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A reinterpretation of some Bay Area shellmound sites : a view from the mortuary complex from Ca-Ala-329, the Ryan Mound

Alan Leventhal
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from the mortuary complex from Ca-Ala-329, the Ryan Mound**

Leventhal, Alan Mark, M.A.

San Jose State University, 1993

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**A REINTERPRETATION OF SOME BAY AREA SHELLMOUND SITES: A
VIEW FROM THE MORTUARY COMPLEX FROM CA-ALA-329,
THE RYAN MOUND**

A Thesis

Presented to the Faculty of the Department of Social Science

San Jose State University

**In Partial Fulfillment
of the Requirements for the Degree
Master of Arts**

By

Alan Leventhal

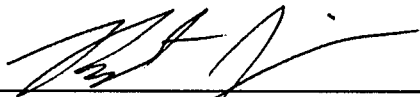
December, 1993

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APPROVED FOR THE UNIVERSITY

ABSTRACT

This thesis addresses the archaeological assemblages derived from prehistoric site, Ca-Ala-329, and applies these data to pre-existing settlement-subsistence models developed for the San Francisco Bay Area. When these data failed to conform neatly to an expected pattern of shellmounds-as-villages, alternative explanations had to be explored. Alternative explanations were developed by critically evaluating the treatment of comparable published archaeological data from other San Francisco Bay shellmounds and sites from the macro-Central California culture region. Also addressed are theoretical models in ethnoarchaeology, social, cultural, economic and symbolic anthropology, in order to compare prehistoric and post-contact Costanoan cultural information to other Central California prehistoric and ethnographic data.

The results from this analysis argue for a reconsideration of extant assumptions about Bay Area prehistory and for a reinterpretation of the function and development of the many shellmounds that once served as cemeteries for pre-contact Costanoan Indians.

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I also would like to thank Glen Wilson who drafted the profiles, stratigraphies, and some of the maps and who illustrated the Ala-329 artifact assemblage. He also conducted the obsidian hydration studies, as well as a comprehensive faunal analysis and bone whistle identification. While waiting for me to complete this study, Glen continued to generate additional faunal and obsidian hydration studies, and to complete the

illustrations on the rest of the Ala-329 artifact collections, which have recently culminated in a handsome publication (Wilson 1993).

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CHAPTER 1

INTRODUCTION

Prior to the time of Hispano-European contact and colonization of Alta California (circa. A.D. 1769), the aboriginal inhabitants of the greater San Francisco Bay region buried their dead within the many "shellmound" sites located near the bayshore. Archaeological inquiry within the past century has revealed that many of these interred individuals were buried with rich grave associations. Even so, the prevailing assumption by the scientific community has been that these large bayshore sites result from the accumulation of refuse from habitation/village activities, focused around the intensive exploitation of marine shellfish resources (Nelson 1909; Gifford 1916; Cook 1950; Greengo 1950; Heizer and Baumhoff 1956; Ringer 1972; Coberly 1973; T. King 1970, 1974; Desgrandechamp 1976; C. King 1978a; Bickel 1981:12; Moratto 1984:236; Chartkoff and Chartkoff 1984:159-160; Watts 1984; Luby 1991:45 and others).

Although noted in published archaeological reports, the presence of human burials has tended to be viewed by archaeologists as being incidental or peripheral to site formation and function. Thus, the focus of scientific inquiry over the past 100 years has been upon: 1. the physical composition of the shellmound sites; 2. the antiquity of these mounds, as estimated through a process of speculated rates of accumulation and volumetric constituent studies; 3. the identification and placement of site

components within various proposed temporal sequences; 4. ecological/ subsistence and settlement patterns; 5. sociological inferences about status and rank; and most recently 6. comparative skeletal biology/paleo-epidemiological studies. As important as these studies are, all of them share one thing in common. They all assume that these mounds represent prehistoric village/habitation sites. This untested, late nineteenth-century assumption forms the foundation for much of Central California (especially Bay Area) archaeological interpretation.

The analysis of the Ca-Ala-329 prehistoric burial population and concomitant archaeological assemblages has permitted the development of a new perspective that assesses and then rejects the widely held assumption that many of the San Francisco Bay shellmounds are village/habitation sites. Instead, the data suggest that the burial activities represented at many of these sites are central, rather than peripheral, to their aboriginal function and ensuing physical site-formation of these mounds. Indeed, it appears that many of these mound sites served principally as formal ceremonial centers in the form of cemeteries for high-ranking individuals over the many centuries.

To explain these preserved mortuary patterns manifest at Ca-Ala-329 and the subsequent physical development of many other of the Bay Area mounds, a "Direct Historical Approach" methodology is employed. This approach uses ethnographic data concerning known aspects of Central California tribal socio-political organization and socio-ceremonial integration through ritual obligation. It is postulated that important socio-religious funerary and annual mourning ceremonies reported

ethnographically for Central California Indians likely resembled ceremonies performed by pre-contact Costanoan people who buried their dead at these bayshore mound sites. This perspective offers a more complete anthropological explanation that accounts for the presence and patterning of the human burial populations and concomitant archaeological and ecofactual assemblages present within these mounds.

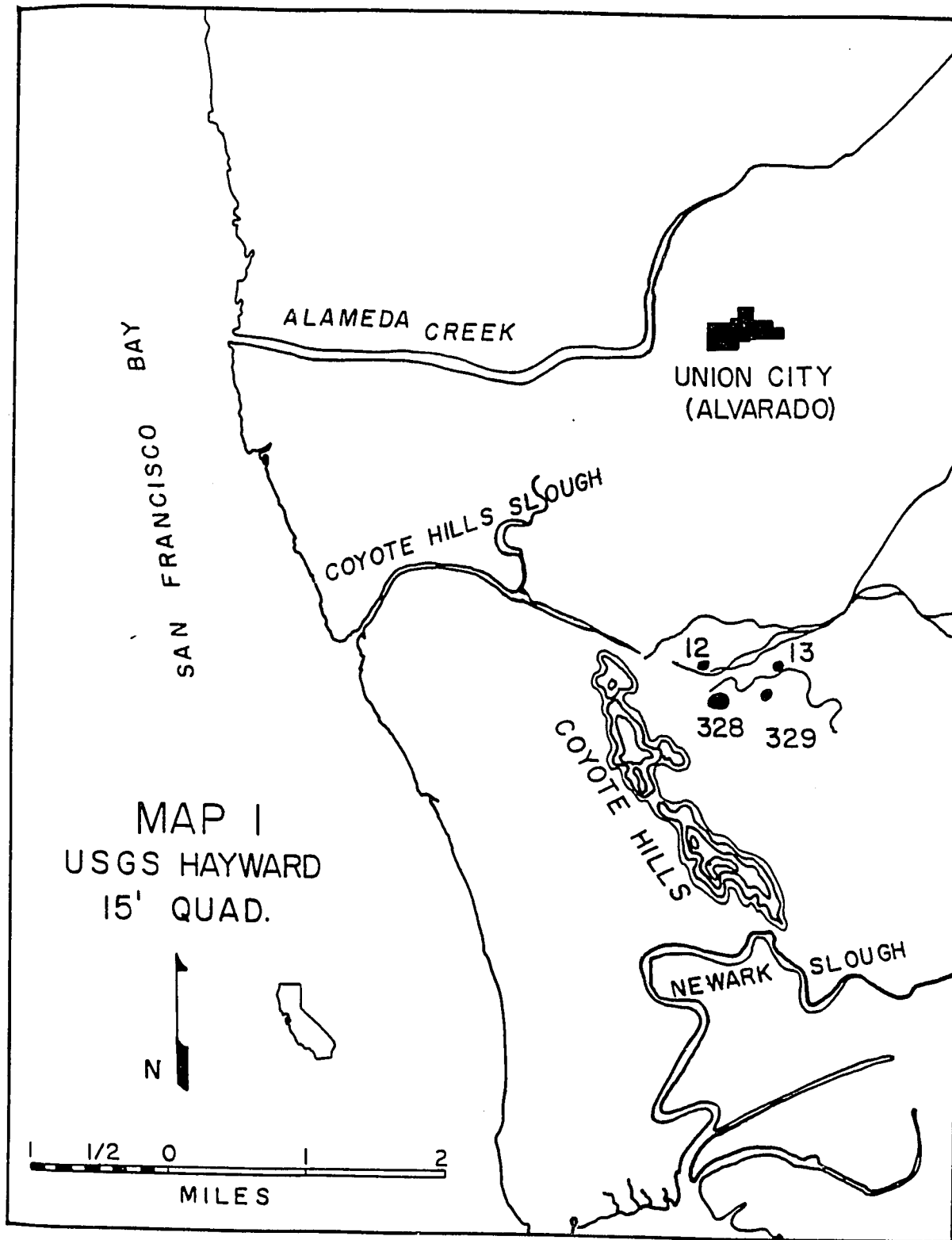
A reinterpretation of the cultural systems underlying the formation of the bayshore mound sites, as viewed from the mortuary complex at prehistoric site Ca-Ala-329, may contribute substantially to the understanding of prehistoric socio-ceremonial lifeways of the Native American inhabitants of the San Francisco Bay region.

Focus of this Study

This study primarily analyzes and interprets data derived from the mortuary complex and archaeological assemblages recovered from prehistoric site Ca-Ala-329, the Ryan Mound. Ca-Ala-329 is the fourth mound site comprising an archaeological locality situated in the Coyote Hills on the eastern shore of San Francisco Bay. The three other mounds are Ca-Ala-12, Ala-13 and Ala-328 (Figure 1). The collective temporal range of these four mound sites, based on radiocarbon dating, spans from approximately 400 B.C. to just prior to historic contact (A.D. 1769).

This archaeological locality falls within the territory of the ethnographic Chochenyo-speaking East Bay Costanoan/Ohlone Tribes. For purposes of continuity, the term Costanoan is used in this study to refer to the aboriginal Penutian-speaking people who inhabited the San Francisco

Figure 1: Location of Mound Sites at Coyote Hills



(From Rackerby 1967)

and Monterey Bay regions from pre-contact times (over four millennia) to the present (Kroeber 1925, Moratto 1984).

Study Goals and Methods

The primary goals of this study are:

1. To reassemble, review and analyze the Ca-Ala-329 field notes and records, burial lot assemblages, non-grave associated artifacts, and a sample of the ecofactual materials generated from the 1962-1968 San Jose State University field excavations.
2. To review the history of greater San Francisco Bay regional archaeology as it pertains to current assumptions about the origins and function of the bayshore mounds.
3. To review and critique current assumptions of the temporal position and interpretation of the Ryan Mound:
 - a. that it is a shellmound that developed as a result of the accumulation of occupational debris and food refuse;
 - b. that it was a village/habitation site;
 - c. that it was occupied during the "Late Horizon" (A.D. 1100-1500).
4. To develop stratigraphic profiles of the excavation trenches and define temporal components based upon stratigraphic position of burials, associated time-sensitive artifacts [e.g., beads and ornaments, based upon Bennyhoff and Hughes' (1987) dating sequence scheme], obsidian hydration values and radiocarbon dating.
5. To develop an alternative perspective that better explains the principal function and subsequent formation of the Ryan Mound, through the use of a Direct Historical Approach methodology (that employs ethnographic data on Central California Native American social organization and ceremonial complexity) and supported by independent archaeological data from other sites.
6. To present an alternative site model that defines cemeteries as specialized ceremonial areas physically and symbolically set aside from and located outside and away from villages and other living (habitation) areas based upon:
 - a. ethnohistoric and ethnographic mortuary data for California;
 - b. ethnographic mortuary data on Native Americans throughout the Americas;

- c. world-wide ethnographic mortuary data for hunter/gatherers.
- d. archaeological data derived from California prehistoric sites
- e. anthropological interpretations addressing symbolically profaned and dangerous areas set aside for the dead (i.e., cemeteries) and their relationship to residential areas set aside for the living.

The Site Model: Working Assumptions

The archaeological site model developed for this thesis is a rather simple one and is based upon several key sociological, ethnological and archaeological factors and assumptions:

1. that prehistoric Bay Area Native American societies developed complex social and ceremonial institutions (i.e., socially stratified societies) just prior to the first century of the Christian Era (A.D. 1) as argued by T. King (1970, 1974); Wiberg (1984); Luby (1991) and others;
2. that pre-contact central California Native American societies developed into ranked chiefdoms, with political, religious and craft specializations controlled by elite lineages as argued by Bean (1976); Blackburn (1976); L. King (1982) and many others.
3. that based upon the above, pre-contact California Native American tribes as complex hunter/gatherer/fishing and proto-agricultural societies, developed social, economic, political ceremonial and religious institutions somewhat analogous to those of the Northwest Coastal tribes [e.g., pre-contact Kwakiutl (cf. Pidocke 1969)] and those of the Early and Middle Woodland traditions of the marco-Mississippian River drainage system who also developed political and ritual mortuary-related mechanisms in the form of complex trade systems, large villages, earthworks and burial mounds independent of intensive farming (cf. Ford and Willey 1940; Griffin 1965; Sears 1965; Willey 1966; Chard 1975; Martin, Quimby and Collier 1975; Struever 1975; Asch, Farnsworth and Asch 1979; Muller 1983; and many others).
4. that cemeteries by their very nature should be classified as ceremonial sites (Binford 1971; C. King 1977; Chartkoff and Chartkoff 1984; and others) because ritualized mortuary related activities are conducted within an identified area set aside for the dead. Ethnographic evidence from California identifies two major cemetery related ceremonies: the funeral (disposal of the dead)

along with cremation (if practiced) and the mourning anniversary (Kroeber 1925; Blackburn 1976) which demanded the attendance of many (hundreds) people over a period of upwards to six days through ritual and social obligations that could cross-cut geopolitical (tribal and linguistic) boundaries, especially in the case of a death of a high lineage (chief) person (cf. Powers 1877; Gifford 1955; Blackburn 1976; and others).

5. that California Indian societies developed complex rules and ceremonies centering around proper treatment of the dead, which included hosting (and therefore feeding) large groups during the funeral and the ensuing annual mourning anniversary ceremony which were held adjacent to or upon the cemetery grounds. These two intensive events ended with ritual washing and purification ceremonies performed by the opposite moieties before leaving the cemetery and burning grounds (Kroeber 1925; Gifford 1955; Blackburn 1976; and others).
6. that based upon California ethnohistoric and ethnographic data, cemeteries were established at various distances outside of village/habitation "living" areas (Kroeber 1925; Bolton 1930; Harrington 1942; Goldschmidt 1951; Gifford 1955; and others).
7. that although large groups may have gathered at the cemetery for the funeral and mourning anniversary, we should expect to find a limited range of activity sets represented by the mortuary features and artifact assemblages. In other words, the prevalent type of features encountered at a cemetery site should be burials, cremations, burning areas for cremations (if practiced), and very few, if any, large, non-residential structures. Furthermore, utilitarian (technomic) objects (i.e., mortars and pestles and other such economically related implements) should tend to be in direct association with the burials, as well as non-perishable social status (sociotechnic) markers, and religious/ceremonial-related (ideotechnic) regalia and objects.
8. that there should be very little, if any, evidence of residential house structures and village related (collector strategy) activity sets represented at a cemetery. Village assemblages should include evidence of: flaked stone, groundstone, bone, and/or shell tool/ornament manufacturing trajectories and associated debris and fabricators (i.e., hammerstones, drills and etc.). Food residues (i.e., faunal and shell fish remains) may be present at cemetery (ceremonial) sites and perhaps consisting of only the locally available fauna at the time of the ceremony. Faunal remains should not as abundant or diversified as what would be expected from a year-round sedentary (collector strategy) village.

9. that village sites should be located at various distances away from the cemeteries (Harrington 1942; Goldschmidt 1951; Gifford 1955; and many others. Furthermore, following a proposed ecological optimal settlement-subsistence model forwarded by Heizer and Elsasser (1980), principal villages should be strategically located within a larger and more diversified catchment area and also in close proximity to year-round fresh water sources. Ideal locations for these large villages may be in the forested foothills and uplands. Considering the fact that the Coyote Hills mounds are located within a salt marsh environment and subject to periodic/yearly flooding from the bay (Pressler 1973) as well as other limiting factors (i.e., lack of potable drinking water during certain times of the year, lack of suitable trees for firewood, seasonal limitations of available foods, and the mounds themselves contain hundreds, if not thousands, of deceased people), presents some potentially non-optimal conditions for people supposedly residing there year round.

CHAPTER 2

OVERVIEW OF BAY AREA PREHISTORY

Since the mid-nineteenth century, hundreds of prehistoric archaeological sites located within the greater San Francisco Bay region have been recorded, excavated and reported upon. Many of these sites, located along or near the margins of the bayshore, have been interpreted as "shell heaps," "shell mounds," "refuse heaps," "kitchen middens," "habitation sites," and "villages" by various authors (Hudson 1875; Ransom 1873; Yates 1875a, 1875b; Nelson 1909; Gifford 1916; Loud 1924; Kroeber 1925; Schenck 1926; Caldwell 1949; Davis and Treganza 1959; T. King 1974; Wallace and Lathrap 1975; Bickel 1976, 1981; Moratto 1984; Chartkoff and Chartkoff 1984; Luby 1991; and many others). The discovery of a fairly high percentage of shellfish remains within the bayshore sites from the Berkeley-Emeryville area influenced early scholars to conclude that these mounds developed as a result of the accumulation of shell refuse by aboriginal inhabitants living on top of them. Thus, almost all of the prehistoric bayshore mounds have since been classified as shellmound/habitation sites.

Some of the most prevalent cultural features within these shell mounds are the physical remains of the aboriginal people themselves. In many cases, graves included a variety of non-perishable grave associations that may or may not have belonged to the interred individuals during their

lifetime. Some of these grave associations are thought to have been placed there as symbolic offerings for the afterlife by relatives of the deceased. The observation that a concerted effort went into the preparation of the mortuary by either immediate members of the deceased person's lineage, or by members of a larger social grouping, is briefly mentioned in the archaeological literature (e.g., Schenck 1926:198; T. King 1970, 1974; Fredrickson 1974b; and others) and in only one widely read, popularized account (Margolin 1978:145-149).

The nature of these mound sites relative to Native American mortuary activities observed or recorded during the mid-nineteenth century were apparently topics of discussion during the 1870s. One scholar offered the following observations:

Mr. Dameron referred to certain mounds that he examined near Alameda Point, and which contained stone implements, shells and bones.

The President stated that this is the condition of nearly all the mounds; but in many, skeletons are found in a sitting posture.

Mr. D.J. Staples said that he did not deem the little information he had to offer of much importance, unless the fact of witnessing burials in the winter of 1849-1850 may aid in the solution of the question

'Whether the bones in these mounds are of prehistoric age'?

In the winter of 1849-1850, on the Mokelumne River, fourteen miles northeast of Stockton, I witnessed the burial of several Indians,... These were placed in the ground... and buried in sitting position, surrounded by their personal property, consisting of beads, trinkets and etc., the graves being made in the depression where formerly stood a sweat-house... . A number of mounds which I have examined ... appeared to have been partially thrown up with the earth; I am of the opinion that the Indians designed them to raise their brush huts above the encroachment of the spring floods. I feel quite confident that scientific men will not discover anything in the Indian mounds of California to connect them with a prehistoric age.

Mr. Ellis called attention to a large mound in the southern part of the city (Oakland) sic. He said perhaps the Indians, being too indolent, had buried their dead where it was easiest to dig (Anonymous 1874).

Although not completely scientific in scope, the aforementioned discussion and others like it influenced the direction and interpretation of scholarly inquiry prior to and after the turn of the century.

Another early contribution was by L. G. Yates who, in 1875, wrote a series of public articles entitled "Localities of Mounds in Alameda County, Washington Township" and "The Relics of the Mound Builders of California" for the Alameda County Independent newspaper. Yates wrote of the aboriginal California people:

The Indians inhabiting California since the advent of the Whites, are generally conceded to be a low, degraded race. ... These reasons probably tended in great measure to cause our aborigines to lead a lazy, careless life without sufficient ambition to engage in active warfare and other pursuits followed by the aborigines of other countries, so that we have none of the elaborate ruins of Central and South America, the extensive fortifications of Wisconsin and other "Western States," nor the imposing mounds of Missouri and other portions of the Valley of the Mississippi.

We find only mounds or elevations formed by the natural accumulations of debris around their former habitations, in which may generally be found, such rude implements as were necessary for the capture of animals used for food. Mortars and pestles used for the preparation of acorns, grasshoppers and other bread-making material, weapons for occasional warfare with neighboring tribes, media for exchange with tribes of different localities, with an occasional personal ornament, and "charms" for propitiating their wicked god, and to charm the game, and cause it to become an easy prey. These include about all the "relics" found in this part of California (1875a:1).

Formal scientific investigations of bayshore mound sites did not begin until the 1890s (Barnes 1897; Holmes 1900; Caldwell 1949). The Castro Mound, located along the southern portion of the San Francisco Bay near

Mountain View, was excavated by Stanford University in 1894. The Palo Alto Times, dated November 20, 1946, published a historical piece about the mound:

The mound has been of interest in academic circles ever since 1893 when Robert I. McFarland noted it ... and called it to the attention of the newly established Stanford University.

Mr. J.P. Ponce of Mayfield gave the university exclusive permission to dig in the mound in 1894 (cited in Caldwell 1949:20).

In 1902, two other bayshore mounds were independently investigated by archaeologists from the University of California, Berkeley. E. L. Furlong and J. C. Merriam conducted limited testing of the West Berkeley mound (Ca-Ala-307), while Max Uhle excavated the stratified 32+ foot-deep Emeryville mound (Ca-Ala-309). Uhle (1907) reported that he was able to identify ten different strata and evidence for culture change. In 1906, Nels Nelson investigated the Ellis Landing mound (Ca-CCo-295). Nelson (1910) said that he was not able to discern any "important breaks in the culture represented." Later in 1908, Nelson completed his monumental circum-bayshore site survey, recording the presence of 425 shellmound sites (Nelson 1909). Nelson opined that:

The ancient remains discovered or re-examined include shell heaps, earth mounds, and a few minor localities that cannot perhaps be termed anything but temporary camp sites. Of the two most numerous forms, the earth mounds are nearly all located by the entering streams, close to the upper reaches of the tide-waters... But as those rather common and widely spread accumulations appear, in many cases to be of relatively recent origin and possibly representative of distinct cultures, the present paper is restricted to a consideration of the shell heaps. These fairly numerous deposits, with a few exceptions, are situated close to the open bay and may, geographically at least, be regarded as distinct (1909:310).

Nelson's published study focused only on the 425 shellmound sites, of which the Patterson Mound and the Ryan Mound were the 328th and 329th recorded sites in his 1909 report. Perhaps, the obvious lack of shellfish remains in the "earthmounds" influenced Nelson's decision to address only the shellmounds. Furthermore, we learn from the footnote on page 310 of Nelson's report that "(t)he earth mounds of Central California have been considered briefly by W. K. Moorehead in his *Primitive Implements* p. 258; and by W. H. Holmes, *Smithsonian Report*, 1900, p. 176." Apparently nothing else was published on the cultural assemblages contained within these sites. Nelson also reported that all of the 425 recorded sites included in his 1909 study were firmly classified as shellmounds:

The group of shellmounds examined in the San Francisco Bay region and located on the accompanying map numbers 425 separate accumulations. It is not supposed, however that this figure exhausts the evidences of aboriginal occupation to be found within the given territorial limits, because the shellmounds are confined to a narrow belt around the open waters of the bay and grade off landwards into earth mounds of a more or less artificial character (1909:322).

Furthermore, he asserted that these shellmounds were settlements and "that the mound people remained practically stationary and drew a varying quantity of molluscs from the bay the year round" (Ibid:345). His interpretations--about speculated rates of accumulation of shell, estimates of the number of people living on the mounds, estimates of age (based upon calculated volumetric studies), and composition of the mounds--influenced the direction of San Francisco Bay archaeological research for the next forty years.

The presence of "numerous burials" contained within these shellmounds was readily recognized by Nelson. He reported that there

were several different modes for the disposal of the dead: cremation, flexed and extended interments, and multiple or "group" burials. He also noted that adults, as well as children, were accompanied with grave associations (1909:343-344). Nelson also speculated that there may have been a functional explanation for so many burials within the mounds (which is reminiscent of the suggestion made earlier by the anonymous scholar in 1874):

The shell deposits, it will be recognized, are made up usually of loose, porous material very easily dug into with a stick or a shell or even with the bare fingers; on the other hand, to make a hole large enough to accommodate a human body in ordinary California soil is a hard task at some seasons of the year, even with modern tools. However, this is merely suggestive, and primitive man may have had other reasons for burial of his dead in the mounds (Nelson 1909:343).

Nelson's speculation about the "other reasons for burial" will be discussed later in this study.

After Nelson's circum-bay survey little formal archaeological work was conducted by U. C. Berkeley staff. In 1912, L. L. Loud wrote a report on the excavations conducted at the Castro Mound (Nelson's 356; SCI-1; SCI-356), and described the mound's structure:

The mound is largely composed of dirt, with stones, shells and ashes as the other ingredients. Shell forms a very small part of the material, but shells, when found, are well preserved, whether at the bottom or the top of the mound (Loud 1912 cited in Caldwell 1949:21).

In 1916, E.W. Gifford published an important comparative study, initiated in 1913, on the Composition of California Shellmounds. Still later, in 1915, L. L. Loud recovered 24 human skeletal remains from the two Stege Mounds: Ca-CCo-298 and CCo-300 (Loud 1924). Although originally interpreted as an occupational site, Loud reported that "no fireplaces or

heaps of cooking stones were found at Stege, though such are commonly met with other mounds" (1924:360). The recovery of human remains and the lack of fireplaces and cooking stones at Stege presumably influenced Loud's conclusion that:

The explanation that the smaller mound was a mere camp-site or hunting station of a permanent village situated on the larger, seems disproved by the occurrence of burials in both (1924:368).

W. E. Schenck and L. L. Loud returned to the Emeryville mound in 1924 when it was being leveled to build a factory, and they recovered an extensive osteological (651 individuals) and artifactual collection (Schenck 1926). Schenck, unlike Uhle, saw no evidence of cultural stratigraphy and concluded: "(w)e are unable to set down such features, however, and must rest with the negative conclusion that strata were not present," thus refuting Uhle's earlier determinations (Ibid:169). This lack of independent verification by Schenck of Uhle's hypothetical stratigraphic cultural sequences presumably colored Kroeber's influential overall perspective on San Francisco Bay prehistory:

Exploration of prehistoric sites anywhere in the State rarely reveals anything of the moment that is not apparent in the life of recent natives of the same locality.... The consequence is that until now the archaeology of California has but rarely added anything to the determinations of ethnology beyond the dim vista of time, and some vague hints toward the recognition of the development of culture...

Nor do the local varieties of culture seem to have advanced or receded or replaced one another to any extent..

In other words, the upshot of the correlation of the findings of archaeology and ethnology is that not only the general Californian culture area, but even its subdivisions or provinces, were determined a long time ago and have ever since maintained themselves with relatively little change (1925:925-926).

By the 1930s the general thrust of these early-twentieth-century archaeological studies centered around generalized descriptions of the cultural materials recovered, inferences about economic activities, discussions on regional developments, inter-site comparisons, and inferred antiquity of the sampled mounds based upon midden volumetric studies (Nelson 1909; Gifford 1916; Schenck 1926 and others). However, in addition to varying amounts of shell, bone, charcoal and ash residues, the only other major archaeological features recovered were human remains and their grave associations. As mentioned above, Schenck (1926) reported that the Emeryville mound yielded 651 burials (705 total), while later excavations at West Berkeley, Ca-Ala-13, Ellis Landing, Patterson Mound and Castro generated 95, 108, 160, 517 and 400+ individuals, respectively (Wallace and Lathrap 1975; Rackerby 1967; Nelson 1910; Davis and Treganza 1959; Caldwell 1949). Although the recovery of human burials was substantial, analyses of these early studies were principally oriented "to the task of building up a body of data, rather than to the interpretation of the bay region's cultural prehistory" (Wallace and Lathrap 1975:5). Temporally, the prevailing view held by these early scholars was that the antiquity of these shellmounds represented a continuous occupation, possibly spanning approximately 3000 to 4000 years (Nelson 1909:345-346; Gifford 1916:13 and others). As a result, Kroeber (1936b) postulated that the prehistoric Bay Area cultures either changed extremely slowly or were static.

Developments in Other Areas of California

As a result of the early pioneering field work conducted by D.B. Rogers (1929) and R.L. Olson (1930), who identified distinct, stratified, prehistoric cultural components within the Santa Barbara region, these and other scholars concentrated on greater regional inter-site component/temporal definitions. Their efforts influenced and helped reorient archaeological inquiry especially within the lower Sacramento Valley and San Joaquin Delta areas (Lillard and Purves 1936; Lillard, Heizer, and Fenenga 1939; Heizer and Fenenga 1939). Apparently, sites located within the Sacramento/San Joaquin Delta region and along the lower Cosumnes River drainage yielded evidence of differential mortuary expressions in the form of body position, orientation and types of artifacts comprising the grave lot assemblages. Based upon these observations a three-part, temporal-regional dating sequence, coined the Central California Taxonomic System (CCTS), was introduced by Lillard, Heizer and Fenenga in 1939. This new dating sequence was divided into Early, Middle or Transitional, and Late Horizon (temporal/cultural) periods and became the foundation for the U.C. Berkeley Department of Anthropology school of thought. Years later, while testing and building upon this tripartite dating sequence scheme, Beardsley (1948, 1954) extrapolated its application to the Marin coast and the San Francisco Bay region, which he classified as the Littoral Zone (1954:7). His study also provided greater refinement to the Central California Taxonomic System by employing a new framework that further subdivided the Central California region into components, facies and geographical provinces (Ibid:6-7). Although there

was some direct evidence of potential Early Horizon (ventrally extended) burials recovered from some of the excavated San Francisco Bay shellmound sites, Beardsley concluded:

A very few slight indications of Early Horizon traditions are known in the San Francisco Bay area. There is reason to believe that coastal areas were inhabited contemporaneously with the earliest known culture of the Sacramento Valley, but no substantial proof for it exists (1954:2)

Since Beardsley's doctoral study, much of the recent (post 1954) scientific inquiry into San Francisco Bay regional prehistory has been descriptive, usually identifying and comparing cultural traits and artifact types, then placing them conveniently within either Lillard, Heizer and Fenenga's (1939) or Beardsley's (1954) modified CCTS dating sequence scheme. Gerow (1968), however, did not entirely accept this classification process and its blanket temporal/cultural/horizontal application to all regions surrounding the Sacramento/San Joaquin Delta heartland. In his 1968 analysis, Gerow demonstrated that the skeletal population recovered from the University Village (Ca-SMa-77), a cemetery site located along the southwestern San Francisco bayshore, was temporally coeval with and yet biologically and culturally distinct from the Early Horizon or "Windmill Tradition" of the lower Sacramento Valley. Gerow thus assigned the University Village burial population and archaeological assemblage to an alternative Early San Francisco Bay Period. Gerow's analysis of the University Village archaeological complex, in conjunction with his re-examination of the published archaeological database, formed the basis for his reappraisal of Central California archaeology. Thus, Gerow essentially

challenged the widely-accepted Berkeley school of archaeological interpretation.

Fredrickson (1973, 1974a), meanwhile, independently discovered additional weaknesses with the Central California Taxonomic System and its failure to explain temporal and cultural variations discovered in the North Coast Range region. As a result, he developed yet another cultural/temporal/regional scheme that included periods and patterns based upon a modification of Beardsley's 1954 study.

When "New" or "Processual" Archaeology emerged in the early 1960s, scholars such as Lewis Binford (1962, 1967) made a significant methodological and theoretical impact on the archaeological record. His influence was felt in California, especially on the interpretation of mortuary data derived from large cemeteries. Stickel's (1968) Status Differentiation at the Rincon Site, L. King's (1969) The Medea Creek Cemetery (Ca-LAn-243: An Investigation of Social Organization from Mortuary Practices), and T. King's (1970) The Dead at Tiburon: Mortuary Customs and Social Organization on Northern San Francisco Bay stand out as some of the first systematic attempts to apply the principles behind Binford's theoretical approaches to prehistoric cemetery data derived from California sites. These studies tested the applicability of Binford's social stratification model by focusing on inferred indicators of social status and rank differentiation within defined cemeteries. Hence, a new theoretically-oriented era for interpreting "Archaeology as Anthropology" began in California; this approach also stimulated diversification into other realms of specialized analysis.

Since the early 1960s, continued university sponsored field schools and later Cultural Resource Management (CRM) studies of San Francisco Bay Area sites and artifact assemblages have generated important specialized analytical studies (see selected sources below as examples) in the following five general areas: 1. subsistence/settlement patterns (Baumhoff 1963; Whelan 1970; Ringer 1972; King and Hickman 1973; Desgrandechamp 1976; Winter 1978a; Dietz and Jackson 1981; Bergthold 1982; Hildebrandt 1983; Watts 1984; Bocek 1986; Elsasser 1986; Simons 1992 and many others), 2. artifact typology (especially beads and ornaments) (C. King 1978b; Gibson and Fenenga 1978; Bennyhoff and Hughes 1987; Bennyhoff 1988; Fenenga 1988; Milliken 1991; and others), 3. obsidian hydration and sourcing (T. Jackson 1971, 1973, 1974; Origer 1982; Wilson 1993; and others), 4. human skeletal biology (Gerow 1968; Suchey 1975; Breschini 1978; Jurmain 1978, 1983a, 1983b, 1990, 1991, 1993; Dittrick and Suchey 1986; Musladin, Jurmain and Leventhal 1986; Gillett 1987, Gross 1991, Elliott 1992, and others), and 5. aspects of social organization (T. King 1970, 1974; C. King 1974, 1977, 1978a; T. King 1974; Fredrickson 1974; Milliken 1981a, 1981b, 1982, 1983, 1988; Wiberg 1984; Luby 1991 and others).

After reviewing the massive body of available published literature pertaining to Bay Area shellmound archaeology, it became apparent that the various authors developed their interpretive perspectives based upon unstated and undefined assumptions and conclusions and, therefore, they never explicitly tested the validity of, nor conclusively proved, the theory that these mound sites were the remnants of villages. Furthermore, in addition to the widely embraced and accepted "shellmound" designation for

classifying the bayshore mounds, this author encountered other classificatory terms such as "occupation sites" or "habitation sites" were often used interchangeably and also without definition or conclusive proof.

Other than Coberly (1973), who formally identified Ca-Ala-329 as "a Central California village site" in the title of her thesis, this author encountered very few archaeologists (e.g., Meighan 1987) that committed themselves to explicit interpretations, much less developed analytical methods of testing the validity of their unstated assumptions about the classification, function and subsequent formation of these shellmound sites. The normative acceptance of the notion that these major bay shore sites are simply classified as "shellmounds," "habitation sites," "occupation sites," or "refuse heaps" has continued from the late nineteenth-century up to the present day.

The only exception to this is T. King's (1970, 1974) study of Ca-Mrn-27, which tested Binford's (1962, 1967) social stratification model, based upon the presence of social markers of wealth and ceremonial objects derived from what he thought to be an organized cemetery. Even though he still embraced the assumption that Mrn-27 was a residential shellmound, the focus of his analysis was on the burial population contained within a portion of the site. Furthermore, T. King offered some interesting interpretive conclusions about the nature of the Mrn-27 mound:

First, the burial cluster, with some possible individual exceptions, represents an organized cemetery utilized by the site's occupants during a continuous period of uncertain but probably rather short duration. The occurrence of such a cemetery runs counter to the normal rule in the San Francisco Bay Area; Typical Bay Area sites, insofar as a "typical" site can be defined, have individual burials scattered through them in a more or less random fashion. The probability of a cluster of burials like that at Mrn-27 occurring as the

result of chance, however, is so low as to be negligible (0.001 by chi-square).

Second, the nature of the artifact assemblage, in which non-utilitarian, "sociotechnic-ideotechnic" artifacts predominate, and the distinctly non-random association of elements of this assemblage with cremated and disarticulated remains of men, women and children buried in the center of the cemetery, leads me to believe that this cemetery reflects in its structure a form of social organization characterized by ascribed ranking (1974:38).

T. King presented strong evidence of social ranking and differential treatment of individuals buried within this "Middle Horizon" site. What is perplexing, however, is his discussion of the mortuary patterning from Ca-Ala-328 in comparison to Mrn-27:

At neither Ala-328 nor 13 was an organized cemetery recorded, though this fact could reflect excavation strategy more than it does cultural reality (1974:48).

These data suggest that a population residing at a site like Mrn-27 would have immediate access to most of the resources available in every season; there would be little incentive to move about during the course of the year, though short expeditions by a few people to some interior location or to the ocean might occasionally be necessary to relieve unpredictable scarcities. On the other hand, the occupants of Ala-328, for example, would have access to the resources of grasslands and marshes close at hand, but would have to travel a considerable distance to collect quantities of the staple shellfish and acorns (Ibid:44).

The fact that Mrn-27 was a very small, insubstantial site lying on a hillside overlooking a much more "typical" Bay Area midden (Mrn-26) suggests a further, rather ironic conclusion. It is possible that large shellmounds, in some parts of the Bay Area at least, may have been exclusively or relatively exclusively the homes of low-ranking families, while high-status lineages lived in somewhat separate locations that today appear to be small, "satellite" sites. Archaeologists have, of course, easily noticed the large shellmounds and dug them whenever possible, finding quantities of scattered burials and utilitarian artifacts; meanwhile the residences and cemeteries of high-status lineages, if such small sites sometimes are, have been bulldozed away without salvage excavation in the

course of urban expansion, judged "insignificant" by archaeologists deeply buried in the excavation of huge shellmounds (Ibid:39).

T. King's (1970, 1974) study still stands as one of the most theoretically-oriented studies conducted within the San Francisco Bay region. He also carefully considered some of the weaknesses of his own interpretations due to "the rather motley data" available to him from other sources and challenged the scientific community to test the validity of his theory independently .

The last major study focusing on the bayshore mounds was conducted by Bickel (1976, 1981). She conducted her doctoral dissertation study on the collections recovered from three of the Coyote Hills mounds: Ca- Ala-12, Ala-13 and Ala-328. While Bickel's dissertation focused on trait-list archaeology as a tool to evaluate "the Berkeley Anthropological School model" of parallel cultural change versus the "Gerowian School model" of convergent bio-cultural change, she did not explain why she dismissed the hypotheses raised by T. King. Bickel essentially restructured the published data presented by Davis and Treganza (1959) for Ala-328 and Rackerby (1967) for Ala-12 and Ala-13. She concluded:

... When specific trends over time are considered, it is difficult to invoke either convergent or parallel change between the 2 areas as a descriptive or explanatory device. One sees convergence or parallels only by focusing on changes in form and ignoring the differences in context in which the changes take place (e.g., the evidently parallel succession of similar bead types and the evidently convergent focus on cut shell bead forms over time both occur against relative differences in numbers of occurrences and size of bead lots between the two areas)...

An examination of central California archaeology from these 2 perspectives leaves strong impressions of change in both areas and separate traditions in each, interwoven with evidence of interplay between them -- a complex picture which cannot be portrayed in simple models of parallel or convergent change (1981:337-338).

Bickel was unable to evaluate the models with the data she chose to use and consequently was obliged to leave unanswered deeper, more complex questions.

Finally, the most recent attempt to analyze mortuary data from a bayshore mound (Ala-328) was performed by Luby (1991). Following Binford's (1971) criteria, Luby employed Bickel's data and then developed a testable model "in order to characterize aboriginal social variation and mortuary behavior...by conducting cluster analyses and searching for sets of co-occurring burial attributes, to establish the significance of such patterns" (1991:45). Luby used a random sample population of 30 individuals from Component III, some of which are "associated with what Bickel (1981) calls a 'basal cemetery'" (Ibid:46). Luby's cluster analysis study supported the conclusions independently arrived at by T. King (1970) for Mrn-27 and Wiberg (1984) for Ala-413 for evidence of a ranked society during the Middle Period. Luby suggested that "(s)ince wealth is usually linked to status and prestige, each of the clusters can be described in terms of their overall position within a ranked system" and "the results of the cluster analysis...indicate that the mortuary population of Component III was differentiated by social rank" (1991:50-51).

T. King's (1970, 1974), Wiberg's (1984) and Luby's (1991) studies, demonstrated evidence of socio-cultural stratification within the populations buried at three geographically separate Middle Period sites:

Ca-Mrn-27, Ala-413 and Ala-328. Their conclusions form the foundations for a more complex and inclusive socio-cultural reconstruction, interpretation, and explanation described in this study.

The major difference between this study and those of T. King and Luby is that this study sharply and explicitly diverges from the normative perspective that the shellmounds are the result of habitation (village) activities. This thesis proposes that the ethnographic record and independent archaeological data, demonstrate that many of these shellmounds, and specifically Ala-329, was:

1. a specialized ceremonial site in the form of a cemetery, particularly for high-lineage people, rather than the remnant of village/habitation site;
2. continuously used as a mortuary, spanning approximately 1800+ years [Ala-329, like all cemeteries, constituted a profaned, dangerous and ritually polluted area set aside and removed from village (non-polluted) habitation sites];
3. deliberately built-up as an earth mound as the result of ceremonially-related (funeral and mourning anniversary) mortuary activities through a mechanism of ritual obligation, rather than as a by-product of accumulations of refuse resulting from human habitation activities (food refuse/shellmound) [the presence of food residues in the mound matrix is probably the result of intensive single-event ceremonial related activities, rather than simply the continuous accumulation of habitation debris];
4. not a single component "Phase 1 Late Horizon" site as inferred by Coberly (1973), Elsasser (1978), Bennyhoff (1978), Watts (1984) and others, [but is a multi-component site spanning from at least Early Middle Period (200 B.C.) through Phase 2 Late Period (circa. A.D. 1700) after Bennyhoff and Hughes (1987-scheme B1:149)].

The following chapters compare the mortuary data, features and artifact assemblages recovered from Ala-329 to data from other published Bay Area shellmounds and other Central California sites. Then these data

are compared and discussed in light of several different theoretical frameworks or models in the following chapters:

Chapter 6 -- Testing an Archaeological Site Prediction Model in Light of Ala-329: Stickel's Site Model as a Test Case.

Chapter 7 -- A Comparative Analysis Between the San Francisco Bay "Shellmounds" and a Late Period Central California Village: Ca-But-1, The Patrick Site as a Test Case.

Chapter 8 -- From Bayshore "Shellmound" Villages to Central Valley Windmill Villages: A Recent Reinterpretation of Mainstream Early Central Valley Prehistory from Meighan's Reexamination of Ca-SJo-68, The Blossom Site.

Chapter 9 -- Testing Ethnographic/Ethnoarchaeological Models: The Direct Historical Approach.

Chapter 10 -- An Attempted Reconstruction of the Social Organization and Ceremonial Complex of the Ala-329 Population as Inferred from the Nomlaki.

Chapter 11 -- Concluding Statements and Discussions Centering Around Ten Hypotheses Generated as a Consequence of this Study: With Comparative Implications Derived From Ethnohistorical/Archaeological Data.

The emergent alternative perspective essentially questions much of the established assumptive foundations for interpreting San Francisco Bay prehistory. If these alternative explanatory hypotheses hold true, then many of the extant specialized studies concerning Bay Area prehistory--subsistence-settlement patterns, optimal foraging strategies, faunal and shell fish analyses, demographic/population studies, social organizational studies, socio-economic/inter- and intra-tribal relations (e.g., marriage and trade), as well as other studies--must be re-evaluated and independently tested.

CHAPTER 3

SITE DESCRIPTION

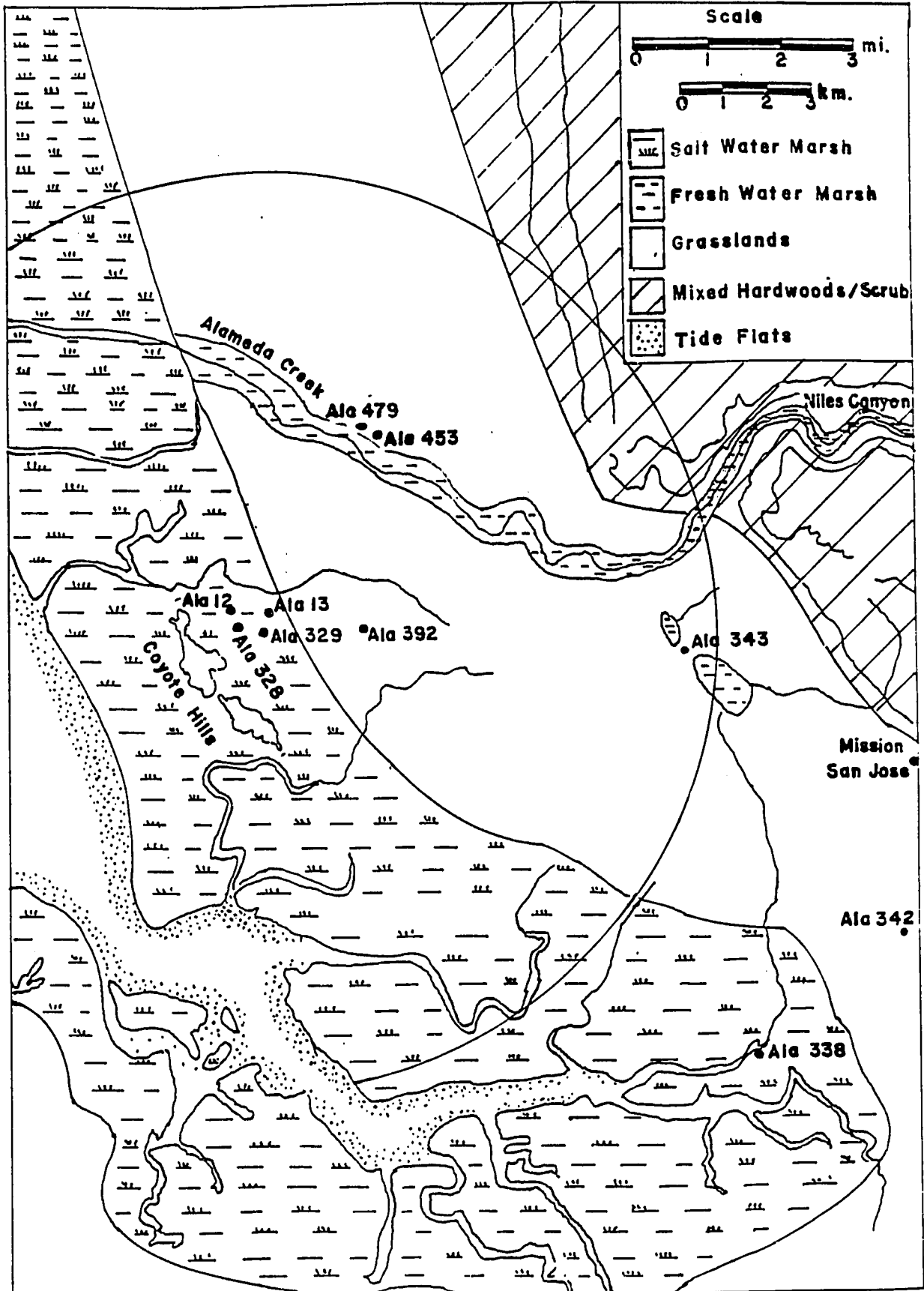
Overview of the Coyote Hills: Environment and Geographical Setting

The Ryan Mound, Ca-Ala-329, is located on the southeastern margin of the San Francisco Bay. The site is bounded on the north by Coyote Slough formed by Alameda Creek, on the west by the Coyote Hills and the bay, on the east by a savanna-grassland that extends approximately six miles to the Diablo Mountain Range, and on the south by the Newark Slough. According to the USGS Newark 7.5' Quadrangle, the elevation of the base of the mound is at approximately the 5-foot contour above sea level.

Ca-Ala-329 is one of four mound sites that constitutes an archaeological locality situated on the east side of the Coyote Hills, near the present cities of Newark and Fremont, California. The other three sites at this locality, Ca-Ala-12, Ala-13, and Ala-328, are within one half mile of one another (Figure 2).

Recent attempts at paleo-environmental reconstruction of the distribution of aboriginal plant communities suggest that the Coyote Hills archaeological locality was established within the salt marsh/wetland community (T. King 1974; Mayfield 1978). Apparently, prior to the construction of flood control levees around 1916, the lowlands surrounding the hills often flooded. Coberly suggested that, based upon information derived from a 1917 Department of Agriculture soil survey map, the "Ryan

Figure 2 : RESOURCE HABITATS OF CA-ALA-329
 10 km. Catchment Radius



Mound probably stood on the actual shore of the bay" (1973:1). Davis and Treganza (1959) offered additional historic environmental information concerning hydrological changes during the early nineteenth century:

On the Whitney map the site is located on the edge of a marshy slough of which the present Coyote Hill Slough is a remnant. The old slough and tidal marsh lands have been reclaimed subsequent to 1917 by a system of levees for developing farmland and the construction of numerous and extensive ponds for the purpose of extracting salt and other minerals through solar evaporation. Due to these factors, the shore of San Francisco Bay, once immediately adjacent to the site, has been removed a distance of approximately 3 miles to the northwest. (1959:4).

Pressler interviewed the owner of the Patterson Ranch, and he stated that "at high tides all the sloughs and creeks were full and the land between would be salt marsh" (1973:58). During the winter/spring rainy seasons, substantial flooding would occur. In the marshy areas north of the locality the land was covered with as much as eight feet of water (Ibid:61).

In her 1976 doctoral research concerning three of the bayshore mounds (Ca-Ala-328, Ala-12, and Ala-13), Bickel suggested that:

There has been no systematic attempt at paleoenvironmental reconstruction of the area of the sites. Consideration of archaeological evidences for environmental conditions has been confined to inferences based upon examinations of the faunal components of midden constituents and species identification of artifactual bone (e.g., if deer were present, the local environment must have such as to support deer, and so forth). Previous discussion of the environment of the sites (D&T 1959:4-5) offered a brief delineation of present-day environment in the area, under the assumption that little significant environmental change has taken place since the sites were abandoned prehistorically (1976:28).

Despite Bickel's position, important paleo-environmental and archaeological-related studies focusing on the reconstructed distribution of pre-contact plant communities and animal populations have been reported

by various authors (Gifford 1916; Greengo 1951; Ringer 1972; Pressler 1973; T. King 1974; and Desgrandechamp 1976). Additionally, faunal analyses on collections from the bayshore mounds have also been published (Howard 1929; Greengo 1950, 1975; Whelan 1970; Ringer 1972; Busby 1975; Brooks 1975; Follett 1975; Watts 1984; and others). Based upon the results cited above, a picture of a rich and diversified environment of exploitable resources emerges. These resources were presumably readily available during different times of the year (except, perhaps for shellfish). During the flood season, for example, pre-contact Costanoans probably used tule reed boats to gain access to some of these resources.

Additionally, studies conducted by Desgrandechamp (1976), Barbour and Major (1977), Atwater, Hedel, and Helley (1977), and Mayfield (1978, 1980), show that this archaeological locality falls within the bayshore/estuary/salt water marsh community. According to Kuchler, this coastal salt marsh community is dominated by glasswort (Salicornia virginica) and cordgrass (Spartina foliosa) and the structure is described as a: "(c)ommunity of perennial graminoids and succulent forbs, the former 1 m tall or more, the latter usually less" (1977:24). These coastal salt marshes are usually "(a)round sheltered bays, estuaries and coastal lagoons, usually above mean water level and inland from intertidal sand and mud flats" (Ibid). Adjacent to and east of the coastal salt marsh environment are grasslands, or California prairie, with areas of spring-fed fresh-water marshes, thus providing a rich and diversified lowland ecology. (For a detailed study of the different exploitable flora and fauna from this area see Ringer 1972.)

Site Background Information

Ca-Ala-329 is a large earthmound site oriented parallel to the bayshore, and its approximate dimensions are 450 feet by 300 feet. The mound is nearly flat at the top, averaging approximately 12 feet high, with a small area near the 50N 60W trench reaching a height of 16 feet.

The site has been known to many East Bay residents since at least the early 1870s. As mentioned above, the mounds appear on the 1873 Whitney map. In 1875, Yates published several popular newspaper articles in the Alameda County Independent on the location of many of the bayshore sites. Yates (1875b) wrote:

Our next stopping place is on the east side of Patterson's willows where there is quite an extensive mound. ... Nothing unusual occurs at this mound, but on crossing to the other side of the willows to the ranch of the Ryan Bros., we find one of the most extensive and interesting mounds in the county. It covers several acres and is raised from twelve to fifteen feet above the surrounding surface; besides the top has at various times been scraped off to fill the accompanying depressions, some of which show the circular depressions consequent upon the former presence of "sweat-houses." Large number of human bones have been found in leveling and cultivating the soil of this mound -- bones of various animals, stone implements, such as mortars, pestles, charms, fragments of obsidian (volcanic glass), implements of bone consisting of saws, bodkins, etc., have been found in this locality, and in fact this mound appears to have been a spot much frequented by the Indians for many ages and in large numbers (Alameda Independent No.5, July 3, 1875).

Nelson apparently identified only two of the larger Coyote Hills mounds during his monumental survey in 1908. These two mounds were designated Newark #1 (Ala-328) and Newark #2 (Ala-329) (Nelson 1910; Coberly 1973:3). How Nelson missed identifying the two other mounds (Ala-12 and 13) is not known at this time.

According to Coberly:

The earliest historic disturbance of the Ryan Mound may have been the construction of the house of Mr. Ryan, a tenant of Mr. Patterson. No trace of the house remains today. In about 1925, the top of the mound was scooped out to form a reservoir which proved to be unsuccessful because the loose, ashy midden would not hold water. The highest portion of the site must have been destroyed in this operation (1973:2).

These historic anecdotes are partially supported by the two rather large depressions mapped by Gerow (Stanford) and Hester (SJSU) in the center of the mound on the Ala-329 site map (Figure 3).

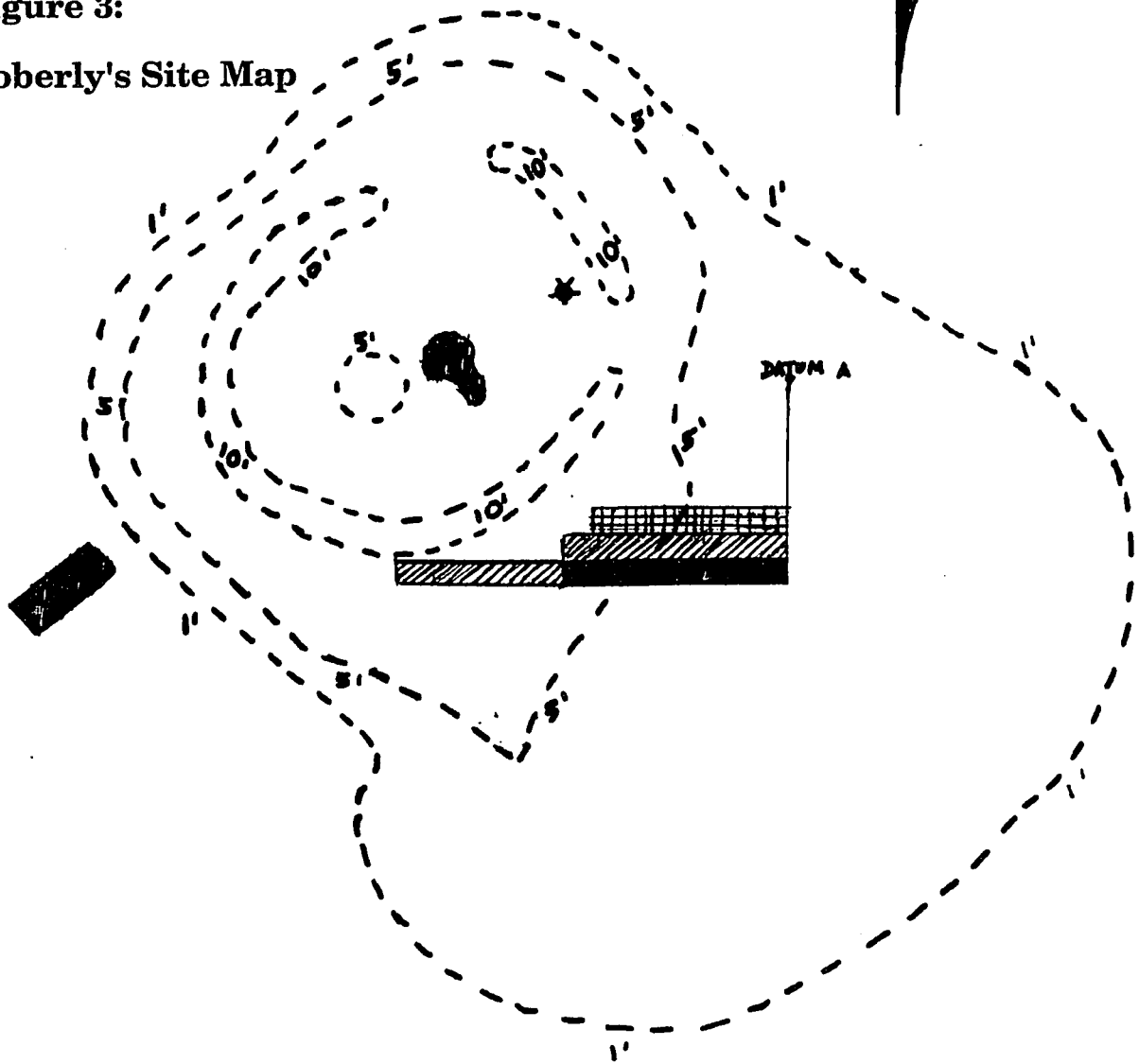
History of Archaeological Investigations at Ala-329







Ca-Ala-329 was first excavated by Wedel in 1935, yielding 12 burials (Barnett 1935). In 1948 it was assigned its current trinomial Ca-Ala-329 by the University of California Archaeological Survey. Also in 1948, salvage excavations at this site were conducted by C. E. Smith from University of California, Berkeley. Smith encountered and removed an additional 38 burials.

In 1959, Gerow from Stanford University conducted the first systematic field excavation at the site. Gerow established the first series of 10-by-10-foot excavation units on the southeast portion of the mound (Figure 3). After the third season, Coberly analyzed the archaeological assemblages associated with 68 burials and compared her data to the adjacent Ala-328 mound. Her Master's thesis was published in 1973 and has become one of the major reference documents for interpreting the Coyote Hills in general and Ala-329 specifically.



Figure 3:
Coberly's Site Map



- 1.25 inches = 100 feet
-  Trenches dug in the 1935 University of California excavation—approximate location from Barnett and Wedel, 1935.
 -  1959 excavation, Stanford
 -  1960 excavation, Stanford
 -  1962 excavation, Stanford
 -  Reservoir pipe
 -  Contour lines, labeled by feet above the surrounding plain

(From Coberly 1973)

In 1962, another field school was conducted by J. Hester and D. Pritchard from San Jose State College. Between the years 1962 and 1968 San Jose State excavated 68 10-by-10-foot excavation units, almost all excavated down into the sterile sub-soil. The students were briefed, well trained in field techniques, and required to keep detailed descriptive field journals, which were kept on file at San Jose State University. Whenever they encountered burials, excavation and recovery strategy shifted to a trowel, brush, ice pick and dustpan technique of exposure and all grave-associated soils were sifted through 1/4 inch and 1/8 inch mesh screens for maximum recovery of tiny beads and other fine objects. All grave-associated objects were inventoried in the field notes and later cataloged at Stanford. Almost all of the burials were drawn and photographed both in black and white (prints) and as color slides.

All of the sifted soil from the excavation units, burial features, and other features was screened through 1/4 inch mesh screens. All of the recovered non-grave-associated artifacts and ecofacts (fauna, shell, etc.) were sorted and placed within labeled unit level bags. These level bags were then placed within labeled cardboard boxes and stored at San Jose State. Later, the majority of the faunal bone from the excavation units was separated from the unit level bags and curated in the Department of Biological Sciences Bird and Mammal Museum for further study. The remaining non-grave-associated artifactual materials (flaked stone, groundstone fragments, thermally affected sandstone cobbles, baked clay, shell and miscellaneous faunal remains) filled 42 cardboard boxes. This

author completely reviewed, analyzed and catalogued these materials in 1987.

For several years following the end of the 1968 field season, very little was done to analyze the Ala-329 burial population and grave assemblages. In 1970 or 1971, C.E. Smith from Hayward State requested permission from Gerow to conduct additional testing with his students at the site. Smith apparently placed seven 10-by-10-foot and eight 5-by-5-foot units mostly in the area of the southern historic depression. Later, Gerow resurveyed the site, updated his site map and shared this information with San Jose State (Figure 4). In 1984, Diane Watts, a graduate student from Hayward State, completed a comparative faunal assemblage study for her Master's thesis on materials derived from the Hayward State excavations. Unfortunately, she provided no site map, provenience or stratigraphic information relative to Smith's excavations.

At Stanford, several of Gerow's students reviewed some of the burial population as part of their academic studies. Gerow provided materials for four radiocarbon dates from the Stanford excavation at the time Bickel was considering Ala-329 for inclusion in her doctoral study. Gerow submitted three samples associated with Burial 130 and also from the base of the mound (Gerow personal communication). For reasons that remain unclear, Bickel decided not to include Ala-329 in her comparative study.

In 1982, under the direction of Dr. Robert Jurmain, the burial population from the San Jose State excavations was transferred from Stanford to the SJSU Department of Anthropology's lab facility. Since then, Jurmain and his students have completed detailed osteological analyses of

Ca - Ala - 329

THE RYAN MOUND

CONTOUR INTERVAL 1 FOOT

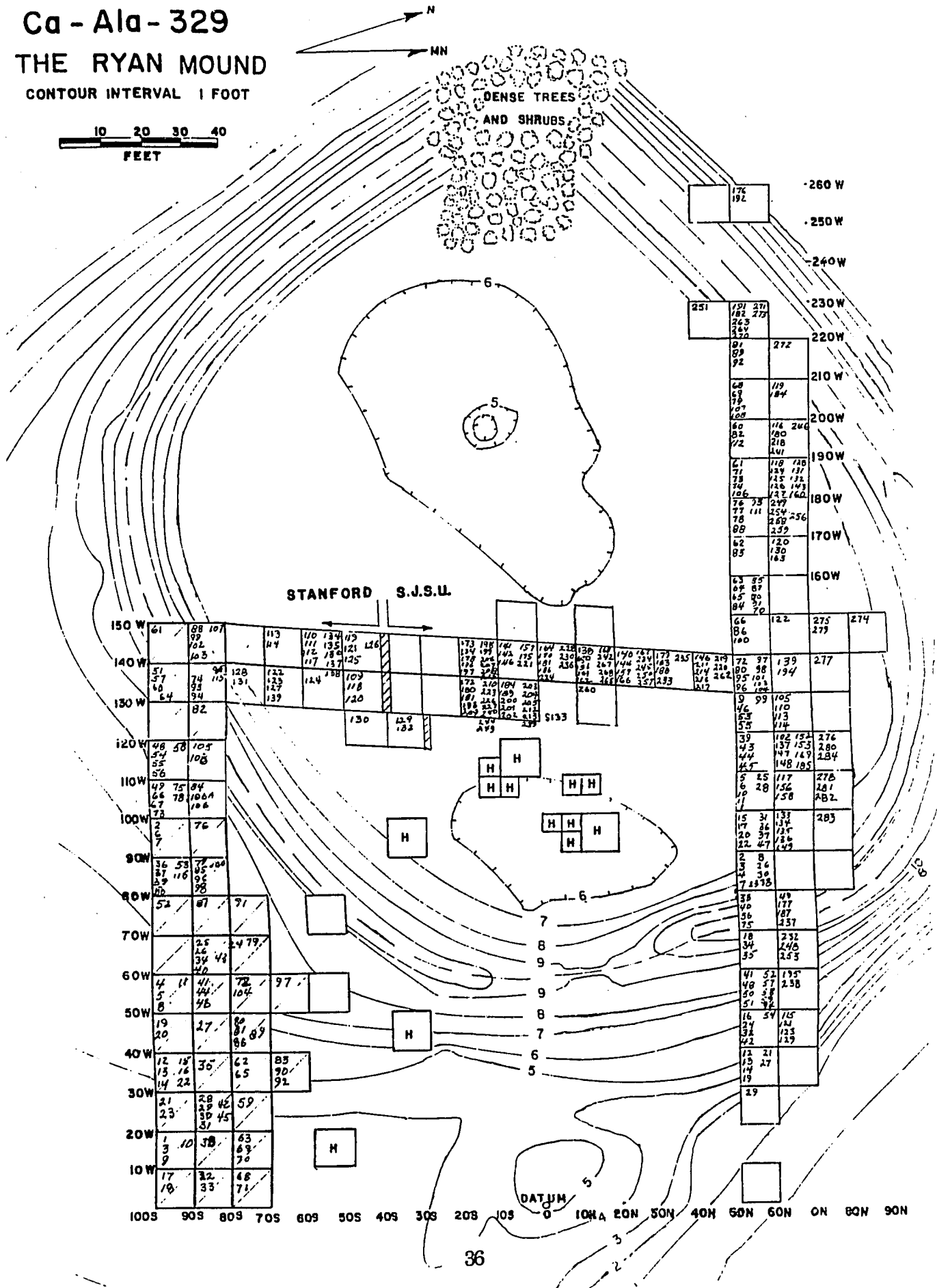


FIGURE 4: DISTRIBUTION OF BURIALS FROM THE SJSU AND STANFORD EXCAVATIONS

the 283 identified individuals and even more recently, have conducted analyses upon the approximately 139 burials from the Stanford University excavations (Gillett 1987, Jurmain 1991, Elliott 1992). Under Jurmain's direction, several Master's theses and professional papers have been written on the Ala-329 burial populations (Pierce 1982; Bizjak and Repke 1986; Musladin, Jurmain and Leventhal 1986; Gillett 1987; Jurmain 1990a, 1990b and 1991; Gross 1991; Elliott 1992 and others).

CHAPTER 4
CA-ALA-329 MORTUARY COMPLEX AND ARCHAEOLOGICAL
ASSEMBLAGES

284 burial field designations were assigned to the 283 *in situ* burials discovered during the 1962--1968 San Jose State excavations. With the exception of two Stanford University senior honor theses, this collection remained mostly unanalyzed in the basement of the Leland Stanford Museum from the end of the last archaeological field season in 1968 until 1982. Robert Jurmain, human osteologist from the Department of Anthropology, San Jose State University, decided to develop an advanced osteological program centering upon the analysis of the Ala-329 skeletal population. After a preliminary analysis, Jurmain (1990a:83) and his students determined that there were likely 298 individuals represented within this (SJSU) burial population, with a possibility of a maximum of 320 individuals based upon commingled elements. He discovered that Burial 155 was never allocated to an actual *in situ* burial; therefore, there are only 283 formally recovered grave lots. For purposes of continuity, however, I have used 284 as a general reference to the number of burials discovered at Ala-329 (Burial 284 being the last field designated grave).

During osteological analysis, elements representing at least 37 additional individuals were commingled with several of the primary burials and these were given an "A" "B" suffix after the burial number to distinguish them (see Appendices A and B). After Jurmain and his

students completed the analysis of the San Jose State population, he requested permission from Gerow to transfer and analyze the Stanford University excavated population for continued research. Dr. Gerow granted permission to transfer the 139+ burials recovered during the 1959--1968 field seasons. This combined skeletal population thus exceeded 440 individuals. In April 1991, at the request of the Ohlone Indian community, the Stanford collection was transferred back to Stanford University for repatriation. This population was reinterred following a basic skeletal inventory and partial analysis in June 1991.

Horizontal and Vertical Provenience and Cultural Stratigraphy

One of the major problems encountered during this present study was establishing horizontal and vertical proveniences for the 284 field designated burials. After reviewing the students' field notes and artifact catalogs, a plot of the distribution of the burials by unit and depth was made. Here again a problem arose, because all vertical measurements were taken from the surface of the mound (at 0 inches); without known individual unit datum elevations, it was difficult to reconstruct the curvature of the mound's surface. A decision was made by this author to reconstruct and draw trench profiles by establishing a horizontal control at the 6-foot (72-inch), 8-foot (96-inch), 9-foot (108-inch), and 10-foot (120-inch) levels and measure up to the surface to define the mound contour. Five stratigraphic profiles were generated representing the 50 North, 60 North, 70 North (East/West trenches), and the 120 West and 130 West (North/South trenches). All 284 burials (except Burial 155) were plotted, including

individuals from isolated adjacent units. Throughout the site, burials ranged in depth from 6 inches to almost 96 inches (8 feet) deep.

The preservation of the burials varied; however, the majority were in excellent condition. Based upon the field notes, state of preservation and distribution of the burials, little pre-contact disturbance occurred to earlier burials, as later generations were buried within the mound. In fact, the only recorded disturbances to the burials occurred in the upper 3 feet of the mound, especially in the vicinity of the reservoir depressions. During the course of reviewing the student field notes, it became alarmingly clear that the site had also been vandalized by pot hunters over the weekends when no one was present. Apparently, pot hunters dug into the partially excavated burials and removed skulls and bones, as well as ornament and bead assemblages. These destructive activities compromised the potential wealth of interpretative data that could have been generated from this collection (see Appendix C for Unit Profiles and Burial Illustrations).

Age and Sex Distribution of the Ala-329 Population

Jurmain, and his students performed a detailed skeletal analysis on this skeletal population. This analysis included the determination of age and sex based upon various current independent criteria (e.g., stages of pubic symphysis remodeling, width of sciatic notch and morphology of os coxa, and others) established by skeletal biologists/ physical anthropologists (Todd 1920; Ubelaker 1978; Lovejoy et al. 1985; Katz and Suchey 1986; Bass 1986 and others). Whenever the age determination of an individual was expressed as a range, the median age value was included in the

appropriate 5-year grouping. Adults assigned approximate age values of 20+, 25+, 30+, 35+ and 40+, were included in the general "Adult" category, and sub-divided into the appropriate male, female or indeterminate grouping (for a more comprehensive study on the Ala-329 population see Gillett 1987).

Jurmain's data are synthesized into the table below. For comparative purposes, Wiberg's (1984) age group cluster for his Ala-413 population (ages 15 and under is sub-adult) was employed, rather than Bickel's (1981) data for the Ala-328 population.

Table 1

Distribution of Burials by Age and Sex: Ala-329

<u>Age</u>	<u>Subadult</u>	<u>%</u>	<u>Male</u>	<u>%</u>	<u>Fem.</u>	<u>%</u>	<u>Indet.</u>	<u>%</u>	<u>Totals</u>	<u>%</u>
0-1	19	(7%)							19	(7%)
1-5	31	(11%)							31	(11%)
6-10	9	(3%)							9	(3%)
11-15			8	(3%)	3	(1%)	3	(1%)	14	(5%)
16-20			12	(4%)	8	(3%)	3	(1%)	23	(8%)
21-25			10	(4%)	13	(5%)			23	(8%)
26-30			10	(4%)	9	(3%)	1	(.04%)	20	(7%)
31-35			20	(7%)	5	(2%)			25	(9%)
36-40			15	(5%)	20	(7%)			35	(12%)
41-45			10	(4%)	13	(5%)			23	(8%)
46-50+			2	(.07%)	2	(.07%)			4	(1%)
<u>Adults*</u>			20	(7%)	21	(7%)	16	(6%)	57	(20%)
Totals	59	(21%)	107	(38%)	94	(33%)	23	(8%)	283	(100%)

From the data derived from the combined population presented in Table 1 above, it appears that there is a normative age/mortality curve or distribution for the Ala-329 population. Wiberg suggested that the sub-adult population is underrepresented at Ala-413. He referred to a study conducted by Doran (1980) that "has calculated sub-adult death ratio ranges in portions of central California of .21 (Early Horizon), .12 (Middle Horizon) and .19 (Late Horizon); where 15 years or less is considered subadult" (1984:32). By employing the above criteria and comparing Ala-329 data to other published information from the adjacent mounds, the results are as follows:

Table 2

Comparison Between Ala-413,-328,-13,-12 & -329 Sub-adult Death Ratios

<u>Site</u>	<u>Sub-adults</u>	<u>Adults</u>	<u>Sub-adult Death Ratio</u>
Ala-413	9	52 (n= 61)	.17
*Ala-328	97 (0-12 yrs)	373 (n=470)	.26
*Ala-328	134 (0-17 yrs)	373 (n=507)	.36
**Ala- 13	24	70 (n= 94)	.34
**Ala- 12	4	9 (n= 13)	.44
Ala-329	17	72 (n=89)	.24 (Phase 2 Late)
Ala-329	39	102 (n=141)	.38 (Phase 1 Late)
Ala-329	15	38 (n= 53)	.39 (Middle Period)
<u>Ala-329</u>	<u>71</u>	<u>212 (n=283)</u>	<u>.33 (All phases)</u>

* Bickel uses Brooks and Oliphant's (n.d.) aging criteria data on the Ala-328 population: pre-adolescent = 9 - 12 years and adolescent = 13 - 17 years.

** For Ala-13 and Ala-12, Bickel employs the term "youth" (1981:279).

If the above subadult death ratios calculated for Middle Period sites Ala-12, Ala-13, and Ala-328 are compared to Doran's data derived from the six interior "Middle Horizon" sites selected for his study, the results indicate that all three of these ratios surpass the ratios established by him for both the Middle Horizon (.12) and the Late Period Augustine Mound (.29) of the Central Valley. It is also discovered that the Middle Period component from Ala-329, with a death ratio of .39, is far higher than the two ratios established by Doran for the Middle and Late Period Central Valley sites. However, we also find that the combined ratio value for all three phases at Ala-329 (.33) approaches the combined ratio value of (.36) derived from the neighboring Patterson Mound (Ala-328) burial population. Finally, if this death ratio reflects cemetery demographics, the combined ratio (.31) for the two Late Period components at Ala-329 is just slightly higher than that which Doran derived from the Late Period Augustine Mound (.29). Two independent factors may have influenced these ratios: 1. the sampling of the site and field recovery techniques, and 2. the attention paid, as in the case of Ala-329, to the presence of infant bones mixed in with the adult burials. Approximately one quarter (25%) of the combined SJSU burial population (n=283) comprises the subadult category (ages 15 years and younger).

ANALYSIS OF THE RECOVERED BURIAL ASSEMBLAGES: METHODS AND PROBLEMS

The analysis of the SJSU Ala-329 grave lot and artifact assemblages entailed reassembling, review, and analysis of all the materials curated at Stanford and San Jose State Universities. Essentially, the archaeological recovery program produced two basic analytical units: 1. burial-associated assemblages, and 2. non-burial-associated artifacts and ecofacts recovered from the excavation units. These non-associated materials were subdivided into three additional curatorial units: 1. most of the individual finished artifacts were sorted out from the unit level bags and catalogued and curated by Gerow at Stanford; 2. most of the faunal remains were sorted out and curated at SJSU's Bird and Mammal Museum in the Department of Biology; 3. the remaining unanalyzed excavation materials resided unwashed and uncataloged in SJSU's Department of Anthropology storage facility. All of the artifacts from the excavation units were reviewed and analyzed and a representative sample of the archaeo-fauna was analyzed and is discussed in the concluding chapter.

During the course of reassembling the grave lot assemblages and analyzing the artifacts and ecofacts recovered from the excavation units, all field school-related materials on file at San Jose State University were reviewed (e.g., general informational handouts, course requirements, field methods guidelines, interpretive information about Ala-329 and Costanoan Indians, illustrations of anticipated artifact types, etc.). In addition, the students' field notebooks were cataloged and then reviewed to yield

information about the field methods employed during the seven years (1962-1968) of excavation. Copies of the burial records were obtained from Gerow and placed within binders. Hester provided a complete set of color slide photos documenting the various stages of excavation of the mound, burial features, non-burial-related features, and stratigraphic profiles of the trenches and mound deposit over the seven-year period. Reviewing these materials proved both instructive and problematic, leaving several impressions. The following summarize these impressions:

1. The burials constituted the vast majority of the archaeological features discovered at Ala-329.
2. The majority of the principal technomic/utilitarian artifacts (e.g., mortars and pestles) were in direct association with the burials, rather than distributed in what might be expected for an abandoned "refuse heap" or village pattern.
3. There were faunal (bone and shell) assemblages recovered from the unit excavations [however, based upon photographic evidence and field notes, there appears a very low percentage of shell derived from the screened deposit].
4. Although the excavation unit deposit was sifted through 1/4 inch mesh screens, there was little evidence of flaked stone or other tool manufacturing at this assumed shellmound/village site.

After reviewing the cataloged non-burial artifacts recovered from the excavation units and then analyzing all the remaining archaeological materials left in the unit level bags, a fifth impression emerged: the majority of these artifacts, although broken, were finished products. In consideration with other aspects comprising this assemblage further reinforced the overall impression that Ala-329 did not constitute a major village site. As a result of this analysis 4,460 artifacts were identified and

classified. Table 3 presents a summary of all of the artifacts recovered from the 68 screened excavation units:

Table 3

Frequency of Artifacts by Class Recovered From The SJSU Excavation Units

<u>Cataloged Collection</u>		<u>Uncataloged Collection</u>		
<u>Groundstone</u>		<u>Groundstone</u>		<u>Totals</u>
Intact mortars	= 1	Intact mortars	= 0	n = 1
Mortar frags.	= 14	Mortar frags.	= 8	n = 22
Intact pestles	= 5	Intact pestles	= 0	n = 5
Pestle frags.	= 26	Pestle frags.	= 57	n = 83
Manos	= 2	Mano?	= 1	n = 3
Metates	= 0	Metates	= 0	n = 0
Charmstones	= 81	Charmstones	= 4	n = 85
Proto charmstone	= 11	Proto charmstone	= 11	n = 22
Charmstone frags	= 89	Charmstone frags.	= 18	n = 107
Plug/spool	= 1	Plug/spool	= 0	n = 1
Smoking pipes	= 2	Smoking pipes	= 0	n = 2
Spindle	= 2	Spindle	= 0	n = 2
Steatite pendant	= 1	Steatite pendant	= 0	n = 1
Grooved stones	= 2	Grooved stones	= 2	n = 4
Groundstone frag.	= 3	Groundstone frag.	= 4	n = 7
Total	= 240	Total	= 105	Total = 345
<u>Flakedstone</u>		<u>Flakedstone</u>		<u>Totals</u>
Obsidian points*	= 46	Obsidian points	= 4	n = 50
Obsidian tools**	= 3	Obsidian tools	= 5	n = 8
Obsidian prisms	= 2	Obsidian prisms	= 0	n = 2
Obsidian flakes	= 6	Obsidian flakes	= 5	n = 21
Obsidian util.flk.	= 0	Obsidian util. flk.	= 3	n = 3
Obsidian resh.flk.	= 0	Obsidian resh.flk.	= 3	n = 3
Obsidian nub	= 0	Obsidian nub	= 1	n = 1
Chert points	= 4	Chert points	= 0	n = 4
Chert drill	= 1	Chert drill	= 0	n = 1
Fran. chert flks.	= 3	Fran. chert flks.	= 59	n = 62
Mont. chert flks.	= 0	Mont. chert flks.	= 7	n = 7

Table 3 (continued)

Mont. chunk	= 0	Mont. chunk	= 1	n = 1
Chalcedony flake	= 0	Chalcedony flake	= 1	n = 1
Basalt flake	= 0	Basalt flake	= 1	n = 1
Rhyolite flake	= 0	Rhyolite flake	= 1	n = 1
Quartz flake	= 0	Quartz flake	= 1	n = 1
Steatite flake	= 1	Steatite flake	= 0	n = 1
Quartz core	= 0	Quartz core	= 2	n = 2
Quartzite core	= 1	Quartzite core	= 0	n = 1
Franciscan core	= 0	Franciscan core	= 1	n = 1
Assayed Fran.cht.	= 0	Assayed Fran. cht.	= 3	n = 3
Franciscan biface	= 0	Franciscan biface	= 1	n = 1
Fran. uniface	= 0	Franciscan uniface	= 1	n = 1
Mod. Fran. flk.	= 0	Mod. Fran. flake	= 1	n = 1
Fran. chopper	= 0	Fran. chopper	= 1	n = 1
Angular Fran. cht	= 1	Angular Fran. cht.	= 87	n = 88
Total	= 68	Total	= 199	Total = 267

End/Edge/Battered/Pecked*** End/Edge/Battered/Peck Cobbles

Worked stones***	= 161	Worked stones	= 6	n = 167
Hammer stones	= 5	Hammer stones	= 2	n = 7
End battered	= 1	End battered	= 28	n = 29
Edge battered	= 0	Edge battered	= 2	n = 2
Pecked cobbles	= 3	Pecked cobbles	= 19	n = 22
Anvil stones	= 2	Anvil stones	= 0	n = 2
Notched stones	= 15	Notched stones	= 0	n = 15
Total	= 187	Total	= 57	Total = 244

Unmodified Cobbles/Pebbles Unmodified Cobbles/Pebbles

Banana stones	= 0	Banana stones	= 73	n = 73
Thermal affected	= 4	Thermal affected	= 2411+	n = 2415+
Serpentine	= 0	Serpentine	= 37	n = 37
Franciscan chert	= 0	Franciscan chert	= 6	n = 6
Quartz	= 0	Quartz	= 4	n = 4
Metamorphic	= 0	Metamorphic cob.	= 1	n = 1
Granitic	= 0	Granitic cobble	= 1	n = 1
Basalt cob. frag.	= 0	Basalt cob. frag.	= 1	n = 1
Rhyolitic	= 0	Rhyolitic	= 1	n = 1
Siltstone nodule	= 0	Siltstone nodule	= 1	n = 1

Table 3 (continued)

Organic residue	= 2	Organic residue	= 2	n = 4
Pigment residue	= 1	Pigment residue	= 0	n = 1
Sandstone balls	= 0	Sandstone balls	= 4	n = 4
Total	= 7	Total	= 2542+	Total =2549+

Clay Objects

Clay pipes	= 2	Clay pipes	= 0	n = 2
With impressions	= 5	With impressions	= 3	n = 8
Shaped clay	= 0	Shaped Clay	= 3	n = 3
Clay nodules	= 0	Clay nodules	= 5	n = 5
Fired clay ball	= 0	Fired clay ball	= 1	n = 1
Burnt clay	= 0	Burnt clay	= 116	n=116
Vitreous clay	= 0	Vitreous clay	= 34	n = 34
Total	= 7	Total	= 162	Total = 169

Clay Objects

Bone/Antler/Fish Tools***

Bone awls/frags.	= 150	Bone awls/frags.	= 0	n=150
Serrated tools	= 74	Serrated tools	= 0	n = 74
Antler wedges	= 42	Antler wedges	= 0	n = 42
Antler tools	= 35	Antler tools	= 0	n = 35
Bird bone whistle	= 27	Bird bone whistles	= 0	n = 27
Worked bone/tool	= 22	Worked bone/tools	= 0	n = 22
Antler fragments	= 14	Antler fragments	= 0	n = 14
Burnishers	= 5	Burnishers	= 0	n = 5
Incised bird bone	= 2	Incised bird bone	= 0	n = 2
Bone ring	= 1	Bone ring	= 0	n = 1
Fish harpoon/hook	= 9	Fish harpoon/hook	= 0	n = 9
Total	= 381	Total	= 0	Total = 381

Bone/Antler/Fish Tools

Shell Beads/Ornaments

<u>Olivella</u> 1a bead	= 126	<u>Olivella</u> 1a bead	= 0	n=126
<u>Olivella</u> 1b bead	= 109	<u>Olivella</u> 1b bead	= 0	n=109
O. 2a1 (M1a)	= 203	O. 2a1 (M1a)	= 0	n=203
O. 2a2 (M2a)	= 4	O. 2a2 (M2a)	= 0	n = 4
O. 3d (H1a)	= 1	O. 3d (H1a)	= 0	n = 1
O. 3e (K2)	= 3	O. 3e (K2)	= 0	n = 3

Shell Beads/Ornaments

Table 3 (continued)

O. untyped	= 4	O. untyped	= 5	n = 9
Clam disc bead	= 1	Clam disc bead	= 0	n = 1
<u>Haliotis</u> pendant	= 26	<u>Haliotis</u> pendant	= 0	n = 26
Other shell pend.	= 1	Other shell pend.	= 0	n = 1
Total	= 478	Total	= 5	Total = 483

Other Objects

Quartz crystal	= 1
Concretions	= 0
Red ochre	= 2
Charred basketry	= 1
Bird beak	= 0
Fish verte. bead	= 1
Serrated mussel	= 2
Shell tool	= 1
Abal. whole/frag.	= 3
Total	= 11

Other Objects

Quartz crystal	= 0	n = 1
Concretions	= 10	n = 10
Red ochre	= 0	n = 2
Charred basketry	= 0	n = 1
Bird beak	= 1	n = 1
Fish vertebra bead	= 0	n = 1
Serrated mussel	= 0	n = 2
Shell tool	= 0	n = 1
Abal. whole/frag.	= 0	n = 3
Total	= 11	Total = 22

- Notes: * - All obsidian pt fragments are combined with this class.
- ** - All obsidian tools (e.g., bifaces, scrapers) are included in this class except utilized flakes.
- *** The majority of tools/objects in these classes are fragmented. The majority of the catalogued "worked stones" do not display any wear patterns, and therefore are not really tools. The majority of bone tools, (e.g., bone awls) are very fragmented. Each tip, mid-section and base was treated as a single tool.

Discussion

By employing Binford's (1962) three-part artifact classificatory system (i.e., technomic, sociotechnic and ideotechnic), of the eight general classes of artifacts presented above, five (groundstone, flakedstone, battered/pecked stone, unmodified cobbles/manuports and bone/antler/fish bone tools) may be classified as functional/utilitarian or technomic. However, charmstones

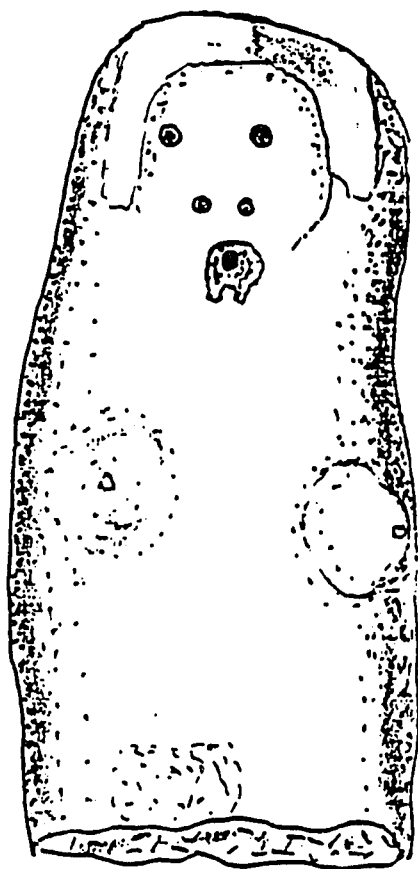
and smoking pipes from the groundstone class should be classified as ideotechnic or ceremonial-related objects under Binford's system.

The three remaining categories (clay objects, shell beads and ornaments, and other objects) cross-cut both sociotechnic and ideotechnic artifact classes. Moreover, burnt clay and vitreous clay residues may be the by-products of cremation pyres and therefore indirectly associated with ceremonial/religious belief systems. The clay smoking pipes could have functioned in a similar fashion as the stone smoking pipes, which were used in either prayer offering or ceremonial-related shamanistic curing (Bolton 1926:278; Harrington 1942:28; Palou, in Levy 1978:489; Riddell 1978:379; Grant 1978:511 and others).

Another ceremonial-related clay object was recovered from the Stanford University portion of the Ala-329 excavations. An unassociated baked clay human figurine (specimen S67-1046) was discovered at 60S/150W at a depth of 46 inches (Figure 5). This female-looking figurine appears to be analogous to similar funeral-related effigies described from the neighboring Coast Miwok region in Marin. Isabel Kelly, conducting ethnographic work among the surviving Coast Miwok people, reported that during funerals:

At death, the body was lashed to three long poles and carried to the nearby cremation grounds, where corpse and litter was burned (TS). Property, including most shamanistic equipment and shell money, ordinarily was burnt... . There was no outright mourning ceremony unless the polo-lo(?) Dance (Loeb 1932:117) and the manufacture of clay and tule figures representing the dead be so considered. Death, resurrection, ghosts and poison form an interrelated cluster of recurrent themes touching many basic aspects of Coast Miwok culture: male tribal initiation, selection of the female leader (maien), "moiety" alignment, doctoring, various dances, and the Bird Cult.

**Figure 5: Baked Clay Figurine Recovered From
Stanford's Excavation Unit 60S/150W**



S67-1046



... Prior to this dance, four human effigies -- three male and one female -- were made of clay. They were about one foot tall and were dried and clothed. Said to represent "dead relations," all the figures belonged to the Land "home"... . Before the boys danced, four women, each clasping a clay figure, entered the ceremonial house through the smoke hole and danced with the "dolls". They danced again the fourth night, after which the effigies were left out side to disintegrate" (1978:421).

From the "Other Objects" category, items such as the quartz crystal, red ochre, and the eagle beak (bird cult?) may also have been associated with ceremonial-religious contexts. If this was so, they should be classified as ideotechnic objects. The shell beads and some of the abalone ornaments should be classified as sociotechnic markers or symbols of wealth and distinction. Some of the isolated effigy abalone ornaments, on the other hand, may have had an institutionalized religious aspect (e.g., Kuksu cult) assigned to them as proposed by Gifford (1947:21); Fredrickson (1974b); and Bennyhoff (1977:50). If these abalone effigy ornaments are badges or markers of membership within the Kuksu or other secret religious societies, they too should be considered as ideotechnic artifacts.

The SJSU Associated Burial Assemblages

Of the 284 field-designated burials recovered from the SJSU portion of Ala-329, 213 had grave associations. Table 4 presents a breakdown of burials with grave associations by age and sex:

Table 4
Distribution of SJSU Burials With Associations Versus Those
Without Associations

<u>Sex</u>	<u># Burials With Goods</u>	<u>%</u>	<u># Burials Without Goods</u>	<u>%</u>	<u>Totals</u>
Males	79	28%	27	10%	106
Females	77	27%	16	6%	93
Subadult*	41	14%	17	6%	58
Indet. Adult	16	6%	10	4%	26
Totals	213	75%	70	25%	283

* Some older sub-adults (13-15 years) were sexed and these were added to either the male or female category.

When these data are further sub-divided by temporal period a clearer patterning emerges:

Table 5
Distribution of SJSU Burials by Temporal Component

<u>Period</u>	<u>Burials With Associations</u>				<u>Burials Without Associations</u>				<u>Total</u>
	<u>M</u>	<u>F</u>	<u>Sub-Ad.</u>	<u>Indet.</u>	<u>M</u>	<u>F</u>	<u>Sub-Ad.</u>	<u>Indet.</u>	
Phase 2	29	23	11	8	7	3	4	4	89
Phase 1	36	42	24	8	11	8	10	2	141
Middle	14	12	6	0	9	5	3	4	53
Totals	79	77	41	16	27	16	17	10	283

The data presented above demonstrate one of the highest ratios of burials with grave-associated objects anywhere within the Bay region and certainly higher when compared to Ala-328. There were 517 burials recovered from Ala-328; out of this population only 71 individuals (14%) had grave associations. The following information is derived from Davis and

Treganza (1959:12-14) and presents the distribution of Ala-328 burials containing burial associations by component:

Component A (Phase 2 Late)	- n=20;
Component B (Late Middle Period)	- n=31;
Component C (Early/Middle Period Transition)	- n=20.

One of the reasons why there is a high frequency of Ala-329 burials with grave associations is that the majority of the burials within this population are derived from strata representing the combined Late Periods with n=181 or 85%. Apparently these Late Period cultural strata are absent in Ala-328, except for a thin veneer of Phase 2B comprising the upper most level of the mound. The trend of increased frequency of non-perishable grave wealth associations, as evidenced at Ala-329, suggests a patterning that intensifies through time, especially after the Middle Period.

The grave associations recovered at Ala-329 included all three of Binford's classes of artifacts. The groundstone artifacts were classified by using Beardsley's (1954) typology. The abalone shell pendants were typed in accordance with Gifford's (1947) typology. The shell beads were originally classified using Gifford's and Beardsley's types; however, they were all later reclassified in accordance with Bennyhoff and Hughes' (1987) proposed typology for purposes of comparison to and continuity with most of the recent Central California bead studies. Detailed discussions and interpretive implications of the Ala-329 archaeological assemblages are discussed more fully in the ensuing chapters. Finally, all of the recorded field information for the 284 burials (i.e., body position, orientation, etc.), museum specimen numbers, artifact types, and descriptions are

summarized in Appendix A. For illustrations of selected grave-associated artifacts, see Appendix D.

CHAPTER 5
**CHRONOLOGY, STRATIGRAPHIC RECONSTRUCTION AND
TEMPORAL ASSIGNMENT OF COMPONENTS**

Since the turn of the century, various authors have used different methodological strategies to estimate the antiquity of the "shellmound" sites (Uhle 1907; Nelson 1909; Gifford 1916a; Schenck 1926; and others). These methods were based principally upon speculative rates of accumulation of cultural residues, volumetric measurements of midden, observed stratigraphic changes in shellfish species, and the use of time sensitive artifacts prior to the development of radiometric dating techniques (pre-1950). Gifford highlighted these techniques in his discussion of the age of the "shellmounds":

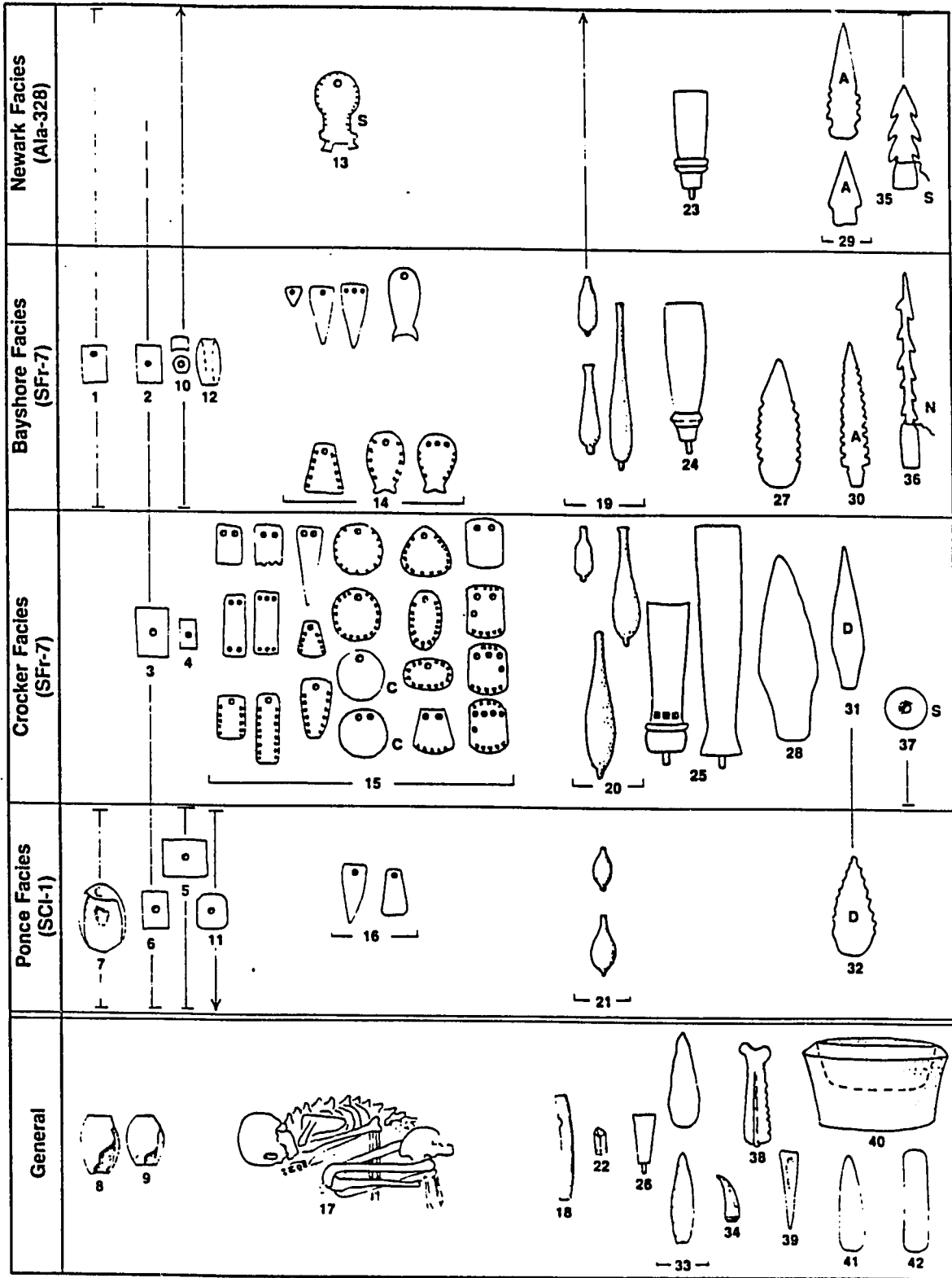
If we take Mr. Nelson's estimate of thirty-five hundred years as the age of the mound, the shell must have been laid down at the average rate of 10.13 tons a year, or fifty-six pounds a day. This amount of shell a day certainly seems reasonable enough, if we accept one hundred people as the average population of the mound throughout its growth. Both Dr. Kroeber and Mr. Nelson consider this figure to be the most probable, the former basing his opinion on his knowledge of California Indian life, the latter on his findings at Ellis Landing (1916a:12).

Until recently, the time range represented within the Ryan Mound has remained open to conjecture. Coberly did not submit any charcoal samples for radiometric assay in 1963. Instead, she relied solely on the presence of "artifact types and burial traits" as "key time markers" to support her position that Ca-Ala-329 is "a very late, Phase 1, Late Period

site, according to the Central California Relative Dating Sequence" (1973:89). Some of the "key time markers" that Coberly selected to support the Phase I Late Period assignment include: Gifford's type 3e and 2a2 Olivella beads; three Desert Side-notched points; abalone "banjo" pendants; tubular steatite pipes; single-piece harpoon heads; small serrated points; tubular mammal bone beads; pestles with expanded and flanged handles; low incidence of red ochre; fairly high proportion of cremations; non-perforated charmstones; and complete abalone shells associated with graves (Ibid).

When Elsasser (1978) published Bennyhoff's (1972) temporal/horizon/facies charts (Figure 6), for inclusion in his Development of Regional Prehistoric Cultures chapter, and again in his (1986) Review of the Prehistory of the Santa Clara Valley Region, California, two misleading designations and interpretations emerged. The first one was in Bennyhoff's chart that illustrated the representative archaeological assemblage for the "Newark Facies of the Late Horizon"; it is mislabeled as **Ala-328**. Coberly (1973) in her study had clearly demonstrated that this Phase I Late Period assemblage was derived from Ala-329, while Davis and Treganza (1959) and Bickel (1976, 1981) had reported that evidence of Phase I Late Period (component) artifacts were absent from any of the other three adjacent mounds (Ala-328, Ala-13, Ala-12). Bickel's doctoral study lent additional support to this position when she stated that "Beardsley found no artifact types at Ala-328 which cross-dated to valley components placed in the Phase I of the Late Horizon" (1981:324).

Figure 6: Late Horizon, Phase 1 (Augustine) Facies Chart



(From Bennyhoff 1972; Elsasser 1978 and 1986)

In the second instance, these charts have led to some misinterpretations. Bennyhoff's dating sequence charts indirectly suggest the assumption that Ala-329 represents a single component Phase 1 Late Horizon site. Indeed, temporally Ala-329 is thought by many as almost the type site for the Phase 1 Late Period within the Alameda District (Coberly 1973; Bennyhoff 1983; Watts 1984; Simons 1992 and others).

Recently, Bennyhoff (1983) reanalyzed the archaeological assemblages from the east bay Emeryville Mound located north of Ala-329, and he identified potentially 11 distinct temporal components based upon diagnostic traits and artifact types. He also compared the Emeryville Mound archaeological assemblages to dated components derived from other central California bayshore mounds and interior sites. As a result of this reanalysis, Bennyhoff commented upon the temporal/cultural and ethnohistoric assignment of Ala-329:

I foresee the possible shift of the Ryan mound (Coberly 1973) to the Diablo district (and the incorporation of the Newark phase of the Alameda district into the Danville phase of the Diablo district) if R. Milliken can produce better evidence from mission records and personal names that this south Bay locality was actually occupied by the Bay Miwok. At present, only the Ryan mound has strong links with the Diablo district. Unfortunately, late Phase 1 in the Alameda district has the weakest data base of any phase (1983:7).

Another researcher also assumed that Ala-329 constituted a single component Phase 1, Late Period site. Watts, who was working on the faunal materials derived from the 1970s Hayward State University excavations, noted that "the recovered material from Ala-329 has never been subjected to any method of chronometric dating" (1984:23). Yet, prior to the time when Watts wrote her thesis study, Gerow (at the behest of Bickel) submitted four organic samples that he thought would radiocarbon

date the upper and basal strata of the Ryan mound (Gerow personal communication). The results of the radiocarbon dates, ranging in age from A.D. 300 to A.D. 1520, were reported by Gerow and published by Breschini et al. in 1984 (see discussion on Radiocarbon Dating below).

Obsidian Hydration

Watts (1984) apparently decided not to submit any organic samples for C14 dating; however, she did select 13 obsidian specimens for hydration studies. These 13 samples were submitted to the Sonoma State University hydration lab and were visually sourced as Napa Glass Mountain. Based upon a conversion formula, Origer calculated the obsidian rim values into calendar years. The estimated dates of these samples range from A.D. 305 to A.D. 1828. Watts did not identify which of the dating sequence schemes she used to interpret these obsidian hydration values. She just simply listed the micron values, excavation unit, depth and date and subdivided her table into three temporal horizons with key breaks at A.D. 500(?) and at A.D. 1600 (Figure 7). Furthermore, she placed only one hydrated specimen, with a value of 3.3 microns, into the Middle Horizon. At this juncture it is important to note that most of the recent (post-1977) publications, such as Heizer (1978a), Chartkoff and Chartkoff (1984) or Moratto (1984), agree that the terminus of the Middle Period (Horizon) is placed between circa. A.D. 700 - 900. These scholars also place the division between Phase 1 and Phase 2 of the Late Period (Horizon) at A.D. 1500 (Elsasser 1978; Bennyhoff 1972; Bennyhoff and Hughes 1987; and others). Therefore, if Watts'

Figure 7: Watts' Obsidian Hydration Results and Temporal Assignment

ALA-329			
Microns	Unit	Date	
3.3	G 30-36"	AD 305	Middle Horizon
3.0	B 12-18"	AD 596	
2.5	D 24-30"	AD 1020	Late Horizon Phase I
2.3	Q1 24-30"	AD 1167	
2.2	6 6-12"	AD 1237	
1.8	4 18-24"	AD 1483	
1.7	6 48-54"	AD 1537	
1.6	6 6-12"	AD 1588	Late Horizon Phase II
1.5	6 42-48"	AD 1636	
1.5	W 36-42"	AD 1636	
1.4	4 18-24"	AD 1680	
1.4	4 12-18"	AD 1680	
1.0	6 36-42"	AD 1828	
ALA-328			
Microns	Unit	Date	
5.1	C2 54-60"	BC 2023	Early Horizon
4.4	J 36-42"	BC 999	
3.9	B1 18"	BC 360	Middle Horizon
3.8	D 30-36"	BC 242	
3.8	F1 24-30"	BC 242	
3.8	B2 18"	BC 242	
3.6	B2 6-12"	BC 126	
3.6	D1 12-18"	BC 14	Late Horizon, Phase I
2.2	E 12-18"	AD 1237	
1.5	D 30-36"	AD 1636	
1.4	M 15"	AD 1680	Late Horizon, Phase II

(After Watts 1984)

obsidian hydration values are reinterpreted based upon the prevalent dating sequence scheme (Bennyhoff 1972; Bennyhoff and Hughes 1987), the results are shown in Table 6.

Table 6

Temporal Reassignment of Watts' Obsidian Hydration Data

<u>Microns</u>	<u>Date</u>	<u>Scheme B1</u>	<u>(Bennyhoff and Hughes 1987)</u>
3.3	A.D. 305	Late Middle Period	(A.D. 300 -- 500)
3.0	A.D. 596	Terminal Middle Period	(A.D. 500 -- 700)
2.5	A.D. 1020	Phase 1A Late Period	(A.D. 900 -- 1000)
2.3	A.D. 1167	Phase 1B Late Period	(A.D. 1100 -- 1300)
2.2	A.D. 1237	Phase 1B Late Period	(A.D. 1100 -- 1300)
1.8	A.D. 1483	Phase 1C Late Period	(A.D. 1300 -- 1500)
1.7	A.D. 1537	Phase 2A Late Period	(A.D. 1500 -- 1700)
1.6	A.D. 1588	Phase 2A Late Period	(A.D. 1500 -- 1700)
1.5*	A.D. 1636	Phase 2A Late Period	(A.D. 1500 -- 1700)
1.4*	A.D. 1680	Phase 2A Late Period	(A.D. 1500 -- 1700)
1.0	A.D. 1828	Phase 2B Late Period	(A.D. 1700 -- 1800+)

(* denotes 2 specimens each)

Apparently uncertain about the results of her Ala-329 obsidian data, Watts reported that:

... there is also an unexpected occurrence of obsidian dating to Phase II of the Late Horizon, an occupation phase supposedly not represented in this site (1984:26).

Furthermore, she avoided addressing the presence of the "Middle Horizon" 3.3 obsidian micron reading and, therefore, dismissed the possible existence of an earlier (pre-Phase 1) component. Although the obsidian sample population was small, Watts' data hinted at the existence of both pre- and post-Phase 1 Late Period components at Ala-329. On the other hand, Watts asserted that:

The hydration results so vividly demonstrate the lack of integrity in this site... In light of Coberly's findings, confused obsidian hydration results and the lack of stratigraphic integrity of the CSUH assemblage, Ala-329, will be treated as a Phase I component of the Late Horizon as determined by previous archaeological evidence (1984:26-28).

Contrary to Watts' interpretive impressions, Coberly observed some evidence of a Phase 2 Late Period presence at Ala-329 (1973:91).

Furthermore, Bickel indirectly acknowledged this Phase 2 component in a passing footnote concerning late period cremations:

At nearby site Ala-329, probably occupied contemporaneously during much of the period when -328 was occupied, cremations occurred relatively frequently (1981:290).

Bickel's discussion on the "temporal relationships" of the three mounds in her study was inconclusive, and she did not formally assign the upper component of Ala-328 to Phase 2. It was Davis and Treganza who succinctly stated that:

Component A of Ala-328 (in which occurs the clam disc bead complex) represents Phase II of the Late Horizon and may be assigned to the Fernandez Facies of that period in the Alameda Province (1959:69).

Stanford University's Obsidian Hydration Studies

In 1966 Axford and Gerow conducted hydration studies on 31 obsidian specimens associated with both Stanford and SJSU Ala-329 burials. A year later Homen and Gerow performed another series of studies on an additional 82 SJSU obsidian specimens. Dr. Gerow kindly shared these hydration results with this author and offered to lend the prepared slides for independent review. The slides were given to Thomas Origer, Director of the Obsidian Hydration Lab at Sonoma State University,

for measurement readings. Origer and his colleagues read the measurements and provided the results to this author in 1988. Tables 7 and 8 present a comparison between the Axford and Origer, and Homen and Origer, readings.

Table 7

Obsidian Hydration Results From Axford and Origer

<u>Spec #</u>	<u>Burial #</u>	<u>Axford Slide#</u>	<u>Axford 1966 Hydration</u>	<u>Origer 1988 Hydration</u>	<u>Specimen Type</u>
1645	Stanf. 9	1	1.1 micron	1.3 micron	Stockton?
1646	" 9	2	0.9 "	16 "	Stockton
1647	" 9	3	1.57 "	NVB	Leaf?
1648	" 9	4	1.05 "	?	Dart frag
1004	" 61	5	1.71 "	DH	Corner N.
1005	" 61	6	0.91 "	--	Biface
1006	" 61	7	1.29 "	--	Corner N.
1007	" 61	8	1.17 "	--	Stockton
1254	" 55	9	1.00 "	2.1 "	Flake
1255	" 55	10	1.06 "	--	Flake
1259	" 55	11	0.87 "	2.7 "	Stemmed
1261	" 55	12	1.02 "	--	Tip
1262	" 55	13	1.29 "	2.0 "	Stockton
1054a	" 89	14	1.38 "	2.3 "	Stockton
1054b	" 89	15	0.90 "	2.3 "	Stockton
1054c	" 89	16	0.99 "	2.0 "	Stockton
1054d	" 89	17	1.22 "	2.2 "	Stockton
1054e	" 89	18	1.05 "	2.3 "	Stockton
1054f	" 89	19	1.10 "	2.1 "	Stockton
1054g	" 89	20	1.10 "	2.0 "	Stockton?
1054h	" 89	21	1.06 "	2.3 "	Stockton
1054i	" 89	22	0.96 "	2.1 "	Fragment
1036	SJSU 5	23	1.02 "	--	Stockton
1037a	" 5	24	1.29 "	--	Scraper?
1037b	" 5	25	0.93 "	4.5 "	Mod. flk
1038	" 5	26	1.42 "	--	Mod. flk
1043	" 5	27	0.97 "	2.0 "	Stockton
No slide made		28			
1839	" 115	29	1.10 "	0.9 "	Corner N
1847	" 115	30	1.10 "	--	Corner N
1848	" 115	31	0.91 "	--	Stockton
1850	" 115	32	none	1.7 "	Stockton

Discussion

Origer's readings were approximately 1.0 micron higher than those obtained by Axford. This proved to be a useful exercise in trying to date some of the Stanford burials. For example, we learned that Stanford Burial 9 was recovered at a depth of 63 inches and has Stockton Serrated points in direct association. Although deep, based upon the Stockton Serrated points as potential time markers, it was predicted that this burial should hypothetically date to Phase 1 Late Period times (circa. A.D. 1100 - 1500). To test this, if we take the two larger hydration values 1.57 (Axford) and 1.6 (Origer) that were obtained on the points associated with Burial 9, then convert the micron readings using the $X^2 \times 153.4$ years formula for Napa obsidian, the result is a date of approximately (A.D. 1573), which falls within Phase 2a (Dating Sequence Scheme B1, Bennyhoff and Hughes 1987).

In the case of the obsidian specimens derived from the two SJSU burials [B. 5 (mean = 1.13 microns/ A.D. 1822) and B. 115 (mean = 1.04 microns/ A.D. 1797)], due to their small hydration values were assigned to the Phase 2B Late Period, however probably date to a very late pre-contact (A.D. 1769) period.

Homen's (1967) obsidian hydration study, in conjunction with Origer's re-reading of 28 selected SJSU obsidian samples, added additional data which contributed to the probable temporal sequences present at Ala-329 and is presented in Table 8.

Table 8

Obsidian Hydration Results From Homen And Origer

<u>Spec. #</u>	<u>Burial #</u>	<u>Homen's Slide #</u>	<u>Homen 1967 Hydration</u>	<u>Origer 1988 Hydration</u>	<u>Specimen Type</u>
1048a	1	77	1.0 micron	1.6 micron	Leaf
1048b	1	78	1.0 "	1.6 "	Fragment
1042	8	33	1.1 "	1.6 "	Stockton
1202	17	41	1.1 "	1.9 "	Biface
1059	18	61	1.6 "	1.6 "	Stockton
1062	18	64	1.6 "	1.1 "	Stockton
1063	18	38	1.6 "	1.3 "	Stockton
1117	18	67	1.6 "	--	Stockton
1238	23	25	1.0 "	1.5 "	Stockton
1333	48	49	2.0 "	1.1 "	Tip
1391	54	17	1.6 "	5.9 "	Prism
1392	54	19	1.6 "	1.7 "	Dart?
1656	67	76	1.0 "	1.5 "	Corner N.
1703	94	81	2.1 "	1.9 "	Stockton
1788	110	13	2.3 "	2.4 "	Knife
1910	127	66	1.0 "	NVB	Pt. tip
2040	143	35	2.1 "	3.4 "	Pt. tip
2222	189	12	1.1 "	--	Stockton
2257	194	32	2.2 "	1.3 "	Flake
2257b	194	31	2.2 "	2.5 "	Flake
2274	209	30	1.1 "	1.9 "	Stockton
2367	226	15	2.6 "	3.2 "	Lance
2368	226	46	1.8 "	2.7 "	Stemmed
2370	226	44	2.4 "	--	Pt. tip
2470	245	9	2.0 "	2.7 "	Dart
2477	247	60	2.1 "	3.2 "	Fragment
2521	259	14	2.5 "	3.2 "	knife?

Results From San Jose State University Hydration Study

Recently Glen Wilson, Director of the San Jose State Anthropology Obsidian Lab facility, performed a new series of cuts on many of the previously uncut Ala-329 obsidian artifacts. Forty-five specimens are included in this present study. [It should be noted that Wilson continued to conduct hydration studies on all of the obsidian specimens from Ala-329

and recently published the results separately (1993)]. Wilson's 1990 data are summarized in Table 9.

Table 9

Wilson's Obsidian Hydration Data

Spec. #	Burial/Unit	Depth	Artifact	Source	Hydration (microns)
1028	50N/ 20W	2"	point	Borax Lake	Diffused
1029	50N/ 40W	18-24"	point	Konocti	2.0
1038	Burial 5	21"	modified flk	Napa	4.9
1042	Burial 8		point	Napa	1.4
1063	Burial 18	9"	Stockton	Napa	1.2
1101	50N/ 60W	42-48"	point	Napa	1.7
1332	Burial 48	58"	point	Napa	2.4
1333	Burial 48	58"	drill?	Napa	2.0
1334	Burial 48	58"	point	Konocti	Diffused
1406	Burial 61	12"	biface	Napa	3.1
1413	50N/170W	12-18"	point	Napa	1.6
1621	50N/ 70W	128"	flake	Napa	5.2
1703	50N/ 50W	104"	point	Napa	1.6
1717	50N/190W	42"	dart	Napa	2.0
1788	Burial 110	57"	knife?	Napa	1.9
1821	Burial 115	24-30"	point	Napa	1.0
1839	Burial 115	24-30"	point	Napa	0.9
1847	Burial 115	24-30"	point	Napa	2.1
1850	Burial 115	24-30"	point	Napa	1.2
1910	Burial 127	36"	point	Napa	NVB
2109	Backdirt	0	point	Napa	2.2
2040	Burial 143	63"	point	Napa	2.7
2136	Disturbed	0	point	Napa	2.0
2147	Burial 177	9"	point	Annadel	NVB
2257	Burial 94	67"	biface	Napa	Diffused
2257b	Burial 94	67"	point	Napa	2.3
2274	Burial 209	35"	point	Napa	1.7
2286	Burial 213	40"	point	Napa	6.0
2286b	Burial 213	40"	point	Napa	1.4
2288	Burial 213	40"	scraper?	Napa	1.3
2289	Burial 213	40"	point	Napa	1.2
2324	20S/120W	42"?	point	Napa	2.3
2367	Burial 226	66"	lance?	Napa	2.6, 2.3
2368	Burial 226	66"	point	Napa	2.2
2370	Burial 226	66"	Stockton	Napa	2.4, 2.2
2371	Burial 227	74"	point	Annadel	2.1

Table 9 continued

2371b	Burial 227	74"	lance?	Borax Lake	1.4
2372	Burial 227	4"	lance?	Napa	2.9
2410	Burial 237	52"	biface	Napa	1.8
2470	Burial 245	73"	point	Napa	2.2
2477	Burial 247	40"	point	Napa	2.5
2491	40N/220W	39"	flake	Napa	2.8
2521	Burial 259	66"	biface	Napa	2.8
2554	80N/140W	0	point	Napa	3.3
2608	70N/ 90W	6"	biface	Napa	2.5

Discussion

Unlike Origer, who did not have access to the original artifacts, Wilson was able to source visually 45 of these specimens, as well as prepare new thin sections. Origer had the opportunity to cut and source only one specimen from Burial 239. This specimen was sourced as a Napa obsidian with a mean reading of 2.7 microns (A.D. 870). Although Wilson's results differed slightly from Axford's, Homen's and Origer's determinations, they nonetheless present another set of independent hydration data, which contributed to the overall temporal interpretation of the mound.

Origer's values in general tend to be fairly close to Homen's. Problematic, however, are Homen's and Wilson's 0.9 -- 1.1 hydration values, which convert to A.D. 1865 and 1781, respectively. Although it may be conceivable that burial interment continued within the mound during the 18th century (cf. Yates 1875), however, it would probably be unlikely to find any burials dating as late as 1781, since the Santa Clara Mission disrupted and baptized the people of the "Estero" and "Santa Agueda" district from this region between A.D. 1777 and 1800 (Milliken 1983:38,99-102). On the other hand, if burial activity continued shortly after Hispanic colonial contact, it would be expected to find some evidence of European

trade beads or other artifacts of European origin within the mound; such was not the case.

Temporally there are some potential problems with Origer's and Wilson's larger hydration values of 4.9+ microns. These larger values calculate out in excess of 3500 years ago, and therefore are probably aberrant, perhaps due to cuts on older portions of the obsidian. As mentioned above, except for one specimen actually cut, Origer and his colleagues only read the specimen slides that were prepared over twenty years earlier. They did not have the opportunity to make fresh cuts on the obsidian artifacts themselves.

Although it is awkward to select the "best fit" hydration results from among these independent studies, most of these hydration results do fall within the predicted temporal range as determined by other diagnostic artifacts. Therefore, these obsidian hydration studies have contributed to the process of temporally assigning many of the burials within Bennyhoff and Hughes' (1987) Scheme B1 (discussed below).

Table 10 represents the combined distribution of Origer's hydration values (derived from Axford's and Homen's slides) which are plotted in conjunction with Wilson's readings.

Table 10

Distribution of Origer's and Wilson's Values in Microns

0.9	XBB	1.7	XXXXXBB	2.5	XXBBB	3.4	XB
1.0	XXB	1.8	XXXXB	2.6	XXXB	3.7	X
1.1	XBB	1.9	XBBBB	2.7	XXBBBB	4.5	BB
1.2	XXXXXA	2.0	XXBBBBB	2.8	XB	4.9	B
1.3	XXXXBBBBB	2.1	BBBBB	2.9	BB	5.2	XB
1.4	XBB	2.2	XBBBB	3.0	XB	5.8	BB
1.5	XXBB	2.3	XBBBBB	3.2	BBB	5.9	B
1.6	XXXBBBB	2.4	XBBB	3.3	X	6.0	B
						6.5	B

B = specimens associated with burials.

X = unassociated specimens from excavation units.

Of Beads and Ornaments: the Temporal Assignment of the Ala-329 Burials

Over the past 50 years, California archaeologists have recognized the strategic time-sensitive nature of certain types of shell beads and ornaments, as well as other diagnostic artifact types. As a result of the many archaeological studies conducted in Central California, various authors have developed shell bead and ornament typologies (Lillard, Heizer and Fenenga 1939; Gifford 1947; Beardsley 1954; Bennyhoff and Heizer 1958; Bennyhoff and Fredrickson 1967; Fredrickson 1968; and Bennyhoff and Hughes 1987). Based upon the results of his own research, C. King stated that, "(t)he most sensitive indicators of change over time regularly found in late archaeological contexts in California are the beads and ornaments that were used in the organization of social behavior" (1978a:58).

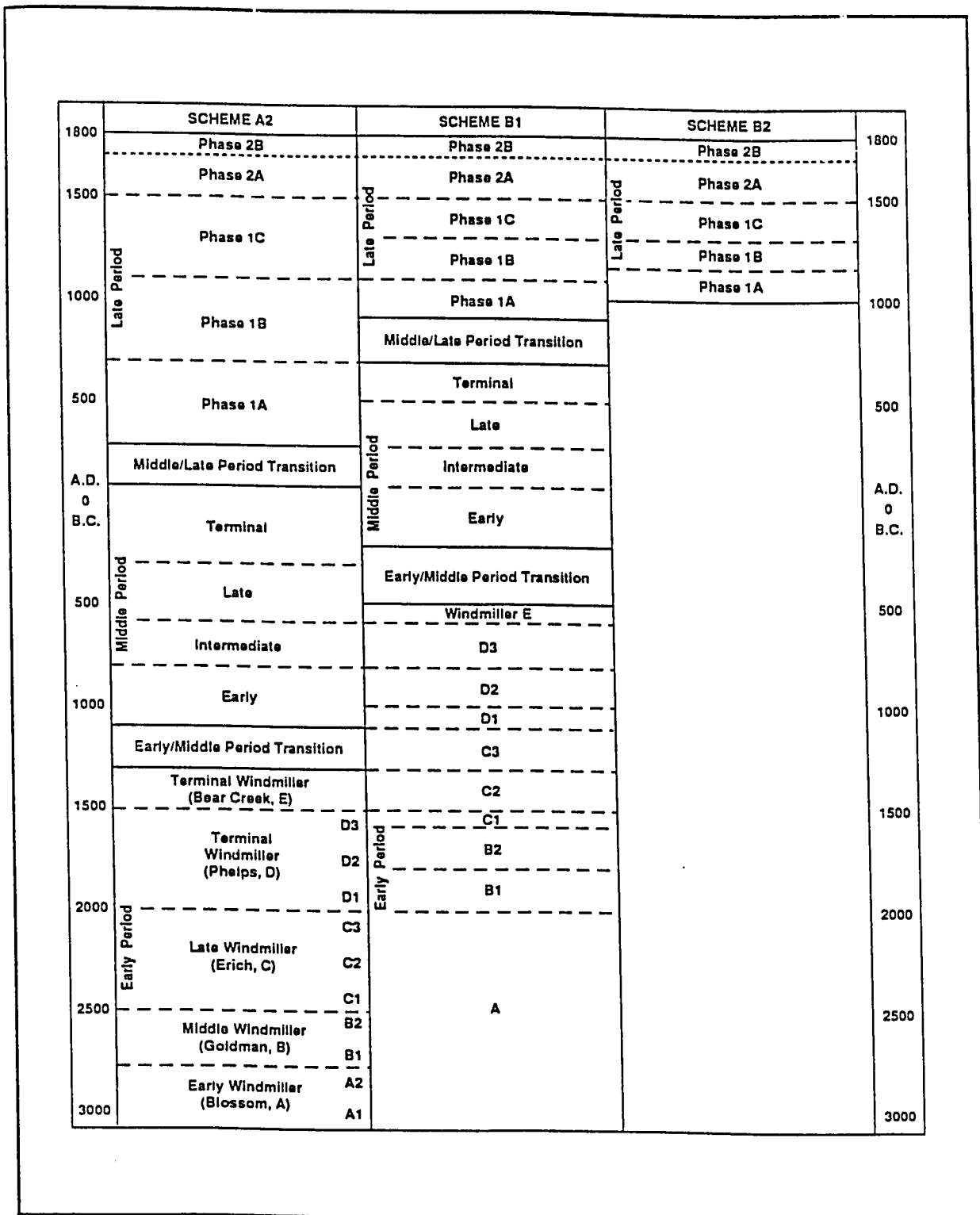
One of the first tasks undertaken after the Ala-329 grave assemblages were reassembled was a review of all the different types of shell beads and ornaments. This was conducted in order to establish tentative temporal

assignments for the individual burials and thus develop temporal and/or cultural components within the mound. Although other "key" diagnostic artifacts were also noted (e.g., Desert Side Notched and Stockton Serrated points, mortars, pestles, harpoons, etc.), the preliminary focus was on the shell beads and ornaments. This preliminary analysis was initially based upon Lillard, Heizer and Fenenga's (1939), and Gifford's (1947) shell bead and ornament typological criteria. Shortly after this, Bennyhoff and Hughes' (1987) typological study, Shell Bead and Ornament Exchange Networks Between California and the Western Great Basin, was published and became available. After reviewing their shell bead study, this author decided to reclassify the Olivella beads in accordance with Bennyhoff and Hughes' typological criteria, since they were able to sub-divide and refine Lillard, Heizer and Fenenga's and Gifford's descriptive types and offer more distinguishable metric and temporal criteria as well (Figure 8). Gifford's (1947) shell ornament typology is maintained for comparative purposes.

Although many burials had Olivella spire-lopped beads in association, many of the cut and drilled fraction types were potentially useful time markers. The preliminary reclassification of the shell beads helped to temporally define the presence of burial activity that potentially ranged from 200 B.C. (Early Middle Period) to just before contact/A.D. 1769 (Phase 2B Late Period).

Table 11 outlines some of the key shell bead and ornament types characteristic for each of the 10 Phases hypothetically postulated as being present at Ala-329, based on Bennyhoff and Hughes' B1 Dating Scheme.

Figure 8: Alternative Dating Schemes for Central California



(After Bennyhoff and Hughes 1987)

Table 11

Time Sensitive Shell Beads and Ornaments Diagnostic for Each Phase

<u>Years A.D. - B.C.</u>	<u>Phase/Period</u>	<u>Bead and/or Ornament Types</u>
1700 -- 1800 A.D.	2B Late	Clam disc bead; <u>Olivella</u> E2 Thick Lipped series; K2 Bushings
1500 -- 1700 A.D.	2A Late	<u>Olivella</u> E1 Thin Lipped series; K2 Bushing; <u>Haliotis</u> N1b effigy pendants
1300 -- 1500 A.D.	1C Late	<u>Olivella</u> M2a Normal Thin Rectangle; K1 Cup; <u>Haliotis</u> N1a effigy pendants
1100 -- 1300 A.D.	1B Late	<u>Olivella</u> M1a and M2a Thin Rectangles; K1 Cupped; <u>Haliotis</u> N6 effigy pendant
900 -- 1100 A.D.	1A Late	<u>Olivella</u> M1a Thin Rectangle;
700 -- 900 A.D.	Middle/Late	<u>Olivella</u> D Split Punched series; Transition C3?, C7, C8 Split Series
500 -- 700 A.D.	Term. Middle	<u>Olivella</u> F3a & F3b Saddles
300 -- 500 A.D.	Late Middle	<u>Olivella</u> F2 & F3 Saddles
100 -- 300 A.D.	Intermediate	<u>Olivella</u> F2 Saddles
200 B.C.--100 A.D.	Early Middle	<u>Olivella</u> G2 - G6 Saucers; G3 Rings; C2 Split Drilled; F1 Saddles?

Employing these time-sensitive/typological criteria on the burial-associated cut-beads and effigy pendants, demonstrated that types were present that were potentially representative of the Early Phase of the Middle Period through to Phase 2B of the Late Period. Table 12 identifies a representative sample of those burials that had these time-sensitive cut-beads and effigy pendants in association.

Table 12

Representative Burials With Time Sensitive Bead and Ornament Associations

Phase 2 - Late Period (1500 -- 1769 A.D.)	Burials: 9, 24, 37, 138, 142, 195
Phase 1 - Late Period (900 -- 1500 A.D.)	Burials: 23, 49, 72, 76, 78, 79, 96, 124, 126, 127, 163, 181, 204, 212, 219, 222, 223, 224, 226, 227, 239, 247, 248, 253, 254
Middle/Late Transition (700 -- 900 A.D.)	Burials: 251, 143
Terminal Middle Period (500 -- 700 A.D.)	Burials: 265, 244
Late Middle Period (300 -- 500 A.D.)	Burials: 240, 250, 260
Intermediate Middle Period (100 -- 300 A.D.)	Burials: 104, 113, 257
Early Middle Period (200 B.C. -- 100 A.D.)	Burials: 273 (C14 date)

After the preliminary analysis of all the burial lots had been performed, this author asked Bennyhoff to visually review and measure, confirm and/or refine these tentative temporal assignments. This was accomplished by having him review a large selected sample of beads, ornaments, pipes and tools from many of the burial lots identified above. Bennyhoff confirmed many of these tentative temporal assignments, especially for those representative of the Middle Period. At the Lowie (now Phoebe Hearst) Museum, Bennyhoff compared the Ala-329 materials with other collections that he had analyzed, thus giving greater comparative definition to the overall burial assemblages. Many of his observations and

comments are incorporated in the complete SJSU Ala-329 burial summary and associated assemblages listed in Appendix A.

Milliken offered further refinement for the assignment of the Middle Period burials. While studying beads and ornaments recovered from Ca-SCI-690, Tamien Station, near downtown San Jose, Milliken requested to measure some of the Middle Period beads from Ala-329. Based upon his metric criteria and knowledge of other similar time-sensitive assemblages, he recommended moving several of the burials to the next earlier phase (Milliken 1990, personal communication). Even so, Milliken's assessment of these Middle Period beads independently confirmed both this author's and Bennyhoff's temporal assignments shown in Table 12.

Radiocarbon Dating

The results from the four radiocarbon dates submitted by Gerow (briefly alluded to earlier) proved significant in providing greater component definition. Gerow submitted three different organic materials all directly associated with Stanford's Burial 130, as a control for the purpose of testing and establishing temporal concordance. Comprising these samples were: 1. human bone, 2. associated charcoal, and 3. Olivella shell beads (personal communication).

The results were informative: 1. the human bone collagen dated 430 +/- 80 B.P. (A.D. 1520), 2. the associated charcoal dated 520 +/- 80 B.P. (A.D. 1430), and 3. the Olivella shell beads dated 980 +/- 80 B.P. (A.D. 970). The fourth sample is published as "Shell-Mixed Bay" and yielded a date of 1650 +/- 85 B.P. or approximately A.D. 300 (Breschini et al. 1984). Gerow selected

this fourth sample because it was obtained in close proximity to one of the basal Stanford burials (Gerow, personal communication). Unfortunately, this association was not published in Breschini's C14 date list. The result of this A.D. 300 radiocarbon date, coupled with the two 3.0 micron (A.D. 603) and 3.5 micron (A.D. 105) obsidian readings obtained by Watts, presented two independent lines of evidence for the possible existence of a lower or Middle Period component at Ala-329.

In 1986, five human bone (collagen) samples were submitted for dating by Musladin, Jurmain and Leventhal as part of their projectile point/bone trauma study (1986). The results of these dates also provided greater component definition and are presented in Table 13.

Table 13

Results from the 1986 Bone Collagen/C14 Dating

Burial 48 -- 250 +/- 50 BP	Burial 227 -- 650 +/- 50 BP
Burial 125 -- 460 +/- 50 BP	Burial 239 -- 700 +/- 55 BP
Burial 177 -- 300 +/- 60 BP	

Converting these radiometric assay values to calendrical dates, they range from approximately A.D. 1250 to A.D. 1700. When incorporated into the Bennyhoff and Hughes (1987) B1 dating sequence scheme, the range spans from Phase 1B to the end of Phase 2B of the Late Period. These data support the temporal assumptions held by Coberly.

There existed, however, a problem not originally considered when the bone samples were prepared for radiometric assay: 1. samples were

comprised of ribs and rib fragments and 2. these ribs had been cataloged, so large surface areas were covered with a "white out" base, India ink numbers, and clear nail polish or lacquer. As the samples were prepared, care was taken to remove all of these cataloging residues by first scraping with a razor blade and then sanding with fine grit sandpaper. As thorough as these efforts were to remove surface residues, there was no way to ascertain if these potential contaminants had "bled" into the bone. Therefore, with aftersight, these dates may be skewed slightly toward the present.

Results From the 1988 Radiocarbon Dating

In 1988, a small research grant was received by the author from the Sourisseau Academy at San Jose State to fund three additional dates. Bone samples from three additional burials were submitted for radiometric assay. Two of the three samples came from Burials 244 and 265, both with suspected Middle Period bead associations. The third sample was derived from a rich grave (Burial 49) that had an early "clawed" type (N6) effigy/banjo ornament assemblage, M series Olivella beads and an A series "show" mortar. It was predicted that this latter burial would, based upon ornament and bead typology, date to approximately A.D. 1100. Furthermore, it was postulated that the beads from Burial 244 should date this individual towards the later Middle Period (between A.D. 300 -- 700), and that those associated with Burial 265 should place this individual in the

Terminal Middle Period or A.D. 500 -- 700. Table 14 provides the results from the radiocarbon dating.

Table 14

Results from the 1988 Radiocarbon Dating

Burial #	Associations	C14 Date	Uncorrected Calendar Date
49	N6 effigy pendants, 544 2a2 (M1a) rectangular beads	835 +/- 90 BP	A.D. 1115
244	221 3b2 (F2 and F3) beads	1400 +/- 110 BP	A.D. 550
265	638 3b1 (C3) beads	1235 +/- 65 BP	A.D. 715

Results From the 1991 Radiocarbon Bone Collagen Assays

After sharing the results of the 1988 C14 dates with the Muwekma Ohlone tribe and apprising them of the implications of this research study, some tribal members wondered whether all of the temporal-related questions were now resolved. The answer was no, they had not. But, if additional funding could be secured to date several of the basal (lowest) burials, then we might be able to demonstrate a yet greater antiquity as predicted by the presence of key artifact types. As a result, members of the Muwekma Tribe wrote a grant proposal to East Bay Regional Park District requesting funding for radiometric dating of five more burials. A list was generated that included all of the suspected Middle Period burials deemed to be suitable candidates for collagen dating. Several independent factors were also considered in this selection process. They include the presence of distinctive or time-sensitive grave associations, horizontal location relative to previously dated individuals, depth below surface and relative to other

dated burials, the amount of available fragmented ribs (or other bones) not heavily contaminated by cataloging residues, and completeness of the individual. This list was reviewed by the Muwekma tribal representatives and Dr. Jurmain. Five individuals graves were identified, and a small amount of fragmented bone was selected as a sample from each and prepared for radiometric dating.

The results from these collagen samples proved most informative. Four of the burials containing distinctive Middle Period artifact assemblages yielded near predicted dates, while the deepest individual had an aberrant date associated with it (see Appendix E - C14 Reports from Washington State University). These burials dated as shown in Table 15.

Table 15

Results from the 1991 Radiocarbon Dating

<u>Burial #</u>	<u>Depth</u>	<u>Associations</u>	<u>C-14 Date</u>	<u>Uncorrected Calender Date</u>
34	127"	None	530 +/- 80 (contam)	A.D. 1420
104	65"	F2/F3 Saddles	1690 +/- 90	A.D. 260
143	63"	F3a Saddles J2bI <u>Haliotis</u> rings	1220 +/- 90	A.D. 730
257	80"	AP2a <u>Haliotis</u> rims	1690 +/- 80	A.D. 260
273	85"	Obsidian point	2080 +/- 90	B.C. 130

These results confirmed the predicted temporal sensitivity of the shell beads and ornaments. Furthermore, these latter dates confirm that mortuary activities were well established at Ala-329 during the Middle

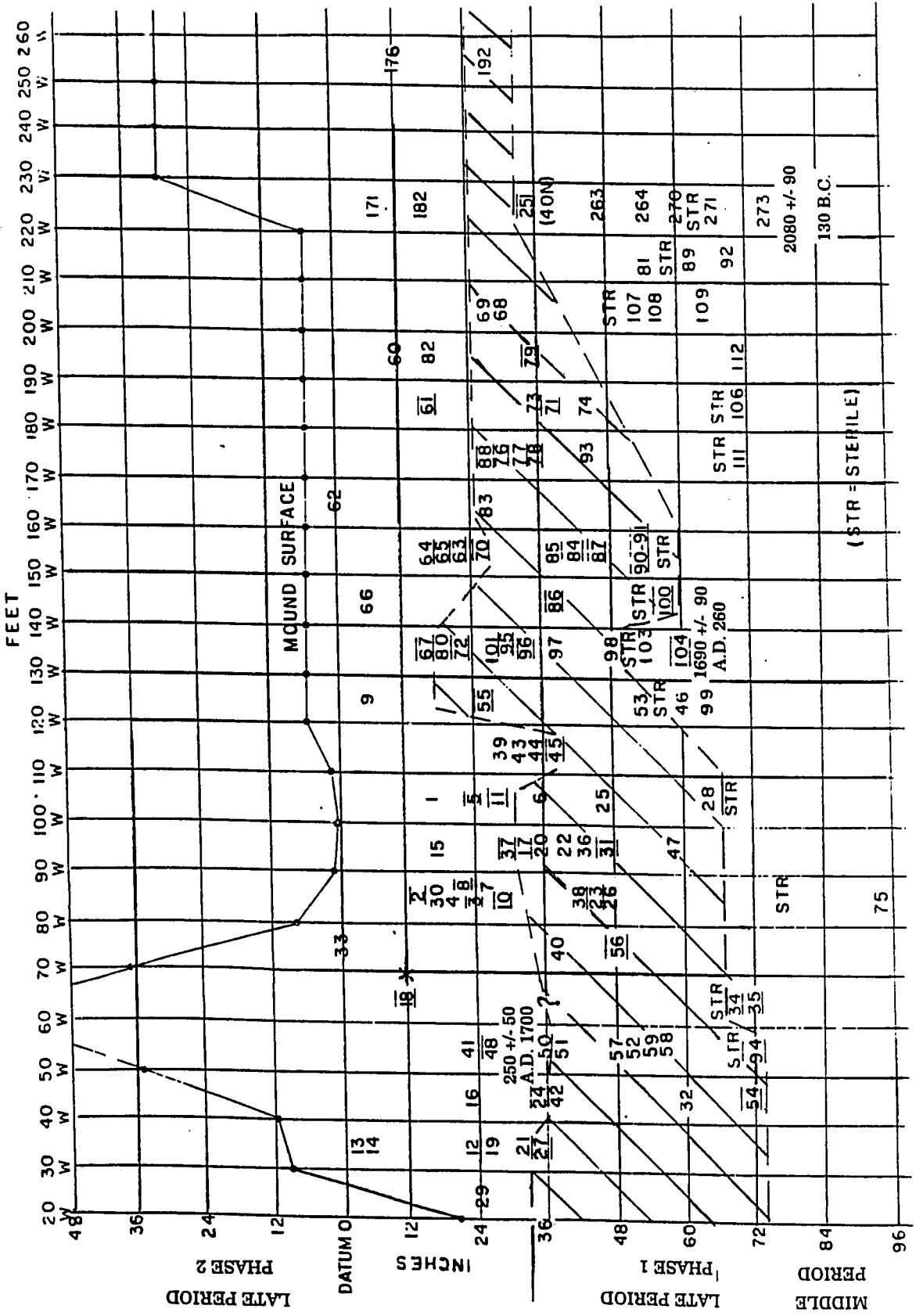
Period (130 B.C -- A.D. 900). Based upon several independent lines of evidence (i.e., C14, obsidian hydration, shell bead and ornament typology and other diagnostic artifacts), there are at least 10 temporal phases identified at Ala-329. These phases range in age from the Early Phase Middle Period (possibly beginning at 200 B.C.) to Phase 2B Late Period (pre-A.D. 1769).

With this temporal framework in place, all of the burials were plotted onto five stratigraphic profiles and assigned to one of the following combined Periods/Phases: Middle Period/200 B.C. -- A.D. 900, Phase 1A--1C Late Period/A.D. 900 -- 1500, and Phase 2A--2B/ A.D. 1500 -- 1800 (Figures 9-13). By stratigraphically dividing the SJSU Ala-329 burial population into these three general temporal components, it is now possible to conduct other specialized studies (e.g., cranio-metric, demographic, body orientation, faunal, typological, and others) with greater refinement and perhaps with more meaningful results than would be possible by placing the entire site into a single temporal component.

Distribution of Burials By Temporal Component

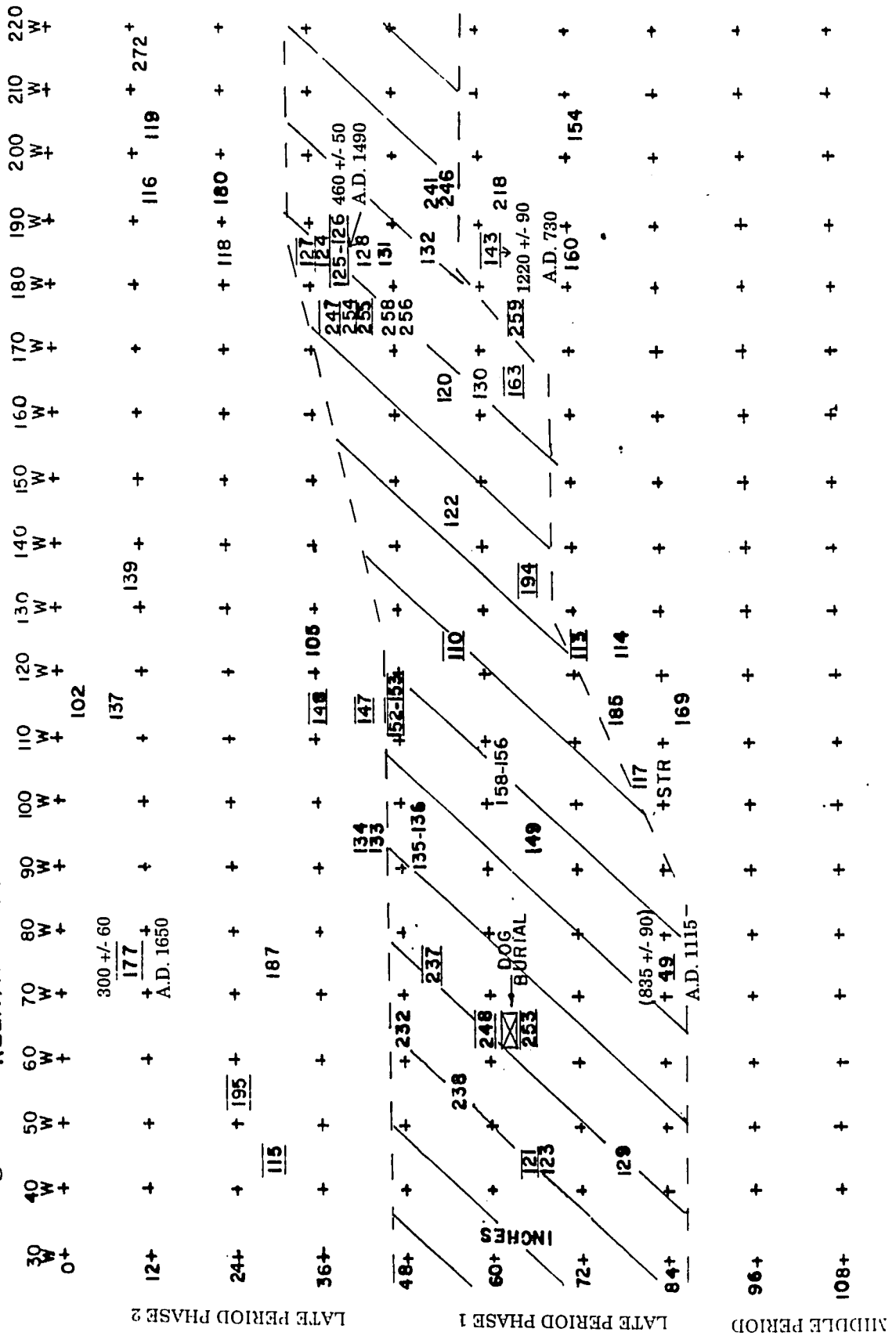
As a result of generating these three general stratigraphic components, it is determined that 89 burials are assigned to both Phase 2A and 2B of the Late Period (A.D. 1500 -- 1800). The three combined sub-components (Phases 1A--1C) of the Late Period (A.D. 900 -- 1500) are represented by 141 individuals, while the remaining five sub-phases of the Middle Period (200 B.C. -- A.D. 900) have a combined population of 53 burials. These totals do not include the potential additional (not necessarily

Figure 9 RELATIVE BURIAL DEPTH ALONG 50 N EAST - WEST TRENCH
 (VERTICAL SCALE EXAGGERATED)



CA ALA 329

Figure 10 RELATIVE DEPTH OF BURIALS ALONG 60 N EAST - WEST TRENCH



CA ALA 329

BURIALS

Figure 11 RELATIVE DEPTH ALONG 70N EAST-WEST TRENCH

70 W +	80 W +	90 W +	100 W +	110 W +	120 W +	130 W +	140 W +	150 W +	160 W +
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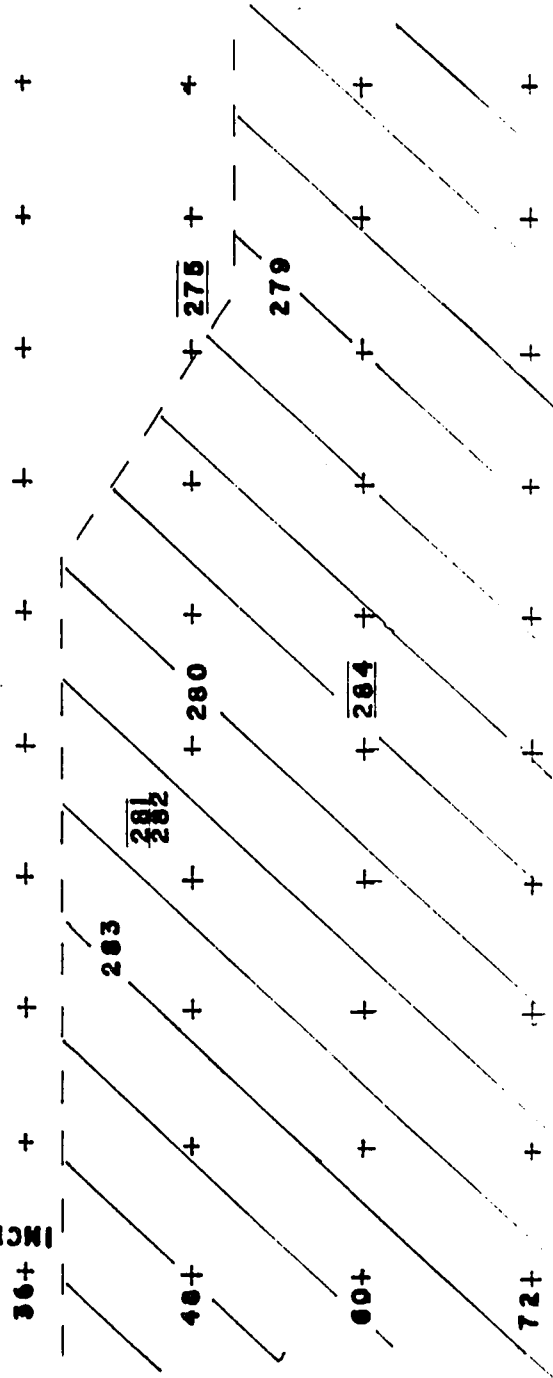
274
(80N)

12+	+	+	+	+	+	+	+	+	+
24+	+	+	+	+	+	+	<u>277</u>	+	+

276

278

INCHES



LATE PERIOD PHASE 2

LATE PERIOD PHASE 1

CA ALA 329

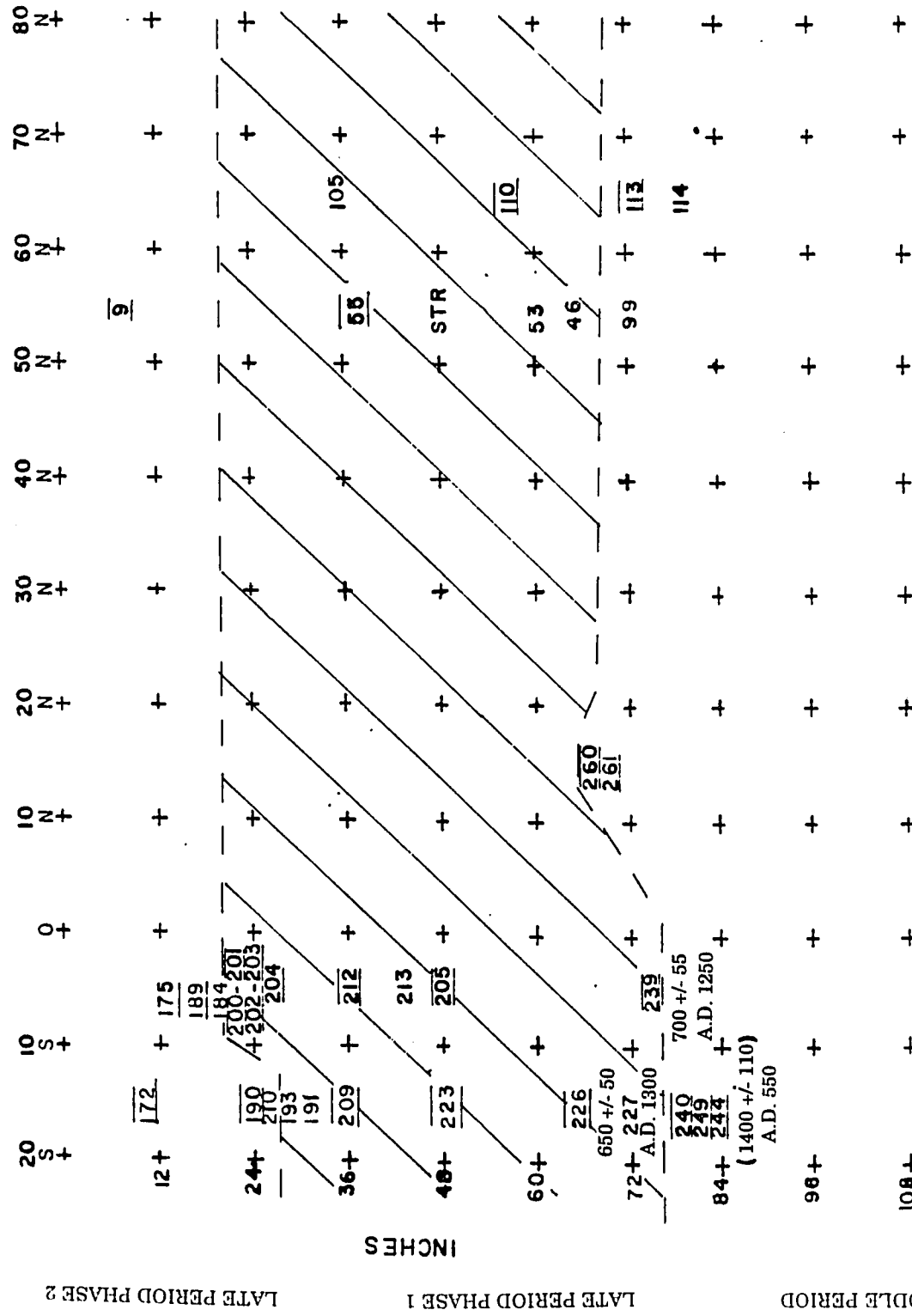
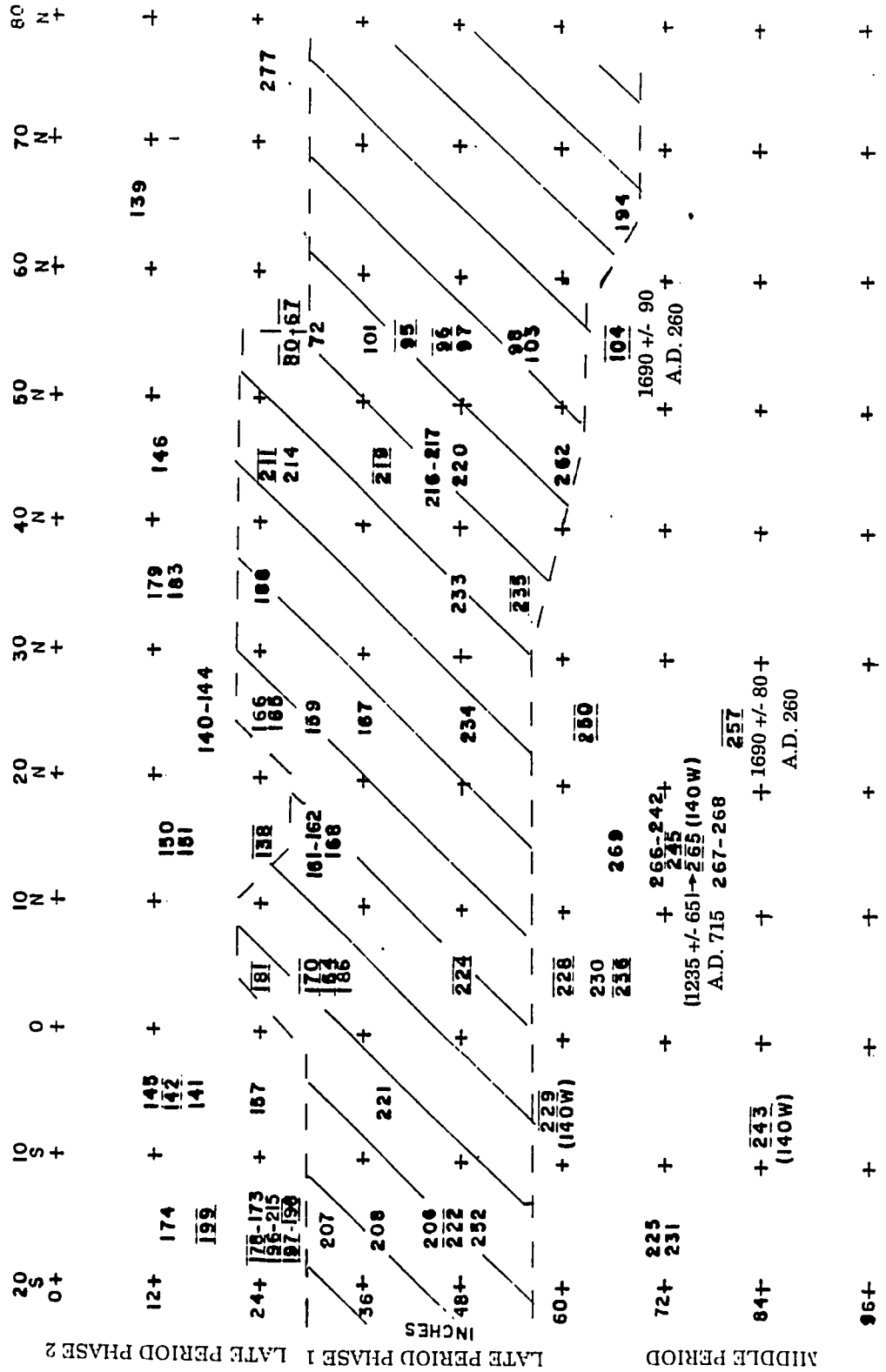


Figure 12 RELATIVE DEPTH OF BURIALS ALONG 120 NORTH-SOUTH TRENCH

CA ALA 329

Figure 13 RELATIVE DEPTH OF BURIALS ALONG 130W NORTH-SOUTH TRENCH



discreet) 37 individuals (i.e., neonates, infants and extra elements) discovered during the osteological analysis conducted by Jurmain and his students. As a result, the Ala-329 burial population each assigned within one of the above three Period/ Phases can now be sub-divided by sex and burial mode as shown in Table 16

Table 16

Division of Ala-329 SJSU Burials by Period, Sex and Burial Mode

Phase 2 Late Period		Phase 1 Late Period		Middle Period		Total
Males	n = 36	Males	n = 47	Males	n = 23	106
Females	n = 26	Females	n = 50	Females	n = 17	93
Indet.Ad.	n = 12	Indet. Ad.	n = 10	Indet. Ad.	n = 4	26
Subadult	n = 15	Subadult	n = 34	Subadult	n = 9	58
Total = 89		Total = 141		Total = 53		283
Primary burial	n = 58	Primary	n = 101	Primary	n = 49	208
Secondary bur.	n = 5	Secondary	n = 8	Secondary	n = 4	17
Cremation	n = 6	Cremation	n = 20	Cremation	n = 0	26
Redeposited Crm	n = 17	Red. Crm.	n = 8	Red. Crm.	n = 0	25
Other (disturb)	n = 3	Other	n = 4	Other	n = 0	7
Total = 89		Total = 141		Total = 53		283

As can be ascertained from the above table, Phase 2 Late Period is represented by 31% (n=89), Phase 1 Late Period comprises 50% (n=141), and the Middle Period contains 19% (n=53) of the SJSU burial population. 74% of all the burials constituted primary inhumations. On the other hand, both types of cremations (*in situ* and redeposited) combined together comprised only 18% of the overall burial population. Finally, cremation is clearly absent during pre-900 A.D./Middle Period times. Burials described as "other" (n=7) presumably represent graves that were previously disturbed, pre-contact, burial-related excavation activities, and are only 2%

of the study population. For the list of burials and associated assemblages assigned to each component, see Appendix B.

On a final note, an interesting pattern emerged during the course of this study that is mostly unique to the Middle Period burials. It appears that many of these individuals were found to be buried flexed but face down. Apparently, some time after A.D. 900 (the beginning of the Late Period) a shift in the burial pattern occurred, whereby individuals were buried flexed and predominantly face up or to the side, with a frequent occurrence of shell beads, ornaments, bone tools and obsidian objects placed in their mouths. This was especially prevalent among the Phase 1 Late Period burials.

Body Orientation

Out of the 283 discreet burials recovered from Ala-329, 195 individuals were intact enough to ascertain polar (body) orientation. Most of this information was determined during the 1962-1968 excavations and independently verified (and corrected if necessary) through the use of the field notes and burial photographs. In cases where no determination was recorded in the notes and orientation could be ascertained by photographs relative to the displayed north arrow, orientation data was added by using a polar coordinate graph sheet grid.

For this study, a summary comparison was made with the orientation data from adjacent sites Ca-Ala-328, Ala-12 and Ala-13 provided by Bickel (1981) and Ca-Ala-413 (an interior Meganos/Middle Period site located near Pleasanton) reported by Wiberg (1984). Bickel offered a useful definition for burial orientation:

Burial orientation is considered here to be the direction of an imaginary axis drawn through the spine of a burial *in situ*, from lumbar to cervical end, ... For example, a burial laid so that the spine was parallel to a north-south line would be considered to be oriented "south" if the cranium were to the south, innominate to the north (1981:282).

Wiberg (1984:31) in his study on the Santa Rita Village Mortuary Complex from site Ca-Ala-413 defined this field observation relative to compass coordinates as an:

Axial positioning (the direction toward which the top of the head was oriented)... Cardinal directions were assigned according to the following azimuth groupings (from true north):

north (337.5 - 22.4)	northeast (22.5 - 67.4)
east (67.5 - 112.4)	southeast (112.5 - 157.4)
south (157.5 - 202.4)	southwest (202.5 - 247.4)
west (247.5 - 292.4)	northwest (292.5 - 337.4)

Table 17 presents the burial orientation data from sites Ala-329, Ala-328, Ala-12, Ala-13 and Ala-413, based upon the above definitions.

Table 17

Burial Orientations from Sites: Ala-329, -328,-12,-13 & -413

Orientation	# of Individuals					% of Individuals				
	Ala-329	328	12	13	413	329	328	12	13	413
North	33	50	1	6	12	12	17	13	11	31
Northeast	19	17	0	1	11	7	6	0	2	28
East	26	36	2	10	0	9	12	25	18	0
Southeast	19	12	0	10	2	7	4	0	18	.05
South	18	37	3	4	2	7	13	38	7	.05
Southwest	12	21	0	7	3	4	7	0	13	.08
West	46	74	1	13	1	16	25	13	23	.03
Northwest	21	49	1	5	8	7	17	13	9	21
Totals	194	296	8	56	39	69%	57%	62%	52%	61%
Indet.	89	221	5	52	25	31%	43%	38%	48%	39%
Totals	283	517	13	108	64	100%				

Admittedly, the above table shows that westerly and northerly orientations are generally only slightly more dominant, except in the case of Ala-12. Whether this burial orientation patterning has ritually related meaning is still open to conjecture. However, it has been recorded that the Costanoans believed that the spirit of a deceased person would travel west over the ocean after death (Fages 1937:70; Harrington 1942:41). This belief may be reflected in the general westerly orientation of the burials.

In order to test this, the Ala-329 population was sub-divided by temporal component. Table 18 represents the orientation breakdown of the burials by the three identified temporal components consolidated into the four general directions (i.e., N,E,S,W):

Table 18

Orientation of the SJSU Ala-329 Burials by Temporal Component

<u>Phase 2 Late Period</u>		<u>Phase 1 Late Period</u>		<u>Middle Period</u>		<u>Totals</u>
North	= 12 (14%)	North	= 29 (20%)	North	= 8 (15%)	49 (17%)
East	= 12 (14%)	East	= 28 (20%)	East	= 9 (17%)	49 (17%)
South	= 14 (16%)	South	= 9 (6%)	South	= 9 (17%)	32 (11%)
West	= 18 (20%)	West	= 27 (19%)	West	= 19 (36%)	64 (23%)
Indet.	= 33 (36%)	Indet.	= 48 (35%)	Indet.	= 8 (15%)	89 (31%)
Totals n = 89 (100%) (100%)		n = 141 (100%)		n = 53 (100%)		283

It appears that westerly orientation has a slightly higher incidence for burials assigned to the Middle Period n=19 (36%). The Phase 1 Late Period people tend to be evenly distributed among the north, east and west directions, with the south being least represented. The Phase 2 Late Period

burials appear also to be evenly oriented and therefore not favoring any direction.

If the above data reflects pre-contact preferred mortuary rules concerning burial placement and/or prescribed orientation belief system, then westerly oriented burials appear to predominate by only a small margin, especially during Middle Period times. To summarize, as a result of the above patterning it appears that, if present in pre-contact Costanoan society, the belief in transmigration of souls toward the west at the time of death did not influence burial orientation at Ala-329. Finally, based upon the results of a chi-square test: $X^2 = 11.38$ with $df=(k-1)$ or 3 degrees of freedom and a significance level of .01, it must be concluded that burial orientation was probably random (not an important factor especially during Late Period times) or perhaps connected to another subset of mortuary rules concerning preferred burial alignment as practiced by the pre-contact East Bay Costanoan societies who buried their dead along this portion of the bayshore.

CHAPTER 6

TESTING AN ARCHAEOLOGICAL SITE PREDICTION MODEL IN LIGHT OF ALA-329: STICKEL'S SITE MODEL AS A TEST CASE

The Development of Site Types as a Classification/Research Tool as Applied to the San Francisco Bay and Central California

The development of site classificatory schemes for greater interpretation of a region's prehistory has been an ongoing concern since the turn of the century in Central California. As discussed elsewhere in this study, Nelson defined three distinct San Francisco Bay site types: "shell heaps" (shellmounds), "earth mounds and... temporary campsites" (1909:310). For the Stanford/Palo Alto region, Caldwell employed a localized variant of Nelson's classification in his master's thesis study by arbitrarily dividing recorded sites "into two groups: (1) mounds or village sites, (2) camp sites" (1949:15).

Many years later, T. King and Hickman, conducting a massive 12,000-acre survey in the southern Santa Clara Valley as part of a general plan for archaeology, developed three general classes of sites: 1. large occupational, 2. small occupational and 3. special use (1973:38). They cross-tabulated the location of these three site types against five distinct environmental zones in which they had been predicted to occur. Their efforts culminated in the development of a predictive prehistoric

subsistence-settlement pattern model for the Southern Santa Clara Valley region.

Bergthold (1982) independently tested the King/Hickman model as part of her master's thesis study. She employed a much larger sample of sites (n=179) from within the greater Santa Clara Valley. Bergthold concluded that "(t)he evidence indicates that the King/Hickman model cannot be used to predict where and what types of sites will be found in the Santa Clara Valley" (1982:228).

Four other studies also offered definitive characteristics of various site types. Chester King, in his Matalan Ethnography study (1977) which was included as part of the preliminary archaeological investigation along the Highway 101/"Blood Alley" project in Santa Clara County, stated the following with regard to site types and relative locations:

Historical data provides us with the description of several types of cultural sites which occur away from habitation sites. The presence of these types of sites possibly cannot be determined using the procedures most archaeologists have used in locating occupation areas (1977:44).

As a result, C. King employed ethnohistoric data to define the possible locations of the following types of sites that he considered either "adjacent to" or "away from habitation sites" (1977:44-45): cemeteries, shrines, and ceremonial/dance plazas.

In 1980, while working on the same Highway 101 project, Stickel applied a site type model that he had previously developed for California (1976, 1980, 1981). The criteria defining Stickel's site types will be applied to the Ala-329 database and its test implications will be fully discussed below.

The third study presenting a site classificatory scheme, developed by Chartkoff and Chartkoff in 1984, defined various site types for inclusion within their generalized regional and temporal divisions developed for California. For example, sites characteristic of their Archaic Period include: 1. occupation sites, 2. base camps, 3. seasonal exploitation sites, 4. cemeteries, 5. bedrock mortar and bedrock milling-slab sites, and 6. some rock art sites (1984:124-127). For their later Pacific Period, they added five more site types that include: 1. ritual sites, 2. astronomical sites, 3. quarry sites, 4. trading sites, and 5. permanent villages (1984:205-216).

The fourth study was conducted by Elsasser (1986) in his Review of the Prehistory of the Santa Clara Valley Region, California. Within his study, Elsasser, noted that for the Santa Clara Valley region, "(t)he prehistoric site types which make up the bulk of the the inventory to 1983 are:" (1) sites with a "lithic scatter"; (2) sites with "habitation debris"; (3) sites with bedrock mortars or milling stations; (4) petroglyph sites; (5) quarry sites; and (6) isolated burial sites (Elsasser 1986:32).

Stickel's Archaeological Site Prediction Model

While investigating five prehistoric sites along the Highway 101 corridor in Santa Clara Valley (approximately 35 miles south of the Coyote Hills locality), E. G. Stickel developed a research design to test a series of hypotheses addressing "site variability, settlement patterns, and technological economic subsistence and other activities such as trading and exchange" (1980:37). In this study, Stickel presented a generalized site

typology that he previously proposed for California, which defines seven different site types:

1. Resource sites (i.e., quarries)
2. Circulation route sites (i.e., trails and paths)
3. Processing or production sites (i.e., butchering stations, chipping stations)
4. Enclosed or modified spaces/sites (i.e., corrals, special burn areas relative to productivity)
5. Service centers/sites (i.e., religious shrines, areas reserved for ceremonial purposes)
6. Habitation sites (includes individual overnight camping, dwellings, small and large villages)
7. Disposal sites (localized trash areas separated from habitation sites)

To test this model, Stickel employed two putative "Late Horizon" charmstones recovered from site Ca-SCI-54. After classifying these charmstones as ceremonial objects, Stickel supported his classificatory model by stating:

Hence, a hypothesis that the site functioned as a service center site for ceremonial purposes (as opposed to habitation or economic activities) may be posited. If this site were a service center site (ceremonial site), then the primary composition of the resultant assemblage of the site should be 1) the finds should be relatively rare (which is reflective of the relatively rare occurrence of ceremonial activities); 2) the finds should consist of artifacts that may be reasonably related to ideological/ ceremonial activities (e.g., charmstones); 3) there should be no evidence of habitation (i.e., activities of eating, sleeping, food consumption, or other maintenance-related activities such as the construction of artifacts related to economic activities) [1980:38].

In addition to testing this charmstone/service center hypothesis, he formulated another testable hypothesis for interpreting a different assemblage recovered from site Ca-SCI-178. Based upon the presence of

shell and a possible house floor, Stickel postulated that SCI-178 might have served as a habitation site and offered the following reasoning:

Hence, a hypothesis to determine whether this was, in fact, a habitation site must be tested. Thus, if the site were a habitation site, then it should have evidence of a variety of activities related to food preparation and consumption activities. For example, house remains would indicate sleeping and consumption activities (Ibid:42).

Stickel advanced selected archaeological indicators that distinguish a habitation site as contrasted with other types of sites containing different archaeological manifestations:

A habitation site should have a maximum range of utilized species present at all sites within the given cultural system, since a habitation site is a primary locus of consumption and utilization.

A habitation site would be indicated by the presence of process mode discards and production mode discards as well; i.e., some of the finished artifacts should be themselves, such as shell beads.

There should be implements present (e.g., tools to construct other tools), and these should be indicative of certain types of processing tools.

Habitation indicators and domestic and maintenance artifacts should be present as should domestic forms, such a cooking and possibly serving vessels and/or implements and possibly sleeping areas, indicated by house structures. In addition, there should be indicators of cooking, heating, lighting fires, and possibly ovens indicative of baking.

Artifacts indicative of social, religious, or other ideological indicators should be present. For instance, if we are investigating a Late Horizon site, such items as charmstones, clam shell disc beads, steatite beads, magnesite beads, saucer-shaped *Olivella* shell beads, etc. would be present (Lillard, Heizer and Fenenga 1939).

When testing Stickel's site typology model against the recovered archaeological assemblages, mortuary and non-burial features discovered at Ca-Ala-329 and other bayshore sites, several deficiencies emerged:

1. The overall defining characteristics, attributes and/or indicators predicted for each of Stickel's site types do not succinctly identify cemeteries (especially in the case of Ca-Ala-329) as ceremonial sites because they do not conform to his definition of "service centers/sites." In other words, one of the deficiencies of Stickel's typology is limited criteria to characterize and define ceremonial sites; Stickel's analysis was also weakened by the *a priori* assumption that bayshore mounds were villages.

2. Stickel stated that a service center (ceremonial site) has a representative assemblage that "should be quite rare (which is reflective of relatively rare occurrence of ceremonial activities); the finds should consist of artifacts that...relate to ideological/ceremonial activities; and there should be no evidence of habitation (i.e., activities of eating, sleeping, food production, food consumption... ." Based upon these criteria Ala-329 does have a large representative population of ideotechnic (ceremonial) related features and artifacts such as the mound, burials, cremations, possible large non-residential house floors (tupentak/round house), charmstones, effigy pendants, etc. Rather rare occurrences, these indicators are abundant and central to the overall function of the site. In addition, while the Ryan Mound has been interpreted as either a village or an occupation site by almost every author, other than the identification of two large, partially exposed, possible house floor features, there was no supporting evidence of clearly defined residential type structures as in the case of Ca-But-1 (Chartkoff and Chartkoff 1983, 1984). Indeed, the larger of the two house floors reported during the Stanford excavations may be the remains of a large ceremonial/mortuary-related structure. According to Gerow,

this structure appears to have been burned down over Burial 130, which is also the same burial that he selected for multiple C14 dating (Gerow personal communication).

3. After reviewing much of the archaeological literature published on bayshore mound excavations, it becomes evident that only one or two possible house floor features were encountered or described at the sites. However, if we compare the number of house floors discovered at these shellmounds, as well as other interior sites to that of a carefully documented and published Central California village (mound) such as Ca-But-1, the Patrick Site (Chartkoff and Chartkoff 1983, 1984), the differences are notable. Details of the excavation and interpretive implications of the Patrick Site are the topic of discussion in the next chapter. Data from site Ca-But-1 are considered here in order to contrast evidence between this documented Central California Late Period village site and the East Bay shellmounds. Although the Patrick Site is located in the ethnohistoric Penutian-speaking Konkow (Southern Maidu) region situated immediately north of Sacramento, it is an excellent example of a systematically excavated village site that supports the ethnographic Konkow/Maidu mortuary pattern of establishing cemeteries and burning places close to, yet outside villages (Dixon 1905).

In order to test the Ca-But-1 sedentary village model (house floors being the most prevalent feature) against the shellmound site data, a careful review of all of the published bayshore mound site reports as well as other central California interior sites for presence and frequency of house

features was conducted by this author, the results of which are discussed in the following sub-study.

Evidence of Structures from Bay Area "Shellmounds": A Substudy

Nelson, describing the physical appearance of the mounds, commented that "(n)evertheless, a few of the larger and better preserved examples present roughly flattened tops and in two instances these surfaces are dotted with distinct saucer-like depressions, as of house pits" (1909:326). Although suggestive, Nelson never scientifically demonstrated through excavation that these "saucer-like depressions" were the remains of residential houses.

From the Ellis Landing mound (CCo-295), Nelson reported that the top of the mound contained:

... a number of saucer-like depressions. Some of these measured as much as twelve feet in diameter and over two feet in depth. They were probably old house pits (1910:370).

Here again, Nelson never excavated these depressions to support his speculation that they were house floors. However, Kroeber wrote in his section on "Prehistory" in reference to Ellis Landing that "(a)bout 15 house pits were recently still visible on it" (1925:922). Assuming that this interpretation is correct, these data are included in Table 20.

In 1915, Loud did not find any evidence of house floors at either of the Stege Mounds (CCo-298 and CCo-300), but observed that "(no) fireplaces or heaps of cooking stones were found..." either (Loud 1924:360). He did recover a minimum of 24 individuals from both CCo-300 and CCo-298 and concluded with "(t)he explanation that the smaller mound was a mere

camp-site or hunting station of a permanent village situated on the larger, seems disproved by the occurrence of burials in both" (Ibid:368).

Reporting on the results from the Emeryville Mound excavations, Schenck described the internal structure and constituents of the site. Herein, under the section entitled Soil, he informed us that after shell,

Soil is the second largest constituent of the mound. ... There was nothing about such layers to suggest house floors, fireplaces, or the like (1926:174).

Later, he observed that "(t)he abundance of bone work, the quality of ground stone work, and the rather limited use of shell, the great scarcity of chipped stone, and the entire absence of pottery characterize all sections of the mound" (Ibid:270). Although Schenck reported the discovery of 651 human burials (1926:205), Beardsley alerted us that there were "705 burials" recovered from this site (1954:88).

Bickel discussed the recording of three "floors" at Ala-328, the Patterson Mound. One of these house floors was completely excavated by Wedel in 1935 and was described as being circular in outline (Bickel 1981:316-317). According to Davis and Treganza, "(i)t measured approximately 16-18 feet in diameter, was saucer shaped, having a central hearth 24 inches across" (1959:58). The several other portions of "house floors" identified included a cross-section profile of a "saucer-shaped depression 11 feet long from edge to edge" (Ibid).

At Ala-13 Rackerby encountered the remains of three possible house floors. According to Bickel only "one complete floor was excavated... and was similar in size and shape to the floor exposed at Ala-328 by Wedel"

(Bickel 1981:316-317). There were no house floor features encountered at Ala-12 by Rackerby .

From Ala-307, the West Berkeley Mound, Wallace and Lathrap reported:

Three compacted areas were noted, one with a possible fire pit near its center. These may well have been remains of house floors but the absence of defined post holes makes this uncertain.

The only indubitable structural remains, uncovered at a depth of 123 inches, consisted of a section of the floor of a large, presumably ceremonial house (1975:44).

Data from four Marin "shellmound" sites should also be considered here. From Ca-Mrn-27, located in Tiburon, T. King identified a large house floor and described its reconstruction:

The house was evidently some eight meters in diameter, and presumably was domed-shaped and semi-subterranean. Its roof was undoubtedly supported by posts, which may have described an oval about a central hearth under a smoke hole. The floor was constructed of compacted adobe clay, and the roof was also covered with the clay probably overlying thatch, much like the roundhouses of the Sierra Miwok (1970:31-32).

From Ca-Mrn-20, McGeein and Mueller reported the discovery of 19 burials and an area thought to have been "part of a house floor" (1955:54). Fifty-six 5' x 5' excavation units (approximately 250 cubic yards of excavated deposit) were placed in this site, which yielded only 91 artifacts.

Referencing Meighan (1950), they offered the following impression:

"Although bay shellmounds in general have very few artifacts, Mrn-20 has the dubious distinction of being the most meager thus far recorded"

(Ibid:53).

Moratto et. al. (1974) excavated Ca-Mrn-14 as part of a scientifically designed salvage project in 1974. Twenty-one (+) units were excavated to a

depth of 190 cm. (totaling approximately 168 cubic meters). This site, thought to be a village, was "initially settled around the time of Christ and was occupied--at least intermittently--until after 1400 A.D." (1974:85). The excavations produced only three burials; however, "... bits of human bone were encountered in almost every unit" (Ibid:84). Also the cultural assemblages included: 116 flaked stone tools, 14 groundstone specimens (including 3 mortar fragments and 1 pestle fragment), 72 bone and antler tools of which 48 (67%) were classified as awl fragments, 133 fish bones, and 54 identifiable mammal bones of which 19 (35%) were pocket gopher. Finally, although 12 non-burial features were encountered, none were considered to be house floors or related to residential structures.

From Ca-Mrn-115 (Thomas Site), Meighan (1953) observed 12 house pits on the surface of the site, ranging in size from 4 to 14 feet in diameter (1953:2). Also encountered were the remains of a burnt structure and charred pieces of baskets. Meighan also reported that no burials were discovered at this site.

Another shellmound introduced earlier, located near the southwest portion of the San Francisco Bay in Santa Clara County, is Ca-SC1-1 (also known as the Castro or Ponce Mound). This site has was one of the earliest mounds to be excavated (in 1894 by Stanford University) (Caldwell 1949).

Caldwell wrote:

Of the numerous prehistoric habitation sites in the southern bay region none has had a more interesting career than that variously labeled "Mayfield", "Ponce", or more recently "Castro" mound. ...

... Burials are rather numerous but unfortunately no detailed data concerning actual numbers are available. In the period 1945-1948 Mr. P. Cossuto, the present owner, estimates he has removed

between three hundred and four hundred. Many more have undoubtedly been excavated by the numerous amateur archaeologists who haunt the region (Caldwell 1949:20-22).

Unfortunately, Caldwell does not inform us whether other features (e.g., house floors) were reported upon by previous researchers (i.e., Loud 1912; Heizer 1946) conducting excavations at the site.

In 1989, while conducting an assessment of the research potential of Costanoan skeletal remains curated at the Stanford Museum, Dr. Phillip Walker counted 188 individuals excavated from the Castro Mound (1989:22). He noted that "(b)etween thirty and forty burials were excavated by Mary Sheldon Barnes around the turn of the century (Barnes 1897)" (Ibid).

From the Sacramento Valley, site Ca-But-1 (the Patrick Site), has also been included in this comparative study. The site is a "Late Horizon" village established on an earth mound that originally covered eleven acres (Chartkoff and Chartkoff 1983). This large mound site was selected for this study because it clearly represents a residential village that "may have included up to 90 houses" (Chartkoff and Chartkoff 1984:188). For comparative purposes, the excavations at Ca-But-1 yielded 326 ground and battered stone tools, 323 cores and core tools, 14,306 flakes and flake stone tools and 18,441 unmodified faunal remains (Chartkoff and Chartkoff 1983:29-30).

Finally, also included in this study is information derived from L. King's (1982) doctoral study on the Ca-LAn-243 sites (Medea Creek Cemetery and Medea Creek Village) located in the Chumash area of south-central California. Medea Creek Cemetery is a Late Period site located within the interior of the Ventureño Chumash linguistic area. The village

site was occupied and the cemetery was used from A.D. 1500 to circa. A.D. 1785. 397 burials, along with approximately 28,000 artifacts found in direct association, were recovered from the cemetery site. Similar to Ala-329, L. King presented a mixing model for LAn-243 and stated that "(n)umerous rodents, attracted to the soft soil of the site of the cemetery, scattered artifacts and small bones throughout the matrix of the site" (1982:39). Also discovered within the cemetery was a pithouse floor feature measuring "four meters across" (1982:43). L. King suggested that the pithouse post-dated the abandonment of the cemetery. She concluded that "the structure contained artifacts which date significantly later (ca. 1850-1880) into the historic period than the cemetery (abandoned ca. 1785)" (Ibid). Furthermore, L. King also suggested that, based on the structure's location in close proximity to both Medea Creek drainage and the cemetery, "it may have functioned as a sweat lodge" (1982:44) possibly for ritual purification purposes after a funeral or mourning anniversary.

Medea Creek village, on the other hand, was discovered approximately 300 meters to the south of the cemetery. Only one burial was discovered within this village area and L. King described it as an "adult ... located, apparently intentionally, under a hearth composed of several hundred burnt rocks" (1982:47). The temporal assignment of this burial is unknown. Little information about the number of house features identified in the village site was available in her study; however, she states that "several" were identified.

An attempt was made to extrapolate out comparative burial and house floor feature data derived from the above site reports. Based upon

these data, it appears that burials constitute the dominant feature type rather than house floors except at the two clearly defined village sites (see Table 19).

Table 19

Frequency of Number of House Floors Versus Number of Burials

<u>Site Number</u>		<u># of House Floors</u>	<u># of Burials</u>
Ala- 12	(Coyote Hills)	0	13
Ala- 13	(Coyote Hills)	3 (1 ceremonial)	108
Ala-307	West Berkeley Mound	3 (1 ceremonial)	95
Ala-309	Emeryville Mound	1 (?)	705
Ala-328	Patterson Mound	3 (16-18 ft. dia.)	517
Ala-329	Ryan Mound	2+ (sweathouses)	487+
CCo-259	Fernandez Mound	1	27+
CCo-295	Ellis Landing	15 house pits on surface?	160
CCo-300	Stege Mound	0	16
Mrn- 27	(Tiburon)	1 (1 ceremonial)	41
Mrn- 20	(Strawberry Point)	1	19
Mrn- 14	(Shelter Hill)	0	3+
Mrn-115	(Thomas Site)	13	0
SCI- 1	(Castro/Ponce Mound)	0	(300-400?)/188
But- 1	Patrick Site	(ca.) 90	1
LAn-243	Medea Creek Cemetery	1 (sweat lodge)	397
LAn-243	Medea Creek Village	? (several)	1

Discussion: Archaeological Assemblages and Other Considerations

Ethnohistorically, in the case of the Chumash, H. W. Henshaw reported that "(a) funeral feast was provided at the grave by the relatives of the deceased" (Heizer 1955:157). Because it has never been raised as a testable research question in the extant archaeological studies, it is difficult to distinguish between food residues resulting from ceremonially-related-intensive-single event feasts (e.g., the funeral or mourning anniversary) attended by large groups of people over a 2-to-6-day period, from food refuse and accumulation of debris as a result of general day-to-day village-related habitation and economic activities. In other words, if several hundred people attended one or both of these intensive-single-event-ceremonial-related gatherings (i.e., funeral and mourning anniversary), then we would expect to find certain types of food residues and perhaps an associated artifact assemblage reflecting these specialized activities (i.e., concentrations of piled shells, ash and possibly distinctive portions of animal remains, and little or no evidence of manufacturing trajectory residues). After reviewing many California archaeo-faunal studies, it appears that no one has yet formulated hypotheses that raise, address, or test the possibilities of such distinctions between types of food residues and artifacts recovered, as in the case of what Blitz (1993) had recently accomplished for the Lubbub Creek site locality in his village versus mound study in Alabama. Furthermore, the usefulness of many of these archaeo-faunal studies have been limited only to species identification and availability, seasonality, probable minimum number of individuals, projected meat weights per species and potential nutritional values (cf.

Whelan 1970; Ringer 1972; Grayson 1973; Hildebrandt 1983; Watts 1984; Bocek 1986; Dietz, Hildebrandt and Jones 1988; Simons 1992 and many others).

Relative to the presence of technomic (utilitarian) implements (e.g., mortars and pestles, projectile points, etc.), a limited number of these artifacts, perhaps in broken condition (possibly reflecting damage due to food preparation activities as a result of hosting large groups of people attending a ceremonial site) would be expected at cemetery sites. On the other hand, it would also be expected to find a different kind of artifactual and feature patterning reflecting sedentary to semi-sedentary habitation activities if Ala-329 was indeed a village site, as in the case of Ca-But-1. For example, at some point in time, it was speculated that pre-contact Costanoan Societies developed a "Collector/Harvester" economy based upon their ability to store food and generate surpluses; as a result, they developed semi-sedentary or sedentary village lifeways (C. King 1977; Dietz and Jackson 1981; Hildebrandt 1983; Bocek 1986; Dietz, Hildebrandt and Jones 1988; and others). If Ala-329 was a continuously occupied village, we would expect to find ample evidence of tool manufacturing trajectory residues, detritus, as well as other products in various stages of manufacture, again as in the case of Ca-But-1. Preserved, village-based manufacturing trajectories should contain the following: 1. unworked primary or raw materials (whole shells, quarried rock nodules for flaked stone, quarry blanks for mortars and pestles, slightly modified animal bone and etc.), 2. evidence of broken specimens in various stages that failed during manufacture, 3. incomplete forms and finished products, 4. fabricating

tools (e.g., hammerstones, antler billets, drills, battered stones, utilized flakes with a full range of use-wear patterns), and 5. general by-product manufacturing debris.

In the case of groundstone manufacturing, E. N. Johnson conducting an analysis on the various mortar types recovered from Contra Costa County sites, commented that the:

Distribution of the A, or sculptured, types extends over the entire lowland area. ... Here also, I find no evidence of activity in the manufacture of these artifacts, but at the Maltby-Concord valley site I have found boulders and chips of basalt; elongated, roughly spalled pieces resembling pestles in the making; and many heavy hammerstones of hard materials, quartz, chalcedony, and a greenish metamorphic rock ... The latter weigh from a few ounces to six or eight pounds, and exhibit evidence of extremely long and hard usage. The site may well have been a manufacturing center for mortars (1942:323-324).

Nelson (1910), commenting on the "material cultural" recovered from the Ellis Landing Mound, informed us that:

As indicative of the life and culture of the prehistoric mound-dwellers at Ellis Landing there were obtained of implements, weapons and ornaments a total of about 630 specimens. Of this number, however, only 380 are accompanied with data of any kind... .

Another noticeable point about the mortars and pestles is their finished condition. This fact linked with another, namely that the rock used is not native to the region, makes it reasonably certain that the implements were manufactured at a distance and in some way freighted to the mound (1910: 385-386).

Realizing that the archaeological field methods employed during the early shellmound investigations at the turn of twentieth century did not include the use of screens for recovery of fine materials, it is still important to note that in almost all cases (including the Ala-329 SJSU and Stanford excavations where 1/4 inch screens were used), flaked stone debitage is exceedingly low at all of these sites. To highlight this point, out of the 68

SJSU excavation units producing approximately 1,534 cubic yards of screened deposit, we discover that only 267 flaked stone specimens, which includes all tools and debitage combined, were recovered. If we compare this total to a recently derived assemblage from Ca-Men-1929, a Pomo village site located in the interior of Mendocino County, we learn that in just one 1 x 1.5 meter (90 cm. deep) test unit (10N/10W), approximately 2,525 chert and obsidian debitage specimens were recovered (Hamilton n.d.). Furthermore, when we compare the Ala-329 total of 267 lithic specimens to an assemblage recovered from a 1 x 1 meter excavation unit (totaling 1.1 cubic meters of 1/4 inch screened deposit) from Ca-SCr-93 located in Santa Cruz (Costanoan territory), we discover that this unit yielded 496 debitage flakes (Leventhal and Sietz 1986). As a result, this SCr-93 debitage assemblage contains almost twice the number of flaked stone tools and debitage recovered from all of the 68 Ala-329 excavation units combined, thus leaving us with little evidence of tool manufacturing at the Ryan Mound.

Evidence for groundstone, bone or shell manufacturing activities is either scant or non-existent at most of these major shellmound sites as well. For instance, when we plot the distribution and frequency of large technomic (utilitarian) artifacts such as the mortars and pestles recovered from Ala-329, the results become informative. We discover that 96% of all intact mortars (n=23) and 92% of all intact pestles (n=54) are in direct association with burials. Those specimens not found in association with burials are usually very fragmented and were once potentially derived from other disturbed burial contexts. Considering the total volume (1,534 cubic

yards) of the SJSU excavated deposit (sixty-eight 10 x 10 foot units), only 1 intact mortar (4%), 22 miscellaneous mortar fragments, 5 intact pestles (8%) and 83 pestle fragments were recovered from the non-burial excavation unit deposits. Overall, these totals are a very small population of the expected amount of technomic tools recovered from this hypothetical "sedentary village," comprising 100 people (Nelson 1910) and spanning more than 1800 years of occupation. In other words, had Ala-329 artifacts and features patterned as a "sedentary village," we would have expected to find a much larger population of intact, non-burial-associated mortars and pestles and house floors, as in the case of Ca-But-1, especially given the excavated volume of deposit at this mound.

In summary, the problems encountered after applying Stickel's generalized California site typology model against the data derived from the Ryan Mound are as follows: 1) his site typology does not predict that Ala-329, based upon his site definition criteria, is a ceremonial site because "the finds should be relatively rare (which is reflective of the relatively rare occurrence of ceremonial activities)" and "there should be no evidence of habitation (i.e., activities of eating, sleeping, food consumption,...)", and 2) based upon these same criteria, in conjunction with traditional assumptions and interpretations held by the extant archaeological literature, "shellmounds" would be defined, mostly due to the presence of food residues (shell and animal bones), as village or habitation sites.

In fact, Stickel's site typology does not predict or define the occurrence of cemeteries at all. It is imperative to note that according to Stickel's definition of ceremonial sites, such sites should "consist of

artifacts that may be reasonably related to ideological/ceremonial activities (e.g., charmstones)." The fact that he principally selected charmstones as primary evidence for ceremonial activities at Ca-SCI-54 is coincidental (keeping mind that 214 intact and fragmented charmstones were recovered from the excavation units at Ala-329), because Davis and Treganza specifically identify charmstones and other such objects (e.g., quartz crystals, pebbles in grave, red and yellow ochre, steatite pipes, bird bone whistles, etc.) as evidence for defining the "ceremonial complex" at the neighboring Patterson Mound (1959:10). However, in their Ala-328 site report they do not provide any anthropologically oriented discussions that theoretically define this "ceremonial complex." In their conclusions, the authors, however, do concede that:

The primary orientation of the cultural activities of the inhabitants of the Patterson mound was toward first of all economic activities, and secondarily toward ceremonial aspects of life and death. By far the abundance of preserved remains point to such an inference, assuming that their function are correctly interpreted. Ethnographically these same primary orientations were in evidence in Central California.

With the abundance and variety of food sources readily available, the number of human burials encountered, and the mild climate, it seems probable that the site was occupied throughout the year.

A rich ceremonial life is attested, especially in the earliest period, by the frequent occurrence of red ochre in the graves and carefully made charmstones. ... Whether the lavishly equipped graves of relatively few individuals reflect social prestige or individual wealth ... is not known, but suggestion is that those possessing some sort of ceremonial power or function ... were more highly regarded than others (1959:64-65).

In Rackerby's summary of the results from his analysis of Ala-13, he offered two salient observations:

The cultural features provide us with many insights into the domestic activities of the site occupants: storage pits, cooking hearths, and dwellings are the three major features recognized during the excavations. The structures exposed were in varying degrees of preservation. Feature 6, with its ring of burials, is unique. ... The association of these burials with the structure suggests that the building may have functioned not as a domestic dwelling, but as a specialized structure for death-oriented activities.

Ceremonial activity is a difficult functional category to define. Most of the artifacts in the collection reflect subsistence activities. Artifact classes such as bird bones whistles, bone tubes, and charmstones, which had religious significance in the historic period studied ethnographically, might function quite similarly in the cultures of prehistoric California (1967:27).

In her interpretation of the Ala-329 data, Coberly (1973) avoided discussion of evidence concerning ceremonial activities that could be inferred from the presence and/or patterning of the burials. She did offer some pertinent concluding statements and speculations:

Brush shelters may have been built.

Burials took place inside the village. ... Three of the richest graves contained large collections of unworked objects in addition to artifacts, which might have been shaman's possessions. Unworked bird bones in number of graves may have been objects connected with a bird cult.

If relative wealth of graves is an index of variation of social standing, it appears there were not highly developed class differences within the village (1973:88).

As presented earlier, Bickel (1976) re-examined the archaeological assemblages and the two published reports on Ala-328, Ala-12 and Ala-13 for her doctoral dissertation, which focused on models of culture change. Her analysis of the data from these three sites was purely descriptive and avoided aspects of socio-cultural interpretation. Furthermore, Bickel's

treatment of the mortuary data focused only on comparing traits and frequencies of grave-associated objects from San Francisco Bay shellmound sites to assemblages recovered within the Sacramento Valley region, and applying these data to two different models of culture change: parallel (Beardsley 1948; Heizer 1949; and others) versus convergent (after Gerow 1968; 1974). Bickel explained that she could not interpret social aspects of the mortuary complexes from the three sites due to deficiencies in the database:

The attempt to extract social structural information from the mortuary patterning was abandoned after it became evident that there were not data on sufficient attributes to command a reasonable picture of the degree of variation in treatment of different individuals (1981:302).

She concluded with the following research recommendations for future archaeological investigations in California prehistory:

Taking what is useful from each of these models of change in central California, it is time to proceed to an analysis of specific trends of change in the Bay area (and in the Valley as well) from a perspective which focuses on the context in which changes occur, treating the variations in form which signify change as background information. ... The work which lies ahead is to gain insight into the behavior in economic, social and ideological realms which produced the patterns in archaeological remains from which an understanding of Bay area prehistory is to be derived (1981:338).

... However, continued attention to formal aspects of artifactual assemblages and mortuary behavior will also be required, including re-examination of data of that sort which have already been gathered, as well as collection of more.

Summary of Ca-Ala-329 Data in Light of Stickel's Site Model

The following summarizes some of the salient features and attributes that support the interpretation of Ala-329 as a specialized ceremonial site:

1. Unlike Rackerby, who concluded that "storage pits (n=2), cooking hearths (n=9) and dwellings (n=3) were the three major features recognized during the excavations" and essentially dismissed the prevalence of the 108 discreet burials as major features at Ca-Ala-13, the most prevalent type of features discovered at Ala-329 between the SJSU and Stanford University excavations are burials (n=440+), which include: primary inhumations, secondary inhumations, and a variety of cremations (Pierce 1982; Jurmain 1983a; and Gillett 1987. There were also only 2+ possible house features identified from the Ryan Mound.

2. The majority of the artifacts (44,210+ or 96% of the entire assemblage in this study) - technomic, sociotechnic and ideotechnic - that were recovered from the Ala-329 SJSU excavations are directly associated with 213 of the 283 discreet burials, and therefore, reflect a mortuary-related activity pattern rather than an abandoned or scattered "refuse" pattern, or that of a highly structured residential-village pattern as evidenced from Ca-But-1 (Chartkoff and Chartkoff 1983, 1984).

On the other hand, there were only 4,460 elements derived from the screened deposit of the sixty-eight SJSU 10' x 10' excavation units. Of these elements, 2,549+ were classified as "unmodified cobbles, cobble fragments or pebbles," thus leaving a total of 1,911 specimens. If we also remove the 155 "clay" pieces (e.g., burnt, vitrified and nodules), as well as the 483 shell ornament/bead isolates (presumably once associated directly with previously disturbed burials or issued as grave offerings), this further reduces the cultural assemblage to a total of **1273** cultural artifacts. As a result of this subtraction, this leaves a greatly reduced number of artifacts (intact and fragmented combined) derived from non-burial context within this site.

3. There were at least two possible house floors identified in the field at Ala-329 by combined Stanford and SJSU excavators; the larger one was interpreted as being burned down upon Burial 130. This observation justifies the exploration of the ethnographic literature for possible mortuary correlates.

4. Food residues from shellfish and mammal remains are present within the "midden" deposit. There are, however, no studies or hypotheses extant in the archaeological literature that have tried to distinguish general habitation refuse from intensive-single-event-ceremonial-feast-related food residues resulting from large gatherings of people, specifically centering around funerals, mourning anniversaries, or other ritually integrative ceremonies.

As a result it is concluded here that Stickel's criteria for defining the attributes of and distinctions between certain types of ceremonial sites as compared to habitation sites must, be rejected and redefined in accordance with data from both the ethnographic and archaeological records.

CHAPTER 7

A COMPARATIVE ANALYSIS BETWEEN THE SAN FRANCISCO BAY "SHELLMOUNDS" AND A LATE PERIOD CENTRAL CALIFORNIA VILLAGE: CA-BUT-1, THE PATRICK SITE AS A TEST CASE

In the previous chapters several topics derived from the archaeological literature have been introduced to support a reinterpretation of the function and physical development of many of the San Francisco Bay shellmounds. These topics included:

1. A long tradition of untested hypotheses by several generations of archaeologists assuming that shellmounds are exclusively village or habitation sites.
2. The lack of plausible alternative explanatory models accounting for site formation processes, other than the model of accumulation of food refuse into "shell heaps" as a by-product of village-related activities.
3. The significant differences between the patterning of associated grave assemblages and the lack of patterning, distribution and frequency of non-grave-associated materials in sites containing large human burial populations (cf. T. King 1970, 1974; Wiberg 1984 and Luby 1991 are the only studies which focus on sociological distinctions within the San Francisco Bay region).
4. The problematic gap between the mission studies by C. King (1974, 1977, 1978, 1978a), Bennyhoff (1977), Milliken (1981a, 1981b, 1982, 1983, 1988), and A. Hall (n.d.), in conjunction with the two theoretically oriented volumes by Bean and King (1974) and Bean and Blackburn (1976), and, on the other hand, the limited development and application of Central California ethnoarchaeological models to the archaeological record (cf. T. King 1970, 1974, Slaymaker 1979, and Wiberg 1984) for studies which have attempted to bridge that gap).

5. The dearth of alternative anthropologically-based explanatory models for the San Francisco Bay region, particularly in light of the amount of money spent on contract archaeology projects in this region.

6. The prevalent position within the archaeological literature that the Costanoan Indian tribes were marginal to, if not far less complex than, many of the neighboring tribes (e.g., Coast, Bay, and Plains Miwoks, Yokuts, Patwins, and Salinans). This perspective is further exemplified by the view that the pre-contact circum-San Francisco Bay tribes lived on top of their dead, rather than, as in the cases of other central California tribes, establishing separate cemeteries outside of villages.

One of the goals of this study was to find carefully excavated and well-documented macro-Bay Area sites that contained at least one of the following conditions: 1. physical evidence and features of a clearly defined village (e.g., house pits or floors with post holes, cooking hearths, patterned artifact/feature assemblages, manufacturing trajectories, faunal remains, etc.); 2. "pure" cemeteries along with an analyzed representative archaeological assemblage; or 3. the presence of a cemetery complex intermixed within the village midden deposit, with evidence of attempted dating of mortuary features versus village-related features (i.e., house floors and hearths) in order to test if they were temporally coeval.

One of the first candidate village sites considered was the "Circle of Circles" site (Ca-SCI-341) located on a high knoll between San Jose and Morgan Hill (Cartier 1980). This site has many surface circular rock features with entrance openings approximately two meters in diameter that appear to have ringed the outside of temporary house structures. These circular rock features were apparently aligned and spaced apart by the aboriginal inhabitants into a group along the circumference of two larger circles, thus creating the appearance of a "village" ring or arrangement of houses. Twenty two of these house rings comprise the

more intact of the two large circle complexes, while another 24 are roughly arranged within the second circle complex. The configuration of the "Circles of Circles" (with some minor differences) is similar to the Nomlaki village plan illustrated by Goldschmidt (1951:318). The problem with this site (assuming it was a village as opposed to a special ceremonial site) is that none of the house features were excavated and only a surface survey collection and map had been made; therefore, sufficient information about the presence, frequency and distribution of subsurface features, tools assemblages, and preserved food residues is lacking.

As an alternative choice the published report on Cotomko'tca Village (Slaymaker 1977), located on the east side of the Marin Peninsula, near San Pablo Bay was considered. Because this site (Ca-Mrn-138) was interpreted as a Late Period village mound ("Nelson's 138th shellheap") located in the adjacent Coast Miwok territory, it might contain information and data to compare to the Ala-329 assemblages. Slaymaker wrote:

The ethnographic/historical village of Cotomko'tca, located with Gallinas Valley, coincides with large site clusters positioned by Nelson and others along Miller Creek and Gallinas Creek. Since the greatest population density occurs along Miller Creek which enters the bay at a point four and a half miles north of San Rafael, it is assumed that the site cluster recorded along Miller Creek represents the settlement of Cotomko'tca (1977:125).

After carefully reviewing the Archaeological Evidence From Site 4-Mrn-138 section, it became apparent that, 29 features (two of which contained human remains) and the remains of eight structures were identified at this site. Slaymaker reported that nine burials were "investigated during the excavation of Mrn-138" (1977:154). Cremations were also encountered. He reported:

Cremated human bone was found in many excavation units although concentrations were rare. ... Since the Coast Miwok custom of cremation required the attendants or relatives to gather up the unburned bone fragments and rebury them, little relation between loci of cremation and loci of recovery archaeologically probably exists. Further, Coast Miwok cremation was efficient as in the Pomo example and little would have been left after the fires had died down (ibid:155).

There was not enough succinct information regarding the locations of the house structures and the burials, thus making comparisons difficult. Slaymaker did make one relevant observation regarding the mortuary patterns at this site: "(g)rave placement tended to be random although two loose clusters of burials could be considered cemeteries" (1977:154).

Attempts to find an appropriate comparative site continued.

Consideration was given to two recent publications: Layton's (1990) Western Pomo Prehistory and Chartkoff and Chartkoff's (1983) Excavations at the Patrick Site (4-Butte-1). I decided to use the latter publication for this study, principally because of three factors or conditions lacking in the Pomo study:

1. Although the excavated village sites (Ca-Men-790 and Men-1805) did provide comparative house feature information, the preservation of faunal bone and possible human remains was lacking.
2. Neither of these two villages comprised or were established on an artificially built mound site.
3. The two sites were not considered major, long term sedentary or semi-sedentary villages.

On the other hand the Patrick Site contained all of the necessary "conditions" and data for comparison:

1. Ca-But-1 is located in the ethnohistoric Penutian-speaking Konkow or Northwestern Maidu territory located above Sacramento. Although this present study has not yet directly addressed the Konkow, they were in close geographical and cultural contact with the neighboring

Patwin/Nomlaki and Plains Miwok to the west and south of them, thus allowing cultural comparisons. They also shared a similar and related ceremonial complex which includes Kuksu Cult and Hesi dance with their immediate neighbors (Riddell 1978:382-384).

2. The study reports a minimum of 51 house structures as well as the excavation and exposure of twelve of these houses. Also preserved within this site were faunal bones and evidence of human remains.

3. The site constitutes an earth mound village.

4. Based upon the analysis of the house features and associated assemblages, the site has been interpreted as a "sedentary community" (Chartkoff and Chartkoff 1983:44).

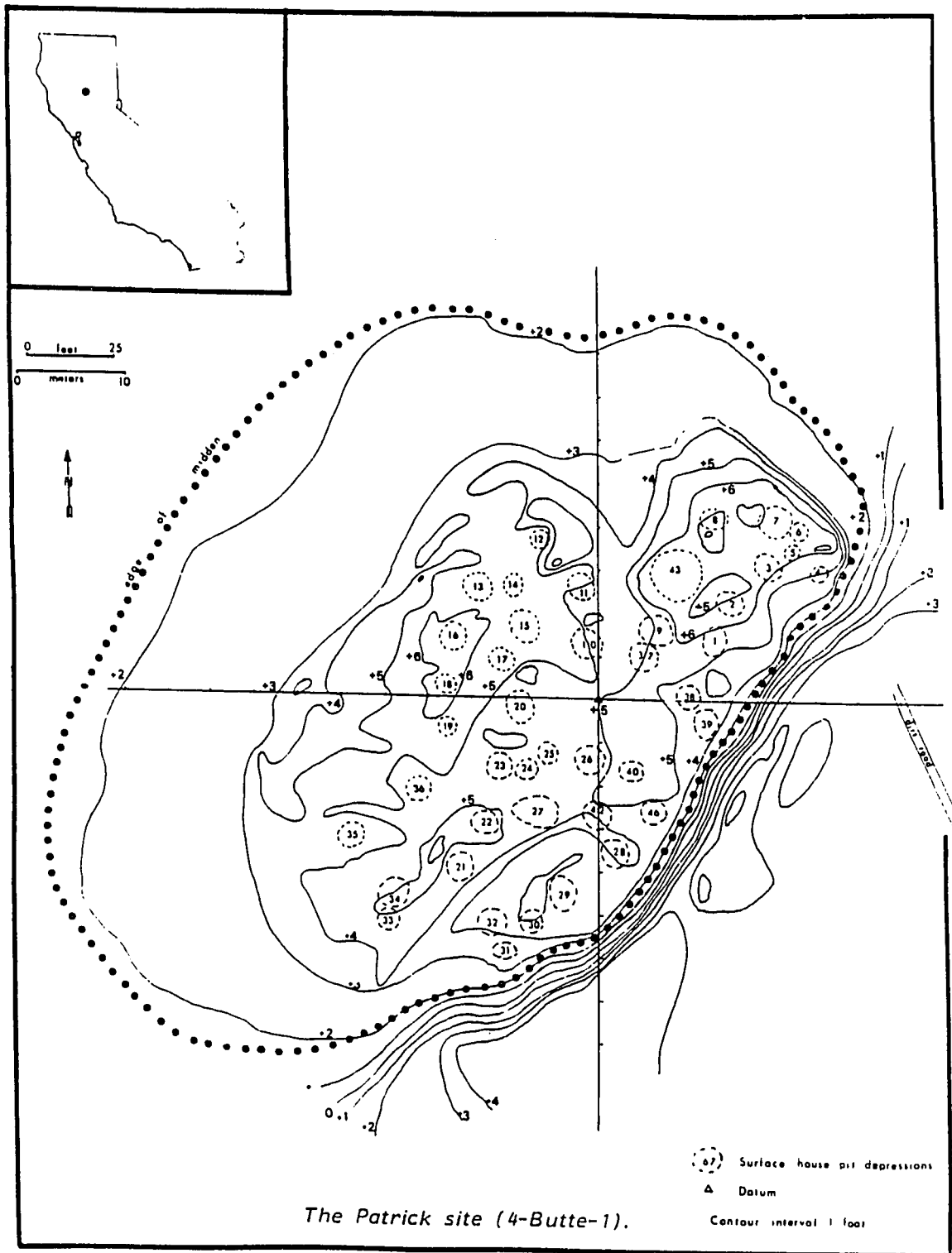
5. Much like Layton's Mendocino Pomo investigation, this analysis is an excellent application of ethnoarchaeological methodology.

Ca-But-1, The Patrick Site: A Late Period Village

The Patrick Site has been described by Chartkoff and Chartkoff as "a riverine habitation site located by the former stream course of Little Butte Creek near Chico," California (1983:3). There was a hiatus of approximately eighteen years since the end of the last joint University of California, Los Angeles and Chico State University field season and the site report publication.

Ca-But-1 is an earth mound that has apparently been areally reduced in size by more than half of the original estimated extent of the midden. The estimated depth of the midden was thought to be approximately five feet. At the time of the site report in 1983, there were "surface depressions of 42 probable houses and a large depression apparently representing a dance house" (Figure 14), and a further suggestion that "(b)eneath the surface may be the remains of 40 or 50 more structures (1984:4).

Figure 14: Site Map Showing House Features Within Village Site Ca-Butt-1



(From Chartkoff and Chartkoff 1983)

The 1965 excavations principally focused on the most visible house depressions. During this field season 36 five-by-five-foot test units and two house features were excavated. The next year, the focus shifted to areas between house pits. A large crew of fifty excavators was able to excavate 106 units as well as to expose ten additional houses. These two field seasons resulted in the recovery of more than 19,000 artifacts, representing eight major classes of material culture, each containing many types and subtypes.

From an ethnoarchaeological perspective Chartkoff and Chartkoff recognized that "(t)he site's existence has been long known since an early rancheria was situated next to the prehistoric village" (Ibid). Based upon the presence of more than 1,200 clam shell disk beads, Desert Side Notched projectile points and thirty obsidian hydration readings of less than one micron, they temporally assigned the site to the Late Horizon Phase II (A.D. 1400 -1840). The authors examined the ethnographic records for information pertaining to Konkow/Maidu village life; architecture (several residential structures, dance or assembly house, and sweat lodge); social organization; subsistence activities; and economic/trade systems. They highlighted the spatial patterning of houses and types of artifacts, and compared these data to the detailed ethnographic and ethnohistoric record.

The following is a summary of their conclusions as documented in their 1983 site report:

1. The site contains at least 51 known and possibly upwards to 50 additional house features, presumably representing the full compliment of structures known to have been built by the Konkow tribes.

2. The majority of the 12 excavated houses contained a "household patterning" with clear evidence of one of several residential attributes. These attributes include: the presence of hearths in 11 out of the 12 houses; perimeter posts in 9 out of the 12 houses; and stone block mortars (7 out of 12 structures) within the house floor.

3. The social organization of the village was inferred from the size and types of the structures as well as the classes of artifacts recovered. They concluded that:

The presence, in almost every house, of both male- related artifacts such as projectile points, knives, ... and female-related artifacts such as mortars, pestles, millingstones,..., indicates that the house holds were based on a nuclear family organization with little apparent status differentiation among them. ...

The differences in house size and construction seem offset by artifact distributions. House 2 is smaller than house 1, for example but proportionally has twice as many beads for the volume of earth excavated. The net result is a picture of a rather egalitarian, sedentary community (1983:44).

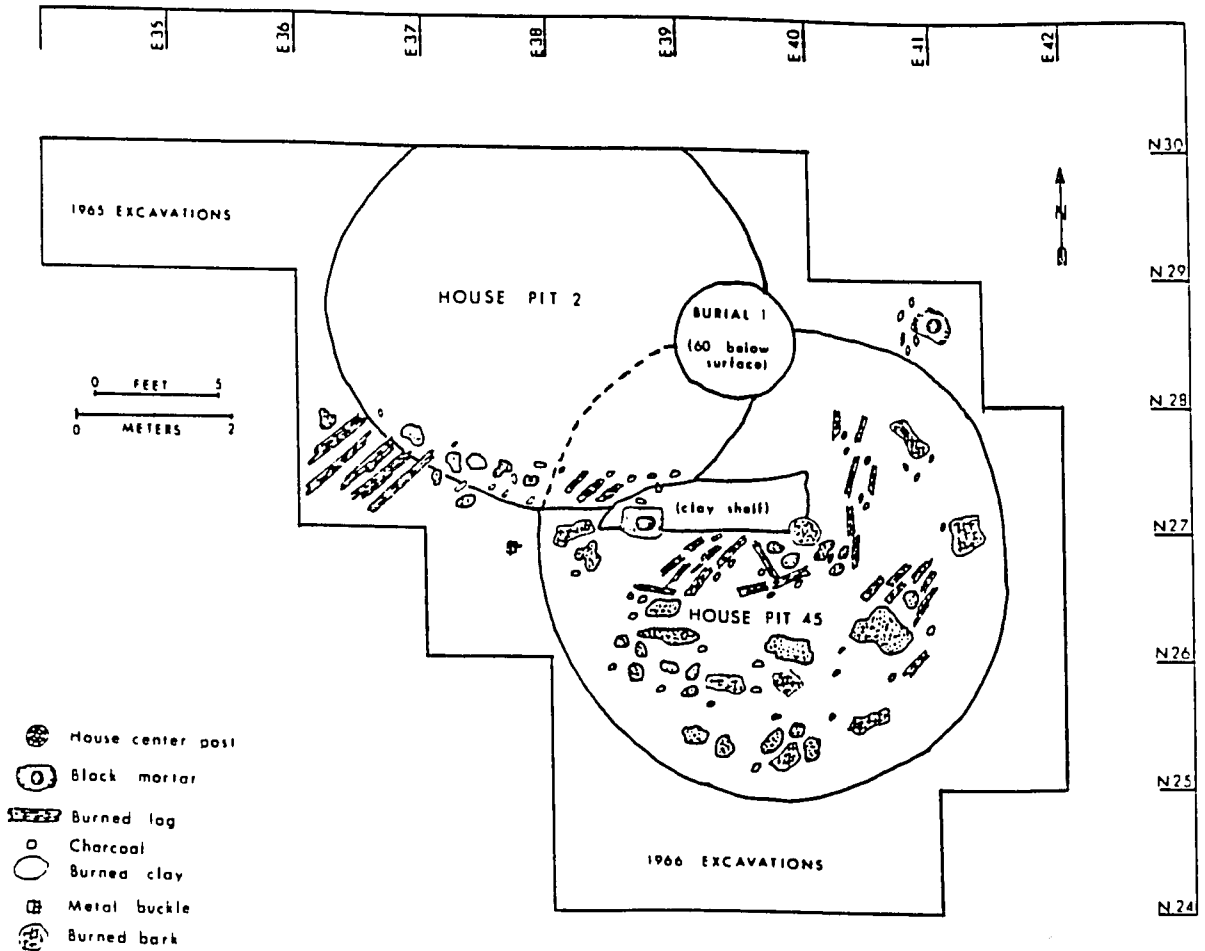
4. Only one burial, an adult, was recovered from within this site. It was discovered between two houses (2 and 45) below a clay layer two and one half feet deep. The authors speculated that the individual was "reburied in this place" (see Figure 15). They observed that:

Only a foot to the south of the pit, at a depth of three feet, a metal belt buckle was found, the only in situ historic artifact recovered from the excavations. The burial may be historic in age; it is clearly intrusive and not contemporaneous with the either House 2 or House 45. The burial pit destroyed portions of both house floors, so it is more recent than either house (Ibid:17).

5. Based upon Heizer's criteria for diagnostic artifacts representative of the Late Horizon which include: "... a new set of varieties of shell beads, a bewildering array of ornaments made of abalone shell, small obsidian arrowpoints... tubular smoking pipes, bird bone tubes... and increased use of cremation and sacrifice by burning offerings in the grave pit just prior to placing the corpse in the grave," they concluded that:

The Patrick Site generally shares these characteristics with the exception of the described mortuary practices, which remains undiscovered, and the abalone shell ornaments, which generally are found with mortuary remains but, as a rule, not with households (Ibid:46).

Figure 15: Archaeological Patterning of Two House Features and Intrusive Burial Into the House Floors at Site Ca-But-1



House Pits 2 and 45, showing roof fall.

(From Chartkoff and Chartkoff 1983)

With the publication and analysis of "Late Horizon" house features and associated artifact assemblages from this site, Chartkoff and Chartkoff have made an important contribution to our understanding of Late Period Central California prehistory. By employing detailed ethnohistorical data about the aboriginal Konkow lifeways, architecture, material culture and linguistic terms, they identified the different types of structures and inferred aspects of pre-contact social organization.

What is perplexing, however, is that Chartkoff and Chartkoff concluded that the pre-contact social organization of this village was structured along egalitarian lines based solely upon the rather uniform patterning of the utilitarian/technomic male-related and female-related artifacts within each of the houses. They did not identify, however, what kind of distribution and/or patterning of house floors, artifacts and other features would indicate of a more complex social organization (i.e., stratified or ranked society as in the case of the Chumash; cf. L. King 1982), nor did they address aspects of such socio-cultural complexity derived from other archaeological sites or from ethnographic records. Instead, they based their interpretations solely upon sociological data derived from the early ethnographic studies of Dixon (1905), Kroeber (1929) and Beals (1933).

At this juncture it is important to note that Ca-But-1 is located within the larger "Climax Culture Area" of the Sacramento Valley (Kroeber 1939:53-55) where complex forms of ceremonial-religious institutions, socially stratified societies, large sedentary villages, and exchange systems based upon accumulation of wealth developed intensively (Kroeber 1925:360-380; Loeb 1932, 1933; Goldschmidt 1948, 1951; Vayda 1967; Chagnon 1970;

and others). The groups adjacent to the Konkow were their linguistic Penutian-speaking cousins, the Nisenan (Southern Maidu) to the south-southeast, the Wintuan-speaking Patwins to the south-southwest, and the Nomlaki to the west-northwest. These ethnolinguistic groups comprised part of the larger socio-ceremonial-economic interaction region, and each developed variations of the socio-cultural attributes described above.

Chartkoff and Chartkoff based much of their interpretation on the Kroeberian "model of the Maidu political unit" (1983:45). Kroeber (1929) formulated a proto-tribelet Maidu socio-political model based upon the concept of a principal centralized village surrounded by lesser villages or "hamlets" from which surplus food, goods, and wealth could be drawn by the headman or chief of the principal village and then redistributed.

Chartkoff and Chartkoff suggested that:

Maidu communities typically had headmen and shamans, both of whom might be expected to have distinctive households but not markedly rich ones. The Maidu were characterized by a sharing ethic in which acquired goods could be borrowed on demand, and the accumulation of wealth was viewed with suspicion. The headman was an exception in that he had to have stores of goods and food on hand to host traders, but the stores did not extend to personal possessions.

Though headmanship was often hereditary, the post was held through the agreement of adults in the community. The headman was a leader by persuasion rather than through authority, so the headman's role should not be considered comparable to a chieftain's. A Maidu community was more highly structured than a band, in Service's terms, but less than a tribe, and much less than a chiefdom.

A Maidu community's households might be linked through kinship ties, with males ordinarily forming lineage descent groups. ... Large communities had secret men's societies, which often also served as

trading collectives... . The dance house would usually serve as the meeting house for the secret society and as the site for its important ritual and social events. The apparent dance house at the Patrick Site was not excavated, so it cannot be related to this model (1983:45).

Chartkoff and Chartkoff did not convincingly establish evidence of an egalitarian social organizational structure for the Konkow or Northwestern Maidu. Interestingly, a year later Chartkoff and Chartkoff employed the same database derived from the excavations at Ca-But-1 to argue a slightly different perspective concerning the much more complex socio-economic and socio-political Hotchkiss Tradition as representative of their proposed Late Pacific Period (1984:186-194). According to the authors, the Hotchkiss Tradition developed within the Sacramento and San Joaquin Delta regions, and along the adjacent "lower river valleys east of the Delta" (Ibid:187).

They characterized this complex Hotchkiss Tradition as follows:

Compared with settlements of the Cosumnes Tradition, those of the Hotchkiss times were larger, more numerous, and denser, reflecting significant population growth. Large pit-house villages had storage facilities and sizable semi-subterranean houses... . Trade goods were abundant and varied, and burials reflect a large, wealthy, socially stratified society in marked differences in the amount of wealth goods accompanying the burials. The pattern of tightly flexed burials, begun in Cosumnes times, continued during the Hotchkiss, but Hotchkiss people also began to cremate some of their dead in significant numbers.

As with earlier Delta traditions, Hotchkiss is known principally from cemetery excavations, and much of the ornamental art of this tradition is known from grave goods accompanying the burials. ... Although the specific constellation of traits that characterizes Hotchkiss tends to be concentrated in the Delta and surrounding areas, similar lifeways can be seen throughout the San Joaquin and Sacramento valleys and the San Francisco Bay Area allowing for variations in local resources (1984:187-188;193).

This description of the Hotchkiss Tradition bears little resemblance to the "egalitarian" conclusion that they originally ascribed to Ca-But-1 in

1983. In the later perspective, the authors used the Patrick Site, with its approximately 90 house features, as a prime example of a Late and Final Pacific Period village (1984:189:Fig. 52). They also employed a photograph of an unidentified Hotchkiss Tradition site in their 1984 publication The Archaeology of California which they described as:

A village of 40 Final Pacific pit houses, sheltered within a Sacramento Valley oak grove. ... The site now covers 5 acres ... and may have included up to 90 houses. A large house, 30 feet across (9 meters), lies near the site's center;... Perhaps 500-700 people lived here when the site was occupied 300-400 years ago (Ibid:188:Fig. 51).

This photograph was the same one that the authors used on the cover page of Excavations at the Patrick Site (4-Butte-1) (Chartkoff and Chartkoff 1983:1:Fig. 1). It is also important to note that, within the span of one year, the different interpretation of the inferred socio-cultural complexity derived from the Patrick Site, is a quantum leap made by the authors. There are six relevant and important interpretive aspects from their later (1984) perspective:

1. The authors stated that there may have been up to 90 houses on the village mound.
2. The remnant mound has been diminished by over half its original size. They estimated that it has been reduced from approximately 11 acres to about 5 acres.
3. The authors indicated that approximately 500-700 people may have lived at the site between 300-400 years ago (spanning Late Phase 1 and Phase 2/Late Periods).
4. The Hotchkiss Tradition is exemplified by the development of large settlements, architectural structures, trade, socially stratified societies (as inferred from the presence of wealth associated with burials), and differential treatment of burials (especially cremations).

5. Although the epicenter of the Hotchkiss Tradition is centered around the San Joaquin and Sacramento Deltas and lower river valleys (comprising ethnohistoric Plains Miwok, North Valley Yokut, partial Maiduan, Patwin and Nomlaki territories), the authors asserted that "similar lifeways can be seen through out the San Joaquin, Sacramento valleys and the San Francisco Bay Area..." which obviously takes in part of the Costanoan territory (1984:193).

6. Many of the Hotchkiss Tradition burial wealth items figured in Chartkoff and Chartkoff (1984:190 Fig. 53) and illustrated by Bennyhoff (in Elsasser 1978:44) were also recovered in abundance in Late Period strata at Ala-329. In fact, there were distinctive artifacts types (e.g., abalone banjo clawed variant pendants) found in association with Ala-329 Phase 1 Late Period burials (e.g., Burial 49) that were made in the same tradition and style as those from the Delta region. The scarcity of banjos in general, and specifically the clawed variants, in the East Bay and South Bay region presumably testifies to a possible intermarriage pattern and trading ties between the pre-contact high-lineage Costanoans and various high-lineages of neighboring interior tribal groups (presumably Plains/Bay Miwok and North Valley Yokut) occupying the epicenter areas of the Hotchkiss Tradition.

In their discussion of the socio-cultural evolutionary developments that took place throughout the Pacific Period (2000 B.C. - A.D. 1769), Chartkoff and Chartkoff (1984) did not identify any distinctive traditions for the greater San Francisco Bay region. The Pacific Period, they claimed, represented a shift from the Archaic Period, and was based on the intensification of "focal economies" (optimal foraging and storage of foods) and the rise of complex societies.

Even though societies living within the San Francisco Bay interacted within these macro socio-cultural evolutionary processes over the last 4000 years, the authors only tangentially alluded to the presence of the "shell middens" as evidence for a focal economy occupying the "Littoral-Offshore Niche" (1984). For the San Francisco Bay region they suggested that:

Coastal populations began to harvest shellfish in Archaic times, the practice reached its peak during the Pacific. As a result, Pacific communities created great mounds of discarded shells around their villages. These shell middens are among the most distinctive archaeological sites in California. ...

The size of the shell middens suggests that there was a focal emphasis on shellfish. In many cases this impression is misleading. The amount of meat in most shellfish is small, so a great mass of shell represents less food than it might seem. In addition, ethnographic evidence indicates that shellfish were not a preferred food source for most groups, but were supplements to the diet or as backups when preferred foods were not available (Baumhoff 1963). Shellfish use was further restricted by toxicity during the summer, owing to seasonal infestation with a dinoflagellate (1984:159).

This is a very interesting perspective on the importance of shellfish within the subsistence economies of coastal California Indian tribes. Of course, one of the few exceptions to this rule has been found within the San Francisco Bay region "where analysis has shown that shellfish were the single most important source of meat" (Chartkoff and Chartkoff 1984:159). On the other hand, Perlman (1980) conducting a world wide sample study on optimal diet models as it relates to coastal variability and hunter-gatherer behavior offered the following perspective regarding the importance of shellfish in coastal diets: .

Most claims that coastal resources are poor sources of sustenance refer to shellfish- specifically the calories or protein provided by shellfish or preserved in the shell middens. Shellfish are intermediate return resources whose least effort-least risk importance receive ethnographic and archaeological support. Both indicate that these food items can serve as supplemental resources during any season or act as a primary resource when high return resources (fall deer, anadromous fish, seal, etc.) are not available.

A number of arguments have been made that although shellfish dominate the individual-per-species counts for coastal sites, they actually provide few caloric man-days and are not a dependable resource. (1980: 286-287).

Similar positions concerning the supplemental or marginal role of shellfish in prehistoric human diets and the problems associated with shell midden analysis have been argued by Greengo (1951) - especially with regards to Gifford's (1916a) shellfish/soil data from the West Berkeley Mound - and also by Landsberg (1965); Koloseike (1968, 1969); Wiede (1972); Osborn (1977); Glassow and Wilcoxon (1988) and others.

Although the San Francisco Bay is mentioned by Chartkoff and Chartkoff, they did not define or allocate a "Tradition" status specifically for the Bay Area. Instead, they sub-divided the macro-Pacific Period into four temporal periods associated with specific geographical/regional traditions. From this sub-division we discover that in close proximity to the San Francisco Bay, yet geographically distinct, were:

1. The Early Pacific Cosumnes Tradition located in the greater Sacramento/San Joaquin Deltas (Middle Horizon/Period: 2000 B.C. - 500 B.C.).
2. The Middle Pacific Chowchilla Tradition (500 B.C. - A.D. 500) located in the San Joaquin Valley, foothill rivers and uplands of the Sierras. It was during this period of time that "(t)he remaining unoccupied parts of the state were permanently settled for the first time, including... the coast between Santa Cruz and Morro Bay" (1984:172).
3. The Late Pacific Period Hotchkiss Tradition superseding the Cosumnes Tradition location of the Delta region (Late Horizon/Period: A.D. 500 - A.D. 1500). Details of the Hotchkiss Tradition were described above.
4. The Final Pacific Period which has no distinctive traditions associated with it. This period represents the pre-contact/proto-historic distribution of the known linguistic groups and tribes (A.D. 1500 - A.D. 1769).

Chartkoff and Chartkoff treated the San Francisco Bay region as peripheral or marginal to these centrally defined "Tradition" areas. Presumably, their perspective was influenced by the unfounded

assumption that the shellmounds exclusively represented villages, an assumption which does not conform to their overall interpretation of the dynamic socio-cultural, socio-political, socio-economic and elaborate ceremonial-religious changes that were intensifying during the latter three Pacific Periods of time.

Nonetheless, their interpretations provide supporting evidence about the development of complex socio-ceremonial institutions within the East Bay as inferred from the mortuary complex at Ala-329. Chartkoff and Chartkoff (1984) did recognize that these Hotchkiss Tradition (Late Period) socio-cultural complexities spilled over into the San Francisco Bay region.

Even so, there are still three weaknesses inherent within their overall perspective regarding Hotchkiss Tradition socio-cultural intensification. These weaknesses lay not so much in their interpretation of the archaeological data, but in the underlying assumptions that have formed the basis of Bay Area prehistory. Notwithstanding their weaknesses, Chartkoff and Chartkoff (1984) present an excellent case for Late Period complex socio-cultural developments through the use of established archaeological and ethnographic data, as did Bean and King (1974) and Bean and Blackburn (1976) several years earlier. Chartkoff and Chartkoff's analytic weaknesses were derived from the following assumptions about the interpretation of Bay Area "shellmounds":

1. That the San Francisco Bay "shell middens" are a product of a shifting intensive focal economy; and that these "shell middens" developed and grew as the result of village community inhabitants intensively harvesting and processing these shellfish over many years.

2. That shellfish became the "single most important source of meat" for these shell midden village sites (Chartkoff and Chartkoff 1984:159, citing Elsasser 1978)

3. That the attributes that define Late Period ceremonial sites do not include cemeteries and therefore would not include "shellmounds." Chartkoff and Chartkoff provided the following aspects and discussion to help define ritual sites:

a) Ritual sites, created especially for the conduct of religious or ritual activities, are known from several parts of the state, particularly from Late and Final Pacific periods. Some contain distinctive rock structures or other features... . Others contain specialized structures such as sweat houses, but not residential structures... . Still others are found where groups of people assembled to perform ceremonies, sometimes adjacent to villages and sometimes not.

b) Often there are no distinctive archaeological remains to mark such spots, but they are known instead from ethnographic records... . Ritual sites were generally located well away from regular settlements because in many California cultures important rituals had to be performed in isolation (1984:208).

Discussions and Implications About Chartkoff and Chartkoff's Three Assumptions

At this juncture it is appropriate here to briefly comment on these three stated assumptions and some of the underlying factors that may have influenced Chartkoff and Chartkoff's interpretive perspectives. To date, very little analysis--other than the early studies mentioned in previous chapters--discussed or explained the overall site formation processes and the development of the bayshore "shell middens" (cf. Nelson 1910; Gifford 1916a; Spiess 1988; and others). The models which proposed that large quantities of shellfish were gathered, processed as food on the mound, and then piled into heaps do not adequately explain all the socio-cultural processes contributing to site formation. As a result, the first two assumptions are addressed collectively.

In the early archaeological studies conducted on these "shell middens," constituents were broken down into various categories (Gifford 1916a; Treganza and Cook 1950; and others). From Nelson's estimated volume of the Ellis Landing site, for example, Gifford calculated the amount of shellfish needed to explain the size and development of the mound:

If we take Mr. Nelson's estimate of thirty-five hundred years as the age of the mound, the shell must have been laid down at the average rate of 10.13 tons a year, or fifty-six pounds a day. This amount of shell a day seems reasonable enough, if we accept one hundred people as the average population of the mound throughout its growth. Both Dr. Kroeber and Mr. Nelson consider this figure to be most probable, the former basing his opinion on his knowledge of California Indian life, the latter on his findings at Ellis landing (1916:12).

Commenting on the ash content as a midden constituent within the Ellis Landing mound:

... it appears that the Ellis Landing people used 1240 pounds of wood a day. If the assumed population of one hundred individual were distributed among fifteen families, this would mean an average of eighty- three pounds of wood per family per day. This is a moderate amount if one considers that they had an abundance of driftwood close at hand (Ibid).

To respond to this early, but widely accepted perspective, we need only review Nelson's (1910) Ellis Landing site report. Nelson wrote:

The Ellis Landing shellmound is situated on the northeastern shore of the San Francisco Bay proper... . The marsh, fringing the greater bay shore, is here only six hundred yards wide... . The site in no way conforms to the general conditions observed now in more than four hundred instances as there is neither fresh water nor firewood, excepting driftwood, any where within miles (1910:360).

Special attention may also be directed to the noticeable variation of preponderating shell species represented in the section wall of the Ellis mound... . The lower portion of this accumulation is composed almost exclusively of mussel shells, and it is only the upper eight feet that the clam shells become at all plentiful. This fact seems to admit of one or

two possible interpretations: either the local physiography of early shellmound times was different from that of the present day or else the mound people possessed boats of some sort.

As is well known, the mussel lives only on rock-bound shores and must therefore, in recent geological times, have been scarce in San Francisco Bay. The nearest, in fact almost the only locality on the east side of the bay where the Ellis mound people could have obtained this apparent main stay of their existence would have been along what is now the Potrero San Pablo and Brooks Island (Ibid:376-377).

If we compare the information derived from Nelson's interpretive discussion of the natural environment surrounding the Ellis Landing mound to the location and possible use of aquatic techniques involved in obtaining mussels from Brooks Island or Potrero San Pablo, and use the calculations employed by Gifford, we are left with many unanswered questions and contradictions. For instance, Gifford envisioned that one hundred people occupied the mound for thirty-five hundred years, intensively exploiting shellfish without fresh water or firewood. This position would assume that the shellfish at that time never became toxic during the summer months, that driftwood (wet or dry) was always plentiful, and that fresh water was not a factor influencing survival and settlement.

Turning now to the third assumption, which addresses the criteria introduced earlier by Stickel (1976, 1980) and Chartkoff and Chartkoff (1984), and defines the archaeological attributes, features and/or artifact assemblages that potentially predict ritual sites. As a result of applying these criteria to Ala-329, it appears that cemetery complexes present within these shellmounds are exempt from such prediction and definition. It has already been demonstrated that Stickel failed to predict and define the mortuary complex at the bayshore mounds as possibly representative of

largely ceremonial sites. In the case of Chartkoff and Chartkoff, all of the necessary complex ingredients are there for such a prediction and identification; however, they did not recognize features such as mortuaries for inclusion as defining ceremonial or ritual sites. They failed to connect mortuary-related activities with pinnacle ceremonial complexes. They insisted that:

Cemetery remains provide one line of evidence for the rise in social stratification. ... Large cemeteries often had distinct areas for family or kin groups, and within each kin area were often a small number of clearly prestigious, or "elite", burials. These possessed not only a much larger number of burial offerings than those of other individuals, but also many more exotic and elaborate offerings (1984:237).

Even in the comprehensive studies conducted by T. King (1970; 1974) on the cemetery at Mrn-27 he also assumed the site to be a habitation "shellmound." T. King differed, however, from his Bay Area archaeological predecessors and colleagues in postulating the existence of two important interpretive prehistoric manifestations:

1. Within the occupied Mrn-27 shellmound he identified a clearly defined "organized cemetery".
2. He inferred that social stratification existed during the late "Middle Horizon" based upon mortuary patterning and artifact associations (1974).

On the other hand, T. King and others neglected to identify or explain which socio-cultural and ceremonial/religious institutions might have been operational within these pre-contact societies when the mortuaries within the shellmounds were being used. T. King suggested, as mentioned earlier, that Mrn-27 constituted an "organized cemetery," while those at the large "shellmounds" (e.g., Ala-328) represented only "quantities of

scattered burials" (Ibid:38). Yet, an adequate behavioral model to explain the presence of the burials still must be generated. Given the representative collections of human skeletal remains derived from these scientifically explored bayshore sites, coupled with the rather crude archaeological recovery methods employed during the early part of this century, Emeryville mound, for example, still yielded a total of 705 burials. Since its demise, it is impossible to determine how many burials were actually contained within the Emeryville mound.

Nelson employed some of his calculation formulae to estimate the burial population contained within the Ellis Landing mound. He calculated:

Taking the sum 160, as the approximate total of human remains obtained from all levels of the refuse-pile... it would appear that the entire mound estimated to have had a volume of 1,260,000 cubic feet, might contain about 3000 skeletons. In the opinion of the writer this figure is probably much too low. For if the mound, as previously suggested, is any where from three to four thousand years old; and if in its later stages it could support about one hundred people at any give time, the pile should contain more nearly 10,000 skeletons; provided most of the individuals comprising the one hundred or more successive generations were interred on the spot (1910:381).

Although many scholars feel that Nelson's estimate is a poorly designed calculation, his earlier figure of 3000 individuals may not be all that far fetched. Certainly, Ala-328, Ala-329 and Ala-309 (Emeryville) are good candidates to surpass a figure of 3000 burials. In fact, recently Wilson calculated the overall volume of Ala-329 and estimated its potential burial population:

Planimeter measurements made on the contour map drawn by the Stanford excavators indicate the present mound has a volume of about 20,900 cubic yards, from which Stanford and S.J.S.U. removed and screened about 2,600 cubic yards, leaving about 18,300 cubic yards

unexcavated. ... Burials removed by Stanford and S.J.S.U. total 473. Dividing the cubic yds excavated by the number of burials gives an average of 5.8 cubic yds moved for each burial recovered. Assuming the burial density remains constant throughout the mound, dividing the 18,300 cubic yds of unexcavated matrix by 5.8 indicates there may be as many as 3,100 burials remaining... (1993:2).

To date, only one California archaeologist has been identified by this author who suggested that cemeteries should be treated as ceremonial sites in Central California. In his 1977 Matalan Ethnohistory, C. King developed a section focusing on "Ceremonial Sites." He wrote:

Historic data provides us with the description of several types of cultural sites which occur away from habitation. The presence of these types of sites possibly cannot be determined using the procedures most archaeologists have used in locating occupation areas. The following information is presented to enable archaeologists to anticipate the presence of these site types.

At what was probably the village of Thithirii (Carnadero), just south of Gilroy, Pedro Font observed in 1776: ... something like a cemetery. ...

Probably at least all of the large village sites in the Coyote valley had similar cemeteries adjacent to them (1977:44).

In summary, this chapter has attempted to present archaeological evidence that defines the attributes for Late Period sedentary village sites (e.g., Ca-But-1 which was used as a published test case) and compare these archaeological features and artifact assemblages to those recovered from Ala-329 as well as data derived from other published shellmound sites. This comparison, in conjunction with the other documented perspectives, interpretations, archaeological data and ethnographic information, lends greater credence to the position that the shellmounds did not develop as habitation villages, but represent long-term, specialized ceremonial-use sites, principally focused around mortuary-related activities.

This chapter concludes with a observation from Gifford regarding the Ellis Landing mound:

It is just possible that the favorable location for shellfish at Ellis Landing mound... may have made it not only the metropolis but also a sort of ceremonial center for the region (1916:11).

CHAPTER 8

FROM BAYSHORE "SHELLMOUND" VILLAGES TO CENTRAL VALLEY WINDMILLER VILLAGES : A RECENT REINTERPRETATION OF MAINSTREAM EARLY CENTRAL VALLEY PREHISTORY, FROM MEIGHAN'S REEXAMINATION OF CA-SJO-68, THE BLOSSOM SITE

Foundations for the Shellmound Village/Refuse Heap Model

Since the earliest excavations of the San Francisco bayshore mounds were conducted, it appears that no one to date has yet succinctly demonstrated, based upon the patterning of recorded features and recovered assemblages, that these shellmounds were the exclusively the consequence of sedentary or seasonal village activities. Other than the opinions and the untested conclusions forwarded by certain late-nineteenth-century scholars (such as those presented at the beginning of this study), it was Max Uhle and Nels Nelson who probably most influenced their contemporaries and the ensuing generations of archaeologists to view these shellmounds as ancient village sites (Uhle 1907; Nelson 1909, 1910).

As a consequence of the formal "explorations" of the Emeryville, conducted in 1902 by J. C. Merriam and M. Uhle, a published site report presenting archaeological data and interpretations, was written by Uhle in 1907. This site report issues the two widely embraced foundation, site formation and socio-cultural assumptions, that: 1. these mounds developed

as the result of village/refuse accumulations, and 2. these mounds did not develop as separate cemetery sites. Uhle was apparently heavily influenced by Paul Schumacher's 1876 conclusions about the function and development of the Santa Barbara shellmounds. Schumacher wrote:

The view that these mounds of shells were made for burial of the natives, especially for the burial feast, is false. The fact has been shown without doubt that the mussel heaps mark the location of old villages and accumulated for centuries as the kitchen refuse of the natives. Graves were dug in these mounds only when the surrounding ground was rocky and could not be worked with the primitive tools of the natives [1876] (1960:20).

Uhle footnoted Schumacher's earlier work in his report and stated matter-of-factly that:

Shellmounds originate on the accumulated refuse deposited by people who have lived in the place when the heap has formed and the mounds may therefore be regarded as sites for dwelling places, or abodes for the living, and not as mounds set aside as burial grounds by people living elsewhere in the vicinity. Whenever these mounds were used for burials it was not done in spite of their being dwelling places, but rather because they were such.

Many tribes of a low grade of civilization follow the custom of burying their dead underneath their feet in the ground upon which they live, to protect the graves of their dead against being disturbed and also to enjoy the protection of the spirits of the departed against their enemies (1907:21).

Also as discussed previously, Nelson recorded 425 shellmounds and focused his descriptive and interpretive study only on these distinct manmade features, thus deliberately omitting any analysis of earth mounds (1909). He stated that "(t)hus far only three of the four hundred and twenty-five shell heaps composing the group have been carefully excavated..." (1909:311).

Nelson recognized the two different types of mounds; however, he based this distinction on three criteria: 1) physical composition (shell

versus earth); 2) location; and 3) suspected differences in antiquity and culture. He stated:

The ancient remains discovered or re-examined include shell heaps, earth mounds, and a few minor localities that cannot perhaps be termed anything but temporary campsites. Of the most numerous forms, the earth mounds are nearly all located by the entering streams, close to the upper reaches of the tide-waters; and their number could be increased indefinitely by searching these stream valleys toward their sources. But as those rather common and widely spread accumulations appear, in many cases, to be of relatively recent origin and possibly representative of distinct cultures, the present paper is restricted to a consideration of the shell heaps (1909:310).

Ca-Ala-329 was one of the original 425 "shell heap" sites recorded by Nelson and plotted onto his 1909 map. Although this point may appear trivial, it highlights one of the key reinterpretive arguments of this thesis: Ca-Ala-329 is not a shellmound; it is an earth mound containing some shell. Furthermore, the soil matrix (predominantly earth) of Ala-329 is identical to what Wedel observed during the excavations of Ala-328 in 1935 (Davis and Treganza 1959:81), and also to what Loud (1912) and Heizer (1946) concluded about the Castro Mound/SCl-1 (Caldwell 1949). Davis and Treganza included in their footnotes the following: "(i)n fact the scarcity of shell in the site led Wedel to observe, 'it would appear that this is an 'earth mound' rather than a 'shell mound'" (1959:81). Likewise, Heizer's impression of the physical composition of the Castro Mound was equally descriptive: "(t)he site has a great number of Cerithidea shells, some Ostrea and Mytilus, but can hardly be called a shell mound" (Caldwell 1949:21).

Suggs, on the other hand, accepted the refuse-heap/village accumulation model proposed by earlier writers. He popularized this position in The Archaeology of San Francisco (1965):

The Emeryville Shellmound was, in fact, little more than a huge garbage heap that had collected through the many centuries that Indians had lived in the area. Here they had lived, collected oysters, clams, and mussels, caught fish and birds, and hunted. When they finished their meals, they simply dumped the empty shells, bones, and any other refuse a reasonable distance from their huts. Through the years, the mound grew and grew as the shell refuse of generations of Indians who lived on it and around it piled up and mingled with charcoal, ashes, broken or lost tools, tumbled down huts, and the general kind of debris that one finds around the camp. Burials were also made in the discarded shells and debris. The digging was probably easier there (1965:10).

These differing perspectives are crucial to understanding the various depositional factors and cultural processes that contributed to bayshore mound function and development. Essentially two models have emerged: 1. the widely embraced and long - accepted village accumulation/refuse heap model, and 2. the alternative explanatory model presented in this present study - that some of these mounds are a result of intensive socio-ceremonial related activities that centered around mortuary-related practices (burying and cremating the dead); through a process of ritual obligation, hosting and feeding large numbers of people in attendance; the possible construction and maintenance of specialized large mortuary-related assembly/dance-like house structures and possibly other lesser (non-residential) structures; and ultimately the raising an earth mound cemetery in order to continue to bury people of distinction within a finite space/area (especially during Late Period times).

**Challenges to Mainstream Interpretations of Central Valley Prehistory:
The Windmill Site CA-SJO-68 as a Test Case for an Alternative Model**

Recently, Meighan (1987) challenged the current position regarding the Windmill mounds in the San Joaquin/Sacramento Delta region in a manner analogous to this study's argument. It also may be argued here that Meighan can probably be considered the unintentional progenitor of the alternative perspective presented in this study. Meighan suggested that although "(t)he original reports interpret the sites as residential villages with associated cemeteries," based on the types of features encountered and the artifactual assemblages recovered, "the sites are specialized mortuary mounds" (1987:28).

The specific site Meighan focused on was Ca-SJo-68, the Blossom Mound. This mound, according to E. J. Dawson, originally measured 130 by 65 feet in 1923 (Ragir 1972:27)," with a maximum depth of less than 5.5 feet" (Meighan 1987:29). There were 230 burials recovered between 1923 and 1952 from a portion of the site (Ragir 1972; Meighan 1987:30).

As evidence for his alternative position, Meighan cited Heizer's earlier interpretations of site SJo-68. According to Meighan, Heizer assumed that the graves were derived from residential areas within an assumed village, and yet was perplexed why non-burial-associated artifacts were so exceedingly rare. For this reason, Meighan questioned Heizer's interpretive conclusions. Apparently, Meighan reflected on this data base, as well as other factors (i.e., burial frequency and patterning), and decided in 1987 to offer an alternative interpretation. He concluded that Ca-SJo-68

did not constitute a village/midden; the mound "is neither a midden nor a village but only a cemetery and that probably the whole assemblage of archaeological material from the site is representative only of a specialized mortuary complex that existed in a restricted area in time" (1987:29). To support his position, he cited four key criteria:

1. Physical nature of the site deposit.
2. Arrangement and disposition of burials.
3. Scarcity of domestic artifacts in the site.
4. Scarcity of food refuse in the site.

Ragir described the Blossom Mound in The Early Horizon of Central California Prehistory (1972). Under the heading of "Intensity of Occupation" she informs us that:

At SJo-68, ash concentration and the relative high incidence of unworked animal bone, shell, stone fragments, and smooth and impressed baked-clay fragments give us good evidence of intensive occupation (Heizer 1949:12; Heizer and Cook 1949; Setzer 1942). Occasional whole or broken artifacts including mortars, pestles, stone points, point fragments, bone awls and other bone artifacts, are found in the unassociated deposit (1972:30).

She also noted a dog burial and five cremations (ibid:36,90).

Although SJo-68 dates to a greater antiquity than Ala-329, the features recovered from the Blossom Mound (i.e., predominance of burials) and artifact types and frequency derived from the "unassociated deposit" resembles those of the Ryan Mound. This similar patterning lends further support to this author's and Meighan's reinterpetive perspectives about the nature and function of these two sites.

Meighan recommended additional work to further define the complex aspects of the Windmill pattern. He also agreed "with Gerow that too much in the way of conclusions has been based on too little and too poorly controlled evidence and that re-examination is called for," and concluded "that such an interpretation [i.e., Heizer's] is questionable and that all cultural reconstructions of Early Central California have weaknesses based on treating the types sites as if they were 'villages'"(1987:35).

The only major disagreement between the position postulated in this present study and that of Meighan is, ironically, his suggestion that the Windmill residential villages may be located on the bayshore shellmounds. Meighan posed the question that:

Since we have not been able to define residential villages of the Early central California people in the vicinity of the four type sites, can such villages be found outside the Delta and at a greater distance? Some of the sites that may include residential remains of Early Central California people include the West Berkeley Shellmound..., and possibly the University Village site, which is of equivalent age..."(1987:35).

It is ironic that Meighan presented an excellent case for reexamining the evidence from the Blossom mound, and yet (for inferences regarding the Bay Area) suffered from the same fallacies, weaknesses and assumptions that he cautioned against. Although the West Berkeley Mound may need further analysis in order to determine the full nature and function of this bayshore site, it is clear that University Village (SMA-77) principally constituted a major cemetery site, with little physical evidence of residential village activities or features. Apparently, Gerow's site report is entitled The University Village Complex because that was the name of

the housing development subdivision that impacted the site (Gerow 1968:7). However, Gerow's use of the term "complex" in his analytical report, refers to the mortuary patterning, associated artifact assemblage, and their temporal assignment.

It is the position of this author that this present study on Ala-329 essentially parallels the intent of Meighan's "Reexamination of the Early Central California Culture" article. Therefore, this chapter will conclude with one of the key issues raised by Meighan:

If the type sites of the Early central California Culture have been misidentified as to their origin and function, there are important implications and reevaluations to be made about sequence and relationships. Existing evidence is inadequate to resolve the problems, but it is useful to raise the question as a means of showing alternative, and perhaps more realistic, understandings of the cultural developments in a complex and important area where a great deal of excavation has been done (1987:35).

CHAPTER 9

TESTING ETHNOGRAPHIC/ETHNOARCHAEOLOGICAL MODELS: THE DIRECT HISTORICAL APPROACH

Watson, while discussing "analogy in ethnohistorical reasoning," suggested that:

Ethnoarchaeologists, like all other archaeologists, operate with the basic assumption that there is a real past, about which we can attain real knowledge by means of inference based upon archaeological and historical records (in Gould and Watson 1982:356).

She described two overriding goals for the sub-discipline:

1. To generate explanatory hypotheses for specific items or patterns recovered archaeologically ...
2. To derive theories and broad law-like generalizations about relationships between human behavior on the one hand, and material culture resulting from that behavior on the other (Ibid:356).

Following Watson's "Direct Historical" approach to the archaeological record, we can generate hypothetical cultural and behavioral analogs by employing historical, ethnohistorical, and ethnographic data. Knowledge about prehistoric cultural systems may be explained and tested by comparing the preserved physical remains and patterns with other known archaeological data and accounts from the ethnographic record of a specific region. Watson supports this methodological approach by stating:

This is true because descriptions of the physical and cultural activities, institutions, and materials of the descendants of the people whose remains are being excavated are more likely to be analogous to the past activities, institutions and materials in multiple and (often linked) ways than are analogies derived from anywhere else (1982:359).

These analogies may be framed as plausible and/or testable hypotheses essentially as a bridge-building process, and can only be accepted only when they are confirmed by testing them directly against the archaeological record.

Blackburn (1976), Bean (1976), and others have challenged the conventional view that California Indian tribes had non-complex societies, few ceremonies and beliefs, and a limited productive technology (i.e., simple hunters and gatherers). In his article "Ceremonial Integration and Social Interaction," Blackburn (1976) demonstrated that ceremonial behavior can be viewed as an adaptive mechanism for cultural systems maintenance and equilibrium. He suggested that ritual behavior as found amongst tribal people serves at least in part as an integrative device between and within groups and, thus, becomes a locus for cultural processes and adaptive survival strategies.

In California, much ceremonial interaction was centered around funerary practices and, especially, the annual Mourning Anniversary. Kroeber observed that:

The anniversary or annual ceremony in memory of the dead bulks so large in the life of many California tribes as to produce a first impression of being one of the most typical phases of California culture (1925:859-860).

Both the funerary and annual mourning ceremonies provided the contextual environment for social interaction that cross-cut the many levels within a given society. Ritual behavior produces a wide variety of material assemblages. Many of the assemblages are quite distinct, thus setting them aside from everyday "other" or mundane material cultural items. These ceremonially related materials are generally made both of perishable

(e.g., feathers, skins, fur, etc.) as well as non-perishable materials (e.g., shell, bone and stone).

Following T. King's application of Binford's (1962) classification of artifacts:

(i) ideotechnic items are those artifacts which can be inferred to have most likely functioned primarily in the context of ritual activities. Sociotechnic artifacts are those thought to have functioned primarily in the fulfillment of social functions - serving as status indicators, exchange items, and so on. Technomic items are those associated directly with activities aimed at coping with the physical environment (1970:17),

and are useful for pre-contact socio-cultural and ceremonial reconstruction.

The interpretations proposed by Binford (1962), T. King (1970); Saxe (1970); Wiberg (1984); and others suggest that some of these sociotechnic and ideotechnic objects are badges of socio-ceremonial status that are either ascribed to individuals born into high ranking lineages, or are markers of membership within a special group or society. Such status markers may not be obtainable by individuals of lower or common lineages. In other words, badges reflecting social rank may be limited to a few wealthy and distinguished persons of high lineage or standing. Obviously there may be exceptions to this pattern. Therefore, the identification and interpretation of the socially and/or ceremonially related materials in association with burials is central to the archaeological analysis of the Ca-Ala-329 collection.

To summarize, the principles of the "Direct Historical Approach" will be employed to develop testable hypotheses bridging the ethnographic and archaeological records. This study will rely principally upon the ethnographic works of Gifford for the Miwoks; Harrington for the

Costanoans; Gayton for the Yokuts; and Goldschmidt for the Nomlaki tribal groups.

Overview of Central California Ethnohistory and Ethnography

While some of the early scholars at the University of California, Berkeley were exploring shellmounds, other anthropology students directed by A. L. Kroeber, R. B. Dixon and other professors, sought to gather as much ethnographic information as possible from the surviving remnants of Central California Indian tribes. Although culturally impacted by more than 130 years of colonialism, much ethnological information was gathered by these anthropologists.

The period from 1900 to the 1940s was a time of intensive cultural anthropological field work in California conducted by scholars from U.C. Berkeley and other institutions, from which a wealth of ethnographic information was recorded and published [Powers (1877); Dixon (1900, 1902, 1905, 1910, 1911, 1912); Merriam 1902-1930 (Heizer 1967); Barrett (1904, 1908, 1919); Barrett and Gifford (1933); Kroeber (1904, 1907a, 1907b, 1908, 1910, 1929, 1932); Curtis (1907-1930); Mason (1912, 1916, 1918); Gifford (1916, 1916a, 1917, 1926, 1927, 1944, 1955); Harrington (1921-1939, 1942); Gayton (1930, 1930a, 1945, 1948); Demetracopoulou and DuBois (1932); Kelly (1932, 1978); Loeb (1932, 1933); Demetracopoulou (1935, 1940); Beals (1933); DuBois (1935, 1939); Goldschmidt (1951); and many others).

Even with this rich ethnographic background, except for a few important ethnogeographic reconstructions and demographic studies based upon mission and historical records (discussed below), virtually

nothing has been accomplished to test the archaeological record against ethnographic and ethnohistoric data from the San Francisco Bay region. Commenting on the utility of using ethnohistoric and ethnographic records to test aspects of socio-cultural complexity and evolution, Bickel believed that:

There is little ethnographic information pertinent to understanding Costanoan lifeways before contact. Heizer (1974) and Levy (1978) summarize what is known... . However, mission records can provide valuable ethnographic information as well as other ethnographic data. Recent analyses of mission records focused on other areas around the San Francisco Bay illustrate the potential which such investigations would have for adding to the understanding of the late prehistoric and early historic situation in the area of interest here (1981:31).

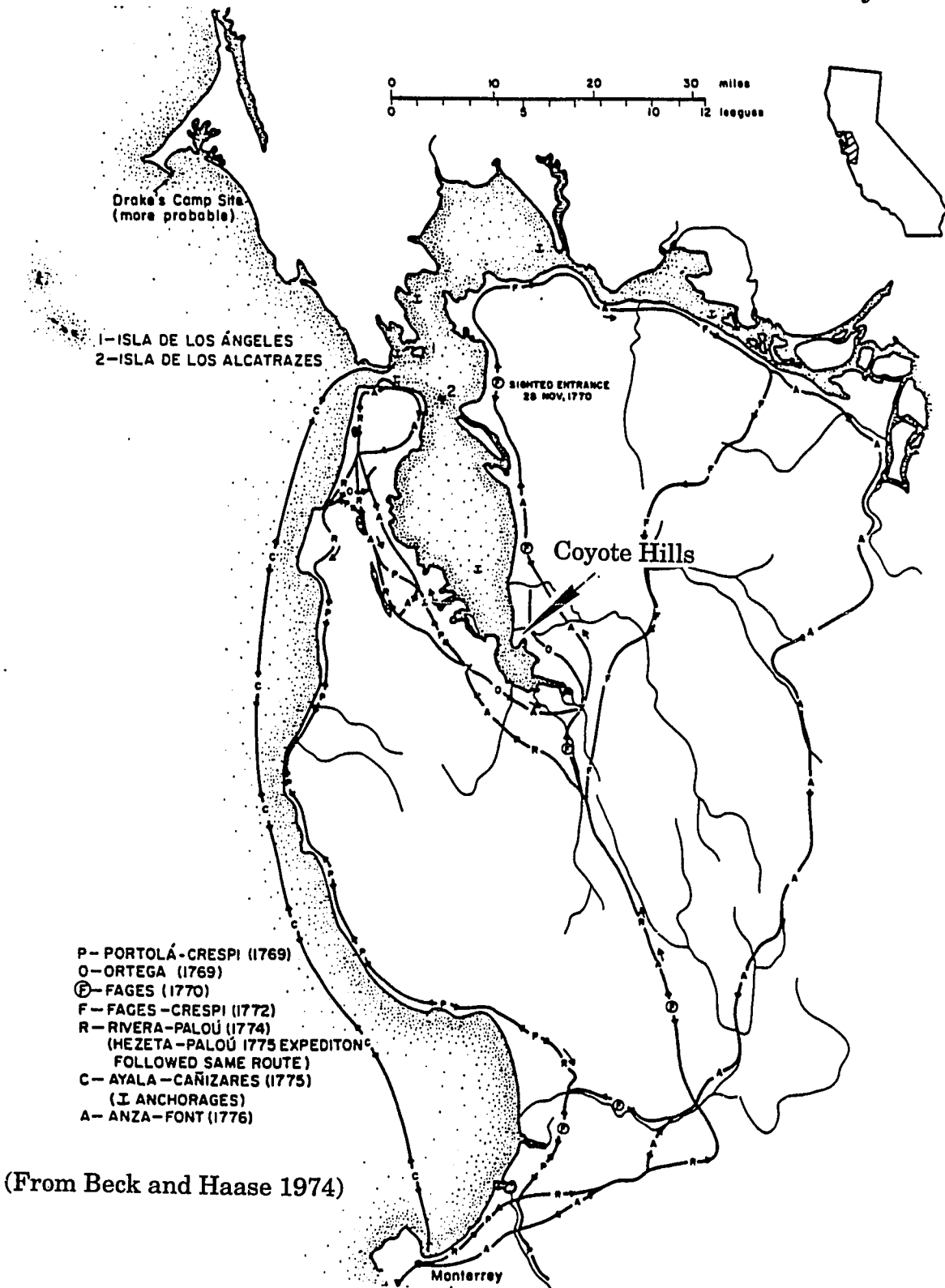
Bickel's conclusion aside, it is generally accepted that large populations of Native California Indians occupied the San Francisco Bay region prior to European contact (cf. Cook 1943a, 1943b). Historical accounts from early Hispano-European colonial expeditions describing encounters with local Costanoan tribal groups are relevant in examining prehistoric socio-political organization within this geographical region (Figure 16).

The first documented encounter between the Spanish explorers and the East Bay Costanoans occurred on November 27, 1770. An expedition led by Lt. Pedro Fages traveling through present-day Fremont wrote:

Turning north, we had to cross a water-course thickly grown with alders... but without water (Canada de Alviso). Near it was a very good fresh water lagoon...where there was an abundance of geese... we saw close to the lagoon many pleasant and affable heathen to whom we presented strings of glass beads (Fages 1911:151).

Other land expeditions of importance include a second journey by Fages in 1772 and one in 1776 under Juan Bautista de Anza (Bolton 1927,

Figure 16: First Spanish Expeditions Into Costanoan Territory



(From Beck and Haase 1974)

1930, 1931). Father Font accompanied de Anza in 1776; on March 25, while traveling north of Stevens Creek (West Bay), he recorded what appeared to be an island across the Bay. He wrote: "(f)rom the camp we already descried the estuary of the port and the island at its extremity" (Bolton 1931:25). Bolton suggested that this "island" was actually the Coyote Hills. Five days later (March 30) on their return trip Font made some additional notes while stopping near Mountain View:

Likewise I sketched the island seen at this end near the shore... In this place we were very cold, and likewise were molested somewhat by mosquitos which live on the bank of the river. This stream appears to have some fish, for we saw there some small mojarras, and some nets with which the Indians fish; but I think it amounts to very little, for I noticed that the Indians who live round about the estuary and the port are not fishermen, for in their villages are seen only piles of shells of mussels, which must be what they fish and eat most of (1931:355).

On the next day Font continued his observations of the terrain and the Indians of the East Bay north of Coyote Creek:

At first we went about a short league to the north-northwest. Then because of the sloughs and marshes we wound around for about three leagues to the east-northeast, and northeast, twisting about until we emerged from the sloughs and lowlands where we had been, and gained higher ground at the foot of the hills... Then we traveled, far away from the water, for some three leagues to the north-northwest and three more to the northwest. The Indians whom we saw along here are totally distinct in language from the previous ones. They are somewhat bearded, gentle, and very poor, but in color they are the same as all of the rest.

... After we had left the sloughs and taken higher ground, we passed along the shores of a somewhat salty lagoon, which we left on our right and into which apparently flowed some arroyos from the canyons of the range of hills which we were following. All the rest of the road is through very level country, green and flower-covered all the way to the estuary, but with no other timber or firewood than that afforded by the trees in the arroyos which we encountered, which were five.

About half way on the road we came to an arroyo with little water, most of it in very deep pools. It has on its banks many sycamores, cottonwoods, and some live oaks and other trees, and it appears to flow west to empty into an estuary, toward which all the arroyos flow and toward which runs a thick growth of trees;... From these trees about thirty Indians came out on the road to us, armed with somewhat dilapidated bows and arrows, but in a peaceful mood, and apparently very gentle. Their language is distinct from all those we had formerly heard...

... They came running, and before reaching us they raised an arm, extending the hand as a sign that we should stop. Yelling with great rapidity, they said: "Au, au, au, au, au, au, au, au, au, au, au, au, au," and then they halted, vigorously slapping their thighs.

... All day today the commander and I have been in doubt as to whether the island at the end of estuary which I mapped yesterday is really an Island or not. because aside from the fact that today it has changed its shape, we were not able to see the water on this side of it (1931:356-359).

According to Bolton's footnotes the salty lagoon was located at Irvington (present-day Fremont), while the arroyo with deep pools and sycamores was the Alameda Creek, presumably near Niles. The island that Font discussed is again the Coyote Hills. While it is not all that clear, Font reports a linguistic shift that may mark the southern boundary of the Chochenyo language.

Another important encounter, in this case with a northern Costanoan village/community as described in Font's diary, occurred on April 2, 1776 near the Carquinez Straits: .

We set out from the little arroyo at seven o'clock in the morning, and passed through a village to which we were invited by some ten Indians, who came to the camp very early in the morning singing. We were welcomed by the Indians of the village, whom I estimated at some four hundred persons, with singular demonstrations of joy, singing, and dancing.

... Three of them came to the edge of the village with some long poles with feathers on the end, and some long and narrow strips of skin with hair on it..., hanging like a pennant, this being the sign of peace.

A little afterward a rather old Indian woman came out, and in front of us,... she began to dance alone, making motions very indicative of pleasure, and at times stopping to talk to us, making signs with her hands as if bidding us welcome (1931:366-368).

Some of the other vanguard ethnohistoric accounts from the Bay region are contained within the diaries of the men who accompanied the first Spanish sailing expedition to enter and map the San Francisco Bay region (Figure 17): the 1775 exploration of the packet vessel San Carlos commanded by Captain Ayala (Galvin 1971).

On this 1775 expedition, during one of their land excursions within northern Costanoan territory, Fray Santa Maria observed some aspects of their socio-political organization, and described the apparent status of the ranking headmen or chiefs (capitanes):

We noticed an unusual thing about the young men: none of them ventured to speak and only their elders replied to us. They were so obedient that, notwithstanding we pressed them to do so, they dared not stir a step unless one of the old men told them to; ... (1971:31).

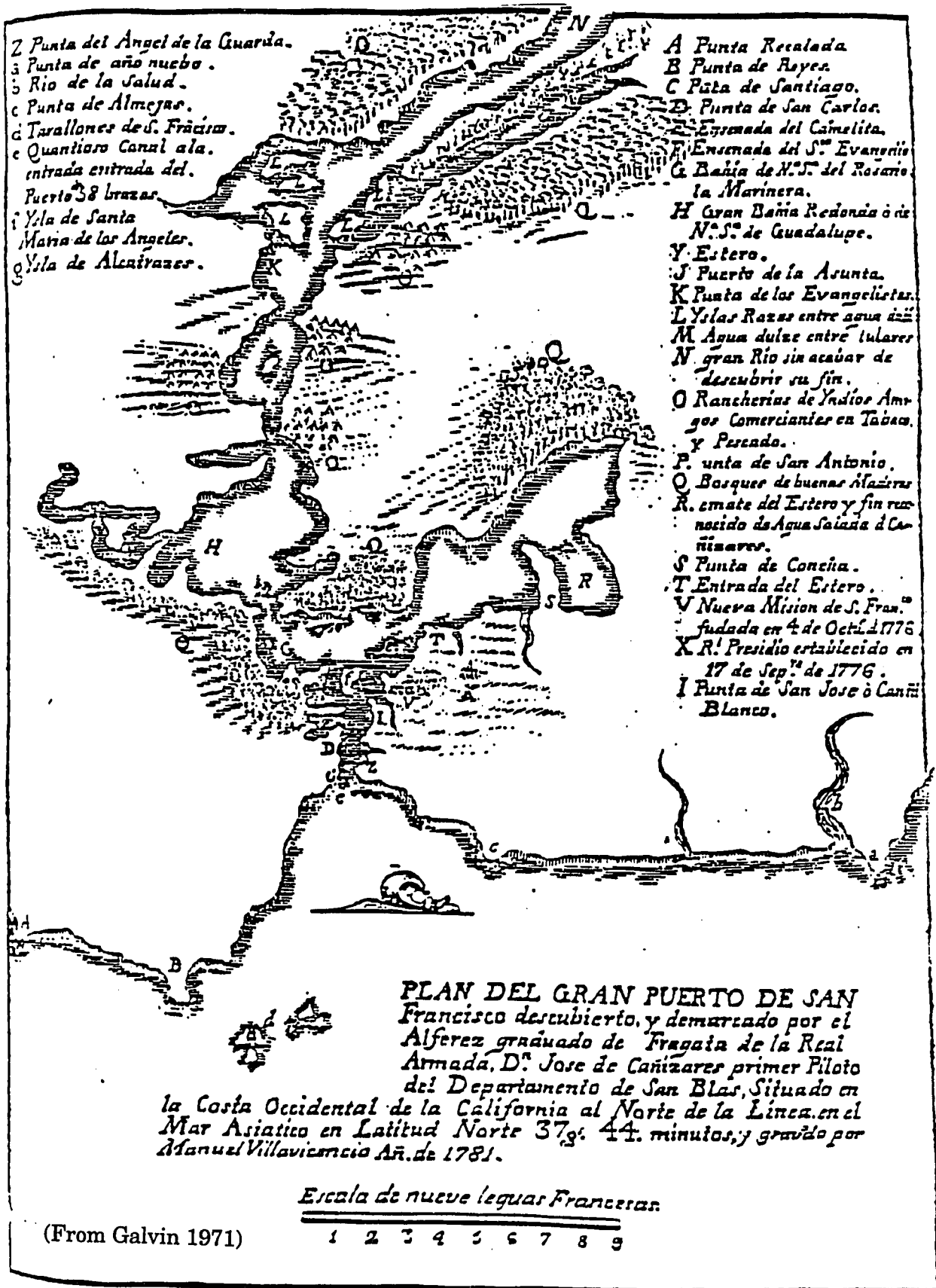
On August 15, Santa Maria made a detailed recording about his encounter on the shore with fifty-seven Indians:

There was in authority over all these Indians one whose kingly presence marked his eminence above the rest. Our men made a landing, and when they had done so the Indian chief addressed a long speech to them...

After the feast, and while they were having a pleasant time with the Indians, our men saw a large number of heathen approaching, all armed with bows and arrows.

... This fear obliged the sailing master to make known by signs to the Indian chieftain the misgivings they had in the presence of so many armed tribesmen. The themi (chief) (sic), understanding what was meant, at once directed the Indians to loosen their bows and put up all

Figure 17: Engraving of the Canizares Map of San Francisco Bay in 1775



their arrows, and they were prompt to obey. The number of Indians who had gathered together was itself alarming enough. There were more than four hundred of them, and all, or most of them, were of good height and well built (Ibid:51-53).

Fages also contributed descriptive information about aspects of Costanoan political authority and social organization:

Besides their chiefs of villages, they have in every district another who commands four or five villages together, the village chiefs being his subordinates.

Each of them collects every day in his village the tributes which the Indians pay him in seeds, fruits, game, and fish. ...

The subordinate captain is under obligation to give his commander notice of every item of news or occurrence, and to send him all offenders under proper restraint, that he may reprimand them and hold them responsible for their crimes. ... Everything that is collected as the daily contribution of the villages is turned over to the commanding captain of the district, who goes forth every week or two to visit his territory. The villages receive him ceremoniously, make gifts to him of the best and most valuable things they have, and they assign certain ones to be his followers and accompany him to the place where he resides (1937:73-74).

This passage demonstrates the existence of complex lines of political authority and mechanisms for the accumulation of surplus food. This description is further evidence explaining how the Costanoans, like neighboring tribes (Coast Miwok, Plains Miwok, Yokuts, Patwin, Nomlaki and Salinans), were able to host, feed and maintain large groups of people over several days for various ceremonies, as described below.

Another important commentary about the status of Costanoan captains (chiefs) is contained within the Mission San Carlos response to the 1812 questionnaire (Interrogatorio) which inquired about the nature of missionized Indians of Alta California. The Spanish government in

Mexico sent this questionnaire to all the missions. In 1814, Fray Juan Amoros, one of the Fathers at Mission San Carlos, replied:

The principal Indians are their chiefs or kings. Each nation has one. They obey and respect him all their lives. The position is inherited by succession, or in case of want of direct succession it goes to the nearest relative... . The whole nation rendered him vassalage. He went ahead in war, furnishing bows and arrows and animating his people (Kroeber 1908:21).

The Spanish diaries also provide us with a limited amount of settlement pattern information relative to village - bayshore locations. Apparently, Nelson (1909) also discovered the ethnohistoric information contained in the diaries from the 1775 San Carlos expedition and commented that "(t)he Spaniards explored the bay region quite thoroughly in the year 1775, and they appear not to have observed Indians living on the larger shellmounds near the shore unless possibly on mound no. 3, at Sausalito, and at Crockett, on the south side of Carquinez Strait;..." (1909:347).

Crespi, who was on the Fages expedition of 1772, also did not see any villages established on shellmounds along the West Bay. He did note, however, that "at those rancherias that I mentioned, there were large mounds of mussel shells" (Galvin 1971:112). From these first-hand accounts, we can reasonably conclude that Bay Area Costanoan tribal groups established some villages or shellfish processing stations near the shores of the San Francisco Bay. In fact, the men on the San Carlos expedition recorded at least four rancherias close to the shore (but not directly on it) in the vicinity of the Carquinez Straits and Suisun Bay. From recent linguistic analyses of Fray Santa Maria's recorded Indian words, Beeler (1972) and Brown (1973) have proposed that the groups encountered

were the Northern Costanoan-speaking Karkins, who also occupied areas on the north side of the Bay and Carquinez Straits, thus extending Costanoan linguistic territory.

Recent mission record studies have shown that at least three major East Bay tribal groups, the Alson, Tuibun and Yrgin, occupied the coastal region stretching from Newark/Fremont to Hayward (Milliken 1983:139). Milliken placed the Alson group in the vicinity of the Coyote Hills and stated, "The Alson probably held the marshland area at the foot of the historic course of Alameda Creek south of Coyote Hills" (Ibid:101).

Although there are no ethnohistorical accounts describing the location of cemeteries relative to villages for the East Bay Chochenyo-speaking territory, there are at least two important descriptions recorded for adjacent areas within the Costanoan-speaking region. The Anza-Font expedition of March 9-April 14, 1776, while traveling between Hollister and Gilroy, came upon a cemetery near a major village located just south of Gilroy:

On passing near the village which I mentioned on the road, we saw on the edge of it something like a cemetery. It was made of several small poles, although it was not like the cemeteries which we saw on the Channel. On the poles were hung some things like snails and some tule skirts which the women wear. Some arrows were stuck in the ground, and there were some feathers which perhaps were treasure for the persons buried there (Bolton 1930:319-322).

Another independent account was recorded that same year along the Pacific coast, near present-day San Mateo. Members of the Rivera-Palou expedition of November 23 - December 13, 1774, traveling north of Ano Nuevo observed a cemetery near a large village located on Gazos Creek "in

which they planted a high pole, this being the monument used by the heathen for the sepulchers of the chief men of the village" (Bolton 1926:295).

Lieutenant Fages also commented briefly about Costanoan cemeteries and religious world view:

They believe in the transmigration of souls, asserting that those of the dead go to live in a certain island of the sea, from whence they come to enter the bodies of those who are born. Their dead they inter in places like regular cemeteries,... (1937:70).

The majority of valuable late-eighteenth-century ethnohistoric sources are the transcribed diaries of Fages (Bolton 1911, Fages 1937); Crespi (Bolton 1927); Palou (Bolton 1926); Dante (1795); Anza and Font (Bolton 1930, 1933). Although not included in this study, the early-nineteenth-century accounts and records kept by the missions, military men and visiting expeditions from Europe are also primary sources that contain important post-contact socio-cultural-economic and ceremonial information (Mahr 1932; Cook 1943a, 1943b, 1957, 1960, 1962; La Perouse 1959; Rivera 1962; Beechey 1968; Langsdorff 1968; and others).

Shortly after these vanguard expeditions, seven missions were established between 1770 and 1797. These include Missions San Francisco de Asis (1776), Santa Clara (1777) and San Jose (1797) all of which adversely impacted the lives of the East Bay Chochenyo-speaking people. The goal of the mission system was to induce tribal groups into servitude and create agricultural centers to support the presidios, ranchos, pueblos and missions. Ultimately, the converted Indians were to be granted Spanish citizenship. Unfortunately, very large numbers of Indian people died from exposure to European diseases and malnutrition caused by the Mission diet (Cook 1976).

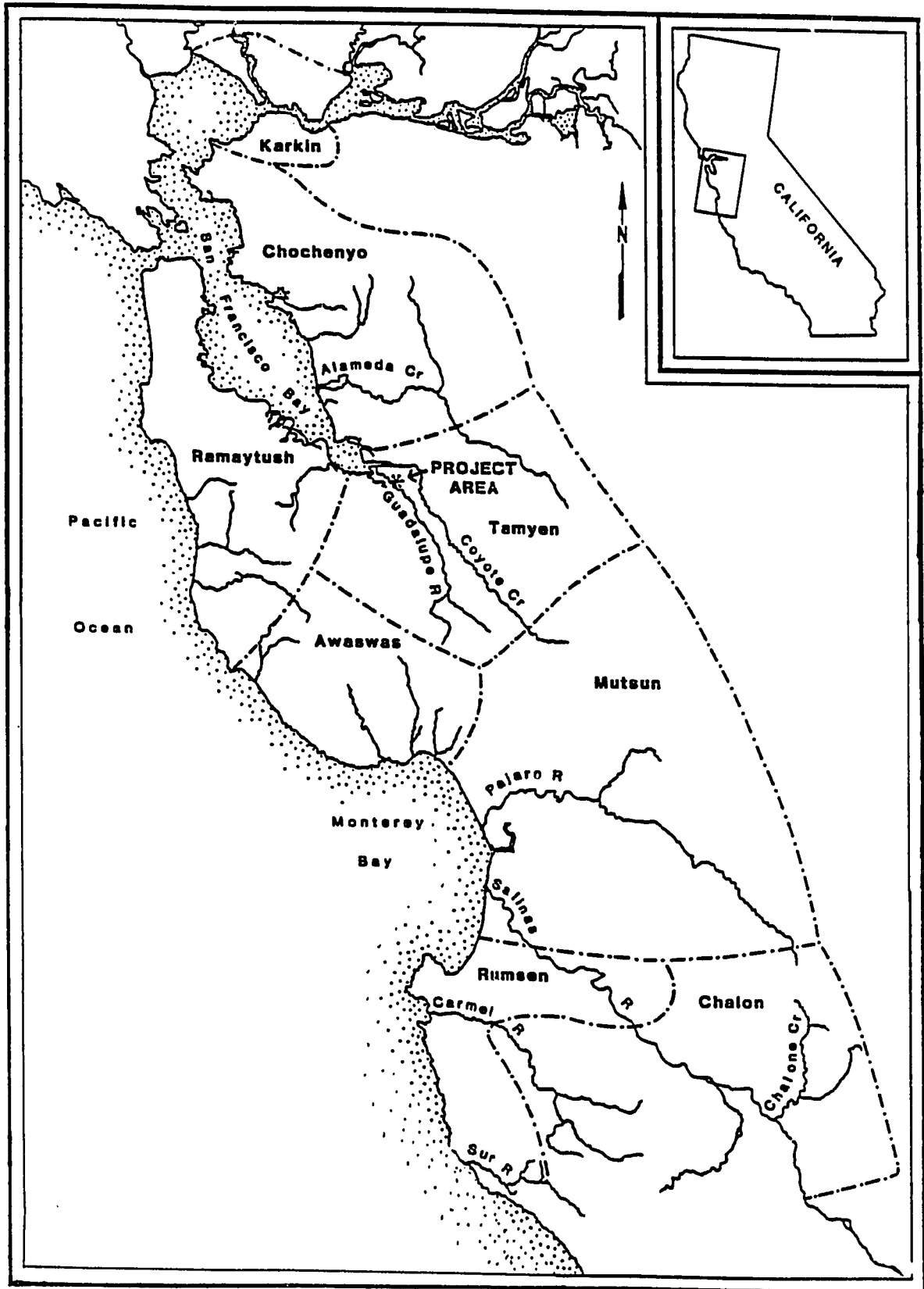
Costanoan Ethnographic Background

Most of the early ethnographic work collected from the remnant of Costanoan people living at the end of the late nineteenth and early twentieth centuries focused upon linguistic and folkloric studies. During the middle to late nineteenth century, linguists collected, analyzed, compared, and debated about the classification of Costanoan and related languages (Latham 1856; Gatschet 1877; Powell 1877; Pinart 1879; Henshaw 1884 and 1888). Kroeber identified seven Costanoan languages in his linguistic analysis which he classified as: San Francisco; Santa Clara; San Jose; Santa Cruz; San Juan Bautista; Soledad; and Monterey (1910: 239-241). The eighth Costanoan language was identified by Beeler (1961) as Karkin (Northern Costanoan), which Kroeber had earlier classified as having affinities with the Wintun (Patwin) family (Figure 18).

C. H. Merriam, between 1902 and 1906, interviewed and recorded ethnographic and linguistic data from Costanoan survivors who spoke the Chochenyo language living at the East Bay Alisal Rancheria near Pleasanton; from Hoomontwash/Mutsun speakers from the Hollister/Gilroy/ San Juan Bautista area; and from Rumsen speakers from the Carmel/ Monterey region (Heizer 1967).

The Washington Township Research Committee in 1904 reported upon the activities and festivals of the Indians around Mission San Jose/Alisal Rancheria. Kroeber also collected comparative vocabularies near Mission San Jose, and Rumsen myths from the Monterey/Gilroy area (Kroeber 1907, 1910). Very late in his professional career, Kroeber (1962) classified the social organization of most of California Indian groups as

Figure 18: Distribution of the Costanoan Languages



(From Elsasser 1986/Basin Research Associates; After Levy 1978)

"tribelets." Tribelets have been defined as being comprised of multi-family political and landholding groups. The territories of these groups contained several settlements of similar size, frequently with one central village that was permanently occupied, while the other villages were utilized only temporarily (1962:33). According to Kroeber, the principal villages were places to store food and materials and hold ceremonial activities. The term tribelet has since been universally adopted by the scholarly community to describe the socio-political organization of most Californian tribes. This concept, however unintentionally, underestimates the degree of socio-cultural complexity achieved by pre-contact Native Californians (i.e., ranked chiefdoms).

J. P. Harrington, ethnographer and linguist, working through the Smithsonian's Bureau of American Ethnology, between 1921 and 1939 compiled all of the Costanoan vocabularies. Through his relationship with Merriam, he was able to locate willing informants from the East Bay Chochenyo-speaking group, the Hoomontwash/ Mutsun speakers (San Juan Bautista) and Rumsen-speaking people (Mission San Carlos/Monterey) who shared their linguistic knowledge, folk stories and California Indian world view. Harrington provided us with extensive ethnographic information concerning the memory culture of early-twentieth-century Costanoan Indians. These Costanoan Indians were the same people whom Kroeber essentially dismissed in 1925:

The Costanoan group is extinct so far as all practical purposes are concerned. A few scattered individuals survive, whose parents were attached to the missions of San Jose, San Juan Bautista and San Carlos; but they are of mixed tribal ancestry and live almost lost among other Indians or obscure Mexicans (1925:464).

Not until the California Indian claims/settlement hearings during the 1950s did Kroeber reverse his earlier position on the extinction of the Costanoan tribal groups. Kroeber wrote that:

This has led to a current belief that the Indians are "dying out"; which is flatly contrary to fact... . As a result of this misunderstanding, there is a widespread belief that many Indian groups, especially the smaller ones, have by now become extinct... . Anthropologists sometimes have gone a step farther and when they can no longer learn from living informants the speech and modes of life of the ancestors of these informants, they talk of that tribe or group as being extinct -- when they mean merely that knowledge of the aboriginal language and culture has become extinct among the survivors... . Dr. Sherburne Cook in 1953-1954 examined the ledger role at Sacramento, and extracted from it the application number, name, and ethnic or geographic appurtenance of several hundred individual applicants. Among these were 127 Carmeleno and part Carmeleno Indians -- Costanoan Indians once attached to the Mission Carmel at Monterey (Kroeber and Heizer 1970).

Since the late 1930s there has been almost no ethnographic work actively involving the Costanoan people. However, these Indian descendents still maintained their cultural identity, and many families formally enrolled during the 1928-1933 Department of the Interior California Indian enrollment census (California Jurisdictional Act of 1928). These enrolled Costanoan families also participated in the 1944 California Indian Claims Settlement Act. The Department of Justice held hearings intermittently from the 1950s to 1968 with anthropologists from UC Berkeley and UC Los Angeles providing testimony on behalf of and against the Indians. The Department of Justice ultimately settled with the Indians of California in 1972 for a sum of \$ 668.51 per person for the value of California Indian lands in 1852 (Stewart 1978).

In the Bay Area, as a result of the efforts of the American Indian Historical Society under the editorial leadership of Jeannette Henry and

Rupert Costo, the Ohlone Cemetery in Fremont was acquired and preserved in the 1960s. This cemetery was formally transferred to Ohlone descendants in 1971. One of these descendants, who also served on the editorial board, wrote a historical perspective on the East Bay Costanoan/Ohlone people drawing upon oral tradition and information about his immediate lineage (Galvan 1968).

More recently, Levy summarized much of the information pertaining to the aboriginal inhabitants of the greater Bay Area in his chapter on the Costanoans in the Smithsonian Handbook of North American Indians (1978:485-495). Levy recorded several important ethnographic facts relevant to this present study, because they help establish which neighboring Central California tribal groups can provide appropriate ethnographic analogs to test against the archaeological record discovered at Ala-329. As summarized from Levy (1978):

1. Costanoans participated in the Kuksu religion, performed annual mourning ceremonies, and shared in a host of other ceremonial dances and rituals practiced by the neighboring Coast Miwok, Plains Miwok, North Valley Yokuts, Patwin, Nomlaki and Salinan Tribes (Loeb 1932:133; Mason 1912; Kroeber 1925, 1932; Kelly 1932; Gifford 1926, 1955; Goldschmidt 1951).
2. The Costanoans were divided into a Bear/Deer moiety system which is analogous to the Miwok Water/Land system (Harrington 1942:32; Gifford 1916:140); Water/Land moieties of the Coast Miwok (Kelly 1978); Bear/Deer moieties (totem) of the Salinans (Mason 1912, Hester (1978); Downstream/Upstream moieties of the Foothill Yokuts (Spier, 1978).
3. Costanoans, much like all of the Central California tribes, claimed that cemeteries were located near, but at varying distances outside villages (Kroeber 1925; Harrington 1942:37; Gifford 1955; Goldschmidt 1951).
4. The East Bay Chochenyo speaking Costanoans were linguistically very closely related to the Plains/Bay Miwok and the North Valley Yokuts/Tulares (Kroeber 1910: 259-261).

5. The material culture (sociotechnic markers) and ceremonial (ideotechnic) regalia derived from pre-contact cemeteries (especially effigy ornaments, beads, mortars, obsidian points, and etc. from Phase 1 of the Late Period circa. post A.D. 900) as well as during ethnohistoric times, indicate that these traits were intensively shared between these aforementioned Central California neighboring tribal and linguistic groups (Schenck and Dawson 1929; Gifford 1947; Lillard, Heizer and Fenenga 1939; Coberly 1973; Winter 1978a; and others).

Ethnographic Sources for the Neighboring Central California Tribal Areas

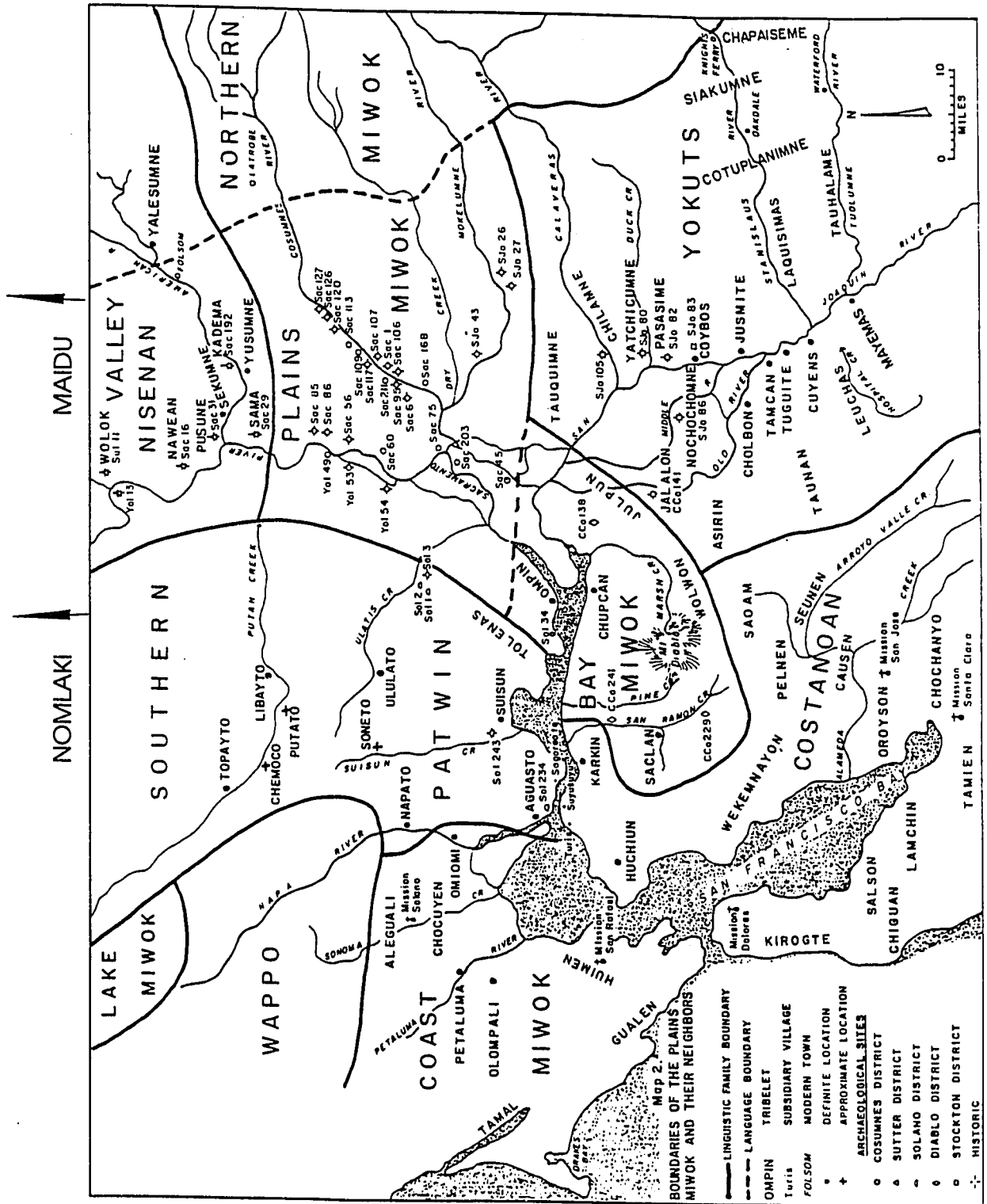
For purposes of this study, ethnographic information about the neighboring Plains/Sierra Miwok region, is drawn heavily from the works of Powers (1877); Gifford (1916b, 1917, 1926, 1944, and 1955); and Bennyhoff (1977). For the Coast Miwok, the majority of information comes from Kelly (1932, 1978) and Slaymaker (1977). For the Yokuts, much of the ethnographic information is derived from Gayton's work (1930a, 1930b, 1936, 1945, and 1948). Finally, on the Patwin/Nomlaki area, located adjacent to and north of the Karkin Costanoans, cultural data is derived from Kroeber (1932) and Goldschmidt (1951) [See Figure 19].

Ethnographic Analogs As Inferred From Central California Tribes

The Costanoan, Miwok, Yokut, Maidu and Wintun-speaking tribes comprise the Penutian language stock of Central California. Of these, Costanoan and Miwok are most closely related and are sub-classified as Utian (Levy 1978).

After the seven missions were established within the Costanoan linguistic region between the years 1770 and 1797, the aboriginal inhabitants of the San Francisco Bay area suffered heavily, and their population substantially declined after the first 40 years (Cook 1943a & b,

Figure 19: Distribution of Adjacent Linguistic/Tribal Groups Within the Circum-San Francisco Bay Area and Important Prehistoric Sites



(From Bennyhoff 1977)

1976). In order to maintain the agricultural and herding economy of the Californian sub-region of the Spanish Empire, joint church/military expeditions sought out new converts in the neighboring Bay/Plains Miwok and North Valley Yokut territories.

One major tribal group, the Saclanes, who have been linguistically classified as Bay Miwok, were an early casualty of the missionization process. As early as 1774, approximately 145 Saclanes (Sacalanes) from the Lafayette region were brought into Mission Dolores, along with members of other East Bay Costanoan tribes. Resistance and resentment among these East Bay tribes, especially from the Saclan and the Costanoan-speaking Huchiun, toward the Spanish military, missionaries and "their" converts led to hostility and armed conflict for the next 30 years. Milliken suggested that "(i)t was in part due to the hostility of the Huchiun and Saclan that the site for Mission San Jose was chosen so near the existing Mission of Santa Clara" (1982:15). Not until 1803-1806 did resistance from the remainder of the northern Costanoan and Bay Miwok tribes end and large numbers of converts forcefully brought to and baptized at Mission San Jose (Ibid:17).

Mission efforts to obtain Plains Miwok converts from the Sacramento and San Joaquin Delta region apparently did not begin in earnest until 1811. Mission record studies show that 2050 Plains Miwok neophytes from 25 different Miwok Tribes recorded at Mission San Jose between 1811 and 1836 (Bennyhoff 1977).

After secularization in 1834, the remnant Plains Miwok and their Sierra Miwok cousins continued to be ravaged and devastated by disease

and displacement almost up to the twentieth century (Bennyhoff 1977; Rawls 1984; and Hurtado 1988).

Ritual For The Dead: Miwok Funeral Ceremonies

Students of anthropology obtained important socio-cultural and linguistic information from these late-nineteenth-century impacted Miwok societies. One of the earliest accounts, recorded during the late nineteenth century by Stephen Powers, concerned the intensive gathering for the funeral of a Miwok chief:

Tai-pok'-si, chief of the Chimteya, was a notable Indian in his generation, holding undisputed sovereignty in the valley of Merced, from the South fork to the plains... He died in 1857 and was buried in Rum Hollow with unparalleled pomp and splendor. Over 1,200 Indians were present at his funeral (1877:353).

As a young man, E.W. Gifford, influenced by the works of C. H. Merriam and S. A. Barrett, began field work among the Sierra Miwok in 1913 and continued that relationship through the 1950s. In 1955, he published Central Miwok Ceremonies detailing aspects of the funeral and mourning ceremonies. The following account has been excerpted to highlight the usefulness of the ethnographic record in explaining pre-contact mortuary behaviors within Central California sites:

Usually in each village, where there is a chief and a ceremonial assembly house, there is a funeral fire tender who attends to the cremation of the dead. After a death he takes charge of the body... Word of a death is spread as rapidly as possible by the chief's messengers, so that people from neighboring villages may attend the funeral... The funeral fire tender takes part in the dance like anyone else; in fact, he begins the wailing. After the mourners have kept it up for considerable time, he suggests to the speaker that they take a rest... The dancing and wailing continue until the body is disposed of. Often the body is kept in the ceremonial house for three or four days before it is cremated... The wailing in the ceremonial house is

sometimes inaugurated by a brief address by the chief or his speaker, some what as follows; "Your friend is dead. Cry. You are now going to cry. All cry together, women and men. If you get tired, say so; then we will go and burn him (Gifford 1955:310).

This brief description offers important social and ceremonial information about the dynamics centering around the funerals in Miwok society. This account identifies the existence of formal offices and specialists, presumably held by individuals of notable social rank which include: chief, speaker, funeral fire tender, messengers, and dancers. Additional socio-ceremonial information encompasses: 1) the invitation to people from neighboring villages to attend the funeral (which may be obligatory for the deceased person's extended lineage and moiety members); 2) the obligation to keep the body in the ceremonial house for three or four days prior to cremation (which also indicates the duration of the event for which the village community must host and feed attending guests, families and friends from the neighboring villages; and, 3) the size of the ceremonial structure, sufficient to house the corpse, the officers of the village, dancers, and mourners (from both the village and neighboring communities).

Concerning Cremation

Performing the actual cremation was also an important aspect or function carried out at the funeral. This would have been especially true at many of the bayshore mound sites where the remains of cremation-related activities have been observed and recorded by archaeologists (e.g., Emeryville, Ala-328, Ala-329, Mrn-27, and others). Gifford discussed the socio-cultural dynamics involved in the cremation of a deceased Miwok person:

The cremation of the body follows the mourning for the deceased and usually takes place in the morning, the pyre (leki) usually about five feet high, being lighted as a rule between nine and eleven o'clock. The day before, the courier (liwape) tells four men to gather wood for the pyre. The dead person is dressed in his ordinary clothes and the body lies on a hide during the mourning in the house. Afterwards the four men (sunupbek) who got the wood carry it to the burning-place (sikayabu) on litter (tak'u) made of four parallel sticks with a cross bar near each end... . When the body was mostly consumed by the flames, the litter is thrown on the fire.

The funeral fire tender and the four men... have to remain until the body is completely consumed... . A burning started at nine o'clock in the morning usually lasts until two or three in the afternoon... .

An ordinary man's property, that is, the property of a person for whom no hohi is danced, is burned, not at the time of cremation, but four days later at either sunrise or sunset, when it is destroyed by the speaker or the courier... . At the cremation, however, the man's relatives and friends may throw some of their own property into the flames... If the deceased is a chief, the ceremonial house is burned also.

The animals belonging to the deceased are killed by his male relatives before his body is put on the pyre.

Just as soon as the speaker finishes burning the property, and before the body is entirely consumed, he and several assistants... proceed to wash the mourners... . Later the people who have been washed pay the speaker. He shows the property thus collected to the chief, and it is then divided among the washers and the wood and water carriers. The chief receives nothing.

The speaker, the funeral fire tender and the four carriers... are washed last. Each one actually gets into the large water basket and is washed and rubbed all over with mugwort. A speaker from another village who has thus far not taken part in the ceremonies washes these participants. It is believed that if the people who have been in closest contact with the dead are not washed they will become ill.

At the burning place a round hole (luwata) is dug about three feet in depth and a foot and a half in diameter. On the morning after the cremation, two of the dead man's relatives, or, if he has none, the speaker, scrapes the ashes into this hole. Stems of mugwort are then laid over the ashes, and the pit is covered with bark until the next cremation, when it is opened again. The hole may thus be used many times before it is full, when another is dug close beside it... .

One informant said that the animals are killed so that they may accompany their master. This informant's father had three dogs which always accompanied him and they were killed at his funeral.

Because of American influence, cremation is no longer practiced. Burials are now carried out with similar ceremonies. All go to the burying place... . People are buried in their best clothes, and money is put over the eyes and in the mouth (1955:311-312)

Extracting Archaeological Analogies From The Ethnographic Record

The lengthy passage cited above, provides several important analogies to the archaeological features discovered in some of the bayshore mounds. Gifford explained how the Miwok society organized itself; identified the responsibilities of specialists, officers, relatives, members of moieties and ranked individuals from neighboring villages; specified the length of the funeral ceremony (four days); and showed the differential treatment of an ordinary man, a person who had the hohi danced, and a chief. He pointed out that when a chief dies, "the ceremonial house is burnt." This Miwok practice may be analogous to the discovery of Stanford's Ala-329 Burial 130, which was discovered below a large burnt structure at a depth of 15 inches deep below surface (Gerow personal communication).

Gifford also provided additional information about the height of a cremation pyre (5 feet) and the length of time needed to cremate an individual (approximately 5-6 hours). As discussed elsewhere in this study, Ubelaker (1978) suggested that a fire must attain 800 degrees centigrade to carry out a mostly complete cremation. Details concerning the treatment and burial of cremated individuals within a reusable three-

foot-deep grave and the continuous utilization of adjacent areas within the same cemetery for later interments and cremations are analogous to what T. King classified as an "organized cemetery" at Mrn-27 in Tiburon (1974:38). In fact, the ethnographic Miwok cremation area described by Gifford almost identically matches King's description of the central portion of the Mrn-27 "Middle Horizon" cemetery:

The center of the cemetery was apparently reserved for cremations including many goods. The visual impression of Burial 3, which filled the bulk of this zone, was of an area in which a number of people had been burned and thoroughly "stirred"... Many bones were burned or charred, and some artifacts showed the effects of fire. ... I would guess, however, that it is relatively unlikely that Burial 3 - and the other multiple burial cremations were the sole result of wholesale burning and churning; it seems more likely that a given plot of ground was reserved for interment of persons entitled to cremation and interment with goods, and over the years repeated grave-digging effected the mixing of the cremated remains (1970:21).

Although, this is not completely identical to the large cremation features reported from the upper portions of some of the bayshore mounds such as Ala-328 (Bickel 1981:310) and Ala-329, we can not completely dismiss the idea that similar ceremonially related funeral activities were performed by the ancestral East Bay Costanoans during Phase 1 Late Period (circa. A.D. 900 - 1500) and later.

Evidence of similar cremation areas have been reported from deep and therefore presumably earlier period contexts as well. For example, Schenck described evidence of cremation from a large, deeply buried feature (28 feet), near the base of the Emeryville mound:

The evidence which the mound yields with reference to the practice of cremation is rather remarkable...

Here was a mass of burned bones in a layer of heavy charcoal two inches thick and more. This mass formed a concave lens about seven

feet in diameter. Portions of the skeletons had been burned entirely away while other bones nearer to the circumference had not been touched. By these it was possible to distinguish with reasonable certainty seven bodies..., of which four were infants or children. About six inches under the mass was the thin layer of reddish ash previously described and possibly a house floor (1926:183).

Similarly, from the 1959-1962 Stanford University Ala-329 excavations there was evidence of a number of cremations. Coberly reported that "(s)keletons in eighteen graves were charred or partially burned away..." (1973: 11). Furthermore, she suggested that "(i)n fourteen cremations the burning appeared to have taken place in situ" (Ibid).

During the later years (1967-1968), when San Jose State College decided to "link-up" its parallel trenches with Stanford's, a large number of partial cremations (n=31) were uncovered within the upper central portion (10-50 inches) of the mound. Most of these also appear to be in situ partial cremations (see chapter 11, discussion under hypothesis #9 for additional information regarding the recovered cremations from Ala-329).

From the aforescribed Miwok account, other analogous mortuary practices can be inferred and compared to the archaeological record. Although relatively infrequent, the presence of canines (dogs) buried within the cemetery is of interest. Gifford's report that the Miwoks killed a deceased persons' dogs "so that they may accompany their master" is intriguing. Dogs must have played an important role within Central California Indian societies. Apparently, dog meat was taboo and avoided in many California Indian societies (Kroeber 1925:216,341).

From Ala-329, one intact, semi-flexed dog burial was recovered from a depth of 62 inches within four feet of Burial 253. As part of this study, the canid bones were taken to the SJSU Department of Biology's Vertebrate

Museum for identification. Based upon comparative canid osteological collections and criteria defined by Krantz (1959) and Gilbert (1980), it was determined by faunal analyst Dwight Simons to be a domesticated male dog, rather than a coyote.

Wallace and Lathrap also reported on the discovery of a partial canid burial from Ala-307, West Berkeley Mound:

Near the base of the mound, at a depth of 182 inches lay half of a coyote skeleton. The animal had been placed in a shallow depression and purposefully covered over. Its remains lay in anatomical articulation, suggesting that the coyote was buried after having been halved longitudinally. This may represent an interment of an animal, ceremonially raised and killed. Thirteen coyote burials, some with offerings, have been reported from Late and Middle horizon sites in the Valley (1975:51).

From SJo-68 the Blossom Mound in the San Joaquin Delta region the remains of a partial dog skeleton was discovered. Haag and Heizer reported that:

(t)he dog remains lay at a depth of thirty four inches ... and in proximity to human burials. Indeed, the whole deposit was charged with human skeletons, and it is reasonable to assume that the dog had been intentionally buried (1953:263).

Finally, two other archaeological attributes present at Ala-329, that may represent evidence for cultural continuity amongst Central California tribes, and are comparable to the Miwok ethnographic practice of placing money over the eyes and in the mouths of deceased people. Only one individual (Burial 239) was recovered that displayed both of these attributes. According to an excavator's field notes, there were two round abalone pendants (K2bII) over the eyes of the burial and many *Olivella* shell beads found in the mouth. In addition, this individual possessed associations that suggest that he may have been a ceremonial dancer. He was buried

with two cream-colored smoking pipes of very fine sandstone and approximately 15 bird and mammal bone whistles, some of which were adorned with Olivella beads and abalone sections pressed in an asphaltum adhesive. He apparently died from a projectile wound to the lower abdomen. An obsidian projectile point was found imbedded in his pelvis [see Jurmain (1991) and Appendix A].

Comparable evidence from the other mounds is scanty. From Emeryville, however, Schenck reported the following:

As far as evidence exists the preparation of the body for burial seems to have consisted of adorning it with red paint and with finery, although, this was not done for all. ...

Other examples ... suggest garments or head coverings ornamented with shell. Such cases seem to indicate that the corpse was dressed as it might have been on ceremonial occasions in life. ... In the upper levels the eyes and (or) face were frequently covered with abalone ornaments. And the finding of Olivella beads inside the jaw, apparently in the ears, and abalone discs over the eyes, mouth, and in the crotch suggests the practice of covering the openings of the body with such shell ornaments (1926:198).

Evidence of elaborately decorated skulls have come from the neighboring Yokut Tribal area in the San Joaquin Valley. Specimens have been reported in both amateur and professional publications. One skull was uncovered by an amateur archaeologist in the Pitkachi Yokut area south of Madera (Roehr Collection 1967). The Pitkachi are the southernmost tribe of the North Valley Yokuts (Wallace 1978). The other specimen appears in Kroeber's 1925 Handbook of the Indians of California from the Buena Vista Lake region of the Southern Yokuts (plate 81).

Central California Indian Memorial and Mourning Ceremonies

It is very difficult to use archaeological evidence to test whether annual memorial and/or mourning ceremonies were conducted at the bayshore mounds. One purpose of using ethnographic and ethnohistoric accounts is to demonstrate the level of development and complexities of socio-religious institutions among Central California tribes. It is necessary to demonstrate that these tribal societies developed complex socio-ceremonial mechanisms so as to be able to host large visiting groups for periods of four days or more. Only in this way can it be argued that the antecedents for such ethnographically-documented institutions have substantial antiquity as inferred from the archaeological record.

Through the institutions of kinship, long distance intra- and inter-tribal exogamous marriages, and economic and political alliances, ceremonial integrative mechanisms developed that cross-cut geo-political boundaries through a process of ritual obligation (Blackburn 1976).

The following ethnographic accounts demonstrate that large groups of people, in some cases representing several different linguistic tribes, participated in these ceremonies and ensuing trade feasts. The only tangible archaeological manifestations to support the presence of these ceremonies at the bayshore mounds are the presence of large assembly ceremonial dance/ performance/special use (mortuary) houses (perhaps misidentified by some as sweat houses) and feast-related food remains. Therefore, if the bayshore mounds are specialized ceremonial/mortuary sites, rather than habitation/village sites, then the food residues and

artifact/feature distributions should have a different pattern than the evidence from village sites (cf. Blitz 1993).

The Miwok Yalka and Yame Ceremonies

According to Gifford (1955), Yalka was a memorial ceremony during which the widow or widower was confined for a period of two months after the death of the spouse. There were strict food taboos, such as not eating meat, and grieving spouses were only allowed out of their house at nighttime. When the time for the release from confinement approached, the chief's hunters suggested liberation. The chief used a knotted string, sent to neighboring villages, to invite people to the ceremony of the widow(er)'s release. The two-day Yalka ceremony took place in the ceremonial house. The chief's hunters killed deer to feed all the visitors and participants (Gifford 1955).

The Yame or "Cry" was the mourning ceremony and occurred approximately one year after death. It lasted from one to six nights with four being the average number of days. The Yame ceremony usually commemorated the death of an individual; however, people in attendance reflected upon their own deceased loved ones as well. When a new ceremonial house was built, especially after the death of a chief, a "Cry" was held to dedicate the new structure. Gifford stated that "(a)n assemblage of three to four hundred people for a cry is not unusual" (1955:313). After the "Cry" ceremony everyone was washed with mugwort (for ritual purification) by the opposite moiety's members. The speaker

directed all who had been washed to pay the washers with money or gifts of bows, arrows, beads, baskets and other valuable items (Ibid:312-315).

Ethnohistoric Data from the Yokuts Mourning Anniversary: Some Interpretive Implication

Every Yokut tribe held a mourning anniversary at one-to-three-year intervals. Usually, only large and considerably wealthy groups could afford to hold an annual ceremony. Hosting such large gatherings was very expensive; however, the cost was defrayed by an exchange system consisting of food and other gifts during the ceremony. This social and economic interaction took on some of the features of a rudimentary version of a pre-contact Kwakiutl "Potlatch," as defined by Pidocke (1969).

According to Gayton (1948), upwards of three separate tribes hosted each event. These three groups would serve in different capacities. One group would host the event in its principal village, another would finance the ceremony by paying the host group. This second tribe would receive in exchange the equivalent worth of their donations in the form of food and gifts from the host group. This exchange suggests that there must have been a great deal of stored surplus food, wealth and manufactured items of great value. The third group was involved in a reciprocal ceremonial relationship with the host tribe centered around washing the mourners at the end of the six-day mourning ceremony. The mourning families had initial responsibility to raise the money (wealth) to host such a large gathering. Other members of the tribe, friends, chiefs and other relatives, aided in raising sufficient funds. After the money was raised and accepted,

the mourning families and the host tribe were obliged to return it with one hundred percent interest at a later ceremony hosted by another group.

Information obtained from Gayton's field work amongst the Yokuts characterizes these socio-economic and ceremonial complexities within Central California with the following account:

... in terms of value, no profit was made on either side; in terms of materials, the hosts received money in exchange for commodities. The money was required to pay the washers, singers, winatums, huhuna dancer and accompanying shaman, the participants in the Shamans' Contest, and entertainers on the final day of celebration, and above all, to pay for the food provided and consumed throughout the week. The recipients who received the commodities could sell them on the spot if the transactions were possible. All informants agreed that a great deal of trading went on during, and on the final day of the ceremony. Naturally, the opportunity was unparalleled throughout the year (1948:124).

Apparently some of these socio-ceremonial gatherings were so large that they attracted members from different linguistic tribes. Gayton cites as an example that ten Yokut and four Mono Tribes attended these ceremonies (1948:125-126). Although intermarried with the Yokuts, the Monos were probably not participants in the actual mourning aspect of the ceremony, but in the larger economic activities involving the exchange of valuable gifts between groups at the conclusion of the six-day event.

A Spanish lieutenant named Estudillo visited the Yokut village of Chischa in 1819. He came upon a large gathering during a mourning ceremony and estimated that there were 2500 to 3000 people in attendance (Gayton 1936:18). Other examples of intensive ceremonial interactions have been recorded among different tribes in California (cf. Goldschmidt 1951; Bean and Blackburn 1976; and others).

Chapter 10

AN ATTEMPTED RECONSTRUCTION OF THE SOCIAL ORGANIZATION AND CEREMONIAL COMPLEX OF THE ALA-329 POPULATION AS INFERRED FROM THE NOMLAKI

If the theory that the large bayshore shellmounds were specialized mortuaries rather than villages is correct, then how can we reconstruct the social organization, socio-economic and ceremonial complexes of the pre-contact Costanoan people who buried their dead at Ala-329 as well as at the other large bay shore mounds? Thus far, ample archaeological evidence supports the contention that during the Late Period socio-cultural systems intensified to the degree that linguistic/ tribal territories were integrated within large ceremonial and economic interaction spheres. Manifestations of this Late Period intensification have been identified at many pre-contact Central California cemetery and village sites, and are characterized by different archaeologists (cf. Fredrickson (1973), Moratto 1984, Chartkoff and Chartkoff 1984 and others). Regardless of whose dating sequence scheme we employ, the consensus is that there were impressively complex developments amongst these non-agricultural Central California tribes. Aspects of this complexity were occasionally recorded by the early Hispano-European explorers and missionaries (e.g., Fages, Santa Maria, Font, Palou, Estudillo and others).

In order to attempt a plausible reconstruction of the social organization and ceremonial institutions operating within pre-contact Costanoan societies as interpreted through the mortuary complex at Ala-329, it is necessary to draw upon detailed ethnographic information about the documented neighboring tribal groups. Unfortunately, as discussed earlier, detailed socio-cultural ethnographic information about the various Costanoan tribes is limited to principally early expedition diaries and post-contact characterizations. However, there are enough substantial ethnohistoric and ethnographic data about some of the neighboring tribes to support elements of this reconstructive process.

Due to these constraints, it was necessary to employ the detailed socio-cultural and ceremonial information contained within Goldschmidt's (1951) Nomlaki Ethnography and apply his data as analogs to supplement the limited information that exists for the Costanoan region.

Goldschmidt's ethnographic study is one of the most theoretically comprehensive treatments of any of the Central California tribal/linguistic groups. Although the Nomlaki were located approximately 80 miles north of Karkin Costanoan territory, both groups were influenced by the intensive socio-political and ceremonial developments and institutions associated with the Patwin/Konkow "Culture Climax" regions (Kroeber 1932, 1939). Goldschmidt's data can be analyzed against the Costanoan regional archaeological record, as well as the larger pre-contact interaction sphere extant during the Late Period. His study also contains enough detailed socio-political and socio-economic information to provide a model that contributes to a generalized social organizational and ceremonial/

institutional profile. This generalized profile may help explain socio-cultural behaviors of flourishing Late Period Costanoans, who were obviously involved within a larger Central California inter-tribal economic and ceremonial sphere of interaction which Kroeber (1939), Fredrickson (1973) and Chartkoff and Chartkoff (1984) have identified as the "Culture Climax" area, "Augustine Pattern" and "Hotchkiss Tradition" respectively.

Pre-Contact Late Period Developments: A Comparison Between The East Bay Costanoans and The Nomlaki

Many of the archaeological traits characteristic of the flourishing pre-contact Late Period in Central California are found over a widespread area, most of which lies within the heartland of the Kuksu religious cult. Many of the Late Period socio-ceremonial traits identified from the Nomlaki territory were also fully developed within the East Bay Costanoan region. Goldschmidt (1951) reviewed the archaeological evidence from the Nomlaki region and compared it with his ethnographic data:

There is considerable conformity between the ethnological data on the Nomlaki and the culture pattern of the Late period described by the archaeologists. The preponderantly Late-period traits found among the Nomlaki are:

flexed burial, burial accompanied by possessions of deceased, burial accompanied by gifts to the deceased, house sites, clamshell-disk beads, tubular magnesite beads, stone pipes with bird bone stems, bird-bone whistle, incised geometric designs, and acorn anvil (1951:304).

Although some of the localized archaeological patterns preserved within the East Bay Costanoan area differ slightly from those pre-contact

Nomlaki cultural traits cited above, the Late Period material cultural, ceremonial complex, mortuary treatment and ritual behaviors found throughout this larger economic interactive Central California region are nonetheless very similar.

Evidence derived from the Late Period mortuary contexts at Ala-329, principally based upon the frequency and different types of grave associations, support the position that pre-contact Costanoan tribal groups developed a wealth complex and stratified socio-political organization analogous to the Nomlaki olkapna. Because of their strategic location between the Pacific coast and the interior Sacramento/San Joaquin Valleys, pre-contact East Bay Costanoans, much like the Wappo (Heizer and Elsasser 1980:22), may have developed their wealth complex as "middlemen" and redistributors of both raw shell materials and finished products (cf. Davis 1961; King and Hickman 1973; Heizer 1978c).

Because the East Bay Costanoans probably held this strategic position, the development of complex trade networks and inter-tribal economic alliances had to be consummated through high lineage, village exogamous marriage arrangements. Furthermore, this development was partially centered around the desire by interior groups to obtain Haliotis (abalone) and Olivella shells. The raw Haliotis and Olivella shells were apparently in high demand by all Late Period Central California tribal groups as sociotechnic/objects of wealth and also as ideotechnic/objects of ceremonial regalia. These ceremonial and economic qualities are somewhat analogous to the kula complex among the Trobriand Islanders

(Malinowski 1922). Weiner (1988) conducting recent research amongst the Trobrianders offered the following perspective about the kula:

... Here was a system of exchange that operated with specific rules and obligations over wide distances and among people with different, although related, languages and traditions.

... From recent research in the Massim, we know that kula is an exchange system of such complex magnitude that Malinowski never fully comprehended the intricacies of the way the shells move around the islands and the meanings associated with their exchange (1988:140-141).

Pre-contact Central California Indian societies also may have developed complex forms of rules and obligation with regards to exchange systems extending over wide geographical areas; however, this topic involving principles of economic anthropological theory is beyond the scope of this study.

Bay Area archaeological investigations in this century demonstrate that two different abalone species were important trade items prior to pre-Late Period times: black abalone (*Haliotis cracherodii*) and red abalone (*Haliotis rufescens*) (Uhle 1907; Lillard, Heizer and Fenenga 1939; Gifford 1947; Heizer 1949; Gerow 1968; and many others) . Although red abalone may have had a wider habitat distribution than black abalone, they were both obtained from Pacific coastal waters. If black abalone was obtained from the Monterey Bay region and southward, then its presence at the Coyote Hills locality suggests a north/south trade network between the Karkin, Chochenyo, Tamien, Mutsun and Rumsen-speaking Costanoan tribal groups [Note: Davis (1961) does plot on his map a north/south trail, but without elaboration.] The red abalone, as suggested above, having a wider coastal distribution probably connected the Pacific coastal Awaswas-

speaking (Santa Cruz) and the West Bay coastal Ramaytush-speaking (San Mateo/San Francisco peninsula) Costanoans with the East Bay tribal groups. Intact Olivella shells probably would have accompanied whole abalone shells during times of trade as well (cf. Heizer 1978c).

Having accumulated large stocks of these raw materials (Haliotis and Olivella shells), the East Bay Costanoan groups were able to trade these desired goods for many different types of finished non-perishable prestige products. These products included: manufactured shell beads, a wide variety of abalone ornaments, obsidian projectile points and large bifaces, large symmetrically shaped "show mortars," large shaped pestles, flanged stone smoking pipes, charmstones and other such items. Because of the lack of fabricating tools (i.e., hammerstones, antler billets, drills) as well as concomitant manufactory trajectory failures and detritus from Bay Area shellmound sites, possibly many of these finished prestige exchange items were manufactured and traded from major upland and/or interior village centers located within the Sacramento/San Joaquin Delta regions.

Much of the Late Period mortuary patterning and grave-associated prestige artifacts recovered from Ala-329 are almost identical to those recovered from CCo-138 (Bennyhoff personal communication; Gifford 1947). Coberly perceived a strong relationship between Ala-329 and the interior-Delta region (1973:91). She postulated that Ala-328 was abandoned and that Ala-329 might be a new village settlement established by an invading interior population from as far away as site Sac-21, located just south of the present-day Sacramento within northern Plains Miwok/ southern Maidu/Nisenan territory. Coberly suggested that the:

Hollister site, Sac-21, far inland to the north on the Sacramento River, is more similar in its archaeology to Ryan than any Bay or Coastal site. Specific similarities include late phase 1 time markers, specific ornament types, and aspects of the burial complex at both sites.

The evidence is compatible both with the theory that Ryan traded inland heavily (perhaps, specifically with Hollister Site) and with the theory that Ryan represents an immigrant settlement from the interior (perhaps from Hollister) (Coberly 1973:90-91).

Coberly rightly observed that the grave assemblages recovered from Ala-329 were very different from the burials from Ala-328. This observation led her to conclude that "(i)t is therefore, not likely that Ryan represents a relocated phase of the Patterson village" (Ibid:92).

Coberly also observed no antecedent archaeological relationship between Ala-329 and Ala-328. On the other hand, her perception that the Ala-329 assemblages had strong affinities with those from the Hollister site and that Ala-328 displayed none led her to conclude that the Ryan mound was possibly occupied by an interior population. She based this relationship on the presence of diagnostic artifacts found at both sites:

These include such typical Interior items as banjo pendants with double lateral projections, bilaterally barbed harpoon heads, stone pipes, and tubular mammal bone beads with constricted centers...

It will be noticed that artifacts at Ryan which show Interior affinities were probably ornamental or religious items (1973:90).

Even so, Coberly could not arrive at a final interpretive conclusion. She simply stated that "(t)here is not enough evidence, however, to disprove any of the three hypotheses about the temporal relationship of the two sites": Ala-328 and Ala-329 (1973:92). On the other hand, Coberly's model did not explain that the Late Period East Bay Costanoans became full participants in the macro-regional socio-economic and ceremonial

intensification centering around the Delta heartland. Due to the wide distribution of many of the Late Period traits, assemblages and socio-ceremonial institutions within Central California, this intensification process must have rapidly affected many so-called "marginal" regions, thus leaving an archaeological record of perceived abandonment and reoccupation by another population (cf. Elsasser 1978). If we accept the interpretation that Ala-328 and Ala-329 were cemetery sites, we find additional support for evidence for mortuary/ceremonial related intensification as presented by Chartkoff and Chartkoff:

Cemetery remains provide one line of evidence for the rise of social stratification. In contrast to Archaic practices, Pacific burials displayed greater and greater differentiation as time went on. Most people were buried modestly, but few individuals were buried with lavish offerings. Large cemeteries often had distinct areas for family or kin groups, and within each kin area were often a small number of clearly prestigious, or "elite", burials. These possessed not only a much larger number of burial offerings than those of other individuals, but also many more exotic and elaborate offerings (1984:237).

As mentioned earlier, it appears that the pre-contact East Bay Costanoans developed complex forms of socio-economic and ceremonial-mortuary institutions, some of which may be analogous to those described for the Nomlaki. While the Costanoans and adjacent tribal/linguistic groups were devastated by the Hispano-European and later American invasions, thus leaving a dearth of rich socio-cultural detail, the Nomlaki retained many of their socio-cultural and ceremonial institutions into the late 19th and early 20th centuries, which permitted plausible reconstruction of their aboriginal society. By employing Goldschmidt's detailed information on reconstructed Nomlaki society, it is now possible to

develop a deeper understanding about how Central California tribal socio-political and ceremonial institutions might have developed and functioned.

Ethnographic Data on the Nomlaki

Goldschmidt envisioned that Nomlaki society was structured along two independent socio-cultural systems that cross-cut each other. These socio-cultural systems were based on patrilineal interrelated village communities, development of wealth complexes, obligatory ceremonial institutions and prestige item and sacred regalia craft specializations. He interpreted their basic socio-cultural structure in the following way:

Nomlaki society was organized on two major axes: the geographic-familistic and the wealth-status system. In Nomlaki society the system of wealth, the geographically patterned groupings, the use of kinship, and the political organization were all inextricably woven,...

The society was divided geographically into a series of autonomous villages, each presided over by a headman... The village was also basically a family group within which all were patrilineally related except the women who married into the family. These family-village groups were called olkapna.

Cutting across this system of localized groupings was a recognized social class differential. Fundamentally, the status distinction was based upon wealth, since the economy of the Nomlaki included a monetary system and a number of material items that were privately owned by persons of prestige. In turn, this development of wealth and prestige was associated with a rather intensive specialization of crafts and professions... (1951:317).

Some time after the first centuries A.D., the ancestral Nomlaki participated within a larger sphere of intra and inter-tribal economic, social and ceremonial interactions. Through time, more formal socio-economic institutions and complex forms of ceremonial integration developed. Presumably, all of these socio-cultural complexities coalesced

during Phase 1 Late Period times and continued up to the end of the eighteenth and early nineteenth centuries. Even after colonial impact, Goldschmidt was able to offer the following socio-cultural details of reconstructed Nomlaki society:

1. The Local Group

The Nomlaki were divided into numerous ... local groups. Each of these local groups centered in a village or kewel; it held a certain amount in common and generally had a second area of land in the mountains . The chief's house was the focal point of the village. ... The chief's house had something of a sacred character. There were anywhere from five to fifty family houses in a single village...

2. The Kin Group

The village comprised, in a sense, a single kin group. These kin groups were named, patrilineal, exogamous social units, the members of which considered themselves blood relatives whether or not the ties of kinship could be directly ascertained. These groups were called olkapna. When ... the same olkapna occurred in two separate villages or when two unrelated persons claimed the same olkapna name, they considered themselves to be of the same group,... and intermarriage was forbidden. The olkapna must therefore be considered clans. The olkapna were patrilineal.

Inheritance of personal property was not important, since most possessions were destroyed or buried with the dead. But inheritance of affiliation and attitudes of kinship followed patrilineal lines.

3. Kinship Regulations

The olkapna was central in a general system for the regulation of interpersonal relationships through bonds of kinship. As is generally true, related persons had certain mutual rights and obligations that ordered behavior.

4. Chieftainship

Over each village was a captain, tcabatu, who had usually succeeded his father but who owed his power as much to his personality as to his inheritance. ... If a dance or social gathering was to be held, he would give each person his duty for that event. ... Small villages were often close together, and a single captain might be over a group of them. This suggests that the chief was not simply the olkapna elder.

The chief's influence might occasionally extend over a larger territory than his own particular domain.

...(T)he captain played an economic role. He was, under prewhite conditions, a rich man - perhaps the richest in the village, but not necessarily so. He kept on hand a supply of perishable necessities of life for use when visitors came to trade. It was his duty to be always in a position to trade. Thus a war might be ended by an agreement to barter goods, and it was apparently necessary for the prestige of the group to make a good showing in these postwar negotiations. Furthermore, any family falling short of food replenished its stock from the chief's larder.

The role of the chief as an economic stabilizer was reflected in a similar pattern in connection with feasts. ... Aside from the social prestige of the office itself, the chief gained status through his wealth. One reason for his advantageous economic status was that he was in the position to trade with outside persons as well as with villagers. ... Also because of his position he was able to marry rich wives--usually several of them--which in turn improved his economic position.

Occasional women chiefs were reported among neighbors of the Nomlaki. One informant mentioned an elected female chief who was the male chief's wife,... Women of high status enjoyed some distinctions, as in the case of the future chief's bride to be.

5. Status and Privilege

The Huta initiation marked off an elite from the body of ordinary people among the Nomlaki. This distinction into two separate social classes based upon initiation into the secret society pervaded all aspects of social life, and the Nomlaki appear to have been highly conscious of status and prestige in all their interpersonal relationships. Nomlaki status was associated with the possession of wealth, the control of certain crafts and professions, the right to trade in perhaps even to own certain types of goods, and prestige and importance in the community.

6. Specialization

The initiation was viewed as an experience through which youths acquired the ability to engage in a profession or special craft, and a prevailing attitude regarded that ability as a special talent presumably resting on a spiritual base. All this suggests a rather elaborate system of occupational specializing and division of labor.

Specific statements that certain persons were especially qualified for certain tasks were made in connection with the following crafts or professions: shamanism, necromancy, message running, fishing, trapping squirrels, trapping rats, bow making, arrow making, flint chipping, breaking of flint blocks, stone-pipe making, stone-bead making, tattooing, cutting of ear and nose septum, haircutting, skirtmaking, climbing for pine nuts, preparing buckeyes, salt leaching ..., and fire making.

... Occasionally specialization became almost ritualistic. One description said that three separate persons had specialized tasks for the act of breaking flint; one to heat the flint, a second to tend the fire in the heating process, and the third to do the actual breaking. It seems likely that this activity had ritual meaning involving the supernatural,... Bear hunting involved several persons with special powers or abilities. ... In many instances the specialization form a source of particular power and prestige, and the specialists were evidently always persons of substance and importance in the community. ... Among the Patwin, craft specialization was associated with specific families, who held a monopolistic hereditary right over the particular activity.

7. Property and Wealth

Ownership of land resided in the olkapna. Each olkapna usually owned a valley territory and another area in the mountains. Since the control over usage rested in the hands of the village chieftain, informant occasionally made reference to individual ownership.

... The private ownership of land resources was limited and unimportant to the economy and social structure of the Nomlaki. ... But private possession of various forms of chattels was significant. These can be divided into three categories: capital goods or equipment, wealth and ceremonial objects, and magic formulas. Important items in the first category included bows and arrows, pestles, baskets, and nets - especially the large and expensive deer nets. In the second category, the prime items of wealth were the hide of the black bear, beads of magnesite and shell, and feathers. Magic formulas of greatest importance were knowledge of "poisoning" magic and special "charm stones." Ownership of wealth items was particularly the mark of status, and there is evidence that such property could be held only by persons who had undergone the Huta initiation. This might be called a system of sumptuary laws or - perhaps better - sumptuary customs.

In native values the pelt of the black bear was the most valuable economic item. No man of distinction would ever be buried without

being wrapped in a fine bearskin he himself had obtained during his lifetime. ... Other hides, especially the otter, the fisher, and some of the foxes, were valuable as quivers. They were a decorative part of the man's costume and a mode of conspicuous display. The possession of feathers was similarly a sign of wealth. Especially desired were the yellowhammer quills, woodpecker scalps, and eagle feathers. Eagle feathers served both utilitarian and ceremonial purposes and formed a marked distinction.

The abalone (tcen) was used in small rectangular and triangular pieces as a decoration on skirts and hides. Another type of bead was the baked magnesite, often referred to by informants as "Indian gold".

8. Gift Exchange

A distinction was made between gift exchange and trade. There were various occasions on which it was appropriate to offer gifts, creating an obligation on the part of the recipient but not a demand on the part of the donor. The obligation was strong, and the rules of etiquette of gift giving were formalized (1951:317-339).

Some central aspects of Nomlaki society, including social organizational structures and economic institutions, evolved and survived into the late 19th century. These Nomlaki socio-cultural components are useful ethnographic analogies to help explain complex Late Period archaeological manifestations within Bay Area sites.

Kroeber recognized a geographical/linguistic border between the northern Costanoans and Southern Wintuns (although he classified the Karkin as Wintun) and noted the possibility of cultural drift (1925:466,470).

The proximity of the northern Costanoan area to Wintun territory renders it highly probable that many elements of the Sacramento Valley ceremonial system, if not the main part of the scheme itself, must have penetrated some distance south of San Francisco Bay. In this event it is likely that the specific feather costumes, dances and songs were accompanied in their gradual migration by the foot drum and earth-covered dance house. There is, however, no direct evidence of the existence of this cult among the Costanoan Indians. A few survivors in north Costanoan territory know of the Kuksui dance with the Lole and Hiweyi as accompaniments; but as these

individuals live with the descendants of missionized Plains Miwok and northern Yokuts,... it is not altogether certain that the dances are native to the locality (Ibid:470).

Goldschmidt, on the other hand, saw a wider sphere of influence that explained the origin of the Nomlaki wealth complex. He postulated that the wealth complex was originally derived from the Northwest Coast tribes of British Columbia, and then diffused southward along the California coast until it reached the San Francisco Bay region. From the San Francisco Bay it diffused northward into Patwin and Nomlaki territory.

(T)he wealth pattern was apparently derived separately from and later than the olkapna-village institution in the organization of Nomlaki society. Specifically, these particularly important aspects of the wealth complex were associated archaeologically with a Late phase. The connection between wealth and the Huta initiation suggests an association with the Kuksu system, which Kroeber has found to be a relatively late cultural manifestation in the region immediately to the south of the Nomlaki.

The Nomlaki were located geographically between the Patwin and the wealth oriented societies of northwestern California. There were only one or two tribes intervening between them and the Hupa. It might be inferred, therefore, that the wealth pattern came southward from the coast of British Columbia, via the tribes of northwestern California, up the Trinity, and thus to the tribes of the Sacramento drainage. The central California development may have derived ultimately from the Northwest Coast, but it did not come to the Sacramento valley via the Trinity Alps. If it was ultimately of northwestern provenance, it must have moved southward to the San Francisco Bay region and then back north.

There are two reasons why the Nomlaki must have obtained the wealth complex from the south rather than from the Hupa. First, the intervening Wintu to the north did not share the pattern in any important degree. Second, the details of cultural affinity point southward rather than to northwestern California.

... Nomlaki and Patwin wealth objects were closely similar but clearly distinct from the Hupa and Yurok. Nomlaki social pattern relating to wealth was again in greater conformity with the peoples to the south than those to the north (1951:339-340).

Whether Goldschmidt is correct about the possible origins of the wealth complex and its integrated ties with the Kuksu ceremonial system, the fact remains that these intensive socio-economic institutions were definitely fully established in Central California by Late Period times. Independent archaeological evidence for this socio-economic and ceremonial intensification has been identified at Late Period sites within this Central California Kuksu heartland region. Fredrickson refers to this as the Augustine Pattern (1973). Moratto presented the following description of this Late Period pattern:

The Augustine Pattern is distinguished by intensive fishing, hunting, and gathering...; large, dense populations; highly developed exchange systems; social stratification, as indicated by considerable variability in grave furnishings; elaborate ceremonialism; and the mortuary practices of cremation (often reserved for high-status persons) and preinterment grave-pit burning of artifacts, coupled with flexed burials. Technologically, the Augustine Pattern exhibits shaped mortars and pestles...

An important stimulus to the Augustine Pattern was the southward expansion of Wintuan people in the Sacramento Valley, identified archaeologically by preinterment burning, harpoons, flanged tubular pipes,... (1984:211).

Analogous socio-ceremonial complexities were reaching their height in the North and East Bay Costanoan region (immediately adjacent to and south of the Patwin epicenter region) as well during this time period (circa. A.D. 1000 - 1600).

Interpretations and Possible Implications

As a result of presenting the above detailed ethnographic information, it is suggested that these highly evolved and complex Central California tribal socio-economic and socio-ceremonial interactions may be characterized as a rudimentary form of the pre-contact Kwakiutl Potlatch ceremony, as described by Piddocke (1969). Piddocke's interpretive perspective was influenced by the schools of cultural ecology and adaptive functionalism. Piddocke attempted to reconstruct the pre-contact Potlatch and to demonstrate that it was an adaptive "pro-survival or subsistence function, serving to counter the effects of variation in regional resource productivity by promoting exchanges of food from those groups enjoying a temporary surplus to those groups suffering a temporary deficit" (1969:130). Piddocke described some of the socio-ceremonial aspects of Kwakiutl society:

The chief was the custodian or manager of the resources of the numaym. As such, it was his duty to perform the necessary rituals concerning the exploitations of these resources at the appropriate season. In this position, he received a certain portion... of the fish, seals, goats, etc. caught by the men.

... Potlatches were held on several occasions: following or during funerals, by the deceased's successor when he entered formally into his new position;

The potlatch had no one essential function, but several. It redistributed food and wealth. It validated changes in social status. It converted the wealth given by the host into prestige for the host and rank for his numaym, and so provided motivation for keeping up the cycle of exchanges. The potlatch was, in fact, the linch-pin of the entire system (Ibid:138;146;148).

Although California Indian societies did not develop the elaborate socio-economic and ceremonial institutions found among the Northwest

Coast Tribes, they nonetheless developed analogous "trade feasts," or economic and ceremonial mechanisms that functioned in a similar fashion (Goldschmidt 1951; Vayda 1967; Chagnon 1970). In fact, Goldschmidt discussed the nature of the "gift exchange" in his Nomlaki Ethnography and identified a similar relationship:

A ceremonial gift exchange among the River Wintun approaching the pattern of the northwest-coast Potlatch is described by Powers:

Between the nummok [Noimok] and the Norbos [a southern group of Wintu] tribes there existed a traditional and immemorial friendship, and they occupied a kind of informal relation or cartel. This cartel found its chief expression in an occasion great gift dance (dur'-yu-pu-di). There is a pole planted in the ground, near which stands a master of ceremonies dancing and chanting continuously while the exercises are in progress. The visitors come to the brow of the hill as usual, dance down and around the village, and then around the pole, and as the master of ceremonies announces each person's name he deposits his offering at the foot of the pole. Of course, a return dance is celebrated soon after at the other village, and always on these occasions there is a great rivalry of generosity, each village striving to outdo the other, and each person his particular friend in the neighboring village. An Indian who refuses to join in the gift dance is despised as a base and contemptible niggard (1951:339).

While full comparison of Kwakiutl Potlatch and Central California trading ceremonies lies outside the scope of this study, it is important to note that the presence of complex socio-cultural institutions and mechanisms inferred or directly recorded from California tribes (especially the Costanoans) have been dismissed or not recognized by many social scientists. The exceptions, however, are contained in the relatively recent publications, ?Antap: California Indian Political and Economic Organization edited by Bean and King (1974), and Native Californians: A Theoretical Retrospective edited by Bean and Blackburn (1976). The theoretically-oriented articles in these two volumes bridged the gap between

the California ethnographic and archaeological sub-disciplines. In the latter volume, Bean offered a generalized summary of the social organization of Native California tribes and the attributes of "chiefs," which elaborates further the comparison with Northwest Coast cultures:

Chiefs were economic administrators, managing the production, distribution and exchange of goods. They were usually subordinate to no other authority, although they were variously influenced by councils, secret-society officials, shamans and other officials and wealthy men. Since his primary function was to control the collection, distribution and exchange of food stores, money and valuables for the benefit of the group, the chief needed ties with other corporate groups, since every group was in danger of occasional food stress in the absence of economic exchange arrangements with other corporate groups. Intermarriage, ritual alliances, and gift-giving between chiefs, and other reciprocal acts symbolized the sealed agreements which corporate administrators maintained with each other (1976:111).

For purposes of this study, it was necessary to demonstrate that similar socio-cultural features were fully developed within Costanoan societies as well. For some reason, both the archaeological record and the Costanoan Indians of the San Francisco/Monterey Bay regions have been treated in the anthropological literature as "marginal" to the rest of California. This perspective presumably evolved as a result of several historical factors:

1. The Costanoan tribes were impacted very early, thus creating a dearth of "reliable" ethnographic data.
2. The complex socio-cultural information contained within the early diaries has never been carefully reviewed by social scientists and compared to other documented tribal groups.
3. Early 19th-century European visitors negatively commented on the "state" and demeanor of the missionized Costanoans, thus influencing later historians, anthropologists and writers.

4. As a result of missionization, post-eighteenth-century surviving Costanoans became a minority population, overshadowed by the later-baptized Plains Miwok and Yokut tribal groups. Still later, the post-secular, emergent Bay Area Indian rancherias were dismissed by early anthropologists as "mixed communities," and therefore very little ethnological interest was taken in these refugee populations.

5. Hostility towards Native Californians during and after the American conquest period (post-1846) displaced, disenfranchised and impoverished Indian people, thus reinforcing the negative stereotypes that the surviving populations had little or no socio-cultural complexity.

Even though Bickel was under the impression that "there is little ethnographic information pertinent to understanding Costanoan life ways before contact," this chapter will conclude with a reiteration of Fages' evaluation of Costanoan "Government and Economics," in order to reinforce the position that socio-cultural complexities extant in neighboring tribal groups were also well established within pre-contact Costanoan societies:

Besides their chiefs of villages, they have in every district another one who commands four or five villages together, the village chiefs being his subordinates.

Each of them collects every day in his village the tributes which the Indians pay him in seeds, fruits, game, and fish. ...

The subordinate captain is under obligation to give his commander notice of every item of news or occurrence, and to send him all offenders under proper restraint, that he may reprimand them and hold them responsible for their crimes. ...

Every thing that is collected as the daily contribution of the villages is turned over to the commanding captain of the district, who goes forth every week or two to visit his territory. The villages receive him ceremoniously, make gifts to him of the best and most valuable things they have, and they assign certain ones to be his followers and accompany him to the place where he resides (Fages 1937:73-74).

CHAPTER 11

**CONCLUDING STATEMENTS AND DISCUSSIONS CENTERING
AROUND TEN HYPOTHESES GENERATED AS A CONSEQUENCE OF
THIS STUDY: WITH COMPARATIVE IMPLICATIONS DERIVED FROM
ETHNOHISTORICAL/ARCHAEOLOGICAL DATA**

The major goals of this study were to relate pertinent aspects of social organization, subsistence-settlement patterns and mortuary behaviors reflected within published Central California tribal ethnographic records to the archaeological record preserved at Ca-Ala-329, specifically, and to other bayshore mound and interior sites in general.

From a cultural perspective, Goldschmidt's definition of social organization was a useful framework to understand some of the sociological infrastructure of pre-contact and post-contact Central California Indian tribal societies:

The structure of a society involves two things: first, there is a division into smaller social units, which we call groups; and second, there are recognized social positions (statuses) and appropriate patterns to such positions (roles) (1960:266).

Central California Indian societies tended to integrate along status lines which often cross-cut the society and were subject to change (Blackburn 1976). Elite members of their societies possessed symbolic objects and badges setting them apart from individuals and/or lineages of lower status (Bean 1976; Bates 1982; and others). Many of these prestigious symbols were buried with the individual at the time of death (cf. Beechey

1826; Goldschmidt 1951; Gifford 1955; and many others). Social indicators of high rank and status were manifested in the form of non-perishable "grave wealth" objects, as well as in the specialized treatment of the interment itself (cf. Binford 1962, 1971; T. King 1970, Chartkoff and Chartkoff 1984; Wiberg 1984; Luby 1991; and others). Employing a "direct historical approach," such archaeological features and patterns were compared with material culture and mortuary behaviors from the known ethnographic record. This methodology was especially useful because in most regions of California the ethnohistorically documented tribal groups were the aboriginal "living descendants" of those who left at least the Late Period archaeological tradition and preserved cultural record. From these ethnographic data hypotheses were generated to test the validity of proposed correlations between ethnographically documented mortuary and settlement-subsistence practices and the archaeological record (Charlton 1981; Gould and Watson 1982).

This anthropological study resulted in the development of several controversial alternative perspectives. One alternative perspective reinterpreted the nature and function of the bayshore mounds: They did not constitute remnant villages and accumulations of habitation refuse, but were principally (if not exclusively), developed and functioned as cemeteries for high lineage pre-contact East Bay Costanoan tribal societies. This reinterpretation was somewhat analogous to Meighan's (1987) perspective in "Reexamination of the Early Central California Culture" as discussed in chapter 8. Meighan concluded:

Existing evidence is inadequate to resolve the problems, but it is useful to raise the question as a means of showing alternative, and perhaps more realistic, understandings of the cultural developments in a complex and important area where a great deal of excavation has been done.

...I conclude that such an interpretation is questionable and that all cultural reconstructions of Early Central California have weaknesses based on treating the type sites as if they were 'villages' (1987:35).

The conclusions of the present study were also influenced by mainstream Central California prehistoric archaeological research as well as ethnographic studies and ethnohistorical records. By carefully considering information from these sources, as well as from world-wide anthropological studies, ten archaeologically based hypotheses were generated which critically centers around the interpretations, problems and assumptions inherent within extant California Native American anthropological studies. I will discuss these ten hypotheses as a conclusion to this research project.

Ten Archaeological Hypotheses Raised in Light of this Study

Hypothesis # 1

If it is true that Costanoan Indians, as with other California tribes, buried their dead outside their villages, then it would be expected to find pre-contact cemeteries established at various distances away from the main village or town.

First, a careful review of California Indian ethnographic records (e.g., Powers 1877, Kroeber 1925, Heizer 1978a, and many others), provided no evidence that tribal groups lived on top of cemeteries located inside their villages as speculated for the bayshore mounds. In fact, ethnographically there is no evidence that Native American tribal groups deliberately lived

immediately on top of their dead (especially on cemeteries containing the remains of those relations who died during living memory), in an analogous shellmound village fashion, anywhere in North America without evidence of earlier village abandonment (Bushnell 1920; Driver 1969). Furthermore, a survey of various world-wide hunting, gathering and fishing societies (Webster 1942; Service 1963; Coon 1971; Rosenblatt, Walsh and Jackson 1976; Fried and Fried 1981; Bloch and Parry 1982) also demonstrated no evidence for this kind of combined cemetery/habitation behavior, with the possible exception of the Tikopia of the Solomon Islands. In the case of the Tikopia, it is reported that prior to European contact, deceased loved ones may have been buried below the floor of their houses (Fried and Fried 1981:147). However, we also discover that:

One half of the traditional Tikopian house is not actually lived in because underneath the mats which cover the floor are buried the former occupants of the house;... . Tikopians live, therefore, on the cramped borders of their tombs and take their identity from what is essentially a necropolis (Bloch and Parry 1982:33).

This is the only case found by this author where the living continued to occupy a residence after a grave was dug into the house floor.

Are we then to accept the assumption that pre-contact Bay Area Costanoan tribal groups are exceptions to the universal form of mortuary behavior in which human societies dispose of their dead in segregated cemeteries? Cemeteries are symbolically profaned areas that are potentially dangerous to the living and, therefore, are located at various distances away from villages and habitation sites (non-polluted areas for the living) (cf. Malinowski 1926; Radin 1957; Eliade 1959; Van Gennep 1960;

Radcliffe-Brown 1968; Douglas 1969; Bean 1975; Rosenblatt, Walsh and Jackson 1976 and others).

Reasons for segregating cemeteries and burning grounds from village sites obviously vary from culture to culture and region to region; however, explanations elicited from California Indian tribal communities include: 1. a corpse is dangerous to the living (Bean 1975); 2. a corpse can cause sickness or death, especially among young children [apparently in some ethnographic cases. such as the Coast Miwok and Pomo, young children were not allowed to attend funerals or burnings because of this fear (Loeb 1926:289)]; 3. cemeteries are haunted by ghosts (Aginsky 1976); 4. cemeteries are polluted and dangerous areas (as in the case of the Hupa and the fear of smoking wild tobacco that might have grown on a burial ground) (Goddard 1903); and 5. other taboo rules. As a result of these deep-seated fears, complex rules developed involving the proper treatment of the corpse prior to, during and immediately after the burial (Dixon 1902, 1905, 1912; Gifford 1955; Bean 1975; Aginsky 1976 and others).

In much of California ritual obligations between tribal and moiety members included: mourning observances, food taboos, material-wealth offerings, and a ritualized termination of the funeral which culminated with the necessity for ritual purification by washing individuals who handled the dead body or the deceased's personal objects, dug the grave, were mourners, or were in close contact with the corpse (cf. Kroeber 1925; DuBois 1935; Merriam (Heizer) 1967; Bean 1975; Heizer 1978a and others).

For example, Aginsky describes the view of the Pomo Indians north of the San Francisco Bay:

The Pomo were not afraid of a dead person, but after the dead body had been cremated (Kroeber 1925:253) which is done so that it 'would go up into ashes and disappear into the air' they go through all kinds of purification rites and ceremonies to ward off the ghost. The ghost may be seen or heard when one passes by the place where the body was cremated. ...

The Pomo were in great fear of ghosts. Special songs were sung to keep them away from the habitations because they came 'wandering about'.

When a person sees a ghost he becomes very sick and faints. If songs are not sung over him, or if he does not recover consciousness and sing the songs himself, he dies (1976:323-324).

An account from northern California was discovered in Goddard's 1903 ethnographic study about the dangers of "pollution" when someone died in Hupa society. According to Goddard, all people who touched a corpse were obligated to keep their heads completely covered until after the purification ceremonies "least the world be spoiled" (1903:224).

From the Wintu area of Central California, DuBois reported that "(a)fter the burial the chief mourners, who were the nearest relatives, and the grave diggers--those who had come most closely in contact with the corpse--were considered contaminated and had to purify themselves" (1935:65).

Secondly, if the Ryan Mound was a pre-contact Costanoan cemetery, then the residential village(s) whose dead are buried in this mortuary should either be: 1. located immediately nearby within the saltwater marsh community; or 2. located ecotonally in the foothills, near fresh water streams, thus maximizing access to upland (e.g., acorns, deer), riverine (fish) and lowland (bay, saltwater marsh, fresh water marsh and grassland) habitats. Heizer and Elsasser support this second proposition:

California Indians had a strong tendency to stake out their tribal territory so as to cover several life zones. Life zones are areas characterized by a combination of elevation, rainfall, climate, and certain plants and animals. ...

By being able to freely hunt and gather in more than one life zone, the Indians could secure a much greater variety of plant and animal foods, and this is doubtless the reason why many tribes arranged their territorial domains to include portions of several zones (1980:9-10).

A third possibility may also have existed, that the people buried within these mounds were individuals from high lineages that cross-cut geo-political tribal boundaries; hence, their funerals hosted larger-than-usual gatherings through ritual obligation (Blackburn 1976).

If pre-contact Costanoans evolved a patrilineal and exogamous social organization similar to the Nomlaki olkapna as described by Goldschmidt (1951), then it is possible that Costanoan chiefs (as well as sub-chiefs, officers, specialists and perhaps other high lineage-wealthy men) married elite women from other major tribal centers (Kroeber 1925:834; Milliken 1983:56; Winter 1978a, 1978b; Levy 1978). Such marriages, could have been mechanisms for improving the economic position of tribal chiefs and their lineages (cf. Blitz 1993). These economic-related marriage alliances presumably also created inter-tribal ceremonial obligations and reciprocity, especially at the time of death and during the ensuing mourning anniversary [as in the cases presented by Blackburn (1976)]. In other words, these mortuary sites may be exclusive cemeteries for people of high or distinctive lineages or for distinguished individuals (e.g., fallen warriors, doctors, shaman, and others). Furthermore, the physical development of the mound and specialized burial treatment (i.e., cremations, associated wealth and ceremonial objects, ceremonial

structures, etc.) for these distinguished deceased individuals may also be a result of large scale gatherings, perhaps representing [as well as cross-cutting] tribal groups from a larger geographical region (as in the case presented by Gayton (1936) for the Yokuts and Powers (1877) for the Miwok in chapter 8; also see Heizer (1955); Blackburn (1976) and C. King (1976) for ethnographic comparisons and Tainter (1971b); Martin (1972:168) and L. King (1982) for pre-contact village/cemetery locations for the macro-Chumash region]. Common people, on the other hand, were probably buried locally in cemeteries located outside their smaller villages.

Evidence of patrilineal/exogamous social organizational patterning (cf. Levy 1978; Milliken 1983) should be manifested in high lineage/wealthy female burials accompanied by exotic forms of sociotechnic or ideotechnic artifacts such as "show" mortars and distinctive types of Haliotis pendants not of local origin. For the East Bay Costanoan region, these distinct banjo/effigy pendants should probably include Gifford's (1947) N6 "incurved horn" series pendants.

According to Gifford, all of the known 34 N6 banjo-effigy specimens were derived from only two Delta area sites: Ca-CCo-138, Hotchkiss Mound (28 specimens), and 6 specimens from S2 Howell's Point Mound (1947:3,22-23,83). CCo-138 is located along the western margin of the San Joaquin Delta, just northeast of the present town of Knightsen, approximately 21 miles west/northwest of Stockton (Gifford 1940:Map 3). The Howell's Point Mound (S2) is located on the west side of the Sacramento River, approximately "7 or 8 miles upstream from Knight's Landing" (1940:157, Map 1).

More recently, two additional N6 type pendants were illustrated by Bennyhoff and published by Elsasser as being from the "Late Horizon Phase 1, Diablo District -- Veale facies (CCo-150)" (1978:44). As best as can be determined, CCo-150 is from the "Veale Tract" in Contra Costa County and does not appear on any archaeological maps (Lillard, Heizer and Fenenga 1939; Gifford 1947:3; Bennyhoff 1977; Moratto 1984). However, if CCo-150 is the same site as C. 150 as described by Heizer, then it is located immediately south of CCo-138 (Lillard, Heizer and Fenenga 1939:62-63). Furthermore, if CCo-138 and CCo-150 are close to each other, then it can be speculated that they, as Late Period sites, fall within the ethnohistoric Julpune (Bay Miwok) tribal territory (Figure 20) of the San Joaquin Delta region (Bennyhoff 1977:144-145,165-Map 2). On the other hand, the Howell's Point Mound is well established further north of this area, in ethnohistoric River Patwin (in between and adjacent to the Karkin, Plains Miwok and Nomlaki) territory (Kroeber 1932; Johnson 1978).

Regardless of distance, all three sites are located outside East Bay Costanoan territory. We must assume, based upon all the Central California archaeological investigations conducted to date, that these N6 banjo/effigy pendants must have originated in and are representative of the Delta region. If this is so, and the pre-contact East Bay Costanoan tribal groups were socially organized in a manner analogous to the Nomlaki olkapna, then these banjo/effigy pendant forms should be very rare in the Alameda and South Bay districts and perhaps restricted to high lineage women who married into these East Bay Costanoan tribal communities.

Such appears to be the case for Late Period Burials 49 and 96 from Ala-329, who are both female and were buried with abundant sociotechnic (e.g., beads, shaped "show" mortars, pestles, etc.) and ideotechnic (i.e., Haliotis banjo/effigy pendants) artifacts. The presence of these distinct types of associated banjo/effigy pendants supports the aforementioned evidence for geographically extensive, inter-tribal marriage/alliance patterns and economic spheres of interaction (cf. Milliken 1983).

Thirdly, the location of these bayshore mounds at the interface between "land" and "water" may also symbolically set these cemeteries apart from all others located inland. There may have evolved a deep-seated, symbolic belief system relative to the desire to bury ranking or distinguished people at this land - water interface. This belief system was most likely intertwined with their mythological cosmology and creation narratives [i.e., great flood - subsidence of water - emergence of land as in the case of the Maidu (cf. Shipley 1991)]; the emergence of principal animal persona in these narratives (e.g., origins of the bear/deer moieties which were analogous to the land/water moieties of the neighboring Miwoks); as well as other ritual-oriented and ceremonial-related rules of behavior (Gifford 1916b; Eliade 1959).

Finally, although the Coyote Hills probably did not have the same magical presence or position as the large sacred mountain peaks or "places of power" (e.g., Mount Diablo, Tamalpais and others), these hills constitute a unique bayshore geomorphic feature and may have had an analogous quality to East Bay Costanoan societies (cf. Davis 1992). The Coyote Hills are fairly prominent and can be seen from long distances across the bay, from

the southeast foothills below Mount Hamilton, and from the north. As mentioned in chapter 9 of this study, during the second de Anza expedition in 1776, Font paid much attention to the Coyote Hills in his diary. In fact, he originally thought the Coyote Hills constituted a large island (Bolton 1930). Due to the presence of at least four mortuary-related mounds in close proximity to each other, there may have been an indigenous belief system that centered around the origins of this land formation and the need to bury people there intermittently for over an 1800+-year period of time. Perhaps, to the pre-contact Costanoan tribal societies, the Coyote Hills were more than just a place name and habitation site; it was probably tied into a deep seated belief system centering around the passage of the dead into the afterworld (cf. Davis 1992).

In light of the archaeological and ethnological evidence presented in this study, we may need to re-examine the assumption that the bayshore shellmound sites developed as a result of village-related activities and consider that these mound sites were quite possibly segregated cemeteries.

Hypothesis # 2

If it is true that Costanoan tribal groups developed a belief system that when people die their souls travel to the west over the ocean, and that the orientation of the body was part of a prescribed mortuary practice, then we would expect that the majority of burials to display a westerly (including northwest and south west) burial orientation.

This hypothesis was discussed in chapter 4. This hypothesis should be rejected; for both the Phase I and II Late Period burials, orientation was evenly distributed with no clear evidence favoring a westerly alignment.

Although not statistically significant, the Middle Period burials, however, had a slightly higher incidence of individuals favoring a western

orientation patterning, with n=19 or 36% (out of 53 individuals) within this temporal population. Therefore, at this present time, it may be concluded that western orientation of the deceased populations of people buried at Ala-329 did not reflect a belief system involving prescribed rules of celestial alignment at the time of interment, during all three temporal periods. However, on the other hand, because the dating of the SJSU Middle Period burial population span a period of time of approximately 1000+ years (130 B.C.- A.D. 900), it is not presently possible to determine those individuals representing the earlier sub-phases of this temporal period. Furthermore, it is not possible to test whether or not the westerly oriented burials may predominate and date from these earlier sub-phases and therefore, possibly be reflective of the older Windmiller burial pattern centering around the Delta region.

Discussion

Archaeologically, it seems that the most patterned behavior occurred during the Early Period/Windmiller Tradition of the Sacramento/San Joaquin Delta region, circa. 3000-4000 years ago. From the outset, archaeologists noted that the majority of extended Windmiller burials were predominantly westerly oriented, in a ventral position (Lillard, Heizer and Fenenga 1939; Heizer 1949; Ragir 1972 and others;). On the basis of this patterned westerly orientation, Schulz was able to postulate the time of year when the individual(s) died, based upon the solar declination and the assumption that "orientation was toward the setting sun" (1981:96). If this mortuary patterning and prescribed alignment belief system continued into

the later Middle Period, it would therefore be expected to find the practice decreasing through time, as burials were becoming more and more flexed. The Middle Period data from Ala-329 supports this hypothesis.

Another interpretation is that grave orientation may have been determined by the prestige and status of who the person was and/or how he or she died. In other words, a fallen warrior might be allocated a certain orientation and treatment (Mason 1912; Gould 1963; Binford 1971), different from a person who was killed by a grizzly bear, or a person who was considered dangerous in the society, or a shaman, doctor, or other person of power (Bean 1975). Mason (1912) provides some supporting ethnographic information regarding specialized burial treatment (i.e., cremation) from the Santa Cruz Costanoan and Salinan regions:

Cremation, nevertheless, was generally considered the greater honor and given to the few. Thus at Santa Cruz (Costanoan) 'they burned the bodies of those killed in war, but interred at sundown those who died from natural causes.'

At San Antonio the most distinguished dead were cremated, while persons of no particular importance were merely buried,...

On the death of a San Antonio native all his possessions, including his house, were at once burnt and the village was abandoned for a short time (1912:167).

Binford's (1971) mortuary practices study offers additional interpretive insights on the implications of body orientation and other specialized burial treatment patterns. He presented a host of perspectives postulated by various scholars who attempted to explain the significance of burial orientation variability and treatment discovered within various worldwide ethnological and archaeological contexts. Binford compiled the following:

The following is a list of the most commonly cited propositions as to the relationship between forms of mortuary customs and beliefs.

1. Propositions offered in 'explanation' for formal variations in the manner of treating the dead prior to interment.

a. Propositions regarding the practice of cremation.

(1) Cremation is associated with belief in an afterworld in the sky; burning the physical remains releases the soul which is then transported to the celestial afterworld via the ascending smoke (James 1928:232-233).

(2) Cremation is associated with extreme fear of the corpse and hence a desire to 'be done with it' (Malinowski 1925:49).

2. Propositions offered in 'explanation' for formal variations in the manner of arranging the body in the grave.

a. Propositions regarding the practice of flexing the body.

(1) Flexing the body was a copy of the position of the foetus in utero which was taken as a symbol of rebirth (Tyler 1921; Wilder and Whipple 1917:376; Grottanelli 1947:83; Kusters 1919-20:684).

(2) Flexing the body was the result of binding the legs to the body to prevent the spirit from walking and thus returning to the living.

b. Propositions regarding the orientation of the dead in the grave relative to specific reference points.

(1) Orientation of the body in death with respect to cardinal directions 'seems to be the working out of the solar analogy, on the one hand is death at sunset... new life at sunrise' (Tylor 1871:508).

(2) Orientation of the body in death with respect to cardinal directions (celestial orientation) is related to a belief in a continued life of the dead man at a celestial land of the dead, orientation being in the direction the deceased must travel in their journey to the land of the dead (Rose 1922: 132-133).

(3) Orientation of the body with respect to terrestrial reference points is related to a belief in reincarnation since the body is aligned toward the location where the soul must reside before being reborn (Rose 1922:129-132).

(4) The direction of orientation of the body at death is toward the original home of the forefathers (Spencer 1983, Perry 1914:285, Steele 1931:81, Grottanelli 1947:83) [cited from Binford 1971:12-13].

Hypothesis # 3

If the ethnohistorical accounts at the time of contact describing Costanoan cemeteries and the use of poles to mark graves are correct, then we would expect to find discreet graves and a very low frequency of prehistoric disturbances to earlier deposited and/or contemporary burials.

This hypothesis was addressed in chapter 9 and merits additional discussion at this point. Central California cemetery sites have revealed a great deal of evidence of single component and multi-component mortuary patterns. This was obviously in evidence at Ala-329; however, it was especially true for some of the Early Period/Delta Windmill cemeteries. Meighan addressed this issue in his 1987 article, "Reexamination of the Early Central California Culture." He offered several explanations why the Windmill people, during funeral-related activities, avoided disturbing the very closely buried, intact individuals at site SJo-68. Meighan commented:

1. Multiple graves made at the same time; this may well be true for some instances, but the difference in vertical elevations... would argue against some of these cases of proximity representing common graves.

2. 'Careful digging' of new graves, with slight relocation of the grave (particularly to a shallower depth) as soon as any contact was made with bones of previous internments.

3. Use of grave markers so that the locations of individual graves were known and new interments could be made in the 'family plot', taking care not to disturb the remains of previous burials in the same location. Against this possibility is the widespread ancient disturbance of graves in California archaeology, so that in some sites the only intact burials are the last ones interred; they occur surrounded by many scattered bones of previous burials. To my knowledge, no other sites in California compare with Early Central California in having such a density of burials with so little disturbance of the graves (1987:31).

Although there was some evidence of pre-contact disturbance, the majority of the Ala-329 burial modes are primary inhumations (n=208 or 74%). Combined types of cremations constituted an additional 18% (n=51) of the study burial population. Previously disturbed or "other" and secondary (redeposited) burials (as determined by the excavators) only accounted for 8% (n=24) of the population. After a careful review of the students'

journals, it became clear that the excavators did indeed encounter various amounts of human bone fragments within the mound deposit. These isolated elements, presumably derived from neighboring "intact" as well as previously "disturbed" burials, were collected but not assigned any field burial number. A summary from the field notes for unit 20S/130W is a useful example of this pattern and is shown in Table 20.

Table 20

Distribution of Isolated Human Elements from SJSU Unit 20S/130W

<u>Depth</u>	<u>Description of Element</u>	<u>Possible Associated Burials</u>
13-18"	iliac crest - infant rt. radius	B. 174
18-32"	pubis, ulna (proximal end), 3 rib frags., C1 vertebra, rt. foot phalanx, left 5th metatarsal, radius (infant)	B. 173, 178, 196, 197, 198, 199, 207, 215
48-54"	incisor, phalanx (finger)	B. 252
40-78"	2 ribs	B. 222, 225, 231, 252
54-60"	scapula, patella	B. 222, 225
60-66"	patella (matches above)	B. 222, 225
65"	rib frags., 1 thoracic vert.	B. 225
66-72"	ribs, 2 thoracic vert., scapula (2 frags.)	B. 225
78"	R. hamate, phalanx (hand)	B. 231

There is some evidence of miscellaneous human bone mixed throughout the mound, possibly due to either/or a combination of: 1. pre-contact mortuary related activities; 2. bioturbation (e.g., rodent related disturbances); and 3. historical digging, construction, and plowing.

Nonetheless, the majority of the burials recovered were not significantly disturbed. This fact, coupled with the ethnohistoric evidence presented in chapter 9, supports the hypothesis that these East Bay Costanoans most likely possessed a widely used system of marking graves with poles. The use of burial marking poles was probably an even more elaborate affair for higher lineage people as revealed by the early Spanish expedition diarists (cf. Palou (Bolton 1926); Font (Bolton 1930)).

Hypothesis # 4

If the burials from Ala-329 were people of high lineage, specialists or officers, then we would expect to find evidence of differential treatment of deceased individuals based upon their ascribed status in life (i.e., special body treatment such as cremation); high incidence of sociotechnic grave associations such as beads, ornaments, stones pipes, large shaped pestles and mortars and other distinctive artifacts that lower lineage people (commoners) would not necessarily have access to; presence of non-perishable ideotechnic markers such as effigy ornaments, bone whistles, charmstones, doctoring objects and others items that reflect ceremonial religious affinities.

Much of the information concerning this hypothesis has already been discussed in chapter 4 and in hypothesis # 1. Also in chapter 4 it was reported that of the SJSU 283 field-designated burials, 213 or 75% of these individuals had grave associations. A more meaningful patterning may be gained from the following temporal breakdown presented in Table 21:

Table 21

Number of Burials Per Period With Versus Without Grave Associations

<u>Temporal Period</u>	<u># With Goods</u>	<u># Without</u>	<u>Total</u>
Phase 2 Late Per.	71 (80%)	18 (20%)	(n= 89)
Phase 1 Late Per.	110 (78%)	31 (22%)	(n=141)
<u>Middle Period</u>	<u>2 (60%)</u>	<u>21 (40%)</u>	<u>(n= 53)</u>
Totals	213 (75%)	70 (25%)	(n=283)

Many of the burials without grave associations were classified as primary and redeposited cremations. There is of course, no certainty that every burial within the SJSU population has been assigned to its correct temporal period (i.e., Late Phase 1(C) versus , Early Phase 2(a) Late Period); nonetheless as a result of plotting the burials vertically onto stratigraphic profiles and horizontally onto a site map, in conjunction with conducting obsidian hydration and C14 dating, this study does allow for some possible inter-component and inter-site comparisons and interpretations.

If the presence of complete and partial cremations is considered evidence of differential or specialized treatment of deceased individuals, then the combined number of cremated individuals is 51 or 18% of the 283 burials. Additionally, Coberly reported that from the Stanford population, "eighteen graves were charred or partially burnt away" (1973:11). Therefore, 26% of Coberly's burial study population (n=68) were involved in cremation-related activities, which were also presumably conducted only during the Phase 1 and Phase 2 Late Period times. After combining both of these study populations, 19.7% or almost one fifth of all the discreet graves reported upon in the field were affected by some degree of cremation-related

activities. Many of these cremated burials had grave associations, and a breakdown of the SJSU cremations is shown on Table 22.

Table 22

SJSU Cremations With Grave Versus Without Grave Associations

	<u>Males</u>	<u>Females</u>	<u>Sub-Adults</u>	<u>Indeterminate</u>	<u>Totals</u>
With	16	4	8	12	40
Without	5	1	1	4	11
Totals	21	5	9	16	51

Cremations performed at any site usually required a great quantity of firewood for the pyres (Figure 21). Specialized treatment of cremated people, especially at Ala-329, is further demonstrated by the lack of hardwood trees at Coyote Hills. Therefore, it is speculated here that firewood, not being readily available, would have to be brought in from the foothills approximately 6 to 8 miles east of the mound site, which adds to the interpretation of specialized treatment. Apparently, carrying large amounts of firewood for special events was not limited to cremation-related activities. For instance, Palou recorded on December 6, 1774, that the Costanoan Indians that they encountered near Half Moon Bay carried firewood to their encampment "from a valley behind the range of hills," thus suggesting that these Spanish strangers were treated as distinguished guests in their territory (Bolton 1926).

Figure 21: Mid-18th Century Illustration of a Central California Funerary Cremation (Probably From the Maidu Region)



"Indians Burning their Dead," a scene from an 1862 letter sheet published by James Mason Hutchings, drawn by Charles Nahl.

(From Rawls 1984)

Comparisons to Other Late Period Sites

For comparative purposes, Bennyhoff (1977) discussed the context of similar Late Period assemblages from other Central California districts:

... Bedrock mortars were occasionally used in the Solano and Diablo districts, but most mortars were made of selected small boulders in the Solano and Stockton districts. "Show" mortars (often killed) were typical of only the Diablo district.

Heavy, simple, double-ended pestles (usually of granite) were imported from the Sierra by the inhabitants of the Cosumnes and Sutter districts. They were apparently too valuable to be owned individually since they seldom were placed in graves. ... Light, single-ended pestles of basalt and sandstone were preferred in the Diablo district. The handle end was often carved into various flanges, knobs, and other decorative elaborations. Wealthier women evidently possessed several which were buried with them. The preferred pestle in the Stockton district was a light, double-ended cylinder of graywacke imported from the west, though some individuals were able to import carved specimens. Private ownership is indicated by the frequency with which pestles were interred with the dead.

... Carefully serrated bear claws made of obsidian and worn by dancers in the bear dance were typical only of this region, though occasional individuals from the Cosumnes district obtained one or two for use in their home villages (the specialized chipping technique involved in their manufacture, once characteristic of the whole region, was evidently preserved only by craftsmen in the Stockton district by historic times). Individuals, presumably dancers, in this southern district also preserved the ancient whistle form made from the long-bones of wading birds with end stops although their neighbors had adopted short whistles (usually of duck bone) with central stops.

... A new wave of ideas spread over the entire region during the early protohistoric period; by the end of this subphase it was no longer fashionable to wear the effigy ornaments so popular during previous centuries. By one interpretation, the god Kuksu could no longer be represented in shell, and his form became distorted as the being himself was rejected. Or perhaps the disappearance of the effigies from the graves signified the emergence of a men's secret society which prohibited public display of the god-figure.

One may infer that the power of shamans was strongest in the Sutter, Cosumnes, and Stockton districts, where only those with special powers could touch the dangerous charmstones. For centuries these stones had never been left lying about the village, but were buried along with other special gear with their owners. Types used in earlier periods are most common so the charmstones must represent heirlooms or were obtained by secretly looting ancient graves; rarer (presumably less effective) charmstones could be obtained by trade with other shamans living to the west.

... The Diablo district appears to have been a major distributing center for obsidian traded in from Napa Valley (1977:48-50).

Discussion On Mortars And Pestles in Light of Bennyhoff's Perspective

As mentioned above, 213 SJSU Ala-329 burials had grave associations. Many of these burials contained various types of shell beads and ornaments, worked bone, harpoons, stone pipes, types A1a, Alb and A2a shaped "show" mortars, types IIB1a and IIB4 large shaped pestles and plummet, piled plummet, knob piled plummet, asymmetric spindle types of charmstones (Beardsley 1954).

Comparing the Ala-329 burial assemblages to Bennyhoff's interpretative summary quoted above is most instructive. First, a brief discussion concerning the distribution and types of mortars and pestles at Ala-329 is merited. As mentioned in chapter 6, there were 23 (96%) of the intact mortars (and in some cases "killed" with all fragments present) and 54 (92%) of the intact pestles in direct association with the burials. Ten of these mortar specimens are associated with 11 burials and are classified as "show" (A series) mortars. Coberly (1973) reported on the recovery of four intact mortars and three mortar fragments from the 1959-1962 Stanford University excavations. Three of the large mortars were recovered in direct association with burials (two of which were cremations) and two of these

specimens were classified as "A" series by Coberly. The fourth mortar was a small specimen made on "a streamworn sandstone rock" and "found inverted, embedded in white ash covering a lens of baked clay" (1973:41).

A similar pattern was reported for the mortars recovered from the 1970 Ala-329 Hayward State excavations. All six intact mortars (5 of which are "show" mortars) and the three intact pestles were directly associated with burials (Amrine 1993, personal communication). Table 23 presents the distribution of the SJSU burial associated mortar specimens.

Table 23

Distribution and Burial Context of SJSU Show Mortars

<u>Spec.</u>	<u># Bur.</u>	<u># Sex</u>	<u>Burial Context</u>	<u>Condition</u>	<u>Material</u>	<u>Type</u>
1129	27	Indet.	cremation	killed	granitic	A series
1315	49	Female	primary burial	intact	granitic	A1a
1464	65	Male	primary burial	intact	basalt	A2a
1627	84/87	Female	primary burial	intact	sandstone	A1a
1708	84/87	Females	primary burials	killed	sandstone	B1?
1737	96	Female	primary burial	intact	sandstone	A1b
2103	164	Neonate	primary burial	intact	basalt	A1a
2249	200	Male	cremation	killed	sandstone	A1a
2279	212	Male	cremation	killed	granitic	A series
2659	281	Female	primary burial	killed	sandstone	A series
2661	284	Female	primary burial	intact	basalt	A1a

Based upon these above data, this burial context-mortar patterning demonstrates strong similarities to what Bennyhoff described as characteristic of the Diablo district. Approximately half (n=5) of these mortars were killed. Remnants of other shaped mortars were recovered from disturbed contexts as well. Four of these mortars are sandstone, three are granitic and three are vesicular basalt. Burial 164 is a neonate, and it was placed within the mortar (specimen 2103), which apparently served as a mortuary vessel for the baby. The granitic material may be exotic and derived from the Mount Diablo region or further east.

Bickel provides us with contextual information about the mortars recovered from two of the adjacent mounds: Ala-328 and Ala-13. Bickel reported that "11 whole and 111 fragments" were recovered from Ala-328 (1981:197). Furthermore, "(w)hole mortars accompanied 10 different graves, and mortar fragments were found in 4 other graves" (ibid). From Ala-13 she reported that "6 whole" and "3 fragments" were recovered from "5 different graves at the site" (1981:198). As a result of the patterning at Ala-328 Bickel concluded:

The relative paucity of mortars at this site, and the high incidence of burial association of unbroken specimens suggests that food processing in large stone mortars was not a common activity at the site. ...Either seasonal residence changes or short forays away from a base settlement may be indicated. The presence of one site (Ala-324) [probably Ala-342? (sic)] interpreted as a food-processing station C. King cited in T. King 1974) in the foothills inland from Ala-328 lend scanty support to the idea of short forays for food gathering and processing. Several patterns of movement may not have been involved, varying with the food exploited (which was bulbs, not acorns, in the site referenced above) (1981:199-202).

The pestles recovered from Ala-329 follow a pattern similar to the mortars. The majority of the single-ended handled specimens were found

in direct burial association. As mentioned above, 54 of 59 of the SJSU intact specimens were associated with burials. Coberly reported that out of the 68 burials in her study, "(t)wenty-one pestles and three fragments were found in 21 graves at Ryan,..." and that only "(t)wo pestles and 11 fragments were found unassociated" (1973:28). She also stated that "(a)lmost two-thirds of the pestles (14 and three fragments) show some decorative variation in the shapes of their narrow ends, presumably the handles" (Ibid:28) [see Appendix C for illustrations].

On a final note, groundstone tools, mortars and pestles have traditionally been treated as technomic (functional/utilitarian) tools, and very little attention in the archaeological literature has been given toward the time involved in their manufacture. In 1986, Leventhal and Seitz performed an experimental replication study to replicate a small grano-diorite Late Period boulder mortar recovered from site Ca-Mnt-185H. Employed as fabricating hammerstones were cobbles of the same igneous materials that were found cached in a larger adjacent boulder mortar. Also selected was a boulder of grano-diorite of proportions similar to the smaller archaeologically derived mortar. After 17.2 hours and 46,000 blows of intensive hammering, a mortar well/depression (only 5 centimeters deep) was obtained, representing less than half the depth achieved on the well of the smaller archaeological mortar (Leventhal and Seitz 1989:156-165).

This experimental replication information is presented here to demonstrate that these shaped "show" mortars and pestles probably took an enormous investment of time and energy to manufacture. The energy

output needed to quarry, transport raw materials, hammer-peck-polish-shape-dress the interior well, exterior rim, sides and bottom to a finished symmetrical product must have made these large, finely made objects highly desirable commodities, especially for wealthy families. Although in some cases killed at the time of the burial, the mortars and pestles recovered from Ala-329 are highly elaborate fashioned tools and, therefore under these circumstances, should be classified as sociotechnic indicators (markers of wealth) as well.

Discussion of Stockton Bear Claws

In his summary, Bennyhoff identified the presence of obsidian "bear claws" from the Stockton district. Only one specimen (1044) was recovered from the SJSU excavations and is associated with Burial 3, who was a middle-aged male. This Napa obsidian specimen was recovered from the chest cavity of this person.

Gifford provided an ethnographic account concerning the use of these obsidian bear claws in the Uzumati or grizzly bear dance amongst the Miwok:

The uzumati dance may be called in English the grizzly bear dance, since the dancers plainly imitate this animal.

... The unique feature of the costume of the four male dancers is the imitation bear claws of obsidian. From the informant's description these are clearly nothing more nor less than the celebrated Stockton "curves" excavated in mounds near the city of Stockton,... and also in archaeological sites in the Southern Maidu or Nisenan area. The obsidian "bear claws" used by the Miwok are the same as the problematical objects from the mounds. The identity of the Miwok bear claws with the Stockton "curves" is further corroborated by the report that the uzumati dance was borrowed from the Yokuts people to the west.

Each male dancer wears four of these curved obsidian blades on his left hand. Each blade is bound with deer sinew in the split end of a stick about the diameter of a lead pencil, and the four sticks with the blades are then tied together with string made of blackbird (wankule) feathers to form an imitation bear paw (sopolo). This is fastened to the dancer's left hand, the obsidian blades curving inward like claws (1955:275).

It may be inferred from the presence of the Stockton curve associated with Burial 3 that this man was also a participant in an East Bay Costanoan version of the bear dance during Phase 2B Late Period times. If this was so, then this man may have been a participant/dance performer in life, and therefore placed within this cemetery mound because of his status. Furthermore, if it is true that the bear dance had its origins among the Yokuts to the east, then it can be suggested that during Late Period times this dance was introduced and performed in Chochenyo-speaking Costanoan territory as well.

Discussion of Bird Bone Whistles

Sixty-one bird bone whistles associated with four burials - B. 224 (n=12); B. 236 (n=5); B. 239 (n=27); and B. 249 (n=16) - along with one unassociated incised bird bone were selected as a representative sample and reviewed by Wilson and Leventhal at the SJSU Vertebrate Museum. Using the criteria described by Morejohn and Galloway (1983), 37 of these specimens were positively identified to species and element. These 37 identified whistles were derived from 7 different species of birds and are shown in Table 24.

Table 24

Identification of Bird Species Used to Manufacture Bone Whistles

<u>Species</u>	<u>Common Name</u>
<u>Adrea herodias</u>	Great Blue Heron
<u>Pelecanus erythrorhynchos</u>	White Pelican
<u>Pelecanus occidentalis</u>	Brown Pelican
<u>Cygnus?</u> or <u>Olor columbianus</u>	Whistling Swan
<u>Larus californicus</u>	California Gull
<u>Diomedea nigripes</u>	Black Footed Albatross
<u>Chen sp?</u>	Goose

Table 25 presents the results from this identification study from a representative sample from SJSU burials 224, 236, 239 and 249:

Table 25

Identification of SJSU Bone Whistles by Bird Species and Skeletal Element

<u>Spec. #</u>	<u>Species</u>	<u>Side/Element</u>	<u>Burial #</u>
2359a	Great Blue Heron	Right ulna	224
2359b	Great Blue Heron	Left ulna	224
2359e	Great Blue Heron	Left ulna	224
2359f	Great Blue Heron	Left ulna	224
2359h	Great Blue Heron	Right ulna	224
2359j	probably Heron	? ulna	224
2359k	Great Blue Heron	Right ulna	224
2406a	Brown Pelican	Left ulna	236
2406b	Brown Pelican	Right ulna	236
2406c	Black Footed Albatross	Left humerus	236
2406d	Brown Pelican	Right ulna	236
2406e	Brown Pelican	Left ulna	236

Table 25 continued

2441d	Whistling Swan		ulna	239
2441g	probably Pelican		ulna	239
2441i	probably Heron		ulna	239
2440b	Great Blue Heron	Right	ulna	239
2440f	Whistling Swan		ulna	239
2440g	Great Blue Heron	Left	ulna	239
2440h	Brown Pelican	Right	ulna	239
2437a	Brown Pelican		ulna	239
2437b	Brown Pelican		ulna	239
2482a	White Pelican	Right	ulna	249
2482b	White Pelican	Left	ulna	249
2482c	probably Heron	Left	humerus	249
2482d	White Pelican	Right	ulna	249
2482e	Whistling Swan	Left	ulna	249
2482g	Brown Pelican	Right	ulna	249
2482h	Whistling Swan		ulna	249
2482i	Whistling Swan		ulna	249
2482j	Black Footed Albatross	Right	ulna	249
2482k	White Pelican	Right	ulna	249
2482l	Black Footed Albatross	Right	humerus	249
2482m	Black Footed Albatross	Right	ulna	249
2482n	Black Footed Albatross	Left	humerus	249
2482o	Brown Pelican	Left	ulna	249
2482p	Black Footed Albatross	Left	humerus	249
1421	Brown Pelican	Left	ulna	n/a

None of these whistles are the short types made from duck bones as described earlier by Bennyhoff for the Stockton district (1977). Some of the whistles associated with three of the burials (224, 239 and 249) had asphaltum present on them. Some of the whistles from Burials 224 and 239 had beads (M2) and abalone chips (Burial 239 only) affixed in asphaltum on the surfaces and distal ends of the instruments.

All four burials probably represent high lineage or specially honored persons. Burial 224 is an indeterminate adult who was buried with 43 abalone pendants. Burial 236 is an infant (1 - 1.5 years old) presumably

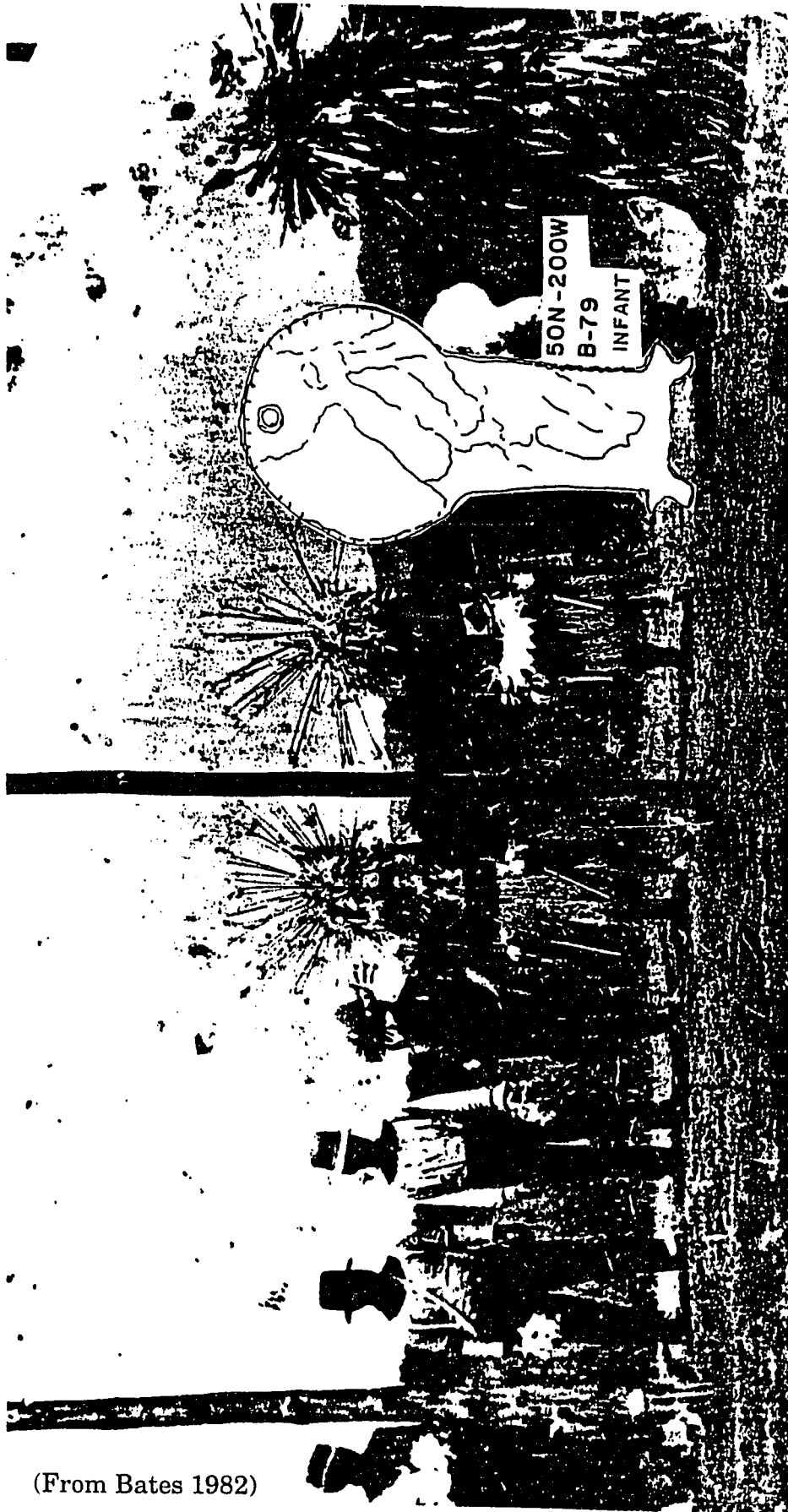
from a high lineage family. The bird bone whistles were placed behind the child's skull at the time of burial. Burial 239 is a 18-year-old male who could have been a fallen warrior. He probably died from a projectile wound received to the abdomen (Musladin, Jurmain and Leventhal 1986; Jurmain 1991). He had one of the richest grave lots, which included: 2 Kb2II pendants over his eyes, 3,154 M1a beads, 1,231 1b beads, two collared creamy white sandstone pipes (which according to Bennyhoff is indicative of the Delta region as a type of pipe and material), and also the 27 associated heavily decorated bird bone whistles. Burial 249 is a male (35-44) and was buried with 18 bone whistles.

Discussion of Effigy Pendants

Bennyhoff suggested that there may have been an abandonment of effigy ornaments during the early proto-historic period and that they were associated with the god Kuksu (1977:50). Gifford classified these as "N" series types of abalone ornaments as banjos, because many looked like "a banjo or other stringed musical instrument" (1947:20). More importantly he recognized the anthropomorphic qualities (i.e., legs, arms, body and large head) of these pendants (see Figure 22). Gifford reported:

Dr. Heizer has suggested to me that possibly these objects represent the deity impersonated in the modern "big-head" performance of the Kuksu or god- impersonating cult in the region where these objects are found. In this performance the dancer wears a tule headpiece from which radiate sticks with feathers attached at distal ends. These project 2 to 3 ft. from the head of the wearer (1947:20).

Figure 22: Comparison of Big Head (Hesi) and Kuksu Dancers to a "N" Series Banjo Pendant From Ca-Ala-329



(From Bates 1982)

Hesi dancers at Stony Ford Rancheria, c. 1914-17. Northeastern Pomo and Patwin.

The distribution of these N series effigy ornaments extend over a wide geographic region, ranging from the City of San Jose (Ca-SCI-128, Holiday Inn Site and Ca-SCI-690, Tamien Station) in the south; then north/northeast to Pleasanton (Castlewood Country Club site); on to the San Joaquin Delta/Stockton region (sites: Ca-SJo-86, SJo-82, SJo-85 and others); north/northwest to Sacramento (sites: Ca-Sac-28 and Ca-Sac-29); to a few miles north of Knight's Landing (S2 Howell's Mound) in Colusa County. From Knight's Landing the boundary extends to the southwest to Vallejo (Napa region, site Ca-Nap-1); west to Tomales Bay (sites Mrn-266 and Mrn-275); south/southeast towards San Pablo Bay to the Cotomko'tca (Slaymaker 1977) archaeological district in the Gallinas Valley (Ca-Mrn-138); south to San Francisco (Ca-SFr-7). From San Francisco the region extends east, across the Bay to Emeryville (Emeryville Mound, Ca-Ala-309); south to Fremont (Ca-Ala-329, Ca-Ala-342); and back to San Jose (see Figure 23: Gifford's 1940 Map 3).

Following the same geographic boundaries, this ceremonial interaction region crosscuts and includes the following five ethnohistoric Penutian linguistic/tribal groups: 1. northernmost Tamien (Santa Clara), Chochenyo (East Bay), Ramaytush (San Francisco) and Karkin (Northern) speaking Costanoans; 2. northern North Valley Yokuts; 3. Bay and Plains Miwok; 4. Patwin (River Patwin); and 5. Coast Miwok. The fact that the Haliotis effigy pendants occur in northern and northeast Costanoan territory, taken in conjunction with the many other interior Sacramento/San Joaquin Delta traits, material culture and burial patterns, supports the position that these East Bay Costanoan tribal groups probably had greater

cultural affinities with the neighboring tribes to the north and east of them than they did with the southern Costanoan groups.

Thirty-nine+ "N" series effigy pendants were recovered in association with 14 of the SJSU burials and represents the highest incidence of these ornaments discovered at any Bay Area site. A review of Coberly's data (1973) and Stanford University's later (post-1963) burial records indicates that banjo ornaments were associated with 12 of their burials as well. A full effigy pendant assembly was recovered with SJSU Burial 43; however, it was stolen by pot hunters over a weekend when field work was not being conducted. Table 26 presents information on the SJSU burial-associated effigy pendants:

Table 26

Distribution by Age and Sex of the SJSU Burials with Effigy Pendants

<u>Spec.#</u>	<u>Bur.#</u>	<u>Sex</u>	<u>Age</u>	<u>Type of Burial</u>	<u>Remarks/Pendant Type</u>
N/A	43	Infant	0	primary burial	Assembly Stolen by Pot Hunters
1318	49	Female	35+	primary burial	N6bIII
1319	49	"	"	"	N6bIII
1320	49	"	"	"	N4aI
1322	49	"	"	"	N4aI
1321	49	"	"	"	N5 series
1324	49	"	"	"	N5
1325	49	"	"	"	N5
1323	49	"	"	"	N6aII
1475	65	Male	35+	primary burial	N1bII
1572	79	Infant	1-1.5	cremation	N1bII
1577	79	"	"	"	N1bII
1580	79	"	"	"	N1bII
1582	79	"	"	"	N1bII
1682	83	Infant	0-.5	cremation	N5 series
1740a	96	Female	40	primary burial	Distal end
1740b	96	"	"	"	Proximal end
1740f,h	96	"	"	"	(2) N2aII
1740j	96	"	"	"	N1aI
1740k,l,q	96	"	"	"	(3)N1aIII

Table 26 continued

1740n,o	96	"	"	"	(2) N series
1740p	96	"	"	"	N6aIII
1759	10	Male	45	primary burial	N1a series
2149	172	Male	Adult	redep. cremation	N4aI
2155	172	"	"	"	N2bI
2245	178	Male	35+	redep. cremation	Proximal end
2165	199?	Male	Adult	redep. cremation	N series frag.?
2246	203	Indet.	Adult	cremation	(2) Fragments
2369a,c	226	Male	35+	primary burial	(2) N6aII?
2498d	254	Female	40+	primary burial	N6aII distal end
2498a-c	254	"	"	"	(3) Proximal ends
2507	256	Male	35	primary burial	N4aI

The distribution of these effigy pendants cross-cuts age groups, gender and burial mode. In the SJSU population there are 7 males, 3 females, 3 infants and 1 indeterminate adult with associations. Of these, 8 are primary burials, 3 are cremations, and the other 3 are redeposited cremations. For the Stanford burials the data is a little more scanty and is presented in Table 27.

Table 27

Distribution of the Stanford University Effigy Pendants

<u>Burial #</u>	<u>Sex</u>	<u>Age</u>	<u>Type of Burial</u>	<u># Pendants</u>	<u>Types</u>
22	Infant	0-0.5	primary	1	N1b
48	Indet.	11-13	primary	?	?
54	Infant	5-7	partial cremation	5	N1b
64	Indet.	18	cremation	1	N1b
66	Indet.	13-15	cremation	3	N1b
78	Male	25	primary	4?	?
84	Male	35	primary	2?	?
93	(2) Males	35 & 25	partial cremation	4?	?
99	Infant	5-6	primary	1?	?
105	Indet.	25+	primary	1?	?
130	Male	13-15	primary	2+?	N6 series?

Five males, 4 infants/sub-adults and 3 indeterminate adults were buried with effigy ornaments within the Stanford population. It should also be noted that Stanford Burial 93 constitutes a double burial containing the remains of two adult males. When the age and sex data are combined for both the SJSU and Stanford populations, it becomes clear that older males (n=12) have the highest incidence of effigy pendant associations. This distribution is followed by infants/sub-adults (n=7), indeterminate adults (n=4), and then adult females (n=3). Although statistically this is a small sample population, the fact that 26 individuals from Ala-329 (SJSU and Stanford combined) have effigy ornaments (n=63+) in direct association with them. Therefore, this sample constitutes the largest excavated and provenienced collection recovered in California, including those from Ca-CCo-138, the Hotchkiss Mound (n=28). Furthermore, these ornaments are rare and do not occur at many other known sites. It may be postulated that their high incidence at Ala-329 lends supports of the uniqueness and status of the individuals buried at this cemetery mound site.

Finally, although these effigy pendants tend to be associated with older males, the fact that some are buried with females precludes exclusive male ownership. Additionally, 27% of the burials that have these effigy ornaments in association are infants, suggesting that such accompaniments indicate ascribed (based upon the infant's lineage) versus achieved status (the child never attained recognition or initiation into a system that bestows these social markers of distinction).

Discussion of Charmstones

Bennyhoff suggested that the presence of large numbers of charmstones is representative of the development of the "power of shamans" in Central California (1977:50). Charmstones were the most abundant of all of the stone objects recovered from Ala-329. From the San Jose State side there were 41 specimens associated with 25 burials. In addition to these, there were 214 charmstones (which include proto-charmstones and many fragments) recovered from the excavation units. From Coberly's data for Stanford, there were 10 specimens found in association with 7 graves, as well as 32 unassociated intact and fragmented specimens. Table 28 provides information on the burial associations.

Table 28

Distribution of Charmstones By Burial

Burial #	Sex	Age	# Spec.	Burial #	Sex	Age	# Spec.
SJ* 5	Male	30	1	SJ 169	Male	35+	1
SJ 6	Female	25	1	SJ 171	Infant	1-1.5	1
SJ 15	Female	30	1	SJ 191	Male	20	1
SJ 31	Male	30	2	SJ 195	Indet.	Adult	1
SJ 48	Male	35	1	SJ 204	Indet.	Adult	6
SJ 53	Male	20	2	SJ 205	Male	Adult	1
SJ 56	Male	20+	1	SJ 224	Indet.	Adult	1
SJ 60	Male	50+	1	SJ 275	Female	40+	1
SJ 68	Infant	1-2	2	ST 2	Female	40+	1
SJ 74	Female	40	1	ST 4	Female	35+	1
SJ 86	Female	35+	1	ST 9	Female	25+	3
SJ 120	Male	20	2	ST 19	Male	25	1
SJ 127	Male	17	5	ST 55	Male	20	2
SJ 134	Female	40+	1	ST 58	Male	35+	1
SJ 151	Male	30	2	ST 72	Male	35	1

*Note: SJ = San Jose; ST = Stanford

When summarizing these associated charmstone data by age and sex an interesting pattern emerges and is shown on Table 29.

Table 29

Distribution of Burials by Age and Sex with Associated Charmstones

Males 20+	n=15	Females 25+	n= 9	Indet. Adults	n= 4
Males under 20	n= 2	Females under 25	n= 0	Infants	n= 2

The majority of charmstones are associated with adult males ages 20 and above. Only in two cases are there charmstones associated with teenage males. It may be speculated that these young men had some formal connection to these "power" objects and therefore they were placed in their graves. In the cases of the two infants, perhaps the charmstones were placed there for either some ceremonial or lineage-related reasons. What is of interest here, is that in 9 cases charmstones were associated with female burials. Again, although the sample population is small, the most noticeable factors in these cases are the ages of these females. Not one has been determined to be younger than 25 years old. Perhaps this patterning implies that older females, after years of gaining knowledge and practice, were publicly recognized for their shamanic practices and/or qualities. This female/age patterning must be tested against other independent data. The only other obvious void in this patterning is the quantum age leap between the two baby/infant burials and the 20+ year-old adult males. With the exception of the two teenage males, charmstones are

not generally associated with either young children (except infants) or other adolescents within this burial population.

In his interpretive discussion on the power of shamans in the Sutter, Cosumnes and Stockton districts, Bennyhoff suggested that "(t)ypes used in earlier periods are most common so the charmstones must represent heirlooms or were obtained by secretly looting ancient graves; rarer (presumably less effective) charmstones could be obtained by trade with other shamans living to the west" (1977:50). Such seems to be the case with Burial 48 who may have been a shaman. This interpretation is based upon his grave associations and Bennyhoff's definition. Burial 48 is a primary inhumation of an adult male, age 30-39 at the time of death. There were three obsidian point fragments associated with him that may have contributed to his death.

Included in his grave associations were two ideotechnic objects: a cylindrical lump of red ochre and a type IB2a perforated phallic charmstone (after Davis and Treganza 1959) made of serpentine. This is the only perforated charmstone recovered from the SJSU excavations. It is identical to the one recovered at Ala-328 (Patterson Mound) from a deep burial context within Component C (Early/Middle Period Transition, after Bennyhoff and Hughes 1987) and illustrated by Davis and Treganza (1959: Plate 31). Similar specimens (14+) were recovered from the West Bay at Ca-SCI-354, the "Foothill College" site, which has two C14 dates associated with it: 2680 +/- 170 (730 B.C.) and 3260 +/- 170 (1310 B.C.) cited in Breschini et al. (1984) as site SCI-057.

As mentioned above, Burial 48 had three projectile point fragments associated with it. Two of these are Stockton Serrated variants, while the third appears to be a dart-like point. The largest micron hydration obtained on the three specimens by both Homen (1967) and Origer (1987) is 2.4 microns (A.D. 1104), thus suggesting that this burial was considerably younger than this "Early/Middle Period Transition" charmstone.

As presented in Chapter 5, it was decided to radiocarbon date Burial 48 because of the presence of this associated early type of charmstone. A radiometric assay of 250 years B.P. was obtained on a sample of bone collagen; this at first confused the temporal assignment for this burial. It was also considered that the submitted catalogued ribs that were scraped clean of residues possibly still retained some contaminants, which may have skewed the radiocarbon date slightly toward the more recent. On the other hand, it was hypothesized that this burial, based upon the relative depth (60"); obsidian point types; and hydration readings (Homen - 1.5, 2.0, 2.0 and Origer - 1.1 and 2.4 microns), might date to Phase 1B Late Period.

It is difficult to envision this individual "secretly looting ancient graves" in order to obtain this early type of charmstone as Bennyhoff suggests for the presence of early types of charmstones in Late Period contexts. This specimen may have been found by this person, or he may have inherited it, or perhaps it was traded to him by people living in the Los Altos Hills area (SC1-354). Regardless of interpretation, Burial 48 is clearly an individual with ceremonially-related objects in association.

Bennyhoff suggested that "(t)he coastal pattern of contemporaneous manufacture of charmstones (each district had its own special forms),

which involved the lack of any belief in their ability to harm humans (village midden is littered with fragments), had been adopted by the Solano and Diablo Phase 1 inhabitants" (1977:50). It is assumed here that he is referring to the bayshore shellmounds as representative of this "coastal pattern." If this is the case, then Bennyhoff has also embraced the assumption that the shellmounds represent villages. Given this assumption, it would logically follow that he would interpret these bayshore/coastal sites as containing "village midden littered with fragments" as in the case of Ala-329.

A Red Ochre Study

A fairly large amount of red ochre was also associated with Burial 48 as well as several other burials. Since Heizer and Treganza published their article entitled Mines and Quarries of the Indians of California (1944), various authors have alluded to the use of cinnabar as desired a "red paint" during the proto-historic/contact period (Heizer 1974:76; Winter:1978a:21; Coberly 1973:86; Pastron and Walsh 1988a; Cartier 1979, 1980; Moratto 1984; and others). A large sample of red ochre from a Late Period burial, was submitted to the SJSU Geology department for trace element analysis to test the cinnabar hypothesis. A suitable sample of red pigment (specimen 2224) recovered in direct association with Burial 193 was selected for analysis. Burial 193 is a primary inhumation of a sub-adult (7-8 years old) which had 8 stacked whole clam shells covering a concentration of red ochre, all discovered within the abdominal region of the body. The specimen was run

on a Norelco X-ray diffraction unit with an attached plotter readout. This pigment turned out to be hematite (FeO₂) rather than mercury sulfide/cinnabar (Figure 24).

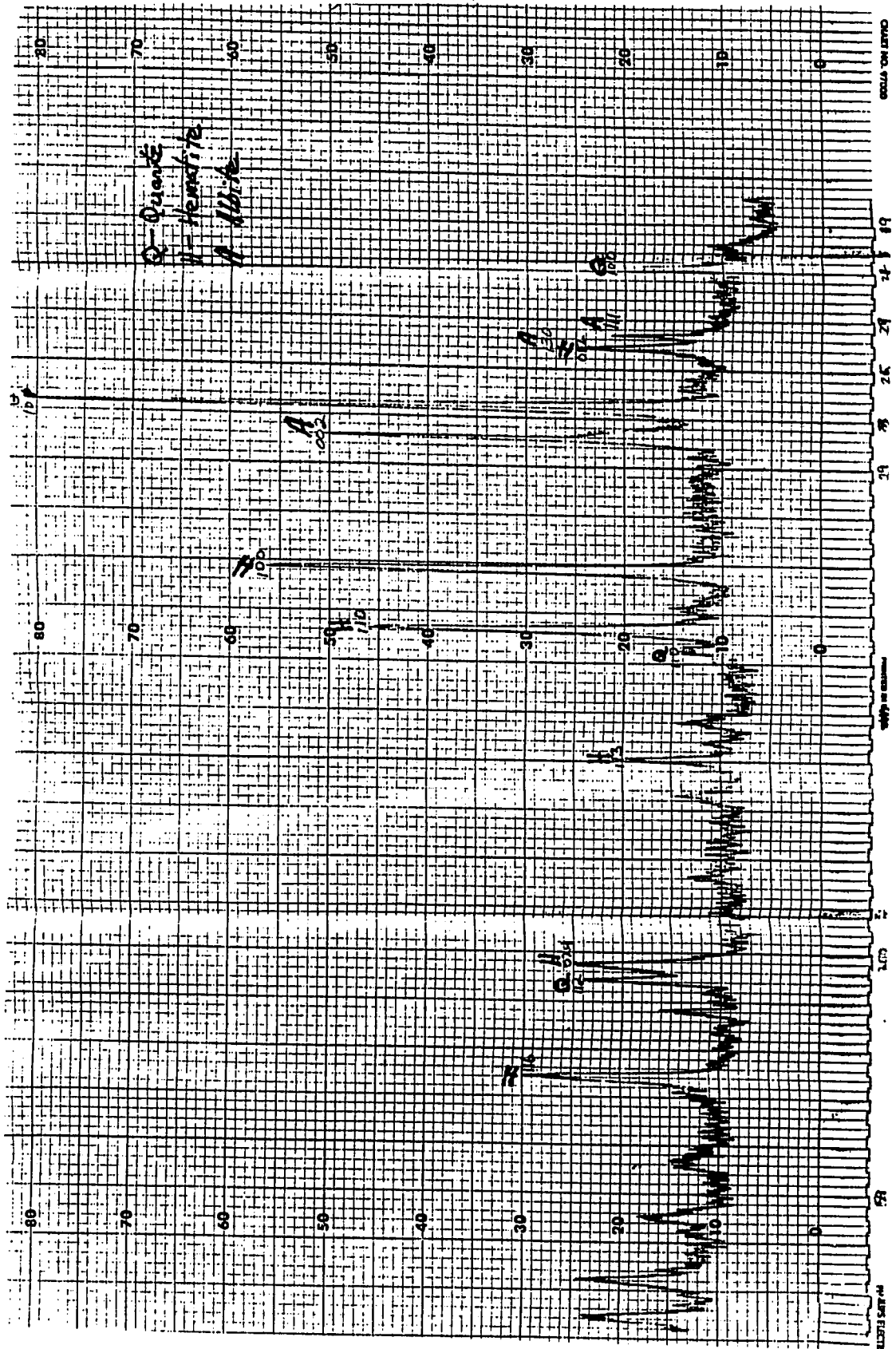
In summary, if Stickel's (1976, 1980) definitive attributes for service centers/ceremonial sites, are considered in conjunction with Chartkoff and Chartkoff's definition for "ritual sites" (1984:208), and Davis and Treganza's interpretive conclusion about Ala-328, that "(a) rich ceremonial life is attested,... by the frequent occurrence of red ochre in the graves and carefully made charmstones" (1959:64); then when considering all of these three interpretive perspectives collectively, they lend additional support toward the re-interpretation of the Ryan Mound as a ceremonial site rather than a village. In other words, based upon the criteria and interpretations employed by these several researchers, Ca-Ala-329 should be classified as a special use, ceremonial-related, cemetery mound site.

Hypothesis # 5

If Ala-329 is a village site, then we would expect to find a higher frequency of technomic (utilitarian) implements such as mortars, pestles, projectile points, etc., in direct association with house floors and other residential and food processing features as in the case of Ca-But-1; rather than configured in a cemetery pattern (e.g., highest frequency of mortars, pestles and other utilitarian tools recovered in direct association with burials).

This hypothesis had been addressed in the preceding summary and in chapter 7 A Comparative Analysis Between the San Francisco Bay Shell Mounds and A Late Period Central California Village: Ca-But-1, The Patrick Site As A Test Case. In summary, the patterning of technomic tools, as well as other classes of artifacts (i.e., sociotechnic and ideotechnic), diametrically differed between the excavated Late Period village site of Ca-But-1 and the upper stratigraphic components of Ala-329.

Figure 24: Results of Testing Red Ochre (Specimen # 2224) Associated With Burial 193 For Trace Element Analysis on a Norelco X-Ray Diffraction Unit



Ca-But-1 patterned as an expected village site and Ca-Ala-329 patterned as an expected cemetery.

Hypothesis # 6

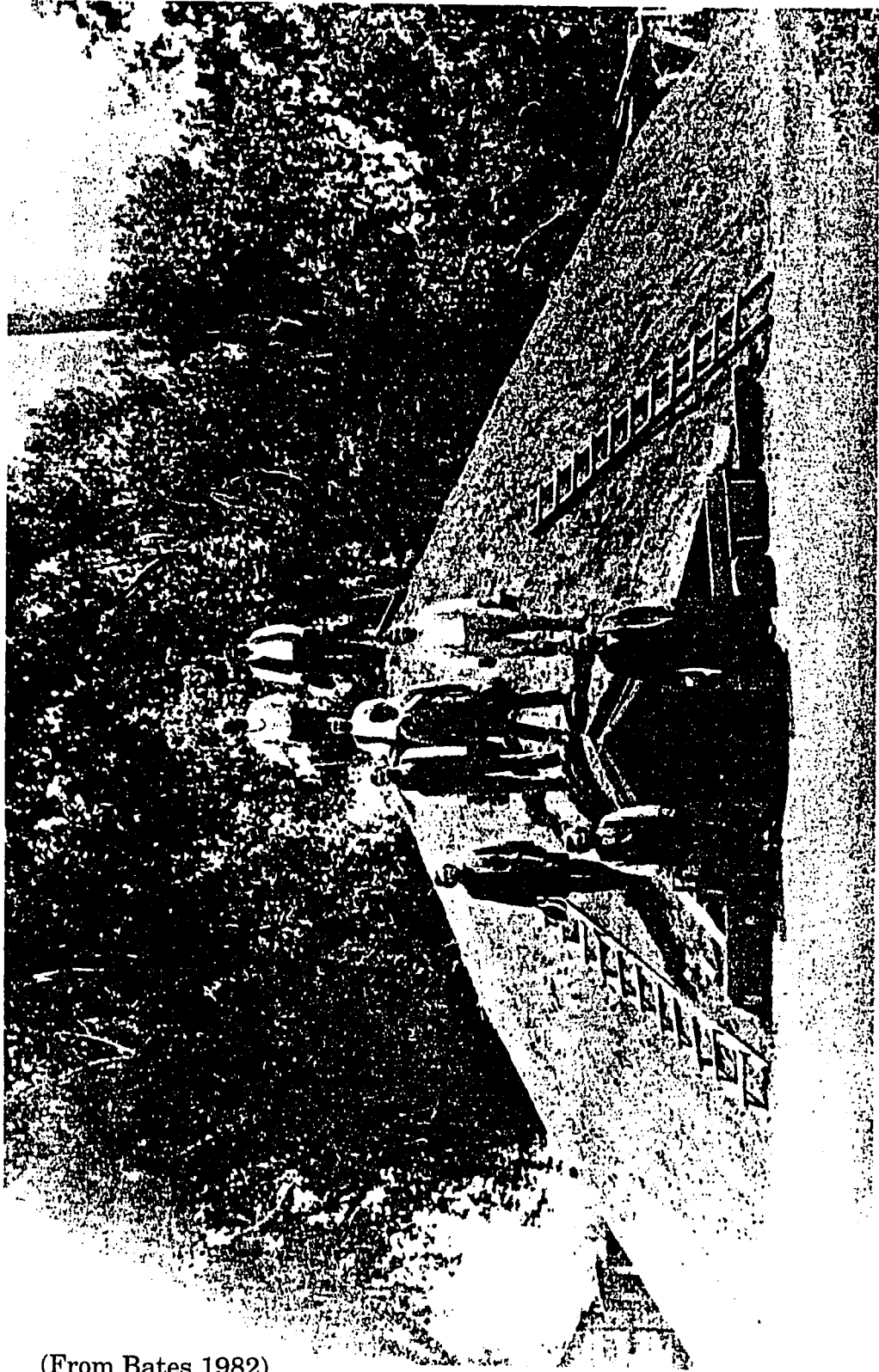
If Ala-329 is a ceremonial site, then we would expect to find the remains of large ceremonial structures (e.g., a tupentak or round house, sweat lodge, or mortuary assembly house) rather than many smaller residential dwellings. The physical remains of these ceremonial structures should be substantially larger than a family dwelling structure, and able to host fairly large groups of people for funerary and mourning-related ceremonies.

This hypothesis was addressed in chapter 6 under the sub-heading of Evidence Of Structures From Bay Area Shellmounds. Clearly defined residential structures have not been discovered at Ala-329, nor was there a patterning of artifacts and features that would suggest evidence of residential areas as in the case of Ca-But-1. The large floors or compacted soil features identified at Ala-329 were apparently on the scale of ceremonial structures or assembly houses (Figure 25). As discussed in chapter 6, other authors interpreted similar house floors from bayshore mound sites as evidence of ceremonial structures (Davis and Treganza 1959; T. King 1970; Wallace and Lathrap 1975; Bickel 1981 and others).

Hypothesis # 7

If Ala-329 is a ceremonial site containing ceremonial structures, then we might find evidence that these structures were burnt down. Ethnographically, such structures were burnt in Central California usually after the death of a chief (Gifford 1955).

Figure 25: Ceremonial Earth Covered Dance House Similar to those Built by Costanoan Tribal Groups



(From Bates 1982)

Figure : Ceremonial dancehouse, Northwestern Maidu, Mechoopda Village, Chico, c. 1890.

This hypothesis was addressed in chapter 9 under Extracting Archaeological Analogies From The Ethnographic Record. Although the burning down of the dance/assembly house at the death of a chief (Gifford 1955:311-312) might have taken place at a principal village site, we still have archaeological evidence of the remains of several ceremonial-sized house floors identified at some of the bayshore mounds (e.g., Ala-328, Ala-13, Ala-307, Mrn-27 and others). As discussed throughout this study, we have discovered ethnohistorical accounts and archaeological findings that suggest the presence of sweat-lodge and assembly-house types of structures discovered within shellmound and interior sites (Anonymous 1874; Yates 1875b; T. King 1970:30-31; Wallace and Lathrap 1975:44; Bickel 1981:316-317; and others). In this study reference was made to Stanford's Burial 130, a young male who was apparently buried within what Gerow believed to have been a burnt down structure. Although this case hardly constitutes evidence that this the structure was burnt down as a consequence of the death of the young man, it is interesting to note that Burial 130 was considered a person of distinction based upon the presence of Haliotis effigy pendants, several hundred Olivella beads of various types (including M1a), charmstones, pestles and "two large broken mortars over the burial" (Gerow personal communication and Stanford Burial Record form for Burial 130).

Hypothesis # 8

If Ala-329 is a ceremonial site, then food residues should be present, but in sparse concentration, resulting primarily from intense-single-event activities. These faunal remains should also contain a different type of butchering pattern from those remains recovered from well-documented village midden sites.

As discussed in chapter 4, most of the faunal remains recovered from the excavation units were separated from the unit level bags and curated (with provenience) at SJSU's Bird and Mammal Museum in the Department of Biology. In order to generate a selected representative sample of recovered faunal remains, Glen Wilson and this author made arrangements to access and sample this collection. We discovered that a graduate student (Jean Geary) had conducted research on the artiodactyl (i.e., deer, antelope and elk) remains recovered from approximately 16 excavation units. Wilson and Leventhal selected nine fully excavated units (20S/150W, 10N/150W, 50N/60W, 50N/80W, 50N/110W, 60N/70W, 60N/80W, 60N/130W and 60N/150W) as a representative sample and conducted a completed faunal/ skeletal element inventory. The majority of the identification was performed by Wilson over a period of several months. Table 30 presents the distribution of minimum number of individuals by the most prevalent mammalian species per excavated level.

Table 30

Minimum Number of Individuals Combined From Nine SJSU Units

<u>Common Name</u>	<u>Sea Otter</u>	<u>Black Tail Deer</u>	<u>Tule Elk</u>	<u>Antelope</u>	<u>Coyote/ Dog</u>	<u>Raccoon</u>	<u>Harbor Seal</u>	<u>Calif. Sea Lion</u>
<u>Depth Inches</u>	<u>Enhydra lutris</u>	<u>Odocoileus hemionus</u>	<u>Cervus nan.</u>	<u>Antilo-capra</u>	<u>Canis sp.</u>	<u>Procyon lotor</u>	<u>Phoca vitul.</u>	<u>Zalophus californ</u>
0-6	5	4	1	0	0	1	1	0
6-12	10	13	3	2	5	0	1	0
12-18	11	9	1	0	4	1	0	0
18-24	13	11	4	3	6	0	2	1
24-30	10	9	2	3	4	3	2	0
30-36	6	5	4	2	1	0	4	0
36-42	9	6	0	1	0	1	0	0
42-48	8	5	1	1	0	1	2	0

Table 30 continued

48-54	12	7	1	0	2	0	2	0
54-60	6	8	2	2	3	2	2	0
60-66	9	9	4	2	4	0	1	1
66-72	5	5	2	1	3	0	1	0
72-78	6	5	3	2	4	2	1	2
78-84	4	4	2	2	2	1	2	0
84-90	0	0	0	0	0	0	0	0
90-96	1	1	1	0	1	0	1	0
96-102	2	2	2	1	1	0	1	1
102-108	1	1	0	1	0	0	1	0
108-114	0	1	0	0	0	0	0	0
114-120	1	1	1	1	0	0	1	0
120-126	1	1	1	0	0	0	1	0
126-132	2	1	1	0	0	0	0	0
132-138	0	0	0	0	0	0	0	0
138-144	1	0	0	0	0	0	0	0
144-150	1	1	0	0	0	0	0	0
Totals	124	109	36	24	40	12	26	5

At least 376 individuals (designated as MNI for "minimum number of individuals") were derived from approximately 333.3 cubic yards of screened deposit derived from these 9 excavation units. As a result, this total number of MNI then calculates out to approximately 1.13 animals per cubic yard. If this number of animals per cubic yard is subdivided by an estimated 1800+ years of continuous "occupation," then a figure of 0.0006 animals per year acquired by the "residents" at Ala-329 is obtained, thus leaving this hypothetical sedentary population with little mammal meat protein intake. Recently, Wilson (1993) combined Geary's MNI data (which was derived from 21 other SJSU excavation units) with the faunal data from the 9 units presented above in Table 30. Wilson obtained 444 MNI that included skeletal elements representing 20 different mammalian species, from these combined 30 excavation units (1993:19).

Wilson also conducted a skeletal identification study (Appendix F) on the avifauna derived from five of these SJSU excavation units and identified 574 MNI representing 40 species of birds from these units (1993:22). Wilson suggested that:

Ducks and geese make up 90% of the species identified as the MNI. Four of the five species of geese are winter visitors and are present in the area usually only from October to March or April. ... The ducks are mainly winter visitors and are present usually from September through April.

...Of the total number of ducks and geese identified 461 were winter visitors and 56 were summer visitors or year round residents.

...It appears from these results that the inhabitants of the Ryan Mound hunted birds mainly within their own catchment area and were most successful from September through April (1993:19-20).

From a purely economic perspective, waterfowl appears to have contributed more to the diet of the people using the Ala-329 mound than mammals did. Perhaps waterfowl were exploited for other reasons (i.e., feathers) other than only as a source of food at this site. In his recent study Blitz (1993) compared both the artifact assemblages and faunal remains from a Mississippian mound site and a contemporaneous village (non-mound) site within Lubbub Creek drainage in Alabama. Believing that the mound was a specialized site that centered around ceremonially-related, large-group feasting and storage of food, Blitz noted differences in the faunal assemblages. Blitz reported:

Faunal remains,...are far more revealing about mound activities than the limited amount of lithic artifacts. In a community-wide sample of more than 33,000 identified skeletal fragments, the bones of several bird species are unique to the mound. ... The birds represented here probably were not used for food; instead their bright plumage most likely contributed to costume or ritual paraphernalia. Interestingly, several of these species played important mythological roles in historic southeastern belief systems (1993:91).

Blitz continued his interpretive perspective regarding the implications of the different faunal assemblages recovered from the two sites:

Scott ...compared faunal samples between mound and village contexts. By bone weight, large mammals (principally deer) dominate both mound and village samples. However, bone weights of deer mandibles, hindlimbs, and especially forelimb skeletal elements were overrepresented in the mound debris, although the differences were not great and the possibility of variable bone fragmentation presented comparative problems In addition, the mound contained a higher relative frequency of fish and turtle remains than the village sample. Clearly, there is a distinct social context of food consumption at the mound, but it cannot be assumed that access was restricted to the social elite (1993:92).

Without trying to imply that there is a one-to-one correlation between the patterning and interpretive implications derived from the Lubbock mound/village site data and those from Ala-329, Blitz's suggestion that there may be unique and therefore differential and/or specialized (i.e., ceremonial-related) activities occurring at the mound is based upon a combination of factors:

The mound associations, if considered in isolation, would not provide sufficient evidence about mound-related activities. Only when mound material associations are compared to village associations, as was done with the ceramic sample, does it become clear that the mound was the focus of specialized activities centered on rituals, feasts and storage (1993:90).

Blitz's study underscores the need to raise appropriate questions relative to interpretation of features, artifacts and ecofactual assemblages recovered from localized and contemporary contexts and compare these data within a theoretical framework. Blitz's study is the only one thus far encountered by this author that sets forth a testable methodology and raises appropriate research questions about faunal assemblages derived from two

assumed distinctive types of sites. It is argued here that similar method and theory considerations be allocated to the archaeological universe of Central California in general (as partially advocated in the case of Meighan 1987) and specifically for the Bay Area as presented in this study. Faunal assemblages derived from Central California ceremonial-related/mortuary mounds need to be compared with and tested against faunal remains recovered from well-documented village sites.

Hypothesis # 9

If Ala-329 was a ceremonial site, then there should be a low frequency of household-related fire hearth and cooking features. In fact, the upper portion of the mound should display some evidence of cremation-related funeral pyres or areas of burning as described for the neighboring tribal groups (e.g., Dixon 1905; Gifford 1955; Aginsky 1976; and others), especially if it was true that during Phase 1 Late Period there was an increase in cremation-related activities. The by-products of these cremation activities should then manifest in the form of large amounts of charcoal, ash, burnt clay, oxidized soils and possibly vitrified clay.

Based upon the students' field notes, there was little evidence of formal cooking features and fire hearths encountered at Ala-329. Burnt soils, baked clay, charcoal and ash, however, were noted by the students as being located in close proximity (above, below, and/or mixed-in) to the burials. Comments about charred artifacts, presence of ash pockets and ashy midden soil were also recorded in the students' notebooks. In chapter 4 it was reported that over 2415 pieces of thermally affected cobbles, 116 pieces of baked clay and 34 pieces of vitrified clay were collected and placed in the unit level bags. Although these numbers do not necessarily reflect

the actual amount of thermally affected materials encountered during the excavations, they nonetheless were not directly derived from fire-hearth features. Many of these thermally affected and burnt objects were most likely associated with in situ cremation-related activities, burning of grave offerings on top of the grave during the mourning ceremony (cf. Dixon 1905; Loeb 1926; Gifford 1955; and others), or pre-interment pit fires. It was also presented in chapter 5 that according to Ubelaker (1978) it took approximately 800 degree C to achieve complete cremation. In addition, based upon replicative experiments, it was demonstrated that in order for clay to vitrify, a temperature approaching 1200 degrees C was required (Parsons and Leventhal 1986). Vitrified clays have been found at other sites that also revealed evidence of cremations (e.g., Ala-342; SCI-128, Holiday Inn; SCI-268; and others).

The recovery of a utilitarian (technomic) assemblage of 7 hammerstones and 29 end-battered cobbles (artifact types not associated with burials), along with 42 antler wedges, suggests that these tools were employed to split hardwoods (cf. Gifford 1940; Bickel 1981:124-125) possibly for cremation-related, mortuary gift burning and/or perhaps for food cooking activities. Finally, evidence of large, clearly defined, Late Period burning areas, similar to the one described by Gifford for the Miwoks, was either not identified or distinguished by the excavators at Ala-329. However, after careful analysis of the burials derived from within the central portion of the Ryan Mound (120W and 130W trenches), there were a minimum of 31 (63%) of the 51 SJSU burials that were recovered in close

proximity to each other and exhibited evidence of attempted cremation of varying degrees. Table 31 presents the distribution of these burials.

Table 31

Distribution of SJSU Cremations from the Central Area of the Mound

<u>Unit #</u>	<u>Burial #</u>	<u>Depth</u>	<u>Unit #</u>	<u>Burial #</u>	<u>Depth</u>
10S/120W	184	21"	10S/130W	141	19"
10S/120W	189	18"	10S/130W	142	16"
10S/120W	200	22"	10S/130W	157	24"
10S/120W	201	22"	20S/130W	174	15"
10S/120W	202	22.5"	20S/130W	178	24"
10S/120W	203	22.5"	20S/130W	196	26"
10S/120W	204	22.5"	20S/130W	197	27"
10S/120W	205	48"	20S/130W	198	29"
10S/120W	212	38"	20S/130W	199	21"
10S/120W	213	43"	20S/130W	206	43"
20S/120W	172	10"	20S/130W	207	31.5"
20S/120W	190	24"	20S/130W	210	26"
20S/120W	191	32"	20S/130W	215	27"
0S/130W	170	30"	10N/130W	161	29"
0S/130W	181	24"	10N/130W	162	30"
			20N/130W	234	49.5"

Although this area of the mound containing evidence of cremated, partially cremated and redeposited cremated remains does not resemble the Middle Period cremated features encountered by Schenck (1926) at Emeryville and T. King (1970) at Mrn-27, they do bear a closer resemblance to the burning grounds described by Gifford (1955) for the ethnographic Miwok area and Dixon (1905) for the Maidu. Ethnohistorically, we have early accounts of Costanoan people attending a burning. Beechey, who arrived at San Francisco in 1826, informed us that: "when a person dies, they adorn the corpse with feathers, flowers, and beads, and place with it bows and arrows; they then extend it upon a pile of wood, and burn it

amidst shouts of the spectators, who wish the soul a pleasant journey to its new abode, which they suppose to be a country in the direction of the setting sun" (1826:64). Therefore, the evidence derived from Ala-329 mortuary complex supports the position that the pre-contact/Late Period East Bay Costanoan tribal groups had ties within a marco-Central Californian cremation-related mortuary pattern as practiced by many of the interior tribal groups within the greater Sacramento/San Joaquin Valley regions (cf. Powers 1877; Dixon 1905; Loeb 1926; Beals 1933; Aginsky 1943; Gifford 1955; Bennyhoff 1977 and others).

Hypothesis # 10

If Ala-329 is a ceremonial site, then there should be very little of stone tool manufacture and lithic debitage present in the mound deposit. On the other hand, at village sites we would expect to find a full range of stone tools, fabricators, failed stages of production, and a great deal of lithic detritus. At a ceremonial site, stone tools not directly associated with burials would have been employed for the activities associated with food preparation for attending groups of people and also for maintenance of utilitarian and ceremonially-related objects and structures directly supporting funerary activities. At a cemetery site the frequency of non-burial associated tools and debitage should be exceedingly sparse.

After reviewing all of the materials recovered from the excavation units and classifying them according to material type, morphology, modification and use-wear patterns, it was discovered that 62 Franciscan chert flakes, 21 obsidian flakes, 7 Monterey chert flakes, and 5 "other" flakes comprising different materials were recovered from the screening of the 68 excavation units. In other words, a total of 95 flakes, 4 cores, 3 assayed cobbles, 1 biface, 1 uniface, 1 drill, 1 chopper and 88 pieces of unmodified angular Franciscan chert were recovered. In addition to these,

50 obsidian points and fragments, 4 chert points and fragments, 5 obsidian tools (e.g., bifaces), 3 obsidian utilized flakes and 3 obsidian resharpening flakes were also recovered from these units. For a sedentary village site, "occupied" in excess of 1800 years, this small amount of unassociated flaked stone material is significantly disproportional and problematic.

A similar patterning was discussed by Meighan for the Windmillier site SJo-68:

Ragir...tabulates 'waste', which is defined to include flakes, pebbles, scrapers, and choppers not found in association with burials. This is apparently nondescript material of the kind generally found in midden refuse. A total of 116 items is tabulated, substantially more than Heizer could refer to in his 1949 definition of the site. This documents some midden component to the overall site, but it is again a very small quantity - certainly less than one item per cubic yard of excavation. Most midden sites in California yield far greater amounts of 'waste' than this, usually more by a factor of hundreds or thousands (1987:33).

Other than one chert drill, several antler flakers and seven hammerstones, there were few fabricating artifacts recovered, with the exception of bone awls and serrated cutting tools. From the mound deposit there were 150 bone awls and fragments and 74 serrated bone/antler/fishbone "cutting tools" recovered. These tools were probably used for building and maintaining temporary arbors, brush structures, baskets for cooking, and perforating holes in animal skins (i.e., deer, elk, sea otter, and others) that were killed near the site and to feed the attendant guests and mourning families.

Evidence of shell manufacturing, bone tool manufacturing and stone tool manufacturing is rare or non-existent at Ala-329 and also at almost all of the other bayshore shellmounds discussed in this study. This lack of

strong manufacturing evidence further supports the specialized non-residential function of this massive cemetery site.

Concluding Remarks and Future Research Directions

The focus of this study addressed the validity of the three following generally accepted but mostly unsubstantiated assumptions:

1. Ca-Ala-329 constituted the remnants of a sedentary village site built-up over time as by-product of the accumulation of habitation refuse.
2. Ca-Ala-329 is a shellmound.
3. Ca-Ala-329 is a single component representing the Phase 1 Late Period (Horizon).

In response to the first assumption, ample evidence derived from the extant archaeological and ethnological literature has been presented in this intensive study to argue that Ala-329 principally functioned as a cemetery which contained largely the remains of personages of high lineage and wealth. Furthermore, based upon the stratigraphic distribution of the burials as well as the dating obtain by radiometric assay, obsidian hydration and time-sensitive grave associated artifacts, there is clear evidence that Ala-329 was regularly used as a place for burial interment and in later times for cremation-related activities for more than 1800 years. Although this research project has called for reinterpretation of the nature, function and physical development of many of the bayshore mounds, and specifically Ala-329, as specialized ceremonial sites which principally centered around both funerary and mourning related activities as in the case presented by Meighan (1987) for Ca-SJo-68, this study does not preclude

the possible co-existence of temporary encampments and/or specific economic-related task sites within the Coyote Hills area, or even near the four mounds themselves (i.e., Ala-329, -328, -13 and -12). However, these hypothetical subsistence-related encampments, temporary "habitation" or specialized task sites have yet to be formally located or identified within this area. Such encampments probably were not established on the mounds themselves. The assumption that these mounds were the only available "high spots" to process food upon ignores the presence of many knolls comprising the leeward side of the hills as suitable and strategic alternative areas of choice.

An important underlying question emerged as a consequence of analyzing the Ala-329 population and cultural assemblages: "why would a village be established on top of the graves of approximately 3000+ deceased people (Wilson 1993:2), in an area that flooded almost every winter/spring containing undrinkable bay-brackish water, and in an environment where there was a very small to nonexistent supply of trees available for firewood?" Considering these factors collectively, especially when taking into account that these critical environmental factors and cultural conditions run contrary to our understanding of the settlement-subsistence patterns and mortuary customs of complex hunter/gatherer societies, there emerged the need to seek plausible alternative explanations.

Hildebrandt in a recent letter to this author commented on an inquiry that he made to another Central Californian archaeologist about the co-occurrences of village sites and cemeteries in the Central Valley region. Hildebrandt shared the following:

I talked to Jerry Johnson several months ago about village sites, mounds, and cemeteries, and he provided some interesting insights. He agreed that formal cemeteries were rarely simultaneously used as village sites, and that many such places experienced contrasting uses over time. This was often the case where they are found in clusters, such as the lower Sacramento Valley. These relationships can be documented archaeologically by carefully distinguishing between the age of burials versus that of the existing midden deposit. Later, people put their village to a different (but nearby) location and began burying their dead in the abandoned middle period midden. With this example, you have a middle period midden (datable with radiocarbon, obsidian hydration, diagnostic artifacts), intruded by late period burials (Hildebrandt 1992, personal letter).

Such a pattern, however, does not appear evident in the case of Ca-Ala-329.

Another factor that negates the perspective that Ala-329 was a village was presented at the beginning of this study. Pressler reported that the land owner of the Patterson Ranch (Coyote Hills region) stated that "at high tides all the sloughs and creeks were full and the land between would be salt marsh" in as much as eight feet of water (1973:58). Furthermore, regarding the availability of fresh water during the drier times of the years Bickel wrote:

Although the exact location and extent of fresh water sources for the inhabitants of the Coyote Hills sites is unknown, it is evident that there were active springs or streams in the area. The water table is high locally. Although pumping of water from wells has lowered the water table historically, it was at or above sea level in 1973, according to Pressler (1973).

Therefore, the seasonal availability of fresh water was probably a limiting factor for both funerary-related activities and temporary habitation encampments or economic-related task sites within this area.

Second, regarding whether or not Ala-329 is a "shellmound," during the early phase of this analysis a complete set of original site photos documenting all of the field work years (1962-1968) was obtained from Dr.

Joseph Hester. The photographic evidence (color slides and black and white prints) shows clearly that, although there were some shell lenses and concentrated scatters, the Ryan mound appears to have mostly been built-up by the accumulation of massive amounts of earth. Recently, Wilson was given permission by East Bay Regional Park District to go on-site to obtain soil samples from the mound and also from an adjacent off-site area for control. The results of his soils analysis and interpretations was contained in his 1993 publication:

Several recent soil samples from on and just off the site were analyzed for physical and chemical constituents. The site midden samples averaged 57% sand, 35% silt and 12% clay, while the off-site sample had 29% sand, 59% silt and 12% clay. Hand sorting of the soil samples indicated that 10% by volume is shell.

... The significant difference in the abundance of all of the elements indicate that the soil in the site was not just carried there from off-site to build the mound or to cover burials, but was more likely built up by extensive human occupational activities.

... Perhaps the larger percentage of sand on-site resulted from carrying in and processing shellfish obtained from a sandy beach. It appears that the site functioned as both a burial mound and a village although it is difficult to determine whether these activities were synchronous or disjunct in time (1993:4).

Although Wilson does not explain how or which "extensive human occupational activities" contributed to the development of this artificially built mound which he estimated to presently contain "20,900 cubic yards of deposit," it is argued by this author that the agents of soil deposition were large groups people purposefully engaged in mound-building activities as part of the commemoration, ritual obligation and specialized treatment for mostly a distinctive class of people buried at Ala-329.

Davis and Treganza noted a soil-matrix structure similar to Ala-329 after excavating the adjacent Ala-328 Patterson mound. They commented:

The internal composition of the Patterson mound resembles that of other sites along the shores of San Francisco Bay, although the shell content is apparently lower than that of the other Bay sites. ... Shell, in general, is scarce in the upper level, occurring principally in concentrated lenses. In lower portion of the site, shell (predominantly oyster) is much more in evidence, occurring in several large beds or strata ... (1959:8).

Their footnote (# 7), which is associated with this aforementioned description of the composition of the Patterson mound, stated that "(i)n fact the scarcity of shell in the site led Wedel to observe, 'it would appear that this is an 'earth mound' rather than a 'shell mound'" (1959:81). As a result we then need to ask, "where else in the archaeological literature do we find other possible explanations that might contribute to our understanding about the possible site formation process of this mound?" Turning back to Meighan's "Reexamination of Early Central California Cultures" for a suitable analogous explanation, he suggested that site SJo-68, the Blossom mound, might have been built up as the result of the following process:

Growth of the site by accretion of new material so that new graves could be deposited above older ones without disturbing the lower levels. ...Natural accretion of new material to the mound could not have been sufficiently rapid to solve the problem of avoiding disturbance. However, if there was artificial deposition of soil on top of burials, with new burials essentially being deposited on the surface, it would be possible to attain the observed distribution of intact graves very closely together (1987:32).

Also not considered in Meighan's "mound accretion model" is the possible presence of earth-covered ceremonial (assembly house) or mortuary-related structures that apparently may have present on some of

these mounds (cf. T. King 1970; Wallace and Lathrap 1975). If these large structures resembled anything like the semi-subterranean earth-covered round house depicted in Figure 25, any attempted dismantling or burning of them would have resulted in much debris contributing to the formation of the mound, and would have left large preserved "house floor" features as described by T. King (1970) at Mrn-27 and Wallace and Lathrap (1975) at Ala-307, West Berkeley Mound.

Finally, a recently published study that has some bearing on this present study as well as methodological and theoretical issues confronting California anthropology as a whole was brought to this author's attention. In his recent American Antiquity article "Big Pots for Big Shots: Feasting and Storage in a Mississippian Community", J. Blitz (1993) compared archaeological assemblages, faunal remains and ceramic vessel attributes (big pots) derived from two areally and temporally related sites: a platform mound and a village. Although, there may not be any direct cultural correlations between early Mississippian sites and contemporary period sites in California, the theoretical backdrop of Blitz's study makes this connection relevant. Blitz suggested that:

In small scale societies, ritual feasts are often an important setting for social integration and status competition. Material evidence of feasting and food storage may be preserved in community ceremonial precincts, such as platform mounds. To identify food-consumption activities, ceramic samples from mound and village contexts at the prehistoric Lubbub Creek site are compared. ...These results, together with supporting feature and faunal data, suggest that mound activities included large-group feasts and storage of food (1993:80).

Blitz's article focused on a different set of ceremonial and feast-related activities and behaviors inferred at the Lubbub Creek sites from

those mortuary and feast-related activities postulated in this study conducted at the Ryan Mound; but he suggested that there existed a difference in the size of the ceramic pots that were used to store foods and prepare vast quantities of food to host large groups and reinforce the status of "Big Men" or "Big Shots" who represented elite lineages at the platform mounds. Blitz suggests that:

'Big men' and chiefs alike attempt to gain access to wealth and make it available to reward a body of followers. Such activities may initiate a complex interplay between material and ideological processes that serves to stimulate increased social differentiation in cultural evolution (1993:81).

...The sharing of a meal by a large group is often an important event, an opportunity to reaffirm social unity, as well as to promote personal ambition. Archaeologists interested in understanding the development of social ranking must pay greater attention to the role of feasting and storage in nonstate societies. Material evidence of such activities may be concentrated within special community facilities. Platform mounds and other such facilities have a high archaeological visibility, but the specialized nature of use-related activities may only become apparent when associated materials are contrasted with generalized domestic patterns (1993:93).

Although the two archaeological localities (Coyote Hills and Lubbut Creek) are situated within different cultural universes, Blitz's theoretical perspectives have a great deal of validity especially when applied to the evolving prehistoric complex Native American societies within California (cf. T. King 1970; Wiberg 1984; Luby 1991; and others). Apparently, the only direct "Big Pots for Big Shots" analogy that at this time can be considered in light of the Ala-329 assemblages is the relatively high occurrence of the large "show" mortars (Big Pots) directly associated with the burials. The presence of such "show" mortars in the Ryan Mound cemetery, taken in conjunction with the other distinctive grave associations, suggests that

many of the people buried at Ala-329 represent an elite social stratum. Furthermore, the presence of such mortars are either rare or absent at Late Period village sites; therefore, they appear to have a higher incidence in direct association with graves than any other pattern or context.

In conclusion, this thesis questioned the views long held by scholars investigating Central California and more specifically, Bay Area prehistory. The main thrust of this study was to raise suitable research questions and seek plausible explanations to bridge unexplained gaps in the archaeological literature and record. I hope that this thesis will stimulate others to verify, reject or refine the assumptions, positions, perspectives, interpretations, questions and hypothesis raised as a result of analyzing the Ala-329 assemblages. This study is not a complete or even near complete site report. That was not the intent of this study. Therefore, there is still much to be accomplished with the collections derived from these bayshore and interior mounds. These collections should be thoroughly analyzed within a theoretical framework that considers all the complexities that permeated the rise of socially stratified societies within California. The final goal of this study was to humanize the archaeological record, not by creating larger-than-life new mythologies, but by seeking to understand human cultural systems within a wider cross-cultural perspective and to offer a reinterpretation of the ancient earth mounds that once dotted the San Francisco Bay.

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Appendix A

**Summary of Ca-Ala-329 Burials and Grave Associations:
With Comments, Observations and Re-evaluation From
Dr. James Bennyhoff's Review of Selected Artifacts**

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With Comments, Observations and Re-evaluation From
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Burial 1--60N/100W--18"--Male--Age 35-45--Orientation 286 degrees.
Primary inhumation, tightly flexed, on the right side. Burial is oriented toward the west, the cranium is looking south.

1048a- Obsidian point. The specimen edges are crushed and display striations, and coagulated residue on the point's surface. It may be a specialized point. Homen 1967 = 1.0 microns. Origer 1988 = 1.6 microns. 38.2 x 16.3x 6.9mm, weight = 4.6 gr. Specimen found under skull.

1048g- Obsidian biface fragment. Coagulated residue is present on the surfaces. It was manufactured by soft hammer percussion, and one edge appears utilized (unifacially nibbled). 29.8 x 23.3 x 8.6 mm. Weight is 5.3 gr., Homen 1967 = 1.0 microns and Origer 1988 = 2.0 microns.

1048b-f- Five talons from a Aquila chrysaetos (eagle) found in the proximity of the face. Unmodified.

Burial 2--60N/80W--20"--Female--Age 35+--Orientation 355 degrees (N5W)
Primary inhumation, tightly flexed position, on the right side, face up. (This is in close proximity to Burials 3 and 10). This may represent a triple burial cluster).

1067- Bone pendant biconically drilled. One end exhibits parallel striations from scraping. It is a left radius of a canine. There are no correlates listed in Gifford 1940 or 1947.

1071- Part of a harpoon unit (Gifford MM2B). This type is representative of a Middle Period fish spear. Bennyhoff suggests MM2B in Emeryville is a Middle Period fish gig (1950).

1058- Antler wedge

Burial 3--50N/80W--27"--Male--Age 35-44--Orientation 310 degrees (N50W)
Primary inhumation, tightly flexed, left side.

1044- Obsidian bear claw, or Stockton Curve. Homen 1967 = 1.0 microns; Origer 1988 = 5.2 microns. Napa obsidian. It may have been hafted as part of a bear dance outfit. It was made on the distal end of a large expanding flake with a hinge fracture and modified by soft hammer, with pressure retouch along the edges. It was found in the chest cavity of this burial.

1008- Pestle (intact).

Burial 4--50N/80W--22"--I--Age 1-1 1/2years--Orientation 315 degrees (N45W)
Possible secondary inhumation, face up.

1093- Small mortar (over skull).

Burial 5--50N/100W--26"--Male--Age 26-35--Orientation 290 degrees (N70W)
Primary inhumation, tightly flexed, face up.

1124,1182- Worked stones, 1124 unmodified sandstone cobble.

1045- 257 spire lopped Olivella, type 1b beads, found in the rib cage area.
Measure range = 13.7-17.5 mm.

1036- Small Stockton Serrated point with a broken base. It was found in
the mouth. Homen hydration rate = 1.02 microns.

1043- Spent Stockton Serrated obsidian point (found in the mouth). It has
slight organic residue on the point. (0.97 microns).

1037a- Unifacial modified flake (not a scraper) found in the mouth.
Napa obsidian. (1.29 microns).

1037b- Unifacially modified obsidian flake (0.98 microns). 1038- Utilized
flake, obsidian (1.42 & 1.39 microns).

1009, 1022- Two bone needles found in the mouth.

1094- Distal end of a charmstone (appears to be partially burned).

1115- Small flat unmodified sandstone pebble.

1118- Clay residual on an unmodified sandstone pebble.

1125- Kidney shaped worked stone (missing).

Burial 6--50N/100 W--36"--Female--Age 21-30--Orientation 250 degrees
(N110W). Primary inhumation, loosely flexed.

1121- Pestle (found near the flexure of the right femur and tibia).

1159- Serrated bone tool (the right deer scapula).

1021- Charmstone. (Both charmstone and bone tool were located by the
occipital region of the skull).

1119- Unworked sandstone cobble. There are two sets of femurs of
infants designated as Burial 6A in association with Burial 6,
representing possibly twins.

Burial 6A--Indeterminate--Age 0 (neonate).

Burial 7--50N/80W--28"--Female--Age 14--Orientation 205 degrees (N155W)
Primary inhumation, tightly flexed, face up.

1138- Abalone shell, bottom broken (found in an upright position in close
proximity to the cranium). The abalone shell is presumed to have been
deliberately punched or killed. The epidermis in the middle of the
shell has a modified/worn/polished concavity measuring 28.3 x 30.3
mm.

1137- Small pestle (found within the chest cavity).

1136- Fragmented antler harpoon point tip (clasped between the teeth of
the skull).

1111- Bone awl (deer?) complete, highly polished. (Date of this type of
antler harpoon circa. A.D. 1100-1300)

Burial 8--50N/80W--24"--Male adult--Orientation 270 degrees (N90W)

Redeposited partial cremation, tightly flexed position. The spine has been reversed.

1042- Napa Obsidian serrated point. Homen = 1.1 microns; Origer = 1.6 microns. Has organic residue on it, and some serrates are broken from impact (possibly caused death due to the location of the point relative to the vertebral column, has organic residue on it and impact fractures.

1040- Napa Obsidian serrated point base is broken. No residue and no hydration value. These points possibly look ceremonial, both were found in the vertebral column area and may have caused soft tissue trauma.

Burial 9-- 50N/120W--18"--I--Age ?--No orientation.

Redeposited cremation.

1017- Proximal end of a short flanged steatite pipe (partially spalled due to cremation).

1031- (5) 3e Olivella beads (LHF 1939) deeply cut and charred "thick, cupped, centrally perforated". Type 3e equivalent to Bennyhoff's K1).

1033a- (2) Olivella 1b beads (charred and fragmented).

1033b- Olivella beads: 65=1c; 12=1b; 8=1a.

1069- Haliotis shell fragment (epidermis is ground down).

1032- Quartz crystal (looks thermally crazed and spalled due to cremation). Crystal has organic residue on the surface.

Burial 10--50N/80W--30"--Male--Age 35-44--Orientation 320 degrees (N40W)
Primary inhumation, tightly flexed on the left side (may be clustered with burials 2 and 3).

1055- Eight bone tubes (under the mandible in some parallel pattern). Some are graduated in size; ends are beveled and display striations, some near the edges. Two appear to be clearly mammal and have remnant residue and deep striations or cut marks around the center. These ends are heavily beveled. Two are not from the same species of animal. Classified EE1b (Gifford 1940). Land mammals, especially deer long bones, predominate; few coyote long bones are identifiable (further identification is difficult with the ends missing).

Presumably, based upon the length and diameter, they were possibly used as gambling bones in the hand game for example.

1116- End battered pebble (fire blackened, some residue). The skull was stolen in the field between November 24 and December 1, 1962 by pot hunters.

Burial 11--50N(?)W--27"--I--Age 40+--Orientation 95 degrees.

Secondary inhumation, tightly flexed, face up.

1061- (84) Olivella 1a beads (scattered near the right mandible).

Measurement range 6.5-10.9 mm.

Burial 12--50N/30W--29"--Female--Age 39-44--Orientation 170 degrees.

Primary inhumation, tightly flexed, face down.

1141- Large pestle (found on the left side).

1191- Bone awl

Burial 13--50N/30W--15"--Male--Age 19-24--Orientation 270 degrees.

Cremation in place, face up.

1183- (2) Olivella 1b beads a) 14.0 mm., b) 18.3mm.

Burial 13A--Indeterminate--Age ? (Infant skull).

Burial 14--50N/30W--20"--Male--Age 31-40--Orientation 180 degrees.

Primary inhumation, tightly flexed, sitting, face down.

(Burial is upside down).

1057- (5) Olivella beads: 1b=3; 1c=2.

1144,1145- Killed pestles.

1007- Proximal end of a serrated scapula fragment.

1056- Haliotis pendant type Q1aIV.

Burial 15--50N/90W--19"--Female--Age 35-45--Orientation 180 degrees.

Primary inhumation, tightly flexed, on left side.

1131- Charmstone (incomplete, not completely pecked all around). It was found near the spinal column.

Burial 16--50N/40W--31"--Male--Age 31-40--Orientation 135 degrees.

Primary inhumation, tightly flexed slightly on left side, face down.

1135- Distal tip of a burnt awl (fragment).

Burial 17--50N/90W--34"--I--Age 5-7--Orientation 60 degrees.

Primary inhumation, tightly flexed, on left side.

1184- Bone needle (found in the cranial region).

1185,1201- Stingray barbs (found in the chest cavity). Stingray (Myliobatis californicus) with barbs ground off (unworked Sting-ray spines tend not to be uncommon, Bennyhoff).

1202- Obsidian point/biface (proto projectile, which is unfinished, found underneath this individual. Hydration reading: Homen = 1.1 microns; Origer = 1.9 microns.

Burial 18--50N/60W--88"--Male--Age 17-18--Orientation 280 degrees.

Cremation in place, loosely flexed, right side, face down.

1163- Obsidian point - Stockton Serrated, intact (Homen = 2.1 microns; Origer = 1.3 microns). Not Napa obsidian.

1062- Stockton Serrated, intact, has organic residue (Homen = 1.4 microns; Origer = 1.1 microns). This specimen has organic residue.

1059- Stockton Serrated, intact, slight residue (Homen = 1.3 microns; Origer = 1.6 microns).

1117- Stockton Serrated, intact, has organic residue (Homen = 1.5 microns). 1162- Stockton Serrated, intact. Four of these points seem to be made by the same person and are of the same obsidian. This

- individual may have been buried with his arrows. Lack of impact fractures suggest this.
- 1054- Steatite flanged pipe, intact. It was found in the central portion of the rear chest cavity. Organic residue still in the pipe.
- 1164- Quartz crystal (appears to be burnt and crazed).
- 1160- Quartz crystal is crazed, facets and tip are completely rounded suggesting it was a drill used to bore out the pipe. It fits in the lower bore of the pipe.
- 1485- Quartz crystal fragment fits the other end of 1160.
- 1161- Enhydra (sea otter) scapula serrated saw. (Possible perforations were deliberately made in the scapula blade).
- 1127- (3) 1a Olivella beads. This burial is a high status individual; possible pipe manufacturer.

Burial 19--50N/30W--34"--Male--Age 35-45--Orientation 350 degrees. Primary inhumation, tightly flexed, right side, face up; and was immediately recovered below Burial 12 and oriented opposite B. 12. There is a small worked stone and red ochre in association.

Burial 20--50N/90W--34--Female--Age 19-24--Orientation 175 degrees. Primary inhumation, tightly flexed, arms extended, right side, face up. Three stones were found in a cluster 22" east of the burial.

1178a- Large flat oblong sandstone cobble, unmodified or no apparent wear.

1178b- Elongated sandstone cobble (exhibits polish and parallel striations and surface pecking near the end).

1178c- Unmodified sandstone cobble.

1177- (14) Olivella 1b beads.

Burial 21--50N/30W--40"--Male--Age 30-35--Orientation 100 degrees. Primary inhumation, tightly flexed on left side. No grave goods.

Burial 22--50N/90W--35"--Female--Age 39-44--No orientation. Secondary inhumation.

1225- Small pestle (with a flanged (knobbed) end and slight depression in the top). Similar to type B9 in LHF 1939.

1226- Worked stone.

Burial 23--50N/80W--48"--Male--Age 30-40--Orientation 10 degrees. Primary inhumation, tightly flexed, face up.

1232- Obsidian Stockton Serrated projectile point (made on a small flake) Homen = 1.0 microns.

1231- (76) Olivella beads. Equivalent to Bennyhoff's M2a and to LHF 2a2. They are end perforated and were found in the left side of the skull. (5) Haliotis pendant fragments were found in the neck area and are missing.

Burial 24--50N/40W--40"--Male--Age 20-24--Orientation 60 degrees.

Primary inhumation, tightly flexed, half sitting on the right side.

1181- (784) Olivella 1a beads (found in the pelvic region).

1180- (555) Olivella 3a1 beads (found in the cranial and upper chest region). (Bennyhoff's E2, thick lipped and full). This burial may be extremely late A.D. 1700-1769. According to Bennyhoff interview. ---3a1 beads are equivalent to Bennyhoff's E2a2 and E2a3, also there is a E3b. All are variations of the same type. Temporal indications of E2 is marker scheme B1 (post 1700 to historic).

Burial 25--50N/100W--43"--Female--Age 35-44--Orientation 325 degrees (N35W) Primary inhumation, buried on the left side, face up, tightly flexed; (a fire lens extends under the entire burial and some bones are blackened).

1132- (186) Olivella 1a beads (found in the neck region).

1133- Serrated bone saw (found near the cranium), probably a deer scapula.

Burial 26--50N/80W--50"--Female--Age 35-45--Orientation 20 degrees.

Primary inhumation, loosely flexed, face down.

1282- Sandstone pestle (several spalls present on the proximal end). The proximal end is chisel shaped. Length = 32.5 cm. It was found in the crook of the arms of this person.

1283- (134) Olivella 1a beads (found near the facial region).

1276,1277- Two bone awls (ulnae?). They were found near the right arm region. - Obsidian flake was also recovered but not catalogued.

Burial 27--50N/30W--42"--I--Age ?--Orientation ?.

Cremation (in place).

1129- Mortar fragments (found inverted on top of the burial).

1113- (10) Olivella 1b burnt beads.

Burial 28--50N/100W--64"--Male--adult--? Orientation.

Redeposited cremation. No associations.

Burial 28A--Indeterminate--Age--1.

Burial 29--50N/20W--8"--I--Age 4-5--Orientation 180 degrees.

Primary inhumation, tightly flexed, sitting erect and facing north.

No grave goods.

Burial 30--50N/80W--21"--Female (3)--adults--? Orientation.

This is a secondary inhumation comprised of three female adults, directly over an extensive shell layer, which has a fire lens below it. The burials are disarticulated. Chert, oyster shell and barnacles were found mixed in.

Burial 30A--Female--Age-Adult.

Burial 30B--Female--Age-35-40.

Burial 30C--Female--Age-40+.

Burial 31--50N/90W--45"--Male--Age 27-35--Orientation 85 degrees.

Primary inhumation, tightly flexed, on the right side.

1260- Large antler harpoon with four barbs on each side (it has asphaltum in the ventral surface).

1261- Smaller harpoon that has five barbs on one side, four on the other (asphaltum is on the ventral surface). These two antler harpoons are intact and were found in the chest region. According to Bennyhoff's interview, the harpoons denote an early/middle late phase 1 (1A/1B Late Period 900 - 1300 A.D.)

1259- Piled plummet charmstone, sandstone and intact (found in the chest region of the individual).

1258- Charmstone (fractured and spalled), probably a fine grained sandstone. It has a heavy collar of asphaltum with entwined imprints.

1294- Clam shell (with a sawed hole). There are striations on the epidermis and was found in the mouth of this person.

1257a,b- Two bird bone radii (with distal beveled ends, bilateral (right and left), found in the leg region of the burial). Bird radii are the same as *Grus canadien* (Sandhill Crane) but a little longer.

1256,1273- (2) Olivella 1c beads. - 1 Olivella 1b bead (uncataloged and missing).

Burial 32--50N/40W--60"--I--Age 35+--? Orientation.

Secondary inhumation or badly disturbed primary burial. It is loosely flexed. No associations.

Burial 33--50N/70W--33"--Female--adult--Orientation 315 degrees.

Cremation (in place).

1177- (12) Olivella 1b and (2) 1a beads. (These are charred).

1155- (3) Olivella 1b beads

1154- Utilized flake of Green Franciscan chert.

Burial 34--50N/60W--127"--I--35+--Orientation 115 degrees.

Primary inhumation, tightly flexed on the left side. This burial is deteriorated and has no grave goods. It may be one of the oldest burials because of its depth.

Burial 35--50N/60W--144"--I--Age 2-3--Orientation estimated 180 degrees.

Primary inhumation and is the deepest burial.

1166- Bipointed bone object, Gifford 1940-T2bII. There is a deliberate thinning of the middle section. It may have been a nose ornament, or fishing hook or gorget.

Burial 35A--Infant--Age-2-3.

Burial 36--50N/90W--38"--male--Age 35-44--Orientation 0 degrees.

Primary inhumation, loosely flexed, face up, right side. This burial is facing magnetic north. There are no associations.

Burial 37--50N/90W--30"--I--Age 0-1--Orientation ?

Primary inhumation of an infant (which was vandalized by pot hunters).

1205- (5) Olivella beads typed 3a1 (LHF) which is equivalent to Gifford's 3b2 and Bennyhoff's E2. They are thin lipped. Bennyhoff puts E2 at the end of Late Phase 2 (A.D. 1700-1769).

Burial 38--50N/80W--44"--Female--Age 17-20--Orientation 0 degrees.

Redeposited cremation, with the face up.

1207- (1) Haliotis pendant--Q1aIV. Gifford states there is one specimen from Niles and two from Emeryville Mound. It is sub-rectangular rather than ovoid, is biconically drilled, and has some asphalt residue on it.

Burial 39--50N/110W--42"--Male--Age 27-35--Orientation 225 degrees.

Primary inhumation, tightly flexed, face up. No grave goods.

Burial 40--50N/70W--74"--Male--Age 25-35--Orientation 240 degrees.

Secondary inhumation. No grave goods.

Burial 41--50N/50W--54"--I--Age 5 1/2-6 1/2--Orientation 90 degrees.

Possibly a redeposited cremation or a partial cremation. It is loosely flexed, face up. There were (60) Olivella 1b beads and (100) Olivella 1a beads found below the skull and in the chest area but are missing.

1307- Quartz crystal (shows no wear on the facets).

Burial 42--50N/ 40W--50"--I--Age 1--Orientation ? degrees/

Primary inhumation (no grave goods).

Burial 43--50N/110W--48"--I--Age 1-3--Orientation ? degrees.

Primary inhumation. This burial was vandalized by pot hunters and had a banjo pendant assembly associated with it.

1300- (1) Haliotis pendant fragment, type S3aII (Gifford, 1947) conically drilled on the long side; measures 19 mm x 12.9 mm.

Burial 44--50N/110W--48"--I--Age 0--Orientation ? degrees.

Primary inhumation--stillborn?

1348- (1) Olivella 1a bead.

Burial 45--50N/110W--48"--I--Age 1 1/2--Orientation 130 degrees.

Primary inhumation, tightly flexed, face up.

1270- Mortar, A2b (Beardsley) found in proximity to the skull. (It may have covered the skull).

1272- Quartz crystal (found near the ribs) heavily worn. All the facets around the crystal are completely ground down and polished. It may have been a power object. Also a large flake was detached from one end and then ground down.

1271- (62) Olivella 1a beads (found scattered in the chest region).

1269- (99) Olivella 3a1 beads, E2 or E1, (Late Phase beads) are unifacially drilled and are of different sizes.

Burial 46--50N/120W--66"--Female--Age 35+--Orientation 95 degrees.
Primary inhumation, tightly flexed, face down. No grave goods.
(This burial intrudes into sterile deposit).

Burial 47--50N/90W--61"--I--Age 1-2--Orientation 315 degrees.
Primary inhumation, tightly flexed, face up, bent forward. This burial was found under a large shell pit feature.- (25) Olivella 1a beads in the neck area are missing.

1309- Haliotis rufescens complete shell; (found near the mouth). There is some organic residue in the shell that has fiber strips in the shell. High facets on the epidermis have been worn down a little and possibly the edge. Specimen measures 102.6mm x 81mm. It may have contained a food offering. Also an adult rib was found in close proximity.

1298- Haliotis pendant, typed as AB3bII (Gifford). It is Haliotis rufescens, is conically drilled, incised on both edges, around the edge and shaped.

Burial 48--50N/50W--60"--Male--Age 30-39--Orientation 150 degrees.
Primary inhumation, tightly flexed, left side.

1327- Cylindrical lump of red ochre (found immediately in back of the skull).

1328- Perforated phallic charmstone biconically drilled adjacent to the ochre. It is similar to the one found at Ala-328, Patterson Mound (plate 3:L), typed IB2a, a double ended phallic charmstone (Davis and Treganza 1959; Beardsley typology is Va).

1332- Obsidian Stockton point (base midsection). The tip is broken.
Homen = 1.5 microns.

1333- Obsidian tip of a large point. There is some crushing on the edges and some ochre stains; it may be an early dart point. There is organic residue present. (Homen = 2.0 microns; Origer = 1.1 microns).

1334- Obsidian Stockton point thin flake; has organic residue on it. It may have caused soft tissue trauma. C-14 date is 250 B.P. 2.0 and 2.4 microns, a date of 1373-1104 A.D.

Burial 49--60N/70W--84"--Female--Age 35+--Orientation 135 degrees.
Primary inhumation, tightly flexed, left side, buried under a large mortar.

1315- Mortar (typed A1a); underneath are the two large pestles.

1313- Sandstone pestle (with a slight hint of a flange on the proximal end, 49.4 cm). Specimen doesn't fall within Beardsley's typology.

1314- Sandstone pestle, (31.1 cm long); is a smaller version of 1313 with a collared proximal end (it is between types B12 and C1 (LHF)).

1316- (201) Olivella 1a and (4) Olivella 1b beads.

- 1317- (544) Olivella beads. 90% appear to be centrally perforated 2a1 and 10% are end perforated 2a2. These types are according to LHF 1939 which is equivalent to Gifford's X2a and Bennyhoff's M1a (centrally perforated) and M2a (end perforated). M2a dates Late Phase I (1300-1500 A.D.) and M1a dates early Phase I (900-1100 A.D.).
- 1318,1319- Haliotis effigy pendants are clawed and have applique applied. Bennyhoff states these are mixed lot 2a1 and 2a2 beads. They look like those found in the Diablo area. They are slightly incised, the two crescents formed by incurved horns with a notch in between the two crescents (Gifford's N6bIII). There is a strong affinity with CCo-138 because of the horns. Each has two perforations, one on the top and one on the side. 1320,1322- Haliotis pendants (with two drilled holes and asphaltum applique); typed as N4aI with two perforations. They are similar to N6 (with two perforations) but terminate in a straight distal end. They are similar to CCo-138 N3b, without rings. These are square ended, no incised edge. They are also similar to the N4 series, however, they have a side perforation and also little Olivella X3bI beads used as applique. There is one recorded from Mission Santa Clara. They are equivalent to G1 (Bennyhoff) and LHF's 3d.
- 1321,1324,1325- Haliotis pendants of N5 series, scalloping, spoon shaped, incurved horns, centrally incised. Diagnostic of Late Phase 1B/1100-1300 A.D.(Bennyhoff and Hughes 1987); also compare to figure 31, SCI-128, (Winter 1978:148. Bennyhoff states G1 are undiagnostic; they occur in the transition of early to late period. They are not classified as cups. The bottoms, which until now are thought to be unfinished, could represent another form, or a type on which feathers were once attached.
- 1323 - N6aII -- (similar types all found in CCo-138). This individual may be from the Delta region. N6 pendants date 1100-1300 A.D. M1a (2a1) date 900-1300 A.D. M2a (2a2) date 1300-1500 A.D. According to Bennyhoff interview, the banjo assemblage is from the middle phase (1B) and appear at Hotchkiss-CCo-138. They are equivalent to Bennyhoff's G1 series, equivalent to Gifford's N6a1--1100-1300 A.D.

Burial 50--50N/50W--70"--Male--Age 31-39--Orientation 260 degrees. Primary inhumation, loosely flexed (skull turned upside down relative to the skeleton). The skull may have been disturbed due to the interment of Burial 51. The left arm and right leg are missing. Burial 51 is immediately west of it.

1339 -Desert Side Notched point (gray Franciscan chert). There is an impact fracture at the base, and thermal spall or impact fracture near the notches. Desert Side Notched points are considered Late Phase 2, and may represent one of several possibilities: 1) a post-obsidian (Stockton Serrated) point type, representing the terminus of the Late Period 1C; 2) DSN's could co-occur with Stockton Serrated points but represents local manufacture; 3) this point is a trade item that came in from the east (possibly Yokuts area); and 4) may represent evidence of

intergroup conflict with an interior or neighboring tribe, and this point contributed to the death of this individual.

1338 - Haliotis pendant (appears burnt). It has a plain edge and two peripheral perforations (Gifford's K5aI) or an AA4a. -- An obsidian flake was recovered but not catalogued or found.

Burial 51--50N/50W--76"--Female--Age 39-44--Orientation 100 degrees.

Primary inhumation, tightly flexed, left side, face down.

1346 - (51) Olivella 1b beads (found in the mouth).

Burial 52--50N/50W--90"--Female--Age 40+--Orientation 100 degrees.

Primary inhumation, very tightly flexed, sitting, face down.

1393 - 18 inch sandstone pestle (clutched in her arms). It has a flanged end and the proximal end has a concavity. Type IIB4 (Beardsley).

1341 - (120) Olivella 1a beads.

Burial 53--50N/120W--60"--Male--Age 17-21--Orientation 95 degrees.

Primary inhumation, tightly flexed, face up. This burial was found under a layer of shell (The teeth were hardly worn).

1366, 1367 - Two intact piled plummet sandstone charmstones. They are about the same size and were found between the right femur and tibia.

1368 - (9) Olivella 1b beads and (3) Olivella 1c (found in the chest region). -

A Haliotis pendant is present in the burial photograph. It may have been part of the Olivella bead assemblage, hence the same number assigned to it. Type Q1aIV - has one perforation in the narrow end.

1371, 1372, 1373 - (3) clam shell pendants. All three are drilled and classed as Margueritifera. They were found in the cranial area above the right temporal and are typed D6 (Gifford 1947). There is a hole drilled in the posterior edge.

1404 - Haliotis pendant. It is plain edged and typed Q2aIII. It may be a basket ornament (according to Gifford). The hole is toward the broad end, but is off center.

1369 - Bone awl (probably deer). 1365 - Bone tube (right humerus, mid shaft of pelican). No cut marks present to suggest it is a proto-whistle.

1370 - Hour glass shaped steatite lip or ear plug (found by the mandible).

Burial 54--50N/50W--84"--Female--Age 35-44--Orientation 270 degrees.

Primary inhumation, tightly flexed. The skull, scapula and clavicle are missing.

1388 - (280) Olivella 1a beads.

1389 - (9) Olivella 1b and (29) Olivella 1c beads. 1388 and 1389 all were found within the chest region.

1391 - Obsidian prism tinkler (Homen = 1.6 microns; Origer = 5.9 microns).

1390 - Obsidian prism tinkler. 1390 and 1391 were both found in leg region, between right and left legs (unmodified).

1392 - Large obsidian bifacial dart point. This point is crude and was found in the leg region. This projectile may be a possible cause of soft tissue trauma. (Homen = 1.6 microns; Origer = 1.7 microns).

Burial 55--50N/120W--39"--I--Age 0-1--Orientation ? degrees.
Redeposited cremation found in an ash shell lens or pit, 13 inches above sterile soil (Many infants came out of this pit and that of Unit 50N/110W).
1341 - (120) Olivella 1a beads.

Burial 56--50N/70W--88"--Male--Age 21-35--Orientation 270 degrees.
Primary inhumation, tightly flexed, right side.
1713 - Haliotis rufescens, whole shell. The high facets seem to be ground down on the epidermis. It is a small shell found in close proximity to the face, perhaps contained a food offering?
1344 - Small charmstone made of serpentine or schist-like, metamorphic stone with mica inclusions. It has a pronounced knob at the top and a highly polished surface. The tip has been broken off.
1345 - Small mortar. This is a "cosmetic" mortar with red ochre residue in the interior well. It is made of sandstone and was found near the lumbar region of the burial.

Burial 57--50N/50W--88"--Female--Age 30+--Orientation 0 degrees.
This is a disturbed burial or is a redeposited inhumation and is somewhat articulated. The skull, mandible, left arm and leg are missing.
1477 - Burnt bone awl tip.

Burial 58--50N/50W--92"--Male--Age 25-35--Orientation 270 degrees.
Primary inhumation, tightly flexed, left side. Found in layer of burnt clay fragments and midden. Several burials 50N/50W may have been disturbed by excavation for new graves.
1511 - Obsidian tinkler.

Burial 59--50N/50W--91"--I--Age 0-1/2--no orientation.
Primary inhumation.
1476 - (114) Olivella beads (1a = 5; 1b = 108; 1c = 1) found scattered among the bone fragments of the burial. 1655 - Antler tool (with one tine cut off and flattened and the other carved and slightly tapering). It may have been a haft handle for something or awl-like tool.

Burial 60--50N/190W--18"--Male--Age 50+--Orientation 20 degrees?
Primary inhumation, tightly flexed, presumably face up. The skull and 40% of the upper torso is missing. (Burials 54 and 57 were also without skulls).
1494 - Bone awl (looks extremely fresh and heavily reworked). It is a splinter of a long bone (possibly deer). The tip has a groove cut into it, half way around the tip and some lesser notches worn away further up. It is possibly an awl for basket making.

1493 - Workstone (with surface pecking on one face and some pecking on the long edge).

1400, 1402--Worked stones?

1514 - Charmstone (has been spalled on the proximal end and broken). The body is partially completed by pecking; the distal end complete. It is reminiscent of crude charmstones from Ala-479 in Union City (Leventhal et. al. 1987).

Burial 61--50N/180W--20"--Male--Age 35-50--Orientation 60 degrees.

Primary inhumation, tightly flexed, right side.

1406 - Obsidian bifacially flaked/modified flake with heavy concentrations of organic residue on one face. It may have been a backed knife for butchering. (Homen = 0.9 microns; Origer = 1.3 microns).

Burial 62--50N/160W--7"--Female--Age 31-40--Orientation 225 degrees.

Primary inhumation, loosely flexed, right side.

1504 - Serrated deer scapula saw (found near and above the pelvic region).

1396 - Reworked pestle (probably similar to 1393 in size and shape). The midsection and distal end are the same. The proximal end has been reworked and shaped by pecking. It has been reworked into a type IIA2 (Beardsley).

Burial 62A--Indeterminate--Age-Fetus.

Burial 63--50N/150W--28"--Male--Age 13-15--Orientation 215 degrees.

Primary inhumation, tightly flexed, right side. This is a multiple burial with Burial 70. (See Burial 70 for additional information).

1496 - Large mortar (inverted over the center of both burials - type B2 (Beardsley).

1709 - Antler tine (possible flaker) found under the mortar.

Burial 64--50N/150W--26"--Male--Age 30-39--Orientation 0 degrees.

Primary inhumation, tightly flexed, left side. No grave associations.

Burial 65--50N/150W--26"--Male--Age 35-39--Orientation 115 degrees.

Primary inhumation, loosely flexed, left side.

1464 - This burial is covered by a large (53 pound) shaped mortar - type A2a (Beardsley).

1491 - (171) Olivella spire lopped beads (1a = 48; 1b = 123)

1467 - Haliotis effigy pendant (was worn as a necklace, and was found in the neck area under the mortar). The pendant is illustrated as being with feet which dates Phase 2A in the Alameda District by Bennyhoff. It is a type N1bII (Gifford) and similar specimens were described by Coberly (1973) and were also found at Ala-342. It is also biconically drilled. According to Bennyhoff interview 1467 is representative of Phase 2A Late Period.

Burial 66--50N/150W--19"--Female--Age 31-40--Orientation 315 degrees.
Primary inhumation, loosely flexed, face up. Some infant bones also were found.

1521 - Pestle (was found in the abdomen of the skeleton). It measures 13.5 inches long and typed IIB4, with a slight concavity on top. - The whereabouts of the bird skeleton is unknown.

Burial 66A--Indeterminate--Age 0-1.

Burial 67--50N/120W--28"--Male--Age 20+--Orientation ?

This is a partial redeposited cremation.

1656 - Obsidian point (found in the thoracic region). It is a possible cause of death. The tip is impacted. It is a Rattlesnake Corner Notched style point rather than a Stockton Serrated. A similar point recovered from Ala-342 is made of Chalcedony. (Homen = 1.0 microns; Origer = 1.5 microns).

Burial 68--50N/200W--36"--I--Age 1-2--Orientation ?

Primary inhumation, loosely flexed, face down.

1693 - (38) complete and (5) fragmented Conis shell beads. They are graded in size. They are typed under the H series by Gifford (1947) and are similar to H2d. They were scattered about the neck region and were interspaced with one or two Olivella beads.

Bennyhoff states these are not Conis shells but rather limpet shells with the tops ground off to create a rim. This many is unusual. A single specimen is usually uncovered. These are Acnaea mitra.

1710 - Large base of an elk antler. There is a deliberate groove made around one of the offshoot tines. This was found to the northeast of the burial. Bennyhoff stated that this elk antler was not a tool. However, in the Delta they made adzes of such antler parts.

1695, 1696 - Two large, finished piled plummet charmstones in duplicate shapes. They are reminiscent of the same type of charmstones found in the multiple burials locus P of Ala-479 (Leventhal et al, 1987).

1694 - Olivella beads = 1a = 20; 1b = 31; 1c = 2.

1697 - Haliotis rufescens (edge incised pendant fragment). It looks like a Q1bII or similar to a S2bI.

1699 - Large pestle. - A sea otter mandible was found nearby, but was not catalogued. Artifacts from Burials 68 and 69 are intermixed.

Burial 69--50N/200W--35"--Male--Age 25-34--Orientation ?

Primary inhumation, tightly flexed, right side.

1567 - Charmstone (finished, highly polished with the proximal end broken). There are remnant incision marks around the neck due to wrapping. It is similar in style to a piled plummet. 1568 - Sandstone charmstone, found near the left tibia.

1569 - Charmstone (squat version of an egg shaped charmstone). 1567 and 1569 were found near each other in the abdominal region. If the

charmstones were hypothetically attached to a net, the net would have been wrapped around this individual (cf. Nomlaki burial practices, see Goldschmidt 1951).

1565 - Unworked sandstone pebble covered with organic residue.

1566 - Bone awl (midsection tip and highly polished).

Burial 70--50N/150W--28"--Male--Age 16-18--Orientation 10 degrees.
Primary inhumation, tightly flexed on the right side. This is part of a dual burial associated with Burial 63. The grave goods tend to be associated with Burial 63 although they are probably associated with both burials, because the antler tube and mortar were on top of both. The burials are facing opposite direction from each other (yin/yang).

Burial 71--50N/180W--44"--Male--Age 31-40--Orientation 130 degrees.

Primary inhumation, tightly flexed on left side.

1626 - Steatite pipe (small, flanged with some asphaltum residue on the upper portion above the flange). The pipe was found near the face of the individual. - 3 long bird bones (similar to the crane radii from Burial 31) are depicted in the photograph, but were not catalogued.

Burial 72--50N/130W--30"--I--Age 1-2--Orientation 70 degrees.

Primary inhumation of an infant, tightly flexed. - Single Olivella specimen types 3a2, 3a1 and 3c (LHF) were found scattered nearby.

1625, 1624 (three 3e beads), 1619 (eighty 2a1 beads) were also found in close proximity.

Burial 73--50N/180W--41"--I--Age 0--Orientation ?

Primary inhumation of infant neonate (disturbed, spread over wide area within grave pit).

1498 - (5) Olivella 1b and (1) Olivella 1a beads.

Burial 74--50N/180W--48"--Female--Age 35-44--Orientation 90 degrees.

Primary inhumation, tightly flexed, face down.

1640 - (39) Olivella beads: 1a = 10; 1b = 1; 1c = 28 (found around the neck region and back of the head).

1537 - (3) Olivella beads: (1b = 2; 1c = 1) 1642--One small broken Haliotis pendant (type Q1bIII or S2bI) found in the facial region.

1528 - Charmstone (proximal end broken). There is asphaltum residue around the neck region, small and not fully finished.

1520 - Small pecked stone specimen (surface pecking on both faces near one of the ends and slightly ground).

1539 - Bone awl (with a wide spatulate end made on a split deer bone). It is the proximal end of a cannon bone of a deer.

Burial 75-- 50N /70W--128"--Female--Age 21-30--Orientation ?

Secondary inhumation, face up, on right side. It was totally disarticulated, according to the notes, except for one foot. It was recovered from sterile

subsoil. It is possibly one of the earliest (oldest) burials found at Ala-329 (See burials 34 and 35). Found in conjunction with this burial were various mammal bones, antlers, an obsidian flake, charcoal, large amounts of baked clay.

1714 - Worked stone which appears to be a centrally grooved sandstone cobble with one end broken. The groove was done by crude pecking, possible net weight.

Burial 76--50N/170W--32"--Female--Age 18-25--Orientation 0 degrees. Secondary inhumation, tightly flexed, face down.

1671 - (6) Olivella beads. Five are end perforated (M2a) and one is M1a (M2a date 1300-1500 A.D., M1a dates 900-1300 A.D.).

1670 - (16) Olivella beads (1b = 6; 1c = 10) found in the neck and pelvic regions. - A worked stone found in the frontal region of the skull was not catalogued.

Burial 77--50N/170W--32"--Female--Age 21-30--Orientation 130 degrees. Primary inhumation, tightly flexed, face down and fully articulated. It was found in close proximity to burial 88.

1637 - Bone punch may be the only artifact.

Burial 78--50N/150W--32"--Male--Age 35-44--Orientation 305 degrees. Primary inhumation, tightly flexed on the right side.

1653 - (37) Olivella 1a beads (found around the neck region).

1654 - (438) Olivella beads. One has a fabric residue on its surface.

There are (58) Olivella M2a and (380) rectangular M1a beads that are centrally perforated. One bead is a triple drilled bead with two perforations. One is not drilled through. M1a (X3aIII) has two perforations and one punctation. 23 were found at CCo-138 and one at Ala-309. There was one X3aIII found in a bear burial from CCo-138. M1a beads date 900-1300 A.D.

1643 - Haliotis pendant (found around the neck region). It is typed AF5aIII, a Haliotis rufescens with one perforation. Similar specimens were recovered from Ala-309 (n=1) and CCo-138 (n=7).

1644 - Haliotis pendant (appears to have bone adhering to it). It has a plain edge, is asymmetrical and is typed AA4aII. There is one recorded from CCo-138.

1645, 1646, 1647, 1648, 1649 - Haliotis pendants type AF5aIII.

1650 - Z2aII. There are four specimens recorded from CCo-138 and one from CCo-295.

1651, 1652 - Haliotis rufescens square rectangular pendant typed S2aII. There were two found in Ala-329 and three from Ala-309.

According to Bennyhoff interview these date 1100-1300 A.D. The mixed Haliotis rectangular beads (M1a - M2a) with perforations in the center and end is indicative of the above dates (Middle Phase 1B); those with more than one hole, are mistakes. Pendants are non distinct. Multiple drillings are of

interest. The beads are M1a series, which is characteristic of early Phase 1 Late Period. End perforated beads are M2a.

Burial 79--50N/200W--51"--I--Age 1-1 1/2--Orientation ?

Cremation in place, loosely flexed, on the right side. This is a high status infant.

1571 - (237) Olivella beads--1a = 184; 1b = 53.

1570b - (264) Olivella beads--M2a = 50; M1a = 214. M2a are end perforated.

1570a - (62) Olivella beads, type M1a.

1572, 1577, 1580, 1582 - large double lateral Haliotis banjo pendants with incised edges; classed N1BII. Specimens are also known at Castlewood Country Club in Pleasanton. This is a Late Phase Burial at 1500-1700 A.D. The banjo pendants were found close to the skull.

These Haliotis pendants were found near the neck region and are classed as follows:

1583 - Haliotis cracherodii with one perforation and an incised edge and classed Q1bI.

1581 - S2aII.

1573 - Q1bIII

1574 - S2bI

1575 - S2aII

1576 - AF4aI

1578a-g - These are possibly basket pendants:a) Q1aIII; b) S2aII; c) S2aII; d,e,f,g,) S2bI

1579 - Haliotis rufescens typed K2aII. Similar ones were found near Castlewood. They are also known ethnographically to have adorned Pomo feathered baskets (Gifford, 1947).

1585 - Fragment of a flat elk bone (which is not worked).

1584 - Antler or bone. The proximal end looks worked and is blackened. Z1 is a conical (headed) object with a flattened thin stem which is not perforated. The residue could be asphaltum (possibly from hafting). - There was a sea otter mandible under the skull and two antler tips which are not catalogued.

According to Bennyhoff interview the principal bead types are M1a and M2a date Phase 1B Late Period. One Haliotis clone of a new type of M2a1. The banjos evolved as local variants, especially 1572 coming out of the horned variant. These are transitional from the claws. His impression was that Haliotis cracherodaii presence was an indication of the terminal middle period 500-700 A.D. The assemblage, itself, points to this burial as Late 1B 1100-1300 A.D. One interpretation is that Ala-329 people had an independent trade network; in later times tying them to Monterey Bay area. Therefore the presence of black abalone continues to Phase 1B and possibly is not traded further north at this time; thus leaving an impression in the Delta region that Haliotis cracherodaii is an earlier marker.

Burial 80--50N/130W--28"--I--Age 1/2--Orientation ? degrees.

Burial 80A--50N/130W--28"--I--Age 0.

In place cremation of two infants, face down.

1604 - Red ochre (found in proximity to the skull area).

1603 - Possible sandstone-red ochre grinder. It was found in close proximity to the skull. The ochre is concentrated within the hole. It appears deliberately worked with both sides ground, like a pendant. It is polished flat on both faces and has asphaltum residue on one end. Nodules will fit in the hole. Bennyhoff states there was a natural hole originally in the rock, then they used it with ochre.

1605 - (18) Olivella K1 beads (deep cups with red ochre). Some are still articulated. Six of them were found in Ala-309. Pomo coiled baskets have them sewn on the side. These may be associated with a basket. The dates are 1100-1300 A.D. according to Bennyhoff. Bennyhoff states these beads are K1 cups. They are absent in Phase 1A and start in 1B and continue through 1C.

Burial 81--50N/210W--60"--I--Age 30+--Orientation ?

Secondary inhumation, loosely flexed on the right side. The skull and some long bones are missing.

Burial 82--50N/190W--23"--I--Age 2-3--Orientation 160 degrees.

Primary inhumation, loosely flexed on the left side and is located in or on a shell pit.

1630 - (24) Olivella beads (1a = 23; 1b = 1) which probably formed a necklace.

Burial 83--50N/160W--34"--I--Age 0-1/2--Orientation ?

Cremation (an infant, possibly a neonate). Pendants and Olivella beads found near fragments of the skull. This individual may possibly have been buried in a basket, because the abalone pendants are similar to basket pendants.

1685 - (242) Olivella 1a beads and (1) Olivella 1b bead.

1682, 1675 - two fragments glued together. It looks like a fish tail of a banjo pendant of N5 type. They are found in CCo-138.

1676, 1678, 1679, 1680, 1681, 1682, 1683, 1692 - Abalone pendants. 1681, 1692, 1678 are type Q1bIII. 1679 is type Z2bIII. The three pendants are identified by Gifford as recovered from "Bay Shore" site SMA-387 (northern San Mateo County). According to Bennyhoff interview 1682 is the lower portion of a banjo pendant that has been reworked and refinished. He would date this burial as Late Phase 1B = 1100-1300 A.D.

Burial 84--50N/150W--51"--Female--Age 25-35--Orientation 340 degrees.

Primary inhumation, tightly flexed, face down (Burial with 87).

1627 - Mortar

1708 - Large sandstone mortar appears to have been killed at the time of burial with portions scattered around the burials.

1705 - Broken Abalone shell were reconstructed into a shell bowl? with asphaltum--possibly a food bowl. The epidermis of the shell has been ground in high facets.

1707 - (49) Olivella beads (1a = 8; 1b = 39; 1c = 2). Some have been punched out the side of the callus. They are ground and punched. There are three crab claw beads included with the Olivellas. According to Bennyhoff interview these beads may have been a variant of a way of stringing the beads.

1706 - Small pestle (found near the back of Burial 84). This is a multiple burial. 84 and 87 were found under the mortar. Sea otter bones were found under Burial 84. (See Burial 87)

Burial 84A--Indeterminate--Age 1-1.5.

Burial 84B--Indeterminate--Age Adult.

Burial 85--50N/150W--48"--Male--Age 35+--Orientation 230 degrees.

Primary inhumation, tightly flexed, face up. The bottom of the burial is in sterile soil. There are no grave goods associated with this burial.

Burial 86--50N/140W--46"--Female--Age 35+--Orientation 0 degrees.

Primary inhumation, tightly flexed, and sitting, bent over with the face forward; slightly on the left side.

1688 - (62) Olivella 1a beads.

1689 - (85) Olivella 3e beads. The above beads and a missing abalone pendant were found in the mouth. K1 cups (Bennyhoff) date 1100-1300 A.D. The pendant, although missing, is an S series, with three perforations. Also found were a broken piled plummet charmstone and a workstone, but these are missing.

1659, 1674 - Bone awls.

Burial 87--50N/150W--55"--Female--Age 19-21--Orientation ?

This person was involved in the trauma study. Projectile point imbedded in L5 vertebra. K1 beads date 1100-1300 A.D.

Burial 88--50N/170W--32"--Female--Age 41-50--Orientation 150 degrees.

Primary inhumation, tightly flexed on the right side. This individual is at the same depth as Burial 77 and east of Burial 78. There was an unknown number of Olivella beads found around the neck region.

1503 - Charmstone fragment.

1698 - Stone pestle found between the legs near the fibula/tibia articulation.

Burial 89--50N/210W--65"--Male--Age 12-15--Orientation 350 degrees.

Primary inhumation, flexed position, extended, on the left side, with both legs gone. This individual is thought to be an early inhumation because of its depth near the sterile sub- stratum. A bear claw was found in the neck

region and a worked stone near the back according to the photograph and notes.

Burials 90-91--50N/150W--58"--I--Age 14-18--Orientation ?

Cremation in place, tightly flexed. It is on the surface above the sterile sub-soil and may be old.

1700 - Three mortar fragments.

1665 - Small pestle.

1711 - (96) Olivella 1a and (1) Olivella 1b beads.

1666, 1667 - Two sandstone cooking stones, unworked.

1668, 1669 - Worked stones?

1712 - (9) Haliotis pendants. One is S1a which is an unperforated rectangular Haliotis ornament. Eight are unperforated and oblong shape and are of the AF type. - One antler not catalogued.

Although these individuals are cremated, the beads and shells are not charred, thus perhaps suggesting placement of grave offerings after interment as in the case of an annual mourning ceremony.

Burial 91A--Male--Age 12.

Burial 92--50N/210W--75"--Female--Age 20-24--Orientation 150 degrees.

Primary inhumation, loosely flexed on the right side. A fragment of a worked stone was found near the pelvic region.

Burial 93--50N/170W--52"--Female--Age 39-44--Orientation 350 degrees.

Primary inhumation, loosely flexed, face up.

1687 - Large pestle found near the skull.

1686 - (1) Olivella 1a bead.

1690 - Small incised abalone pendant fragment.

Burial 94--50N/50W--104"--Male--Age 21-30--Orientation ? Primary inhumation, tightly flexed, face down in sterile soil.

1701, 1702, 1704 - (3) perforated clamshells (Margaritifera margaritifera?). The epidermis on 1704 displays wear patterns.

1703 - Projectile point (spent - the tip has an impact fracture on it and some traces of residue on the surface. It may have contributed to the cause of death. Homen = 2.1 microns (1311 A.D.); Origer = 1.9 microns.

Burial 95--50N/130W--42"--I--Age 2--Orientation 220 degrees.

Primary inhumation, tightly flexed, face up.

1752 - Mortar (found next to the skull).

1753 - Pestle (found underneath the mortar near the skull).

1751 - Distal end of a split wide awl (tip found in the vicinity of the skull).

1727 - Mytilus californicus (ocean mussel) pendant (found in close proximity to the burial). It is drilled, grooved, and typed as D10. Some found in the Delta Region CCo-138.

1754 - Distal end of an awl.

Burial 96--50N/130W--46"--Female--Age 35-45--Orientation 310 degrees.

Primary inhumation, tightly flexed, on the right side, face up.

1737 - Large "Show" mortar (squarely placed inverted on top of the body).

1736 - Pestle immediately under the mortar.

1733 - (229) Olivella beads (some with perforations in the side of the callus). 1a = 212; 1b = 17.

1734 - (6) Olivella (1b = 1; 1c = 5) beads (some have side perforations).

1731 - (35) Olivella (centrally perforated) M1a beads dating 900-1300 A.D.

1739 - Distal end of a flat bone awl that was exposed to fire and is spalled.

1740 - Abalone Pendant assembly (found around the neck).

a - N series - distal portion broken.

b - N series - no diagnostic ends present. Three holes are drilled on top.

c - S2bIII - Haliotis cracherodii. It could be a basket ornament.

d - S2bIII - Haliotis cracherodii.

e - S2bI - Haliotis rufescens - asphaltum adhering to the lower portion.

Four were found at CCo-138 and 2 from Ala-329.

f - N2aII

g - K2bII - Haliotis rufescens, incised, round, one perforation.

24 were recovered from CCo-138 and 5 from Ala-329.

h - N2aII - Reworked feet, one lateral projection. Found at CCo-138.

i - S2bI - Haliotis rufescens.

j - N1aI - deteriorated and has pine pitch(?) on the exterior.

Pine pitch residue retained the impression of the central holes of attached Olivella beads. 4 found in CCo-138.

k - N1aIII - single lateral projections and incised (N1a date 1300-1500 A.D).

l - N1aIII - suggestive of a lateral projection, incised. The back side is completely covered with asphaltum.

m - K2aIII - plugged with asphaltum, round, one perforation, plain edge. (17 known from CCo-138 and 1 from Pleasanton-Alameda).

n - N series pendants

o - N series pendants - broken.

p - N6aIII (has little feet, approaching incurved horns similar to those recovered from CCo-138).

q - N1aIII

Specimens g and m could have covered the eyes as in the case of Burial 239. The estimated date is 1300-1500 A.D. This individual appears to be a very high status woman. M1a bead (Bennyhoff) rectangles = 1100-1300 A.D. Effigy ornament = 1300-1500 A.D. According to Bennyhoff interview he thinks they are local variant, especially with all the holes drilled and the claw and feet ends. All are made of Haliotis rufescens. 1740p is a transitional form of pendant. There are three types of feet in this assemblage. Beads are M2a and M1a which are middle 1B. 1740k - N1aIII is symptomatic of the same time as the beads. The heads of the banjos are oval heads and again are thought to be of local origin.

1740f is a half banjo, h is half banjo. Half banjos are associated with Kuksu. 1740a trapezoidal shape is found near Stockton and Lodi region. 1740 forms have a true horn. May be heirloom transitional form-evolution from claw, horn, then feet. N1aIII he thinks represent the end of phase 1-1B and are of local manufacture.

Burial 97--50N/130W--48"--Male--Age 35-50--Orientation 100 degrees.
Primary inhumation, tightly flexed, right side. No grave associations.

Burial 98--50N/130W--54"--Female--adult--Orientation?
Partial secondary inhumation, skull is missing. No grave associations.

Burial 99--50N/120W--73"--Male--Age 35-44--Orientation 270 degrees.
Primary inhumation, tightly flexed, face down. No grave associations.

Burial 100--50N/140W--60"--Male--Age 41-50--Orientation 10 degrees.
Primary inhumation, tightly flexed, face down.

1756 - Haliotis rufescens pendant found in the mouth. It is trapezoidal-type Q2aIII with one perforation in the broad end and a plain edge. A large one is illustrated in Gifford (1947), is from the Delta Region (Walker Slough Mound). There are 6 from CCo-138 .

1755 - worked sandstone cobble with slight battering on one end, found in the neck region. Pendants were found in the neck region.

1758 - Haliotis (unidentified), probably rufescens - type Q2b with one perforation in the broad end and incised. 2 were recorded from CCo-138.

1759 - N1a series?, unfinished and incised. The distal end is not present, possibly spalled off.

1760 - Haliotis rufescens--S2aII with plain edge.

1716 - S2aIII with asphaltum covering the back.

1757 - quartzite or chert with asphaltum residue.

Bennyhoff interview: A gorget, usually worn around the neck-- Middle Phase 1?

Burial 101--50N/130W--38"--Female--Age 13-15--Orientation 20 degrees.
Primary inhumation, tightly flexed, face down, left side. Nicely preserved, but no grave associations.

Burial 102--60N/110W--4"--Male--Age 21-30--Orientation 205 degrees.
Primary inhumation, tightly flexed, left side (damaged by plowing). No grave associations.

Burial 103--50N/130W--56"--Male--Age 31-40--Orientation 270 degrees.
Primary inhumation, semi-extended (legs are slightly flexed). No grave associations.

Burial 104--50N/130W--65"--Female--Age 35-44--Orientation 280 degrees.
Primary inhumation, tightly flexed, face down.

1776 - (10) Olivella (drilled, one is double perforated). Preparation technique shows in the two holed one. Bennyhoff states these are F2 saddles. Typical of these are the irregular chipped edge. They are often cut on a diagonal. There is one F3 in the bunch. This is intermediate middle (100-300 A.D.). There is one with two perforations.

1775 - Haliotis pendant assembly:

a - AF5aIII	n - AF5aIII	aa - AA2aIII
b - AF5aIII	o - AA2bI	bb - AF5aIII
c - AF5aIII	p - AF5aIII	cc - K2bII
d - AB1aI	q - AB1aI	dd - AA2aIII
e - AA2aIII	r - AE4a	ee - AB1aI
f - Af5aIII	s - AB1bI	ff - AA2aIII
g - AA2aIII	t - AF5aIII	gg - AB1aI
h - AA2aIII	u - AF5aIII	hh - AE4a
i - Af5aIII	v - K2aII	ii - AF5aIII
j - K2aII	w - K2aII	
k - AA2aI	x - K2aII	
l - AF5aIII	y - K2aII	
m -K2aII	z - K2aII	

Burial 105--60N/120W--35"--Male--Age 25+--Orientation 270 degrees.
Primary inhumation, tightly flexed, face down. Found nearby were two deer bones and two sea otter bones and three unworked stones (no formal grave associations).

Burial 106--50N/180W--78"--Male--Age 31-40--Orientation 175 degrees.
Primary inhumation, tightly flexed, face down (No grave associations, but there might have been a scattering of small broken stones defining the grave).

Burial 107--50N/200W--62"--I--Age 6-7--Orientation 270 degrees.
Primary inhumation, extended, on right side. The notes and the photos suggest that Burial 107 was partially extended. This individual forms part of a cluster with Burials 108 and 109.

1781 - (36) Bird bone tubes.

1780 - (3) Haliotis pendants (types Q2aIII, P1a, U2aI).

1782 - (2) drilled canine teeth (possibly from a canid). They are biconically drilled. The roots are highly polished when compared to the roots of the dog burial. They are most likely drilled coyote teeth.

Burial 108--50N/200W--62"--Female--Age 31-40--Orientation 90 degrees.
Primary inhumation, on right side. This burial is abutted to and adjacent to Burial 107 facing almost opposite (yin/yang position). The left leg is bent in a tight flexed position toward the chest while the right leg is bent toward

the posterior of the pelvis (thus looking as if it were in a running position). Interestingly, this was viewed by the excavators as an extended burial position. Observations were made about unusual wear patterns in the upper and lower right teeth of the jaws. No grave associations.
Burial 108A--Indeterminate--Age 5-10.

Burial 109--50N/200W--71"--Male--Age 27-35--Orientation 140 degrees. Primary inhumation, loosely flexed backwards. This burial has been disturbed by presumed prehistoric excavation activities. The feet are adjacent to the right foot of burial 108, thus comprising the cluster of burials. This cluster may be the result of one of several possibilities: 1) all three burials constitute a single interment event; 2) they represent a series of interments close in time so that the individual burials had grave markers (such as the poles with feathers described by the Spanish explorers), or 3) that they reflect a wider age span and were haphazardly placed in grave pits without disturbing any of the other earlier burials.

Burial 110--60N/120W--56"--Male--Age 30-35--Orientation 40 degrees. Primary inhumation, loosely flexed, the right side is face up. (Evidence of fire discovered under the skull).

1788 - Obsidian biface (knife) found between the lower portion of the legs, probably of Napa obsidian. One edge shows some nibbling and crushing--"polish" and the base displays some cortex. Homen = 2.3 microns; Origer = 2.4 microns. Age equivalence for Napa 2.3 = 811 B.P. or 1176 A.D.

1789 - (2) Obsidian prisms (one intact, one a midsection) were found next to the lumbar region of the back. They both exhibit a patination/thin cortex.

1787 - (124) Olivella spire-lopped beads (graded sizes). They were found scattered around the head and neck region. The sizes are 1a = 8; 1b = 101; 1c = 15. Also identified in the field, but not catalogued, are three bear claws (whereabouts unknown) found on the chest.

Burial 111--50N/170W--79"--Female--Age 31-40--Orientation 270 degrees. Primary inhumation, tightly flexed, face down (well preserved). No grave associations.

Burial 112--50N/190W--76"--I--Adult--Orientation ?
Secondary inhumation, no orientation. An isolated portion of a burial. No grave associations.

Burial 113--60N/120W--74"--Female--Age 18-21 (or 16-18?) -- Orientation?
Primary inhumation, position is flexed and face down. This burial was discovered in the adjacent unit to burial 104 with similar bead types. Burial 104 is 50N/130W, 65" deep.

1818 - (159) Olivella beads (associated with the adult). According to Milliken (personal communication) these are full saddles F2b and F3b.

These vary in size from less than 6 mm. (which is an F3b) to the larger ones (F2b). Also F3a (square saddles) are represented in this Olivella sample. F2 is probably 100-300 A.D. The F3b beads date from 100-500 A.D. One specimen may have been cut (instead of drilled) but conforms to the lot. Bennyhoff suggests these are mixed F3 and F2, and since there are mostly F2, dating Late Middle Period.

Burial 113A--Indeterminate--Age 0-.5.

Burial 114--60N/120W--78"--Female--Age 13-15--Orientation 270 degrees. Primary inhumation, loosely flexed on the right side. The burial was intrusive into sterile soil about 10". Although there are no formal grave associations, there were some elk bones and rocks found in close proximity to this individual.

Burial 115--60N/40W--30"--Male--Age 16-18--Orientation ?

Redeposited partial cremation (the upper part of the body is almost completely burnt). There were a total of (5) projectile points in association.

1839 - unserrated corner notched projectile point with the base broken.

(It has no organic residue visible and is spent. Axford #29 = 1.05 microns; Origer = 0.9 microns).

1847 - corner notched projectile point with the base and the tip broken (it has no organic residue, and is spent and might have been resharpened). Axford's #30 = 1.1 microns, 186 B.P. or 1801 A.D.

1850 - base/midsection of a point (it is serrated (two small serrates), base and tip broken (spent). No organic residue present. (Axford #32 = 0.9 microns. Origer = 1.7 microns).

1821 - midsection/tip of a finely flaked point with the base broken and has organic residue on it (no hydration).

1848 - specimen missing. Axford #31 = 0.9 Microns (1863 A.D.)

1832, 1823 - antler harpoon (fragments fit together) harpoon. The tip of this elk bone harpoon has heavy organic residue on it.

2203 - elk antler harpoon fragment, burnt.

Burial 116--60N/190W--15"--Female--Age 35+--Orientation 180 degrees.

Primary inhumation, tightly flexed on the right side. 1885 - (210) Olivella beads (1b = 205; 1c = 5) found in the neck and head region. The beads are in very good condition.

Burial 117--60N/100W--80"--I--Age 30+--Orientation 180 degrees.

Primary inhumation, tightly flexed and face down. It is intrusive into sterile soil 80" deep. No grave associations.

Burial 118--60N/180W--24"--Female--Age 35-39--Orientation 55 degrees.

Primary inhumation, tightly flexed. Disturbed burial (the skull is missing, but the mandible was found upside down).

1923 - (45) Olivella beads (1a = 39; 1b = 6) found in the chest region.

1924 - antler base (probably deer, fairly small), distinctive wear in the form of polish and striations, edges around the base being polished and rounded, suggesting a burnishing wear pattern. Additionally, the distal end has been worked and deliberately tapered into a wedge shaped object with the end broken and spalled on one face. Part of the broken end appears to be reworked and rounded, thus giving a gouge-like appearance. This specimen could have been a handle, a wedge or a gouge.

Burial 119--60N/200W--16"--Male--Age 16-18--Orientation 340 degrees.
Primary inhumation, tightly flexed on the left side.

1933 - whole abalone shell (face up and possibly contained a food offering for afterlife).

1932 - pecked stone (sandstone) that has light surface pecking near the larger flatter end, possibly suggesting a hafted hammer. The smaller pointed end exhibits some light battering.

Burial 120--60N/120W--52"--Male--Age 18-21--Orientation 230 degrees.
Primary inhumation, tightly flexed, face down. There is an infant skull fragment in close association with the burial. Apparently this burial was disturbed by some previous digging.

1929, 1930 - (2) perfectly intact pile plummet charmstones that were found near the feet of the burial. They are both sandstone and grooved around the neck. There is organic residue on the neck of 1930 in the groove and is in perfect shape.

1928 - (2) Halotis pendants, type Q2bI, trapezoidal (they were found in the chest region of the individual).

1931 - (323) Olivella beads (1a = 37; 1b = 180; 1c = 106) scattered throughout the grave. 8 fragments included with the 323 beads.

1927 - antler wedge (highly polished, found below the left foot of the individual). Crushing occurs on the edge of this wedge.

Burial 120A--Indeterminate--Age Infant.

Burial 121--60N/40W--65"--I--Age 0-1/4--Orientation ? Primary inhumation.

1926 - (262) Olivella beads (1a = 74; 1b = 188)

1925 - (5) Halotis pendants--a) K2V2; b,d,e,) These are not like the pendants recovered from Ala-328, Ala-12, or Ala-13. c) S3bI

According to Bennyhoff these round pendants may be indicative of Phase 1B.

Burial 122--60N/140W--55"--Female--Age 39-44--Orientation 100 degrees.
Primary inhumation, loosely flexed. Associated with this burial are two infant skull fragments. No grave associations.

Burial 122A--Indeterminate--Age 0.

Burial 123--60N/40W--67"--I--Age 2-2 1/2--Orientation 305 degrees. Primary inhumation with no grave associations.

Burial 124--60N/180W--38"--Female--Age 16-18--Orientation 85 degrees. Primary inhumation, tightly flexed, on right side.

1938 - Olivella beads--M1a = 40 and M2a = 9. M2a beads have a perforation at the end. M1a beads have a perforation in the center. Originally there were 65 Olivella beads found in a patched or sequined pattern under the skull. This suggests possibly a garment she was wearing or some sort of head dress.

1934a&b, 1935 a&b, 1936 a&b - three pairs of bone whistles going from smallest to largest respectively. Two of the pair were found in the chest region within the flexure of the legs, while the third pair was found near the head region.

1937 - (6) Bird bone whistle fragments (found nearby the burial) probably representing two additional whistles. Fragments of black abalone shell and two long bird bones were also found crushed and flattened, but their whereabouts are unknown. Burial 124 was found just north of Burial 125. Burial 125 is in close proximity to Burial 128 and Burial 126.

Burial 125--60N/180W--39"--Male--Age 25-40--Orientation 75 degrees.

Primary inhumation, tightly flexed and face down.

1940 - (207) Olivella beads: 1b = 195 and 1a = 12 (found scattered in the chest and neck region).

1939 - (13) shell pendants and two fragments.

a - K2aIII unidentified as to type of Haliotis species.

b - U2aII

c - S2aIII

d - Q1bIII Haliotis rufescens. (Three found in CCo-138 and 2 from Ala-309, 2 from Ala-329 (Gifford 1947).

e,f,g,h - Q1aIII

i,j,k,l,m,n - Q1aI Haliotis cracherodii.

The abalone pendants were found in the neck region of this individual.

A Stockton serrated point was imbedded in the lumbar vertebra, and the midsection of the point was found with the skeleton, which was probably "floating" in soft tissue (this person lived from this). The obsidian hydration rate is 2.3 microns = 1176 A.D. C14 = 460+/-50 B.P.

Burial 125A--Indeterminate--Age 0.

Burial 126--60N/180W--39"--I--Age 8-13--Orientation 270 degrees.

Partial cremation in place, tightly flexed, skull is absent. The pendants are identical to those found with Burial 125.

1943 - pendants were found in the chest cavity in what appears to be a sequined fashion:

a - U2aII

e-k - S2bI

b - U2bI

l-q - Q2bI

1992 - remnant of large deer scapula (possibly a serrated cutting tool).
2012 - (235) Olivella 1a beads.
2014 - (85) Olivella 1b beads.
1986 - (60) Olivella 1b and (100) Olivella 1a beads.
1986 - (2) E2 full lipped beads (found 1 1/2 inches above the burial). The dates given for E2 is 1700-1769 A.D.
2013 - end battered pebble, (workedstone).

Burial 139--60N/130W--10"--Female--Age 41-50--Orientation 270 degrees.
Primary inhumation, tightly flexed, on left side.

2018 - immature animal- sea otter? with a circular groove around the diaphysis and an unusual hole at the epiphysis, suggesting it may have been strung. It doesn't appear to be a tool.

Burial 140--20N/130W--18"--I--Adult--Orientation ?

Primary inhumation, tightly flexed (fairly shallow, preservation is poor).
Unable to determine orientation.

2022 - pestle.

Burial 141--10S/130W--19"--I--Adult--Orientation ?

Complete cremation - within an area of many cremations.

2010 - (48) Olivella 1b spire lopped beads (burnt).

2011 - (33) Olivella 1c beads (some appear burnt).

2007 - (6) Olivella 1a and (6) Olivella 1b beads.

2006 - Haliotis rim pendant, central perforation in the apex of the crescent, and is incised. There is no Gifford equivalent for this type.
Similar specimens known from CCo-138.

Bennyhoff states this rim is not really diagnostic of any time. The drilled hole at the apex of the curvature is of interest and also the incisions on the interior curvature.

1991a&b, 2019a&b - bird bone whistles show no signs of burning, so presumably were placed after cremation. The larger two whistles still have plugs in them and a shell inlay showing. 1991 appears to have residue to indicate the bodies of the whistles were wrapped with string like materials, probably to hold them together. 2019 also have the original plugs in them.

Burial 142--10S/130W--16"--Female--Age 20-23--Orientation ?

Partial cremation (found within the same unit as Burial 141), tightly flexed.

2046 - large steatite pipe, flanged with a bird bone stem, (unburnt).

2036 - (3) Olivella 1b and (1) Olivella 1c beads.

2042 - (76) Olivella spire lopped beads--1a = 15; 1b = 61 2041 - (5) E2 beads (full lipped) 1700-1769 A.D.

2060 - (2) harpoon pieces with a hook on the end. One is like a toggle and the other is like a spear.

2001a - (1) E2 bead.

2001 - (2) Olivella 1c and (12) Olivella 1b beads.

2037 - Shell is a 3e (K1) Olivella cylinder or Tivella V1a1. According to Bennyhoff interview this is not a 3e or K1 bead. It is a cortical bone bead, probably a mammal.

Burial 142A--Indeterminate--Age 0-.75.

Burial 143--60N/180W--63"--Female--Age 25-30--Orientation 270 degrees.

Primary inhumation, tightly flexed, on left side.

2073 - (882) Olivella beads (1a = 670; 1b = 212)

2072 - (48) Olivella beads (1c = 18; 1b = 30)

2039 - (7) Olivella F3a (500-700 A.D.) (beads also found at CCo-138 and C-141).

2040 - obsidian biface (Homen = 2.1 microns (1311 A.D.) but Origer hydration rate is 3.4 microns). This large biface knife/projectile point has been burinated.

2038 - Haliotis ring-J2bI- has an incised edge and is Haliotis rufescens. One is known from Bay Region CCo-295 (Ellis Landing). 2bII is Haliotis unidentified. There are 31 from Southern Coast (all from Santa Cruz Island sites: C-100 (Posa Landing) and C 135 (Smuggler's Cove), two from Santa Rosa Island from site R-12.

According to Bennyhoff interview this ring is from the Early Middle Phase. 2044--Haliotis cracherodii, type Q25. (One is known from CCo-138). Q25b (two from CCo-138). Q25c is a new type which is Haliotis cracherodii, trapezoid, plain edge, hole in one side and is the largest Bennyhoff has seen.

2043 - Haliotis cracherodii, type AF6? (somewhat heartshaped, incised on one edge where the hole is). It is similar to two from Ala-387 (Bayshore) or an AB3III which is a new half disk. It looks like half of Af5bI. There is one perforation in the middle of the curved incised edge. It could be Haliotis fulgens instead of Haliotis cracherodii. Ab3II is Haliotis rufescens. Only one known is in Delta region C-141 (Orwood Mound). Haliotis fulgens are southern Californian. The Olivella beads were found in the neck region. The crescent shaped ornament and the abalone were found in the lower rib region.

Burial 143A--Indeterminate--Age 3-6.

Burial 144--20N/130W--18"--Female--Age 25-34--Orientation 130 degrees.

Primary inhumation, tightly flexed, on right side (badly fragmented).

2045 - large pestle.

Burial 144A--Indeterminate--Age 0.

Burial 144B--Indeterminate--Age 0.

Burial 145--10S/130W--12"--Male--Age 20--Orientation ? Scattered secondary inhumation with no orientation.

2068 - (36) Olivella beads: 1c = 22; 1b = 13; 1a = 1.

2069 - clamshell disk bead (Tivella) which indicates a protohistoric time marker --1700 A.D.

Burial 146--40N/130W--14"--Female--Age 21-30--Orientation 270 degrees. Primary inhumation, tightly flexed. An associated worked stone was not cataloged.

Burial 146A--Indeterminate--Age 0-.5.

Burial 147--60N/110W--43"--Female--Adult--Orientation 40 degrees. Primary inhumation, tightly flexed, on left side. The head of Burial 147 is buried next to the head of burial 148. It could be a fairly late burial.

2067 - (25) Olivella 1a beads with (2) Olivella 1b beads.

Burial 147A--Indeterminate--Age 14-16.

Burial 148--60N/110W--37"--I--Age 12-15--Orientation 300 degrees.

Primary inhumation, tightly flexed, on right side. The top of the head is facing Burial 147. No grave associations.

Burial 148A--Female--Age 16+.

Burial 149--60N/90W--65"--Female--Age 25+--Orientation 0 degrees.

Primary inhumation, tightly flexed, on left side. No grave associations.

Burial 150--10N/130W--14"--Male--Age 27-30--Orientation ?

Primary inhumation, tightly flexed, face up (skull gone). It is buried next to Burial 151. 2058 - (5) Whistles laid on his chest. One of the whistles is a mammal bone. a) is the longest; b) is a mammal bone whistle with asphaltum plug; c&g) make up the second longest; d&e) make one whistle and are next in size, then f); j, h) are fragments; i) is a blank tube.

Burial 151--10N/130W--17"--Male--Age 27-35--Orientation 85 degrees.

Primary inhumation, tightly flexed, face down.

2082 - (3) sting ray barbs (found in the stomach region).

2079 - (253) Olivella beads: 1a = 165; 1b = 88.

2085 - (576) Olivella beads: 1b = 522; 1c = 54 (found around the neck and pelvic areas).

2083 - this "worked" stone is not worked.

2080 - unmodified sandstone cobble imbedded in the back of burial.

2081 - charmstone (distal end broke during manufacture).

Burial 151A--Indeterminate--Age 45-50.

Burial 152--60N/110W--47"--Male--Age 12-14--Orientation 160 degrees.

Primary inhumation, tightly flexed, on right side.

2070 - (35) Olivella 1a beads and (2) Olivella 1b beads (found around the cervical area, probably worn as a necklace). The burial was found below 153 and is probably a multiple burial.

2059 - sandstone pebble (net weight shaped). The edges appear to be possibly pecked and grooved.

Burial 152A--Indeterminate--Age 1.

Burial 153--60N/110W--47"--Female--Age 17-20--Orientation 40 degrees.

Primary inhumation, tightly flexed, on right side.

2102 - boulder mortar type B2 (found in association to both Burials 153 and 152).

2071 - mano? (found nearby).

Burial 153A--Indeterminate--Age 3-7.

Burial 154--60N/200W--74"--Male--Adult--Orientation ?

Primary inhumation, loosely flexed, and badly disturbed. It is pretty deep.

The upper half of the skeleton is missing.

2056 - Haliotis Q2aIII pendant. (6 known from CCo-138).

Burial 155--No burial

Burial 156--60N/100W--63"--Infant--Age 2--Orientation ?

Primary inhumation, tightly flexed, face down.

2078 - antler (fused)

Burial 156A--Indeterminate--Age Adult (may be part of Burial 158).

Burial 157--10S/130W--24"--I--Age 16+--Orientation ?

Redeposited cremation.

2075 - whole abalone shell.

Burial 158--60N/100W--63"--Female--Age 25-39--Orientation 305 degrees.

Primary inhumation, loosely flexed, face down. In association with Burial 156. No grave associations.

Burial 159--20N/130W--30"--Infant--Age 1-2--Orientation ?

Secondary inhumation.

2084 - pestle fragment.

Burial 159A--Indeterminate--Age 0-1.

Burial 160--60N/180W--73"--I--Age 1-2--Orientation ?

Primary inhumation (skull missing) and no grave associations.

Burial 161--10N/130W--29"--Male--Age 21-35--Orientation ?

Cremation in place (actually a partial cremation of the upper portion of the body and the spine is bent tightly backwards). No grave associations.

Burial 162--10N/130W--30"--Male--Age 20-22--Orientation ?

Partial cremation, tightly flexed on right side.

2087 - (514) Olivella beads; 1a = 350; 1b = 164.

Burial 163--60N/160W--64"--Female--Age 39-50--Orientation 0 degrees.

Primary inhumation, loosely flexed, on right side.

2092 - (2) Olivella M1a beads. 2091--Haliotis rufescens, type Af5aIII, tear drop shape (6 were recovered from CCo-138 and 1 from Ala-309).
2093 - Haliotis rufescens (plain edge, one perforation, teardrop shape) type Af5aIII.
2094 - Haliotis cracherodii (teardrop shape, one perforation near the base, plain edge) type AF5aI. These were all found in the neck region.
Burial 163A--Indeterminate--Age 1-2.

Burial 164--0?130W--32"--Neonate--Age 0--Orientation ?

Primary inhumation, tightly flexed.

2098 - (426) Olivella beads: 1a = 7; 1b = 405; 1c = 14. 2098a - (1) Bead (fragmented, tiny, circular) possibly an (X3bI). Bone awl was not catalogued.

2103 - basalt mortar (in which the infant was buried).

2099 - Haliotis pendants:

a - U2bI - Haliotis rufescens (U is triangular and is incised). There is one from CCo-138 and Ala-309.

b - Q2bI (trapezoidal, incised). (2 known from CCo-138, 1 from Ala-309 and 5 from Ala-329).

c - U2bI.

Burial 165--20N/130W--26"--I--Age 1-1 1/2--Orientation ?

Primary inhumation, tightly flexed, on left side.

2104 - pestle.

2105 - (122) Olivella beads; 1b = 106; 1c = 16.

Burial 166--20N/130W--24"--I--Age 1-1 1/2--Orientation 90 degrees. Primary inhumation, tightly flexed, on left side. This burial is associated with burial 167. Three sets of antlers are not catalogued but were found near the head.

2106 - (518) Olivella beads shared with Burial 167: 1a = 6; 1b = 448; 1c = 64.

Burial 167--20N/130W--36"--Female--Age 30-40--Orientation 280 degrees.

Primary inhumation, flexed, right side. This may be a dual burial with 166. Essentially this burial has no grave associations, the artifacts are associated with Burial 166.

Burial 168--10N/130W--32"--I--Age 30+--Orientation ? Primary inhumation, tightly flexed, face down (lying in an area of hard pack deposit).

2101 - (3) Clam shells around the skull. One is clearly a pendant because of the drilled surface. Actually there are two probable pendants of Margaritafera margaritafera, as two pieces fit together. These were found in the chin area. See also 1371, 1372, 1373 which were found in association with Burial 53. (Two bird wing bones were found in the chest area but were not catalogued).

Burial 169--60N/110W--87"--Male--Age 35+--Orientation 180 degrees.
Primary inhumation, tightly flexed, on left side. (See Burials 34 and 35).
2130 - charmstone (midsection fragment damaged on both ends).

Burial 170--0/130W--30"--I--Age 6-8--Orientation ?
Redeposited partial cremation.

2126 - (4) Olivella 1a beads.

2141 - (112) Olivella beads: 1a = 65; 1b = 47.

2142 - (86) Olivella beads: 1b = 30; 1c = 56.

2143 - Haliotis pendants:

a) Haliotis rufescens, type Q1bIII, has asphaltum on the back, incised.
There are 3 known from CCo-138 and 2 specimens from Ala-309.

b) Haliotis rufescens, Q2bI, one perforation on the broad side, incised
and has a tapered end. Three were recovered from Ala-329, 1 from
Ala-309 and 3 others reported from CCo-138).

c) Haliotis rufescens, type S2bI, straight bottom edge. S series tends to be
rectangular with an incised edge. 4 are known from CCo-138 and 2
from Ala-329).

d&e) Haliotis rufescens, type K2bII, both have asphaltum on the backs
and are incised. 24 known from CCo-138, 5 from Ala-329, 8 from Ala-
309 and 3 from Ala-387.

f) Haliotis rufescens incised, irregular, is a half disk or an oval, has one
perforation in the middle of the straight side. There is 1 known from
Delta Region, but there is no equivalent in Gifford.

g) Haliotis rufescens, type K6bIII, has two perforations and asphaltum
on the back and has the beginnings of a third drill hole. It has three
beads glued on it. Beads were found around the neck region, but none
are charred, thus suggesting that offerings were apparently made
after cremation. Ornaments were found scattered around the body.
According to Bennyhoff interview the K incised disks are indicative of
Phase 1B Late Period 1100 - 1300 A.D.

Burial 171--50N/220W--10"--I--Age 1-1 1/2--Orientation ?

Primary inhumation, scattered. There are two burials. The excavators
recorded a concentration of shell (shell midden) with roots of willow.

Burial 171A--Indeterminate--Age 0-5 (neonate-badly disturbed).

2151 - bone needle with no hole or a hairpin. It has a grooved encircled
head. According to Bennyhoff interview this is a bone awl of a deer
metapodial splinter with a natural notch. If it were perforated it
would be dated much earlier. It is typed A1e Gifford (1947).

2152 - charmstone (small and intact) discovered 5 inches from the bone
awl.

2153 - worked stone (found close by the charmstone).

An uncatalogued point (obsidian) also found nearby.

Burial 172--20S/120W--10"--Male--Adult--Orientation ?

Redeposited cremation with not many bones present.

2149* - one of two partial banjos pendants and has no feet, it may or may not be broken. It is square ended with an incised edge and one perforation on the broad end - type N4aI. 4 are known from CCo-138.

2155* - Haliotis pendant is not completely intact, but appears to be an N2bI. It has a plain edge, two lateral projections and constitutes half of a type N1bI. (There are 3 N2bI specimens from CCo-138). These pendants were found underneath this burial.

2161 - (52) Olivella 1a beads (scattered)

2158 - (3) Olivella 1c beads (scattered around the burial).

*According to Bennyhoff, the incised pendant is from a very Late Phase 1 (1C)-- A.D. 1300-1500. The half banjo (2155) has a transitional foot (lateral projection) that appears to be of local manufacture, and possibly dates early Phase 2 of the Late Period.

Burial 173--20S/130W--25"--Male--Age 25-35--Orientation 305 degrees.

Primary inhumation, loosely flexed, on right side. There are no grave associations. Immediately to the southwest is Burial 174.

Burial 174--20S/130W--15"--Male--Age 27-30--Orientation 195 degrees.

Redeposited cremation with no grave associations. Both 173 and 174 are underneath a hard packed clay layer.

Burial 175--10S/120W--15"--Female--Age 35-44--Orientation ?

Disturbed burial with the bones scattered. It may have been disturbed by agricultural plowing since it is so shallow.

2159 - (95) Olivella beads: 1b = 94; 1c = 1.

The 1c bead appears to be burnt.

Burial 176--50N/250W--6"--Male--Age 25-40--Orientation 195 degrees.

Primary inhumation, tightly flexed, face down, in a shallow grave with no grave associations.

Burial 177--60N/70W--9"--Male--Age 39-44--Orientation ?

Primary inhumation, tightly flexed, skull missing.

2147 - obsidian point found in what appears to be the pelvic region. This point is different. It is small and serrated and has a high amount of organic residue on it (it may be the primary cause of death). It appears similar to the specimens depicted in Choris painting of the neighboring Yokuts.

Burial 178--20S/130W--24"--Male--Age 35+--Orientation ?

Redeposited partial cremation.

2245 - Haliotis banjo pendant (upper proximal portion banjo pendant with organic residue over it, may be due to cremation). 2165 - Haliotis

banjo type Nb2, incised. (32 are known from the Delta, 6 from CCo-138 and 1 from Pleasanton-Alameda. According to Bennyhoff interview this is from Early Phase 2A (1500-1700 A.D.).

2166 - Haliotis rufescens pendant type Q1aIII (trapezoidal with plain edge). 5 known from CCo-138, 2 from CCo-259 (Fernandez Mound) and 1 from Ala-307. According to Bennyhoff interview these are non-diagnostic.

2244 - (32) Olivella beads: 1a = 3; 1b = 29.

2243 - (76) Olivella beads: 1b = 40; 1c = 36. The Olivella beads are associated with Burials 178, 196, 197, 198, 199.

Burial 179--30N/130W--12"--I--Age 10-14--Orientation 120? degrees. Primary inhumation, tightly flexed (skull missing). There were 10 cobble stones found above the burial and an uncatalogued bone awl.

2144 - large knobbed pestle.

Burial 179A--Male--Age Indeterminate.

Burial 180--60N/190W--24"--Male--Age 41-50--Orientation 65 degrees.

Primary inhumation, tightly flexed, face down. No grave associations.

Burial 181--0/130W--24"--I--Age 21-30--Orientation ?

Partial cremation (possibly a cremation in place), tightly flexed, with no skull.

2172 - (74) Olivella 1a beads.

2173 - (73) Olivella M2a beads dating from 1300-1500 A.D.. They are end perforated. The beads were found in the chest region of the burial.

2171 - bird bone whistle.

Burial 182--50N/220W--24"--Female--Age 21-35--Orientation 270 degrees.

Primary inhumation, loosely flexed, face up.

2168 - worked stone is a split sandstone cobble.

2169 - primary flake, red Franciscan chert (was thought to be a drill).

Burial 183--30N/130W--15"--Female--Age 30-39--Orientation ?

Primary inhumation, loosely flexed (This is a disturbed burial with no skull). A charmstone, stone weight and bone flaker have no catalogue number.

Burial 184--10S/120W--21"--Female--Age 18-25--Orientation ?

This is a redeposited cremation.

2193 - Haliotis rufescens, type K2bII pendant.

2192 - (36) Olivella beads: 1a = 19; 1b = 17.

2191 - (24) Olivella 1c beads.

2190 - (6) Bird bone whistles coming from very large birds. There are probably five whistles here, but originally they were identified as 6 whistles and fragments. Asphaltum is present, which means they may have been paired together. They have remnant string or twine

marks, which may be indicative of lashing together and the attachment of feathers.

Burial 185--60N/110W--76"--Male--Age 13-15--Orientation 220 degrees.
Primary inhumation, tightly flexed, on left side.

2135 - marine mammal vertebra, appears to be drilled through the centrum with two drill holes. The outer ends are grooved and was found under the chin.

Burial 186--0/130W--33"--Male--Age 30-39--Orientation 130? degrees.
Primary inhumation, tightly flexed (The skull was in a side wall and was stolen). No grave associations.

Burial 187--60N/70W--29"--I--Age 2 1/2--Orientation 340 degrees.
Primary inhumation, tightly flexed, face down. No grave associations.

Burial 188--30N/130W--25"--Female--Age 41-50--No orientation.
Primary inhumation, loosely flexed (skull missing).
2220 - pestle.

Burial 189--10S/120W--18"--Male--Age 21-30--Orientation 340 degrees.
Redeposited cremation, loosely flexed, on the right side.
2221 - (3) Olivella 1b beads.
2222 - obsidian point with organic residue on the point. It was a possible cause of death. Homen rate is 1.1 microns (1800 A.D).

Burial 190--20S/120W--24"--I--Infant--No orientation.
This is an in situ cremation.
2209, 2210, 2211, 2320, 2321 - (5) pestles (killed).
2220 - killed mortar.
2204 - (19) Olivella 1b beads (charred).
2208 - Haliotis pendant, type S2bI (charred).
2212 - bird bone whistles (which are not charred). Actually there are five blanks and one little whistle which works.

Burial 191--20S/120W--32"--Male--Age 18-25--No orientation.
Redeposited cremation, loosely flexed, face up, right next to and north of Burial 190).
2214 - (5) Olivella 1a beads.
2216 - (2) Olivella 1b beads.
2217 - pestle.
2215* - charmstone - looks like a magnesite cylinder and has been burnt and spalled.

*According to Bennyhoff interview this specimen is worked and has a beveled end on it. Bennyhoff thought it is a fossil, maybe a sea lily from a limestone formation.

2213 - Bald eagle beak.

2218, 2219 - (2) Elk antler bone pendants or wands. These are probably elk ribs. One has been drilled at one end. 2219 is similar to specimens recovered from Ala-343 on the Fremont Plain. The second specimen may have been drilled. These elk pendants were recovered in the vertebral area.

Burial 192--50N/250W--25"--Female--Age 50+--Orientation 260 degrees.
Primary inhumation, tightly flexed, face down, right side and has no grave associations.

Burial 193--20S/120W--29"--I--Age 7-8--Orientation 75 degrees.
Primary inhumation, tightly flexed, face up.

2239 - (8) Clam shells (covering a large amount red ochre).

2224 - this is the specimen number given to the red ochre from above.

The shells were found in the abdominal region of the individual.

These were stacked with only one top shell drilled and they covered the ochre.

2237 - Haliotis pendant, type K2aII.

2242 - Haliotis pendant, type K2bII (has asphaltum on it).

2240 - Haliotis pendant, type Q2bI.

2223 - (271) Olivella beads: 1a = 93; 1b = 173; 1c = 5.

2241 - bird bone whistle blank. One end is finished.

2238 - Stockton serrated projectile point. It is small with residue and an impact fracture on one of the serrates and on the tip. It is a possible cause of death.

Burial 194--60N/130W--67"--Female--Age 35-45--Orientation 275 degrees.
Primary inhumation, tightly flexed, left side.

2257a&b - obsidian projectile points covered with a thick residue. These are large projectile points that may be classified as darts and possibly caused her death. 2257b looks like the base of a dart point. (Homen hydration rate = 2.2 microns, Origer's reading = 2.5 microns. 2257a has red ochre adhering to it and appears to be a midsection of a point and has a massive impact fracture. (Homen = 2.2 microns; Origer = 1.3 microns. 2.2 micron dates to 1245 A.D.).

Burial 195--60N/50W--24"--I--Adult--No orientation.

In-situ cremation of an adult, probably a male, and is a very late burial.

2181 - charmstone body and distal end (sandstone).

2179 - (1) Olivella 1b bead (burnt).

2180 - (3) Olivella E2 thick lipped beads date somewhere around 1700-1769 A.D.

According to Bennyhoff interview he felt these beads are E2a which signifies Phase 2B (1700- historic). He thought it might be an infant cremation because of the Desert Side Notched associated and the two clam shell disk beads.

- 2184 - (2) Clam shell disk beads (both burnt).
 2178 - Stockton Serrated point (Homen = 1.0 microns; Origer = 1.3 microns). This point is made on an obsidian flake and is principally unifacially flaked. The ventral surface has minor flaking, organic residue and a slight impact fracture on the tip and edges. Possibly contributed to the cause of death.
 2185* - Desert Side Notched point (whitish grey chert). There is an impact fracture on the tip, but no residue. (*A rare point type at this site).
 2183 - A fragment of a wide split bone awl.
 2182 - A narrow split bone awl (both awls are unburnt).

Burial 196--20S/130W--26"--I--Adult--No orientation. Redeposited cremation. It was found in close proximity to burials 197, 198, 199, 178. No grave associations.

Burial 197--20S/130W--28"--I--Adult--No orientation. Redeposited cremation with no skull.

Burial 198--20S/130W--29"--I--Adult--No orientation. Redeposited cremation.

- 2243 - (76) Olivella 1b beads (placed with Burial 178).

Burial 199--20S/130W--21"--Male--Adult--No orientation. Redeposited cremation with no skull.

- 2245 - Haliotis banjo pendant fragment (possibly associated with Burial 178).

Burial 200--10S/120W--22"--Male--Adult--No orientation. Cremation in place.

- 2249 - killed mortar (over the cremation). The bones are adjacent to and under the mortar.

- 2247 - (88) Olivella beads: 1a = 57; 1b = 29; 1c = 2.

- 2248 - Clam (Margueritafera) pendant, typed D6. (One specimen known from the Martin Mound that has two holes, 5 mm apart. 2 others recovered in Ala-329, 1 from CCo-138. There are additional fragmentary valves with biconical drill hole near the posterior edge. Perforations are punched, conically drilled, biconically drilled and made by horizontal abrasion. Presumably they are all pendants. According to Bennyhoff interview these are misidentified as Margueritafera, he thinks they are Anadonta, a fresh water mussel). Under Gifford it should be type D13 (a new type). Bennyhoff believes it was used as a spoon originally, but holes were put in it to dangle from the hand.

Burial 201--10S/120W--22"--Male--Age 39-44--No orientation.
In-situ cremation and is part of the cluster with Burials 200, 202, 203, 204.
No grave associations.

Burial 202--10S/120W--22"--Male--Age 19-21--Orientation 270? degrees.
Partial cremation, loosely flexed, left side. It is part of this cluster and has
no grave associations.

Burial 203--10S/120W--22"--I--Adult--No orientation.
In-situ cremation.

2246 - Haliotis pendant (which actually are two pendants). The two
sections don't appear to go together (but someone tried to glue them
together). These may possibly be banjos.

Burial 204--10S/120W--22"--I--Adult--No orientation.
Partial cremation.

2252 - (516) Olivella centrally perforated M1a beads.

2251 - Olivella beads--1b = 26; 1c = 22.

2284 - bird bone whistle (distal end).

2258 - Mica schist colored small pipe (which is slightly burnt on the
exterior).

2250, 2253, 2254, 2255, 2256, 2285 - (6) charmstones made by the same
person. The nubs on the end are all identical, especially #2254 from
Burial 204 and #2261 from Burial 205.

According to Bennyhoff interview the pipe is probably not steatite.

Burial 205--10S/120W--48"--Male--Adult--No orientation.
Cremation. (Burials 200-205 form a cluster complex and are all found in
close proximity to each other, all cremations).

2261 - piled plummet charmstone.

Burial 206--20S/130W--43"--Male--Adult--No orientation.
Redeposited cremation, loosely flexed, vertebral column is intact.

2264, 2265 - killed pestles.

2266 - intact pestle.

2268 - (11) Olivella beads: 1a = 2; 1b = 9.

2263 - (22) Olivella beads: 1b = 11; 1c = 11. These beads are possibly
shared with Burials 207 and 208.

Burial 207--20S/130W--31"--I--Age 10-15--No orientation.
Redeposited cremation and no direct grave associations.

Burial 208--20S/130W--39"--Female--Age 18-22--Orientation 270? degrees.
Primary inhumation, tightly flexed, with the head bent forward/down.

2271 - (4) Olivella 1b beads (residue and partially charred).

flattened to an elliptical shape. (Seven of this type were recovered from CCo-138, 1 from Sac-6 and 6 from Sac-21). NN2c measure 13-20cm (one was discovered at Sac-21, 2 from Bethany and 1 from Byron).
According to Bennyhoff interview, these harpoons temporally range from about A.D. 900-1300, which spans Phase 1A and 1B Late Period.
This burial should date to the same time as Burial 31.

Burial 212--10S/120W--38"Male--Age 31+--No orientation.
Partial cremation (it was recovered within the concentrated cremation zone or possible burning ground area).

2279 - Show/shaped mortar (was "killed" when buried with this person).

2280 - (56) Olivella beads: 1a = 1; 1b = 42; 1c = 13.

2281 - (872) Olivella 1a beads.

2282a - (180) Olivella M1a rectangular beads.

2282b - (2) Olivella type E2 beads (possibly intrusive?)

2283* - Thin steatite pipe.

*According to Bennyhoff interview: this is a flanged pipe (Late Period)
A pestle was also recovered but was not catalogued.

Burial 213--10S/120W--43"--Male--Age 39-50--No orientation.
Disturbed cremation. 2286 - obsidian point (base broken and residue on the point). Possibly contributed to the death of this person.

2289 - obsidian point (impacted edge, and base with heavy organic residue).

2287a - obsidian point (completely intact with no apparent residue). The base may have been reflaked.

2287b - obsidian point (appears to be reworked). Two of the serrates are slightly broken, a slight break in the base, but has no residue).

2288a - obsidian flake (wedged shaped, crushing and nibbling on the edges). It may be eastern Obsidian. Possible scraping tool. Homen = 1.1 microns; Origer = 4.5 microns.

2288b - scraper (has nibbling and crushing along the edge). It is made on a large expanding flake of obsidian. Homen = 1.1 microns; Origer = 5.8 microns.

Burial 214--40N/130W--27"--I--Age 0-1/2--No orientation.
Primary inhumation. No grave associations.

Burial 215--20S/130W--27"--I--Adult--No orientation.
Redeposited cremation.

2291 - (74) Olivella 1b beads.

2290 - (64) Olivella 1b (8) and 1c (56) beads (not charred).

2292 - bird bone whistle.

Burial 216--40N/130W--44"--Male--Age 39-50--Orientation 270 degrees.

Primary inhumation, tightly flexed, face down. This is either a multiple burial with Burial 217 or this burial may have intruded into B. 217

(which then may be older). The following artifacts may also be associated with burial 217.

2295 - (27) Olivella 1b (5) and 1c (22) beads.

2293 - (12) Olivella 1b beads. 2294 - worked stone, an oblong sandstone pebble with slight pecking in the equatorial margins suggesting a possible weight. It was found by the sacrum.

Burial 217--40N/130W--44"--Female--Age 39-44--No orientation.
This individual was probably disturbed due to the burial of B. 216.

Burial 218--60N/190W--64"--Male--Age 41-50--Orientation 130 degrees.
Primary inhumation, loosely flexed, right side. No grave associations.

Burial 219--40N/130W--39"--Female--Age 19-30--Orientation 10 degrees.
Primary inhumation, tightly flexed, face up, on left side.

2315 - (1) Olivella 1b bead.

2313 - (40) Olivella M1 series beads. According to Bennyhoff these rectangular beads are M1d which are a wide sequin. There are just two of them in this lot. F3 beads are ancestral to this type. The presence of this type suggests an affinity between Hotchkiss, Emeryville and Clarence Smith's collection of Ala-329 salvage operation of 1948. According to Bennyhoff these represent Phase 1A (900-1100 A.D.) Late Period.

2314 - (8) Haliotis pendants. According to Bennyhoff, the V scoring is more indicative of Phase 1. Usually they are plain in the middle.

- a) - ZI-cracherodii d-g) - S2bI
- b) - U2bII h) - S2bII
- c) - S2aII-asphaltum.

2309 - large pestle 19" long (found in the cradle of the arms and legs).

Burial 220--40N/130W--48"--Female--Age 39-50--Orientation 140 degrees.
Primary inhumation, tightly flexed, on right side, face up.

2316 - pestle (tucked under right leg).

2317 - (23) Olivella 1a beads (found in the chest region).

Burial 221--10S/130W--39"--I--Age 0--No orientation.

Primary inhumation, tightly flexed with the bones scattered and no grave associations.

Burial 222--20S/130W--47"--Male--Adult--Orientation 280 degrees.

Primary inhumation, loosely flexed, on left side.

2340 - (1400) Olivella M1a beads (centrally perforated) (1100-1300 A.D.)

2338 - (261) Olivella beads: 1a = 107; 1b = 151; 1c = 3.

2339 - (19) round dirt nodules which are slightly fire affected.

Burial 223--20S/120W--50"--Male--Age 20-25--Orientation 50 degrees.

Primary inhumation, tightly flexed, face up, on the left side. There is one Olivella 1a bead noted but uncatalogued.

2348 - (6941) Olivella M1a beads (1100-1300 A.D). This is a high status person. Burials 223 and 222 may have been buried at the same time, because both have the same types of M1a beads.

2349 - collared pipe, flanged at the end, made of steatite.
(It has a little hole in it's side and is biconically drilled).

Burial 224--0/130W--48"--I--Adult--Orientation 320 degrees.

Primary inhumation, tightly flexed, face up. This individual was probably buried around the same time as 223 and 222. This is a high status person. 2355 - (96) Olivella M1a beads (1100-1300 A.D.)

2354 - (158) Olivella 1a beads. 2356 - charmstone - looks like it was manufactured from a dimpled stone.

2357 - Elk antler wedge (highly polished, has been spalled from use).

2359 - (5) (possibly 6) Bird bone whistles and fragments. One has (2) Olivella M1a beads affixed with asphaltum. They are attached to the proximal side of the whistle.

2360 - crude workstone.

2358 - (43) Halotis pendants found in the neck region.

a - cracherodii S2bIII	j - missing
b - S2bIII	k - Q2bI
c - K2bII with asphaltum	l - S series?
d - S2bIII	m - S2bIII
e - missing	n - Z2bI with asphaltum
f - S2bIII	o - Q2bIII
g - S2bIII	p - S2bIII
h - Q2bI	q - Q2bIII
i - fragment	r - Q2bIII
s - Q with asphaltum	g' - S2bIII
t - Z2bI	h' - K2aI
u - S2bI	i' - S2bIII
v - S2bIII	j' - S2aI
w - Z2bI	k' - S2bIII with asphaltum inlay
x - (see) b'	l' - S2bIII
y - Q2bIII	m' - no type
z - Q2bIII	n' - ? (S2aI)
a' - no type (S2bI?)	o' - S2bIII
b' - Q2bIII	p' - Q2bIII
c' - S2bIII	q' - U7
d' - Q2bIII	r' - S2bI
e' - S2bIII	s' - Z2bI
f' - ?	

According to Bennyhoff interview: he states this is an Early Phase 1A Late Period burial (900-1100 A.D.) and was impressed with the amount of cracherodii abalone present. There is some heavy scoring "v"

incisions on some specimens. The presence of asphaltum indicates that some of these pendants were either attached to something or had feathers glued onto them.

Burial 225--20S/130W--70"--Male--Age 35-45--Orientation 50 degrees.
Primary inhumation, tightly flexed, face up and has no grave associations.

Burial 226--20S/120W--66"--Male--Age 35-50--Orientation 50 degrees.
Primary inhumation, tightly flexed, face down, on left side. This is a double burial with 227 and represents a single event. Burial 226 is slightly higher than 227.

2366 - sandstone pipe (found in the neck, facial region). It has a slight flange or collar around the end.

2367 - obsidian projectile point or spear point, recovered at the joint of the right tibia and femur, tip is broken and edges are ground. It is a dagger-like biface, hydration reading (Homen) = 2.6 microns and (Origer) = 3.2 microns. It displays a distinctive wear pattern, unlike the kind of polish found on a knife edge. There is no residue present.

2368 - obsidian projectile point (has an impact fracture at the tip with several serrates broken). It was found in the abdominal region and has residue on it. Possibly contributed to the death of this person.
Hydration: Homen = 1.8 microns; Origer = 2.7 microns.

2370 - obsidian projectile point (has a resharpened tip with an impact fracture near the distal end, with several serrates broken). It has residue on its surface and possibly contributed to the death of this person. Homen = 2.4 microns.

1.8 = 1490 A.D.; 2.4 = 1104 A.D.; 2.6 = 950 A.D.; 2.8 = 784 A.D.

There are two banjo pendants that are associated with 226 and were discovered on the top of the cranium.

2369a - N6aII - thought to be a clawed type, has a backing of asphaltum.

2369c - N6aII - asphaltum, may have had feathers attached. Both specimens have rectangular (M1a) beads attached which date 900-1300 A.D. Horns or claws on the distal ends are not clearly defined, they may have been straight. CCo-138 had 9 recovered but they were not incised. A N3b type came from CCo-138 also having rectangular beads. These beads are unusually elongated.

2364 - (1880) Olivella M1a beads (which are shingled with some applique). This is shared between the two burials.

2365 - (201) Olivella beads: 1b = 196; 1c = 5. These are assumed to be shared between the burials.

2374 - (21) pendants found which may be associated with 227 also and are listed under that burial.

Burial 227--20S/120W--72"--Male--Age 21-30--Orientation 90 degrees.
Primary inhumation, tightly flexed, face up, on left side.

2371a&b - obsidian dagger (Homen = 1.0 microns; Origer = 2.0 microns).
There is no organic residue. It was found on the mandible near the

skull. Specimen "a" has red ochre and "b" has a hydration value of 2.4 microns.

2372 - obsidian dagger or pike (Origer = 2.9 microns). There is no organic residue, but specimen displays a wear pattern. There is a minute trace red ochre residue on the flake scars. Both daggers were found on the skull. 2374 - (21) Haliotis cracherodii pendants (incised rectangles). 14 are intact. S3a has one perforation on the long side. Type S3aIII are Haliotis cracherodii and S3aII are Haliotis unidentified. 4 unidentified specimens are known from CCo-138 and 4 from Sac-6, some are S3b and are incised. Type S10aI were found at CCo-138 and also 1 previously from Ala-329.

a - S3bII	i - S3bI
b - S3aIII	j - ?
c - S3aIII	k - S3aIII
d - S3bI	m - fragment
e - S3bI	q - fragment
f - S3aIII	r - S3bI
g - S3aIII	s - S3aIII
h - S3bIII	t - S10aI

2373 - mammal bone whistles (5 whistles and 7 fragments). One has a plug in it which may be pitch. There is asphaltum residue on the exteriors of specimens "g" and "b". Specimen "b" was manufactured on an immature animal bone. These whistles are clearly associated with Burial 227. Bennyhoff was impressed with all of the Haliotis cracherodaii pendants.

Burial 228--0/130W--60"--I--Age 1-1 1/2--Orientation 270 degrees.

Primary inhumation, tightly flexed, on the right side. This is a high status infant.

2375a&b - Haliotis bracelets (unperforated) type J2b with an incised edge. "a" is a J2bI Haliotis rufescens. (1 also found at CCo-139 and 1 at CCo-295 (Ellis Landing).

"b" is a J2bIII (Haliotis cracherodii). 22 were discovered at C-100 (southern California) from Santa Cruz Island-Posa Landing, 7 others are reported from Smuggler's Cove on Santa Cruz Island and 2 from Santa Rosa Island #12).

2377a&b - (2) square Haliotis buttons with a plain edge and centered perforation. There is asphaltum residue on the back of both. These are split between the Delta and southern California and may represent an early temporal period. Similar specimens were recovered from Sac-107 (Windmill Mound) and suggest these to be very early. 4359 specimens are known from the Delta Region, 73 come from Sac-107 and 2 from Emeryville). Typed as S5aIV, the majority known come from southern California. (2725 from CCo-68 (Old Journey Mound), 1208 from Windmill Site, 1 from CCo-138, 73 from the Bay Region, 58 from Ala-307 (West Berkeley), 9 from Ala-309 (Emeryville)). There were 5353 total in the Gifford (1947) study. The bracelets were found

around the wrist of the infant. According to Bennyhoff the Haliotis square is suggestive of Late Middle Period - 300-500 A.D.
2378 - (10) Olivella 1a, (1) 1b and (1) 1c beads (in close proximity to the skull).
2376 - worked stone?

Burial 229--10S/140W--57"--Male--Age 31-45--Orientation 180 degrees.
Primary inhumation, tightly flexed, on the right side with no grave associations.

Burial 230--0/130W--64"--Male--Age 11-13--Orientation 0 degrees.
Primary inhumation, tightly flexed, on left side.
No catalog # - (3) Haliotis E1 pendants (missing).
2390 - (12) Haliotis pendants.

- a - S2bI (2 from Ala-329 and 4 from CCo-138)
- b - AF5bIII - Haliotis rufescens with incisions on the bottom.
- c - AF5aIII
- d - S3aI
- e - S3aI
- f - S3aII
- g - AF5aIII
- h - AF5aIII
- i - AF5aIII
- j - AF5aIII
- k - S3aI with asphaltum
- l - S3bII with punctation and hole

There are 15 S2bII specimens known from CCo-138 and 12 from Ala-329.
There are 6 AF5aIII from CCo-138 and 1 from Ala-309. According to Bennyhoff these S series square/rectangular pendants date from the Phase 1B Late Period.
2391 - (740) Olivella 1a beads (found in the neck region).

Burial 231--20S/130W--74"--Female--Age 20-30--Orientation 320 degrees.
Primary inhumation, loosely flexed, on right side.
The field note state that there were two fragmented bone objects found lying at the back of the neck near the skull, but no other artifacts were recovered.

Burial 232--60N/60W--47"--Female--Adult--No orientation.
Redeposited cremation, tightly flexed, on the right side and has no associations.

Burial 233--30N/130W--47"--I--Age 2-21/2--Orientation 270 degrees.
Primary inhumation, tightly flexed, on right side with no associations.

Burial 234--20N/130W--49"--I--Adult--No orientation.
Primary cremation with the bones scattered and no associations.

Burial 235--30N/130W--54"--Female--Age 22-24--Orientation 70 degrees.
Primary burial, tightly flexed, on right side.
2393 - (79) Olivella 1a beads.
2394 - pestle (placed on top of the individual after she was flexed).

2392 - projectile point with heavy residue and impact fracture on the base and on some serrates. Homen = 2.2 microns (1245 A.D.); Origer = 6.5 microns.

Burial 236--0/130W--67"--I--Age 1-1 1/2--Orientation 280 degrees.

Disturbed primary inhumation, loosely flexed.

2406 - (5) Bird bone whistles discovered near the back of the skull and shoulder region. They are very large bones (see study in Chapter 13)

2405 - bone awl found right below the bird bone whistles. It is made out of a split long bone of a mammal. The proximal end has been sawed.

2408 - (245) Olivella 1a beads.

2404a&b - Haliotis pendants are typed S3aI--plain edge. (1 from CCo-138). There is asphaltum present on the backs of these pendants. According to Bennyhoff interview these rectangular pendants date to Phase 1B Late Period.

Burial 237--60N/70W--52"--I--Age 1 1/2-2--Orientation 10 degrees.

Primary burial, tightly flexed, on left side,

2410 - obsidian projectile point has two large flakes removed and is burinated. It looks like the edge of a dart and has organic residue.

Hydration: Homen = 1.9 microns (1433 A.D.); Origer = 2.7 microns.

Burial 238--60N/50W--55"--Female--Age 30-39--Orientation 330 degrees.

This burial is not extended, but loosely flexed on the left side, Both legs are gone however.

2420 - bird bone whistle fragment.

2419 - tip of a bone awl.

2418 - (9) Olivella 1b beads (some are charred).

Burial 238A--Male-- Age 20).

Burial 239--10S/120W--75"--Male--Age 18-25--Orientation 270 degrees.

Primary inhumation, loosely flexed, on right side.

This individual was selected by Musladin and Leventhal for a bone collagen date: 700+/- 55 years B.P. (1250 A.D.). This individual probably died from a traumatic wound. After death he was adorned with an abundance of objects, thus suggesting a very high status individual. Some of the Olivella beads were placed in his mouth as part of the mortuary practice.

2442 - projectile point imbedded in the pelvis. It has organic residue on both faces. There is an impact fracture at the tip. Hydration: Origer = 2.7 microns.

2433a&b - Haliotis rufescens pendants (round, with incised edge) type K2bII (24 known from CCo-138, 5 from Ala-329).

These Haliotis pendants were discovered over the eyes. The shell beads were found around the skull and in the mouth and were also found at the flexure of the legs.

2432 - (1231) mostly Olivella 1b beads.

2435 - (24) Olivella 1c beads. 2431 - (3154) Olivella M1a beads.

2438a&b - fine grained sandstone pipes found near mouth.
 2437a&b, 2439, 2440, 2441 - bird bone whistles.
 2441 - have plugs. Most look like large bird bone and specimen "j" looks like a mammal bone. Some have asphaltum and appear like they were tied together.
 2440a-h are mammal bone whistles. Specimen "f" works perfectly.
 2439a&d are decorated with M1a beads and held with asphaltum. 2437a and b have beads. The majority of these whistles were recovered in the abdominal region. There are also abalone fragments adhering to some of these whistles and they may have had feathers attached.
 2434a-d - Haliotis rufescens pendants, type S7aI (with two perforations centered at each end). There are 46 reported in Gifford's study and most come from the Delta Region; 24 of these come from CCo-138.
 2436 - unmodified sting ray barb (found in screen).
 Results from Bennyhoff interview: one pipe has a pseudo-lip, the other has a collar. Collars tend to be early-Phase 1A - 900-1100 A.D. However, sees with a carbon date of 1250 A.D., he thinks that these occur a little later at Ala-329. Specimen 2434, he thought, may have been once attached to a dance outfit--which is a Phase 1B form. The creamy white sandstone pipe material is indicative of a Delta material type for pipes. Specimen 2433 disks over the eyes with heavy scoring, he thought to be slightly earlier.

Burial 240--20S/120W--77"--I--Age 2-3--Orientation 330 degrees.
 Primary inhumation, tightly flexed, on right side. This is a high status infant.

2421 - (394) Olivella F2 and F3 beads. Square Saddles are F3a; Full Saddles are F3b.
 2423 - (207) Olivella F3 and F2 beads. Total of 601 F3 beads were recovered. Beads and pendants found in the neck region.
 2424 - (768) Olivella beads: 1a = 528; 1b = 240; M2a = 8.
 2426 - (180) Olivella beads: 1b = 6; 1c = 174.
 2422 - Haliotis pendants-half disk, half oval. a,b,c, are AB3bIII with one perforation near the middle of the curved edge, incised, Haliotis cracherodii. There is 1 known from CCo-141 (Orwood Mound II). Some have asphaltum or residue on the back. The fragment is probably part of a,b,c, series; "d" is type U4; "e" is type S5bII which is quadrilateral and tend to be from Central Valley listed as Haliotis unidentified. 1 reported from Ala-309 and 1 from CCo-141 and are believed to represent the early cultures. Pendants and beads found around neck and leg region.
 2427 - Sting ray barb section.

According to Bennyhoff interview: the mixed lot of beads are graduated in size. Some are F3b small saddle and they are oval to round. He suggested that this type is Late Middle Period - 300-500 A.D. There are mostly F3a in this assemblage but some are type F2. It appears "left

over" shell was used to make these beads. Ca-SFr-7 has one of the above pendant type. Specimen # 2422 square pendant is indicative for Late Middle.

Burial 241--60N/190W--55"--I--Age 7-8--Orientation 190 degrees.
This is a disturbed burial. The field notes state that all bones were absent except the skull and vertebrae. This person was laying on their right side. There was a possible fire pit above this burial, with hard dirt with charcoal encountered throughout the grave.

2451 - obsidian flake is actually the base of a projectile point/dart.
Hydration: Origer = 5.8 microns.

Burial 242--10N/130W--71"--Male--Age 35-44--Orientation 210 degrees.
Primary burial, tightly flexed, on right side.

2434 - large boulder mortar found near the head with the well side up.

Burial 243--10S/140W?--84"--Male--Age 35-44--Orientation 270 degrees.
Primary inhumation, tightly flexed, on left side with no grave associations.
Recovered from within sterile sub-soil.

Burial 244--20S/120W--81"--Male--Age 39-44--Orientation 270 degrees.
Primary inhumation, tightly flexed, on left side.

2484 - possible bone wedge (pointed bone wedge probably elk antler and was found in the abdominal cavity).

2483 - (221) Olivella F2 and F3 beads (date to 300-700 A.D.).

2485 - (3) Olivella 1b beads.

2486 - Haliotis pendants

a - Haliotis rufescens, type AF5aIII with one perforation near the base. (6 from CCo-138, 4 from CCo-141 and 1 from Ala-329).

b - Haliotis cracherodii, type AF (tear drop shape has three perforations, and is similar to type AF11).

c - Haliotis rufescens, type Q2aIII (One perforation in the broad edge, plain edge). 6 from CCo-138 and 3 from Sac-6.

This burial should date to the same age as Burial 240 which is the same provenience and 4" higher. According to Bennyhoff interview: # 2488 is a group of beads that are more oval than typical for types F2 and F3. These are slightly different bead lot recovered from Burial 240. They should date Intermediate Middle Period 100-300 A.D.

Burial 245--10N/130W--72"--Male--Age 31-40--Orientation 270 degrees.
Primary inhumation, tightly flexed, on right side. The radius and ulna of the left arm are missing.

2470 - obsidian point midsection with organic residue. Possibly contributed to cause of death. Homen = 2.0 microns (1373 A.D.); Origer = 2.7 microns.

Burial 246--60N/190W--56"--I--Age 2-21/2--Orientation 270 degrees.
Primary inhumation, tightly flexed, on right side. No grave associations.

Burial 247--60N/170W--40"--I--Age 2-2 1/2--Orientation 320 degrees.
Primary inhumation, tightly flexed, face down. Probably represents a very high status child.

2477 - dart? point base with organic residue and impact fractures.

Hydration: Homen = 2.1 microns; Origer = 3.2 microns.

2478 - Steatite pipe biconically drilled, not flanged (uncollared) with remnants of a polished bone tube inside.

2471 - awl tip of bird bone (polished split bone tool).

2479 - long bird bone whistle.

2474 - mammal bone whistle (asphaltum plug and evidence it was hafted onto something or had feathers wrapped around it).

2473 - bone necklace assembly (possibly of fish bones).

2481 - (752) Olivella beads: 1a = 307; 1b = 413; 1c = 32 (found around the head region).

2480 - bone pendant (biconically drilled, a canid metapodial). 2475 - Sea otter penis bone (biconically drilled).

2476 - (2) Haliotis buttons, type L1d (apparently round, unperforated with asphaltum inlay).

"Bone pins" may be listed as bone necklace. This burial is associated with many closely articulated large animal bones (possibly a large bird).

According to Bennyhoff interview: no other site has as much asphaltum used as Ala-329 that Bennyhoff has seen. The emphasis on bone tools is usually indicative the Middle Period. The use of shell as ornaments tends to increase during the Late period. The pipe type dates this burial to Phase 1 Late Period.

Burial 248----60N/60W--59"--I--Age 1 1/2--Orientation 100 degrees.

Primary inhumation, tightly flexed. Beads are scattered.

2468 - (205) Olivella beads: 1a = 27; 1b = 174; 1c = 4 (last 4 beads appear to be charred).

2466 - (505) Olivella beads: M1a = 393; M2a = 109 (The mid-range dates for these beads (M1a and M2a) are 1100-1500 A.D.).

2467 - (1) Olivella M1a bead.

Burial 249--20S/120W--77"--Male--Age 35-44--Orientation 270 degrees.

Primary inhumation, tightly flexed, on left side. 2482 - (18) Bone whistles (both bird and mammal). The bones appear to have been recovered from the chest cavity of this individual. The plugs seems to be of clay? and some of the bones may be pelican. Some have been wrapped. Dr. Bennyhoff was amazed at the asphaltum.

Burial 250--20N/130W--64"--Female--Age 16-18--Orientation 280 degrees. Primary inhumation, tightly flexed, on left side. This is a very high status teen. Beads found around the head and upper torso, and the pendants around the neck.

2511 - (918) Olivella beads: 1a = 809; 1b = 108; 1c = 1.

2513 - (1192) Olivella beads: 1a = 1; 1b = 296; 1c = 884.

2510 - (966) Olivella 1b beads.

2512 - (729) Olivella F series beads. They type as square saddles and date 300-700 A.D. These might be a saucer type rather than a saddle type of bead.

2514 a-h - Haliotis pendants.

a - Haliotis cracherodii, type AB2c (one hole on the straight side, not incised).

b - Haliotis rufescens, type AB3b2 with incised edge and residue. One is known from CCo-141 (Orwood Mound).

c - AB3a (hole is located on the curved side).

d - AB3a

e - Haliotis unidentified, type S5a4 (one perforation on the short side with a plain edge).

f - AB3a

g - Haliotis cracherodii, type AB2c.

h - AB3a

2515 a-f - (6) Bird bone whistles.

According to Bennyhoff interviews: Specimen #2513 Olivella beads are barely ground. #2512 are a saddle bead type F2 and are a minority in this assemblage. The F3 bead type are so rounded with a very small perforation (so they are not typed as G series). It appears that many different individuals are making these beads. They tend to be very oval, but yet are unlike an oval saddle bead. He wondered if this is a new sub-type? He suggested that these are an oval F variant. F5 would be the next available typological designation. He prefers to type these F2 as a variation of F2b. 3b1 beads of #2512 which is his F series (F2 and F3 series). He suggested that these may date to the Late Middle Period 300-500 A.D. These are distinguished from his C series because these are not split. He expected the stop holes in the whistles to be in the upper rather than the central section of the bone.

Burial 251--40N/220W--41"--Female--Age 25-35--Orientation 90 degrees. Primary burial, tightly flexed, face up. This has the most diversified bead lot from any burial.

2491 - obsidian flake

2492 - Olivella beads: 1a (24), 1b (204), 1c (9).

2492a - Olivella beads (punched saddles) - D1 = (4), and D1a = (2).

b - K1 (4)

c - G1 (93)

d - C7 variant (13)

e - F2 and F3 (6)

f - C7 (12)

2493 - Haliotis assembly:

a&b - U2bI	g - AF
c - Z4aI	h - Q1bIII
d - AF5aIII	i - Q1aIII
e&f - Af5bII	j - AE3a

According to Bennyhoff interviews: #2492a are typed D1a and date to Middle Late Transition 700-900 A.D. Several bead types are drilled (C2). He thinks 4 of these beads are shelved and 2 are split and therefore, would date to Early Middle Period 200 B.C.- 100 A.D. He suggests dating this burial. #2492c is a tiny saucer-G1; #2492a is split punch D1; #2492f is indicative of the transitional period being made on a quarter of the shell. Partial grinding or chipped edge distinguishes type C7 dating to the Late Middle Period circa. 700-900 A.D. Specimen "d" is a rectangular variant of a C7. They could be also M series blanks but there are no other finished M series beads in this assemblage. Specimen "b" is a rectangle, amorphous small type F2. Specifically it types as a F3bII oval and wide bead. The last appearance of these beads is during the Middle/Late Transitional Period (700-900 A.D.). Bennyhoff thinks that the adjacent mound, Ala-328, had no Transitional presence, but goes up to the Transitional Period.

Burial 252--20S/130W--50"--Male--Age 30+--Orientation 0 degrees.
Primary inhumation, tightly flexed, on left side. This burial was vandalized by pot hunters.

2495 - Margaritifera clam pendant.

2496 - (150) Olivella beads: 1a = 7; 1b = 49; 1c = 94.

2494 - antler wedge in three pieces, proximal end is spalled due to hammered blows.

Burial 253--60N/60W--65"--Female--Age 21-35--Orientation 90 degrees.
Primary inhumation, tightly flexed in a somewhat vertical position. It had a complete canine skeleton associated near it.

2518 - (447) Olivella beads: 1a = 79; 1b = 278; 1c = 90.

2519 - (140) Olivella square M1a beads.

A harbor seal penis bone was recovered and is unaccounted for.

This burial may date 1100-1300 A.D. Found approximately within 4 feet of Burial 253 was an intact canine (identified as dog) loosely flexed on the left side, thought to be a male. The depth of the dog burial was 62".
Orientation of the dog: 20 degrees.

Burial 254--60N/170W--42"--Female--Age 40+--Orientation 50 degrees.
Primary inhumation, face down, on left side. This burial is included within a cluster of burials: 255 and 256.

2504a-d - (4) scapula saws (of deer and elk).

2501a&b - bird bone whistles (2 whistles and a fragment of another).

2502 - pestle (proximity to burial unknown).

- 2503a&b - Banjo pendants, type N1a3. (dates 1300-1500 A.D.).
- 2498a-e - Haliotis pendants. At least 3 banjo proximal ends and a distal end which is "d". Specimens a-c are proximal banjo end; "d" is a type N6aII within incurved horns and plain edge. All 9 illustrated by Gifford were recovered from CCo-138; "e" represents a midsection of a pendant.
- 2500 - (10) Olivella K1 cups (date 1100-1300 A.D.).
- 2497 - (205) Olivella 1a beads.
- 2499a-e - (5) bone awls (These appear to be this person's personal awls). According to Bennyhoff interview: the incurved horned banjo fragments and the serrated scapula (they are not fiber strippers) date Phase 1B - 1100-1300 A.D.

Burial 255--60N/170W--43"--Male--Age 11-12--Orientation 320 degrees.
 Primary inhumation, tightly flexed, face down. This burial was discovered adjacent to Burial 254 and facing the opposite way.

- 2505 - reworked pendant, unperforated Haliotis fragment; possibly Q series; it displays side incisions.

Burial 256--60N/170W--51"--Male--Age 30-40--Orientation 50 degrees.
 Primary inhumation, loosely flexed, on left side. Found immediately below Burials 254 and 255.

- 2507 - Haliotis banjo pendant, type N4aI with a square end, one perforation on the broad end and incised. 4 are known from CCo-138.
- 2506 - Mytilus pendant (ocean mussel); the surface has been polished and is unifacially drilled. It also had (1) Olivella K1 bead found with it.
- 2509 - stone pipe (uncollared, short steatite pipe with charred material in it (this organic material may be identifiable and datable).
- 2508 - pestle - 10 1/2" long.

Burial 257--20N/130W--80"--Female--Age 20-30--Orientation 0 degrees.
 Primary burial, face down, on left side.

- 2535 - mortar was adjacent to her head; sitting on top of her head was an abalone shell (2526).

2526 - abalone shell (Haliotis rufescens).

2527a-g - (6) Haliotis pendants:

a&b - AP2aII. Type AP2aI: 7 known from the Delta region - CCo-138. They are Haliotis crescent rims. Type AP2aII: 14 of the 15 are from CCo-138; 2 from Bay Region--Ala-307 and Ala-309. They are also found in southern coast near Santa Cruz Island. These rims found around the neck region.

c - Z2aII

d - AF5bIII

e - AF5aIII

g - AB1aIII

According to Bennyhoff interview: Specimens #2527 are rim ornaments and are not diagnostic, but may be Phase 1B. However, because of the depth they may date to the Middle Period.

Burial 258--60N/170W--48"--I--Age 1/4-1/2--Orientation 0 degrees.
Secondary inhumation with no grave associations.

Burial 259--60N/170W--66"--Male--Age 12-14--Orientation 240 degrees.
Primary inhumation, loosely flexed, on left side.

2522 - worked bone pendant?

2520 - (700) Olivella 1a beads.

2521 - obsidian biface with organic residue, edges appear crushed. It appears to be a knife with the distal and proximal ends broken. The high edge facets are polished, indicating it was employed as a knife-like instrument. Homen = 2.5 microns (1028 A.D.); Origer = 3.2 microns.

Burial 260--10N/120W--67"--Male--Age 21-25--Orientation 30 degrees.
Primary inhumation, tightly flexed, on right side. Burials 260 and 261 appear to be a double burial. The assemblage appears to be shared between the two burials.

2533 a-h - Haliotis pendants.

a - Q1aIII

b - U2aIII (12 from CCo-138 and 1 from Ala-329).

c - Q1aIII

d - Unidentifiable

e - AF5aIII (6 from CCo-138)

f - Q2aIII

g - Q1aIII (5 from CCo-138).

h - Z5I--not incised.

According to the first Bennyhoff interview he thought these pendants might possibly date to the Terminal Middle Period - 500-700 A.D. In the second interview he felt the oblong triangulate type doesn't help to date the burial.

2531 - (68) Olivella 1a beads.

2528 - (11) Olivella beads: 1a = 4; 1b = 6; 1c = 1.

2529 - (7) Olivella beads: 1b = 1; 1c = 6.

2530 - (483) Olivella F2 and F3 saddle beads (date 300-500 A.D.).

According to Bennyhoff these are mixed, F2a, F3a and a few F3b beads.

2532 - worked, pecked sandstone pebble. It may be an ear ornament.

Bennyhoff thinks this was a reworked charmstone.

Burial 261--10N/120W--69"--Female--Age 21-35--Orientation 125 degrees.
Primary inhumation, face up. This individual is a double burial with Burial 260 and share the assemblage. Both burials are primary inhumations.

Burial 262--40N/130W--60"--I--Age 0-1/2--No orientation.
Primary inhumation (scattered) and no grave associations.

Burial 263--50N/220W--55"--Female--Age 25+--Orientation 120 degrees.
Primary inhumation, tightly flexed, on left side, face up. No associations.

Burial 264--50N/220W--58"--I--Age 3-5--No orientation.
Secondary inhumation or a disturbed burial, tightly flexed, face down. It is a possible double burial with 263. No grave associations.

Burial 265--10N/140W--73"--Male--Age 14-16--Orientation 250 degrees.
Primary inhumation, tightly flexed, on right side, face down.

2556 - (638) Olivella C3 beads. These beads are very flat and may be split drilled. These are drilled from the interior of the shell. C3 first occurs around 900 A.D. and continues through to 1300 A.D.

According to the first Bennyhoff interview he stated that these beads date to the Terminal Middle Period - 500-700 A.D. G5c are called "poor saucers". He says they are too small for C3 and these tend to be more oval than round. In the second interview he stated these are ovaloids. It took a lot of time to make them. He believes that they represent a new variant, and they would type as an F4. He thinks that they are not a type C3 because of the small perforation. There are no F2's and no good F3's defined in this assemblage, therefore, he will consider these as a new type-F4-oval saddle, perhaps dating to the Terminal Phase of the Middle Period.

Burial 266--10N/130W--71"--Female--Age 39-44--Orientation 0 degrees.
Primary inhumation, tightly flexed, on right side.

2539 - (207) Olivella beads: 1b = 88; 1c = 119.

2551 - (2) Olivella 1b beads (found around her neck).

Burial 267--10N/130W--77"--Male--Age 16-18--Orientation 270 degrees.
Primary inhumation, tightly flexed, face up. Burials 267 and 268 are a double burial. This burial is immediately next to 268. 2542 - (5) Bird bone whistles (intact and found in the facial region near the mouth).

2540 - (3) Olivella beads: 1a = 2; 1c = 1.

2541 - (10) Beads are missing.

Burial 268--10N/130W--77"--Male--Age 17-21--Orientation 270 degrees.
Primary inhumation, tightly flexed, face up. This is perhaps the same burial event for both Burials 267 and 268. 2549 a-c - Haliotis pendants. a - Q2aIII; b - AA2aIII; c - AF.

Burial 269--10N/130W--66"--Female--Age 30-45--Orientation 270 degrees.
Primary inhumation, tightly flexed, face up.

2543 - (114) Olivella 1a.

2548 - (219) Olivella 1a beads (Both 2543 and 2548 beads were found in the neck and chest region).

2544 a-i,k,m,n--Haliotis pendants.

a - Q1aIII (drilled and then cut).

b - S3aI

c - S3bIII

d - S3aIII

f - Q1aIV

g - K1bII (found in the back neck region).

h - K1aIII

i - AB3a

k - AF5aIII

m - Q1aIII

n - AF6I

Burial 270--50N/220W--66"--I--Age 6 1/2-8 1/2--Orientation 90 degrees.
Primary burial, loosely flexed, on right side with no grave associations.

Burial 271--50N/220W--72"--I--Age 6-7--No orientation. Primary burial, tightly flexed. It seems to have been disturbed and has a disarticulated jaw.

2567 - split bone awl.

Burial 272--60N/210W--13"--I--Age 2-3--Orientation 30 degrees?
Primary burial, tightly flexed, on the left side, with no associations.

Burial 273--50N/220W--85"--Male--Age 31-20--Orientation 0 degrees.
Primary inhumation, tightly flexed, on left side.
An obsidian point was found in the lumbar-sacral region, but there is no number assigned and it is uncatalogued.

2663 - charcoal sample (datable).

Burial 274--80N/140W?--5"--Male--Age 18-30--No orientation.
This burial is nearly totally disarticulated due to surface disturbance.
2572 - bird bone tube (large tube which may be a proto whistle or whistle blank or a sucking tube, the end appears to have been wrapped or tied).

Burial 275--70N/140W--49"--Female--Age 39-44--No orientation.
Primary inhumation, tightly flexed, right side. The skull is gone.

2660 - a large cobblestone mortar found at the feet.

2586, 2588, 2626 - (3) Scapula saws (found near the back of the individual near the pelvis).

2587 - burnt clay object, with a groove around it. It is white, possibly magnesite and was found by the pelvis).

A charmstone without an assigned catalog number was found right above the mortar.

Burial 276--70N/110W--18"--Female--Age 41-50--Orientation 310 degrees.
Primary inhumation, loosely flexed, face down. It was found in the upper sod layer and has no grave associations.

Burial 277--70N/130W--26"--I--Adult--No orientation
Disturbed secondary inhumation with no associations.

Burial 278--70N/100W--30"--Female--Age 35-50--Orientation 180 degrees.
Primary inhumation, tightly flexed, left side.

2617, 2641 - (2) Large pestles (found in the leg region).

2638 - (9) Olivella 1a beads (found near the neck region).

A serrated bone saw recovered from the pelvic region is missing.

A possible fish weight found near the leg region is missing.

Burial 279--70N/140W--53"--Female--Age 30+--Orientation 90 degrees.
Primary burial, tightly flexed, face up.

2632 - (38) Olivella beads: 1b = 36; 1c = 2.

2633a&b, 2634 a-c, 2635 a, b-j - bird bone whistles.

Burial 280--70N/110W--49"--Female--Age 31-40--Orientation 270 degrees.
Primary inhumation, tightly flexed, right side.

2645 - (1) very large pestle (found in the crook of the body).

2648 - (69) Olivella beads: 1a = 1; 1b = 65; 1c = 3.

2646 - (2) bird bone whistles (found near the mouth).

Burial 281--70N/100W--44"--Female--Age 35-45--Orientation 190 degrees.
Primary inhumation, tightly flexed, on right side.

2659 - large killed mortar (over the individual).

Olivella M1a beads found in and around the skull are not cataloged.

Burial 282--70N/100W--45"--Female--Age 31-44--Orientation 340 degrees.
Primary inhumation, tightly flexed, face up.

2654 - Haliotis rufescens (found near the right shoulder). It may have been for a food offering.

One recovered deer rib has no number.

Burial 283--70N/90W--42"--Male--Age 14-18--No orientation
Disturbed primary burial, in a sitting position on left side.

2655 - charmstone (sandstone, is charred, with both proximal and distal ends missing).

Burial 283A--Indeterminate--Age Adult.

Burial 284--70N/110W--60"--Female--Age 30+--Orientation 270 degrees.
Primary inhumation, tightly flexed, on right side.

2661 - large "show" mortar underneath the body.

Olivella beads and Haliotis pendants were placed on her head and are missing with no catalog numbers.

Appendix B

**Distribution of Artifact Classes by Burial,
Age, Sex and Temporal Period**

	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Mortars																				
pestles																				
pipes																				
charmstones																				2
worked stone																				1
obsidian flk																				
obsid. points															5					
obsid. biface										1										
obsid. tools																				
obsid. util. flk																				
obsid. prism										2										
chert flakes																				
chert points																				
other shl. bead													159							
cut beads										10										
spire lopped																210		45		323
Hal. pendants										35										2
other shl. pend																				
whole Haliotis																				1
antler wedges																				1
antler tools																				
harpoons																				
bone awls																				
bone saws																				
bone pend.																				
bone tools																				
whistles																				
other bone obj.																				
effigy ornament																				
burial #																				
Age	13-15	21-30	31-40	35-44	25+	31-40	6-7	31-40	27-35	30-35	31-40	Adult	18-21	13-15	16-18	35+	30+	35-39	16-18	18-21
Sex	Female	Male	Male	Female	Male	Male	Ind.	Female	Male	Male	Female	Ind.	Female	Female	Male	Female	Ind.	Female	Male	Male
Type of Burial	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Second.	Primary	Primary	Red Cr	Primary	Primary	Primary	Primary	Primary
Temporal Period	Phase I	Phase II	Middle	Middle	Phase I	Middle	Middle	Middle	Middle	Phase I	Middle	Middle	Middle	Middle	Phase II	Phase II	Middle	Phase II	Phase II	Phase I
Additional Bur.								108A					113A							120A
Age								5-10					0-5							Infant
Sex								Indet.					Indet.							Indet.

	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
	21-30	21-35	30-39	18-25	13-15	30-39	2.5	41-50	21-30	Infant	18-25	50+	7-8	35-45	Adult	Adult	Adult	Adult	Adult	Adult	
	Ind.	Female	Female	Female	Male	Male	Ind.	Female	Male	Ind.	Male	Female	Primary	Primary	Adult	Adult	Adult	Adult	Adult	Adult	
	P Crem	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Red Cr	Infant	Red Cr	Primary	Primary	Primary	Red Cr	Red Cr	Red Cr	Red Cr	Red Cr	Red Cr	
	Phase I	Phase II	Phase II	Phase II	Middle	Phase I	Phase II	Phase I	Phase II	Phase II	Phase I	Phase II	Phase I	Phase I	Phase II	Phase II	Phase II	Phase II	Phase II	Phase I	
Additional Bur.																					
Age																					
Sex																					
mortars																					1
pestles								1													
pipes										5	1										
charmstones																					
worked stone																					1
obsidian flk																					
obsid. points									1												
obsid. biface																					
obsid. tools																					
obsid. util. flk																					
obsid. prism																					
chert flakes																					
chert points																					
other shl. bead																					
cut beads	73																				
spire lopped	74			60					3	19	7		271		1						76
Hal. pendants				1						1											
other shl. pend.																					
whole Haliois																					
antler wedges																					
antler tools											2										
harpoons																					
bone awls																					
bone saws																					
bone pend.																					
bone tools																					
whistles	1				6					6											
other bone obj.											1										
effigy ornament																					1
burial #	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
Age	21-30	21-35	30-39	18-25	13-15	30-39	2.5	41-50	21-30	Infant	18-25	50+	7-8	35-45	Adult	Adult	Adult	Adult	Adult	Adult	
Sex	Ind.	Female	Female	Female	Male	Male	Ind.	Female	Male	Ind.	Male	Female	Primary	Primary	Adult	Adult	Adult	Adult	Adult	Adult	
Type of Burial	P Crem	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Red Cr	Infant	Red Cr	Primary	Primary	Primary	Red Cr	Red Cr	Red Cr	Red Cr	Red Cr	Red Cr	
Temporal Period	Phase I	Phase II	Phase II	Phase II	Middle	Phase I	Phase II	Phase I	Phase II	Phase II	Phase I	Phase II	Phase I	Phase I	Phase II	Phase II	Phase II	Phase II	Phase II	Phase I	

mortars	1				1				24
pestles									53
pipes			1						14
charmstones									41
worked stone									37
obsidian flk									5
obsid. points									44
obsid. biface									7
obsid. tools									4
obsid. util. flk									1
obsid. prism									5
chert flakes									5
chert points									1
other sh. bead									63
cut beads	10				+10?				20831
spire lopped									22348
Hal. pendants									366
other sh. pend.					+1?				7
whole Haliotis			1						16
antler wedges									5
antler tools									17
harpoons									8
bone awls									29
bone saws									14
bone pend.									69
bone tools									1
whistles									124
other bone obj.			1						33
effigy ornament									38
burial #	281	282	283	284	TOTAL				44210
Age	35-45	31-44	14-18	30+					
Sex	Female	Female	Male	Female					
Type of Burial	Primary	Primary	Primary	Primary					
Temporal Phase	Phase I	Phase I	Phase I	Phase I					
Additional Bur.			283A						37
Age			Adult						
Sex			Indet.						

Appendix C

***North and South Wall Profiles of Units:**

50N 60W and 50N 70W

(Figures 26 - 29)

and




***Selected Burial Illustrations from the 50N Trench**

(Figures 30 - 41)

***The original site profiles and burial illustrations were sketched by
unidentified SJSU Archaeological Field School students**

Figure 26

CA ALA 329
50 N 60 W
SOUTH WALL

CHARCOAL LENSES - 
SHELL CONCENTRATIONS - 
CLAY LUMPS - 

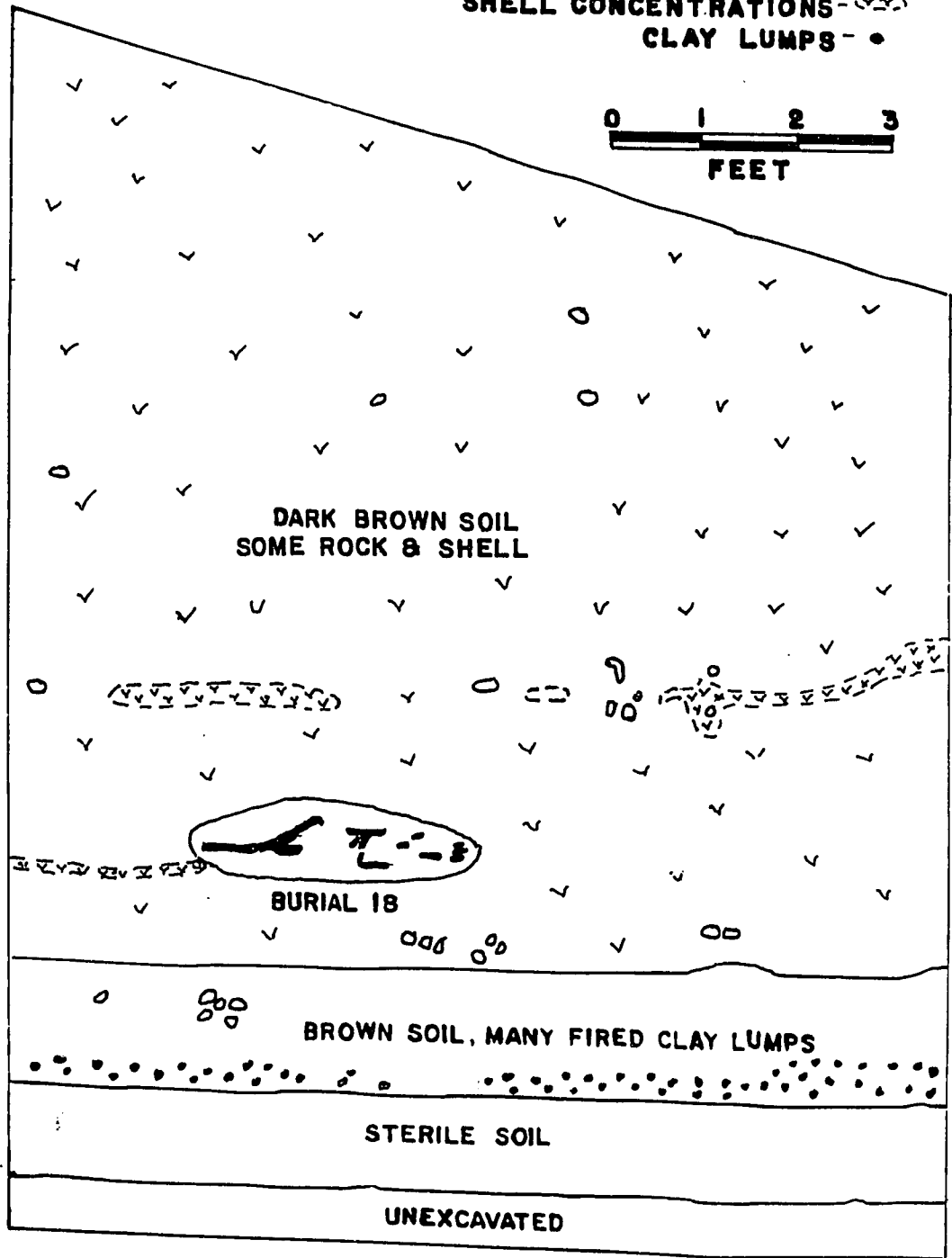


Figure 27

CA ALA 329
50 N 60 W
NORTH WALL

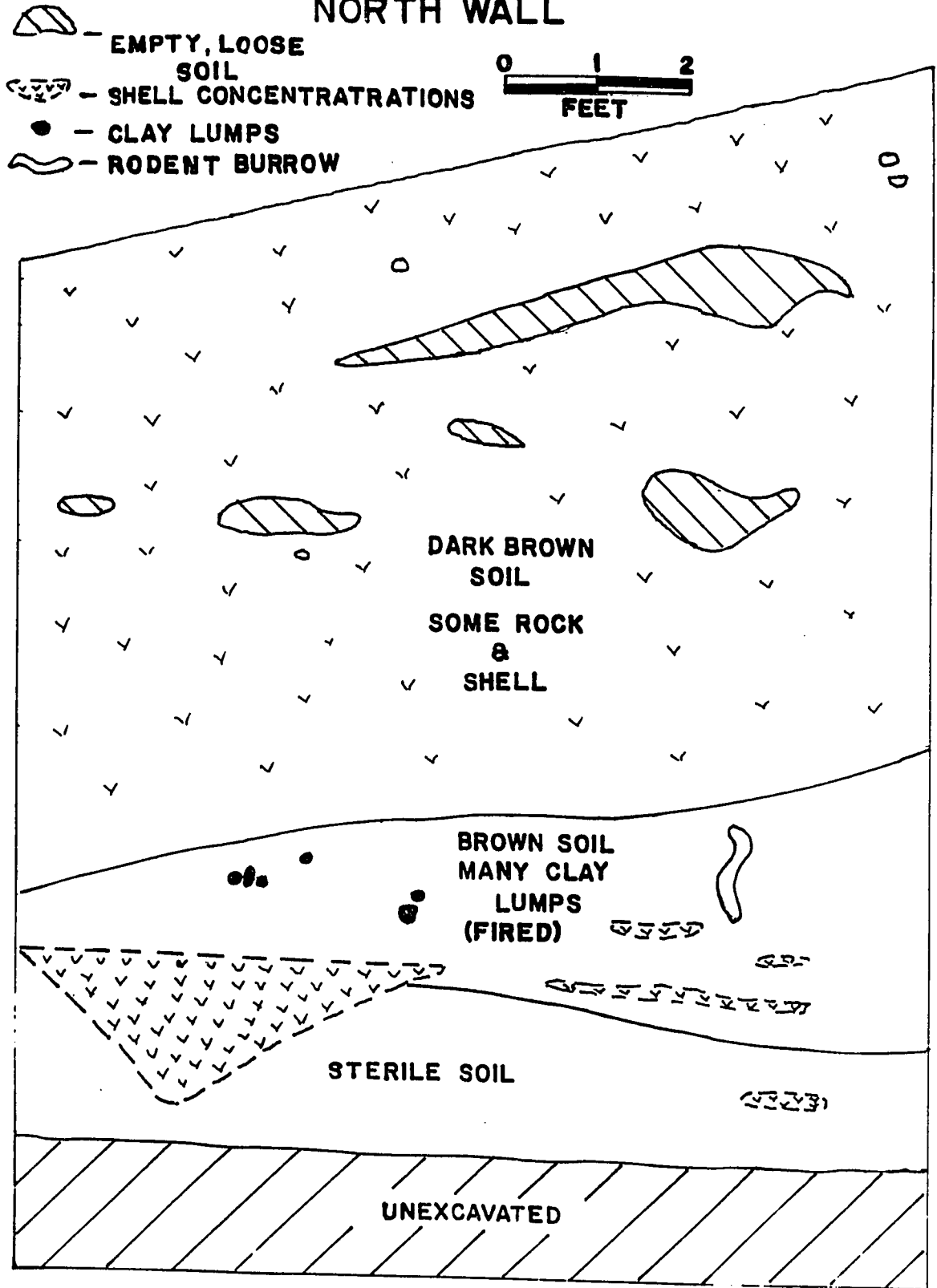


Figure 28

CA ALA 329
50 N 70 W
SOUTH WALL

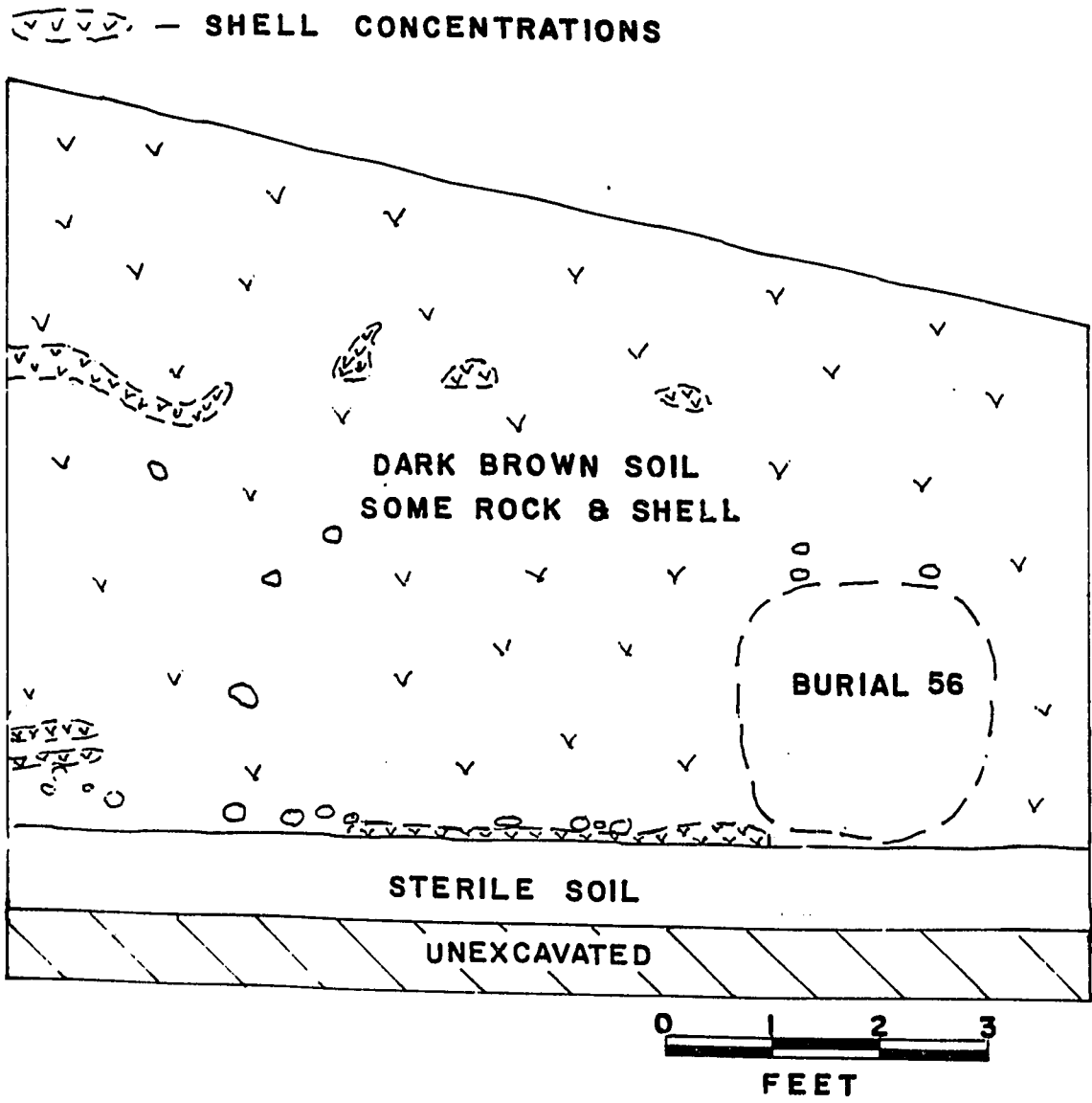


Figure 29

CA ALA 329
50 N 70 W
NORTH WALL

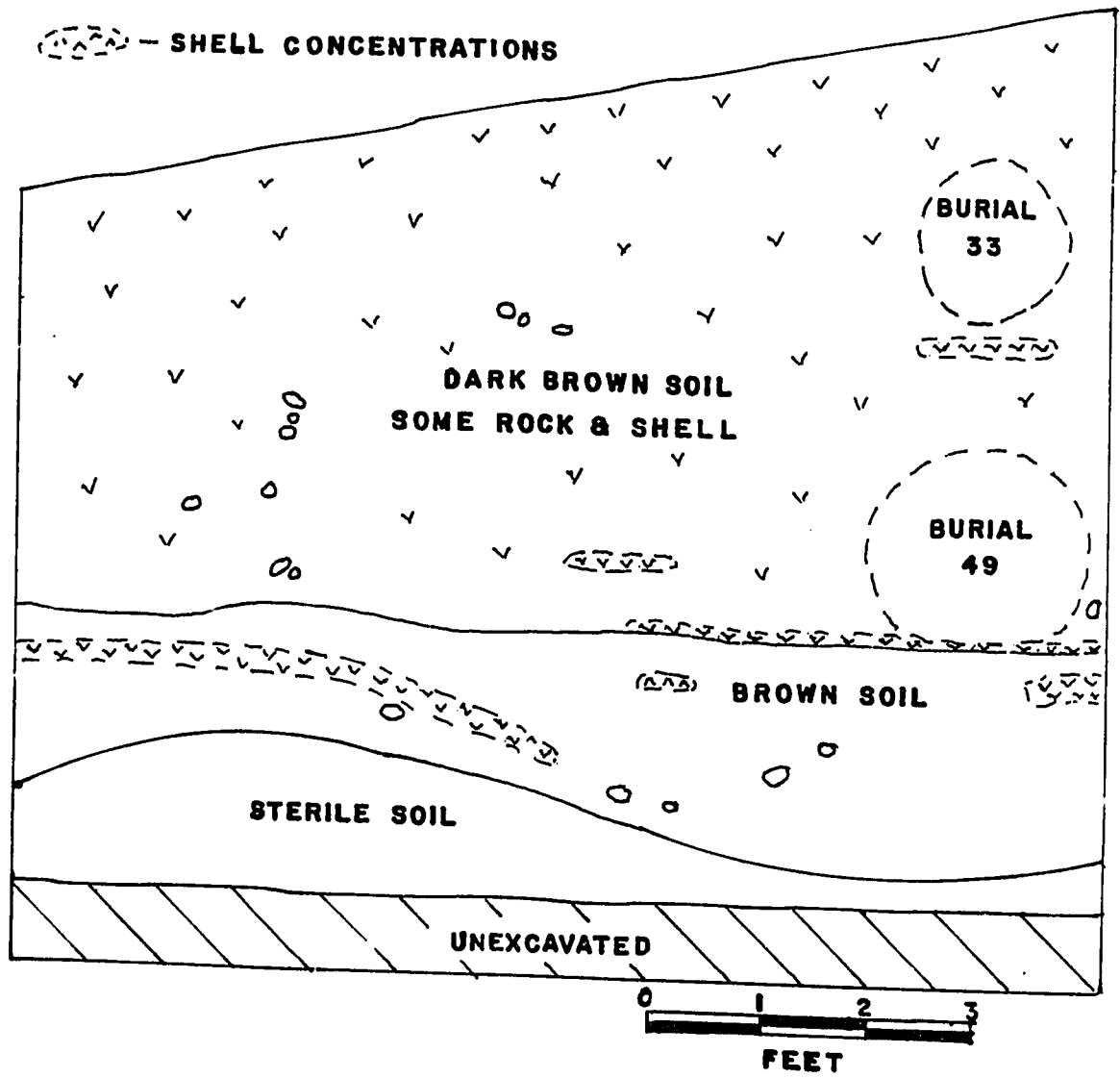


Figure 30

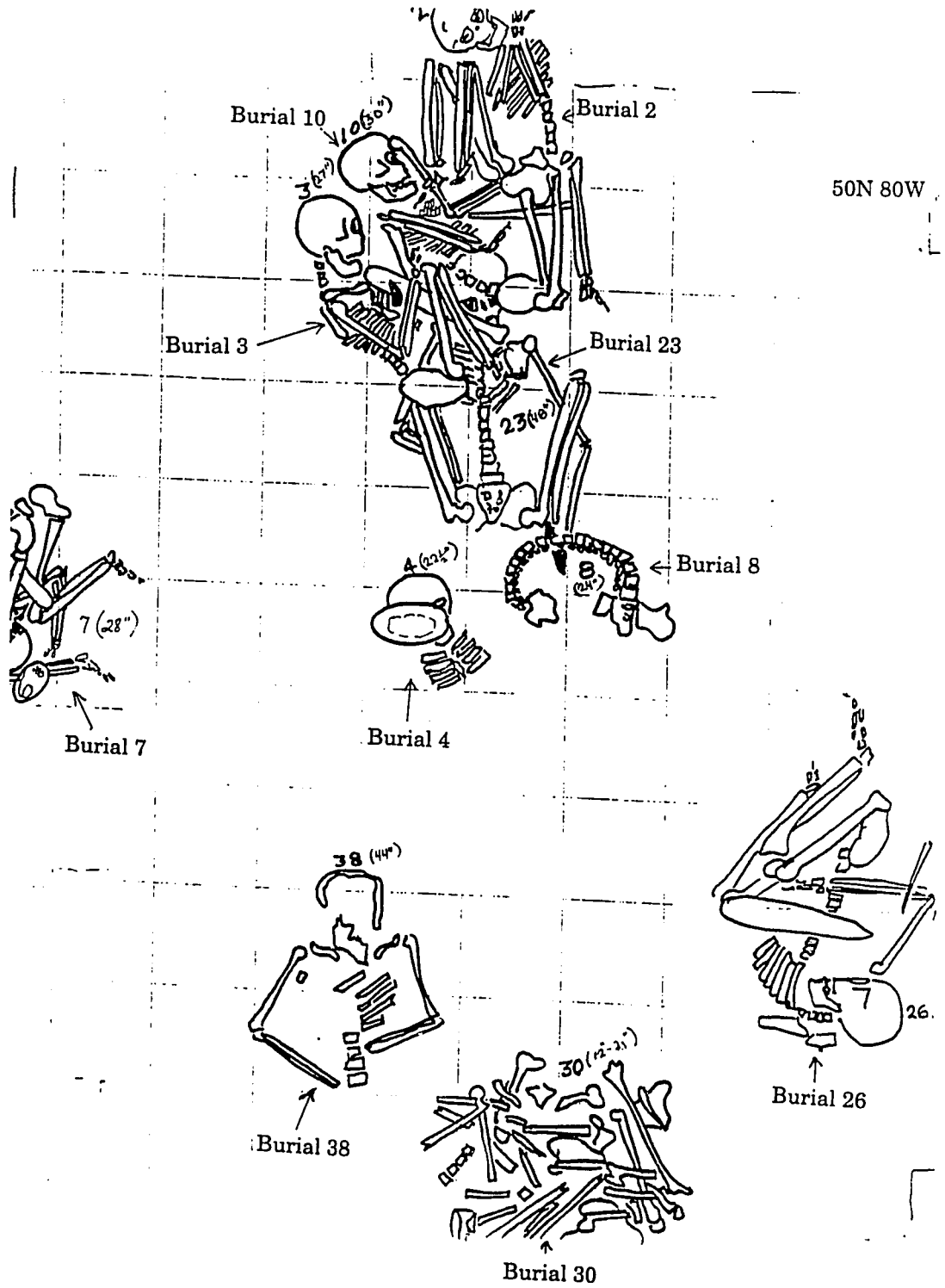


Figure 31

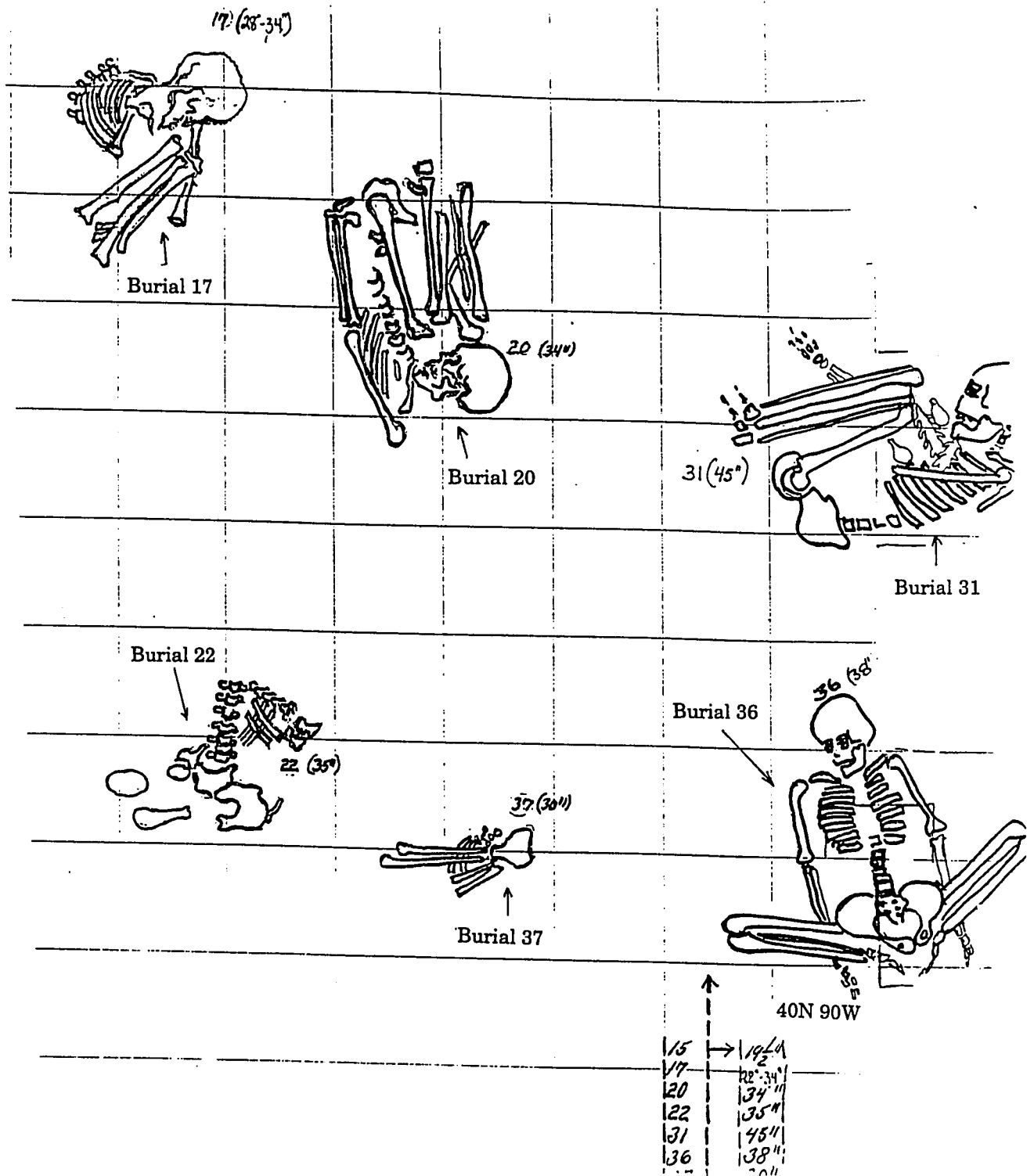


Figure 32

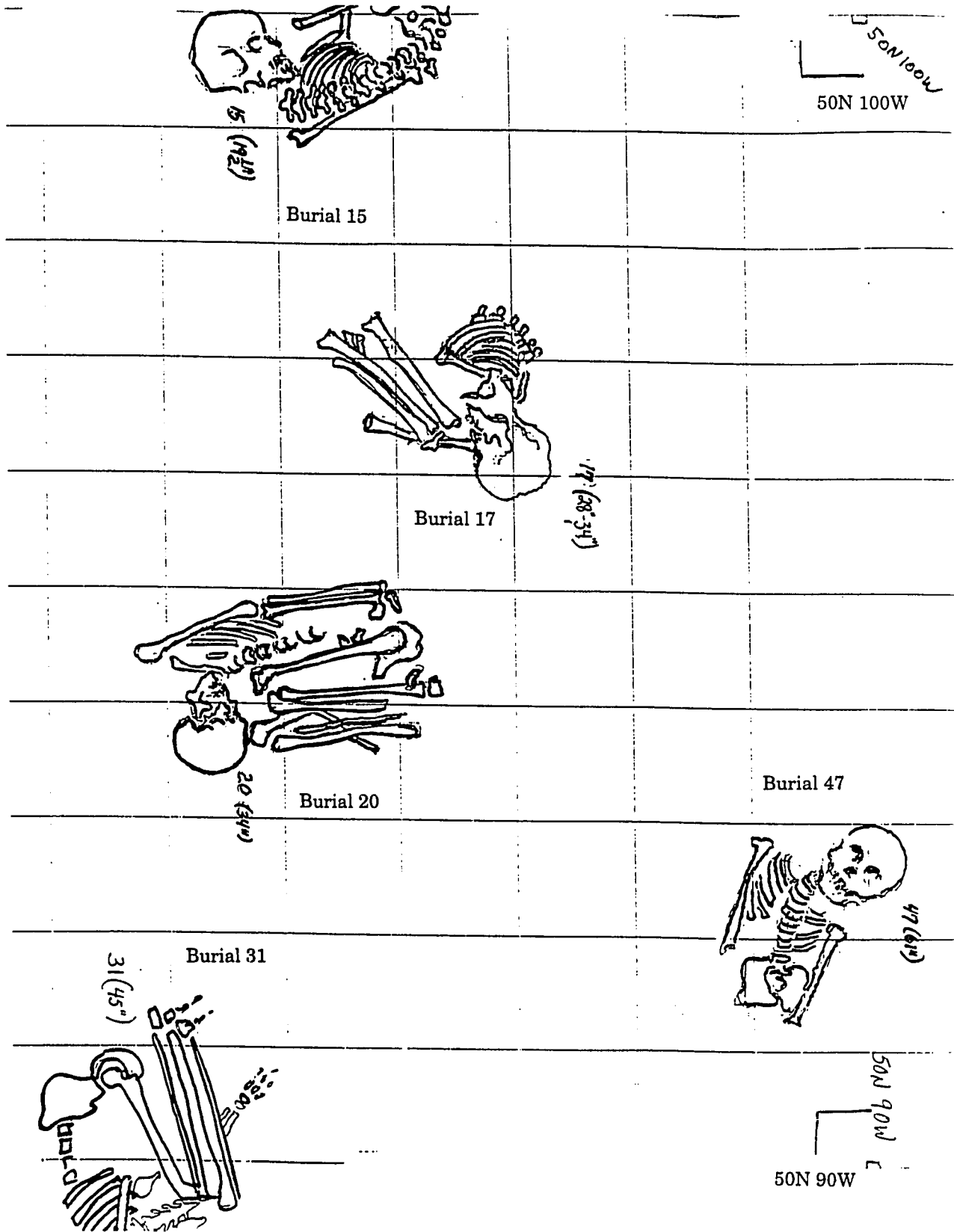


Figure 33

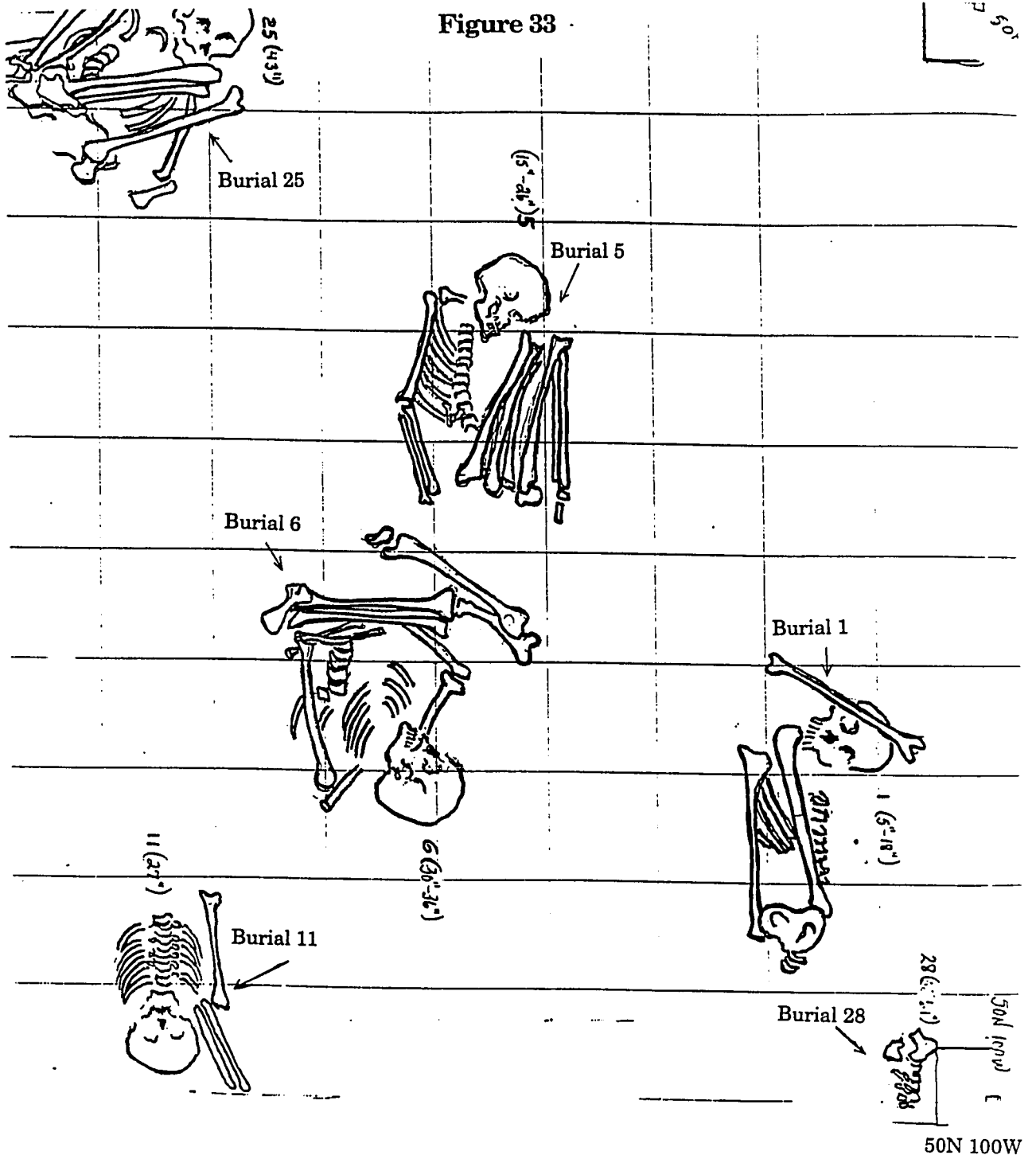


Figure 34

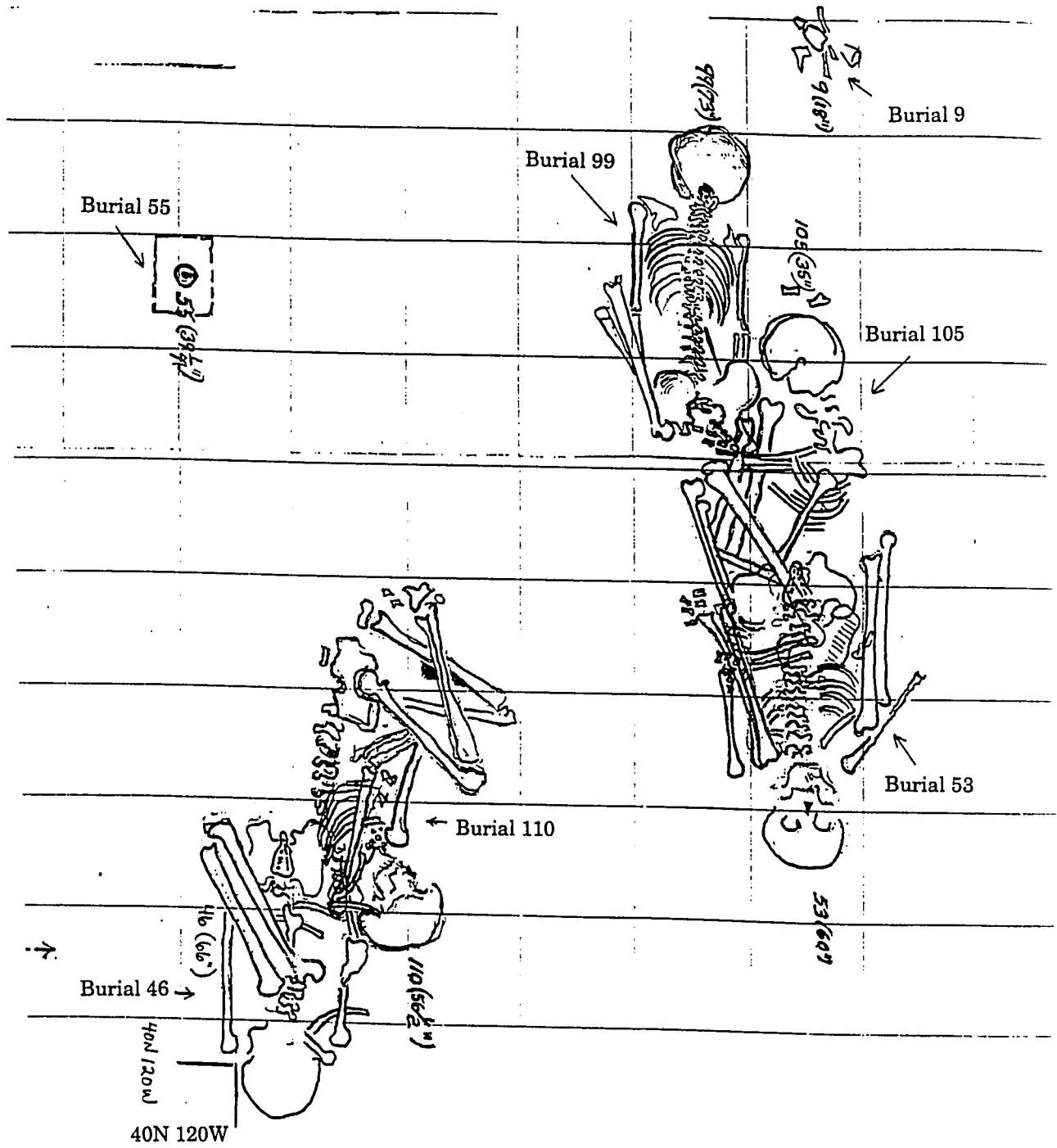


Figure 35

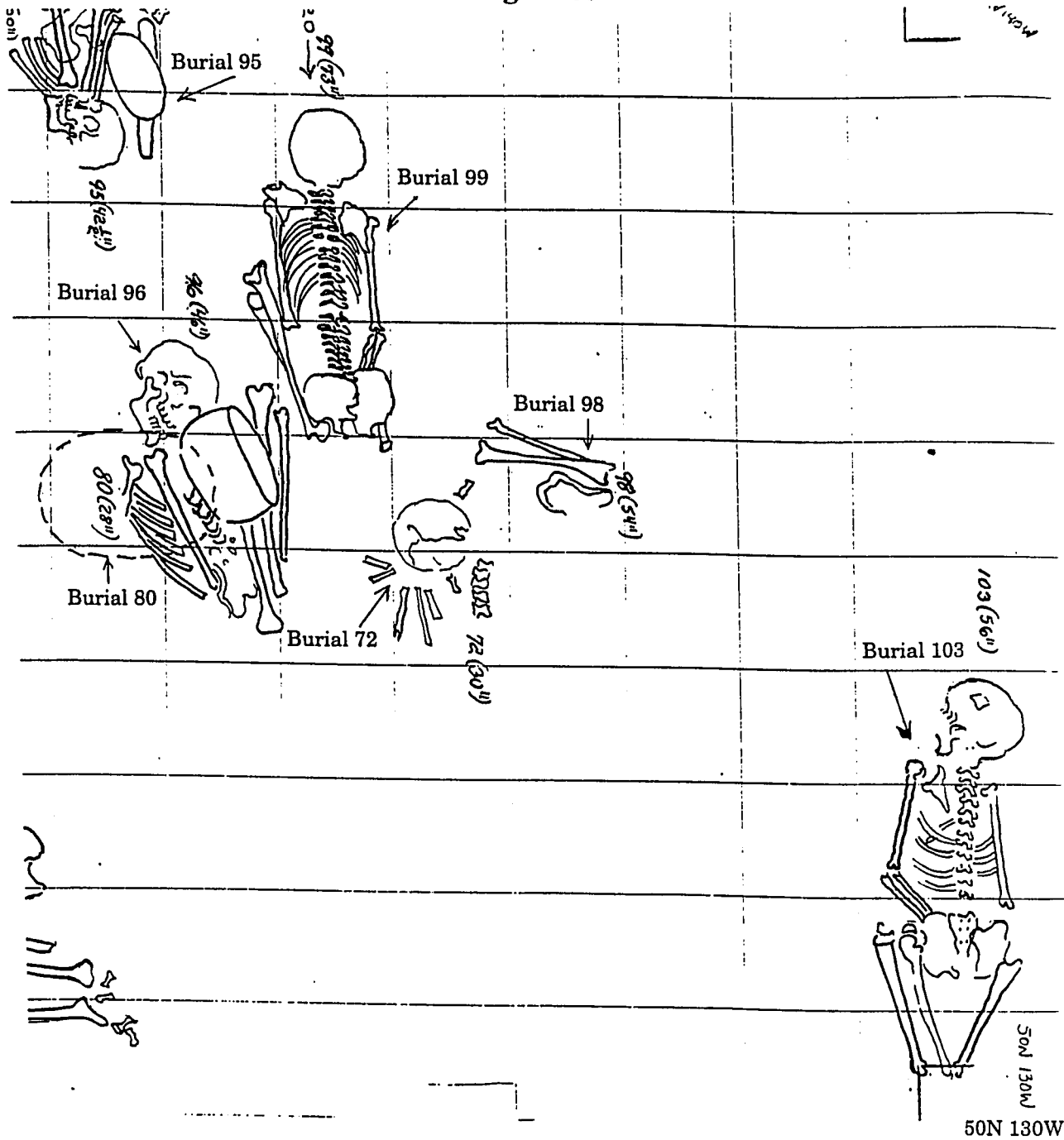


Figure 36

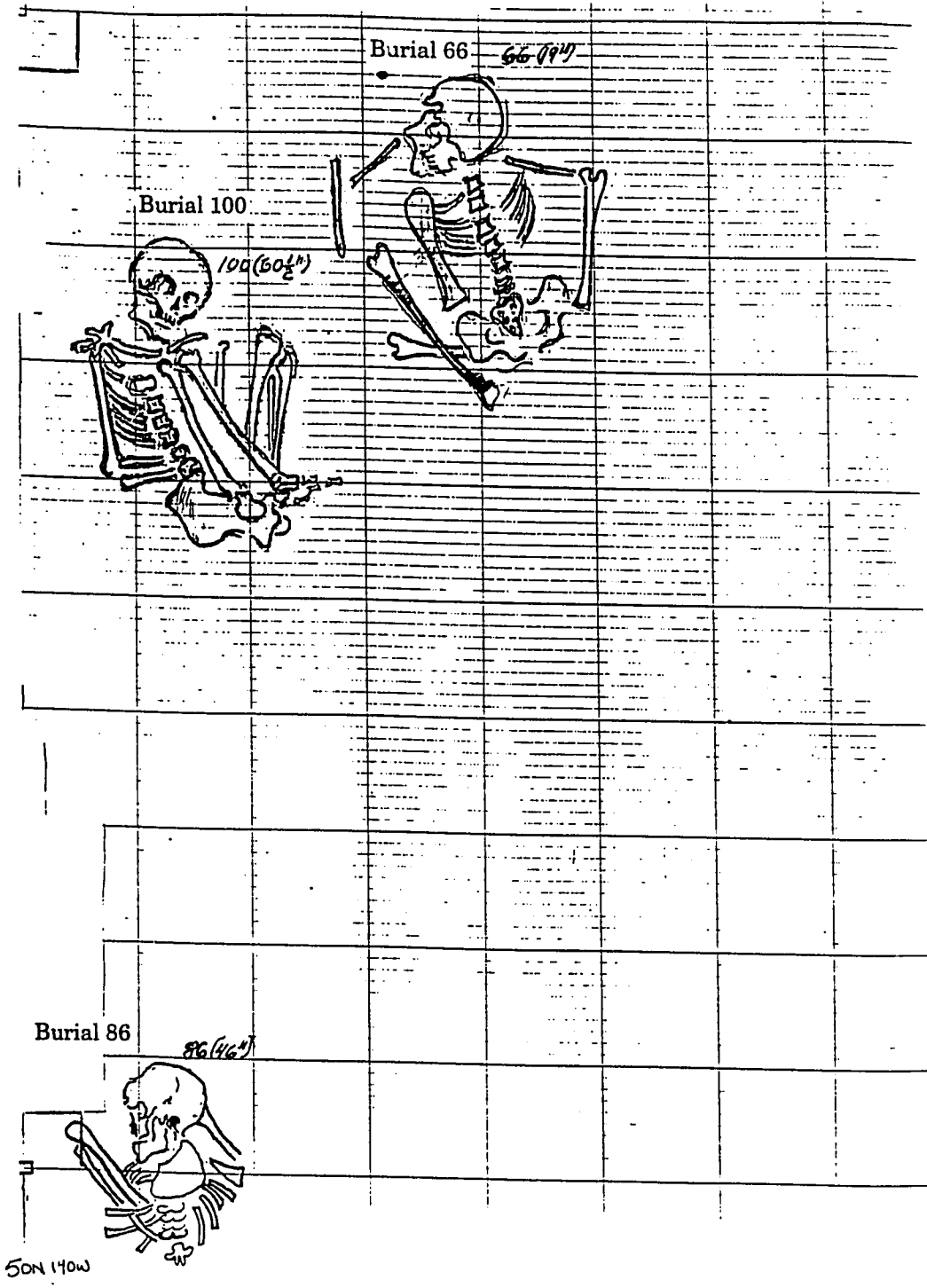


Figure 37

50N 150W

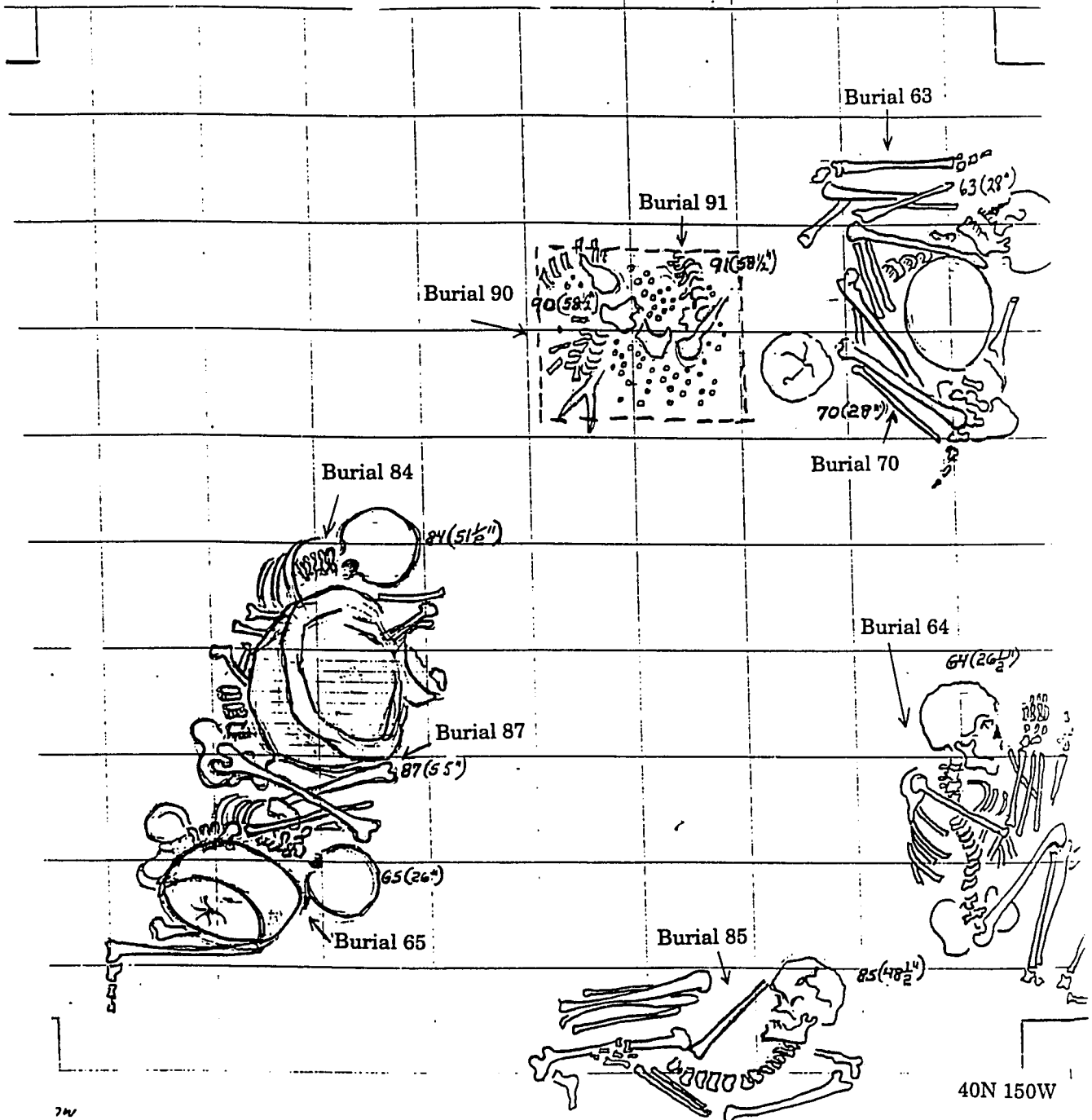
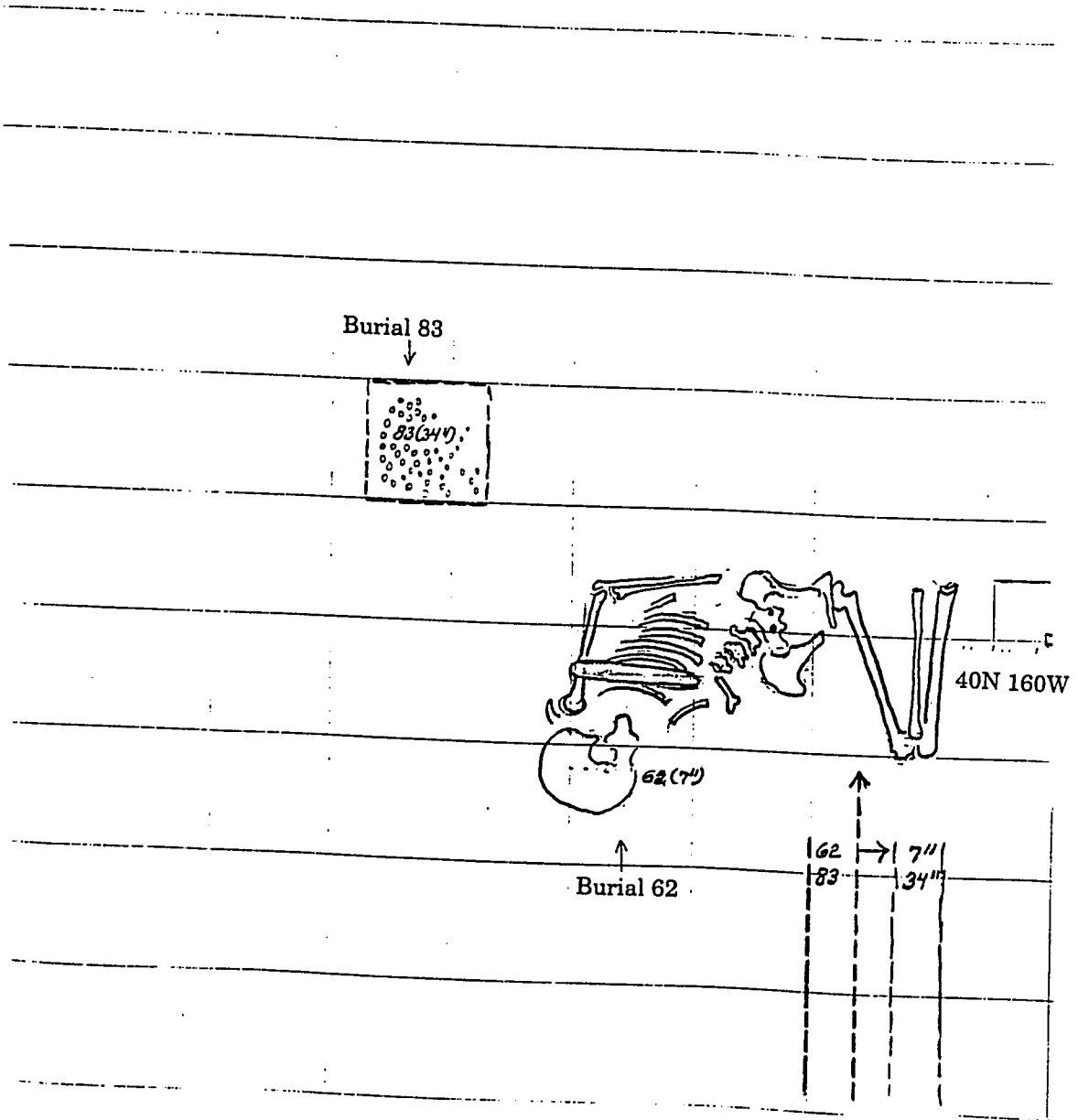


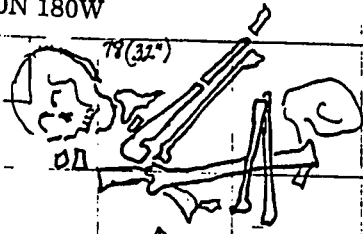
Figure 38



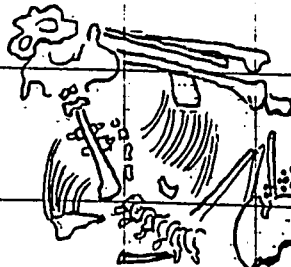
50N 180W

Figure 39

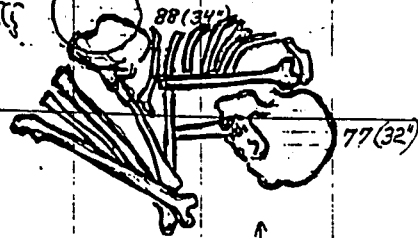
50N 170W



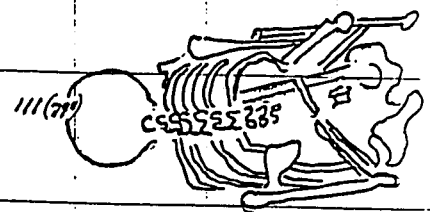
Burial 78



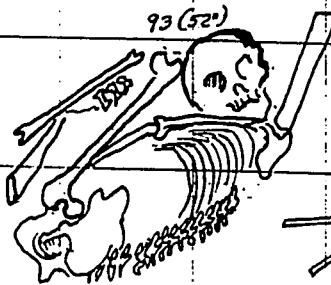
Burial 88



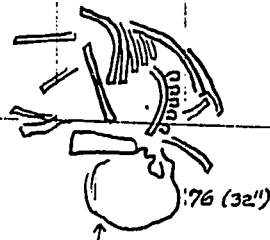
Burial 77



Burial 111



Burial 93



Burial 76

40N 180W

40N 170W

Figure 40

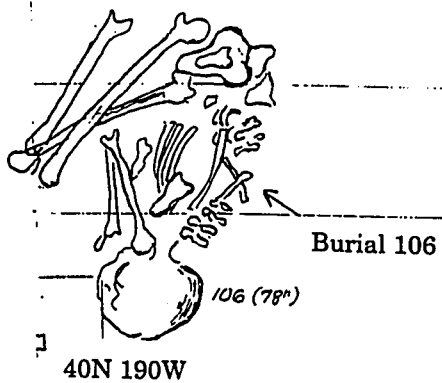
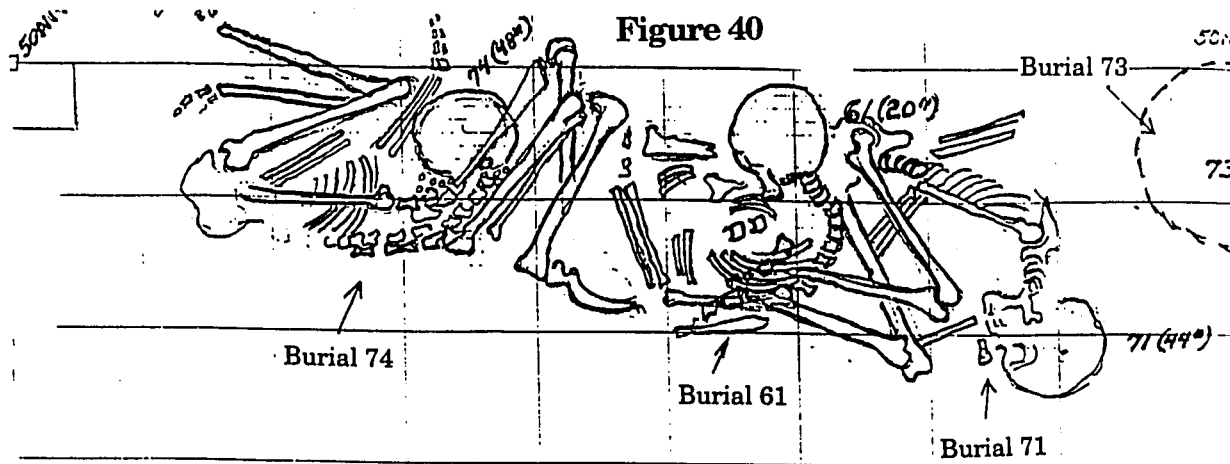
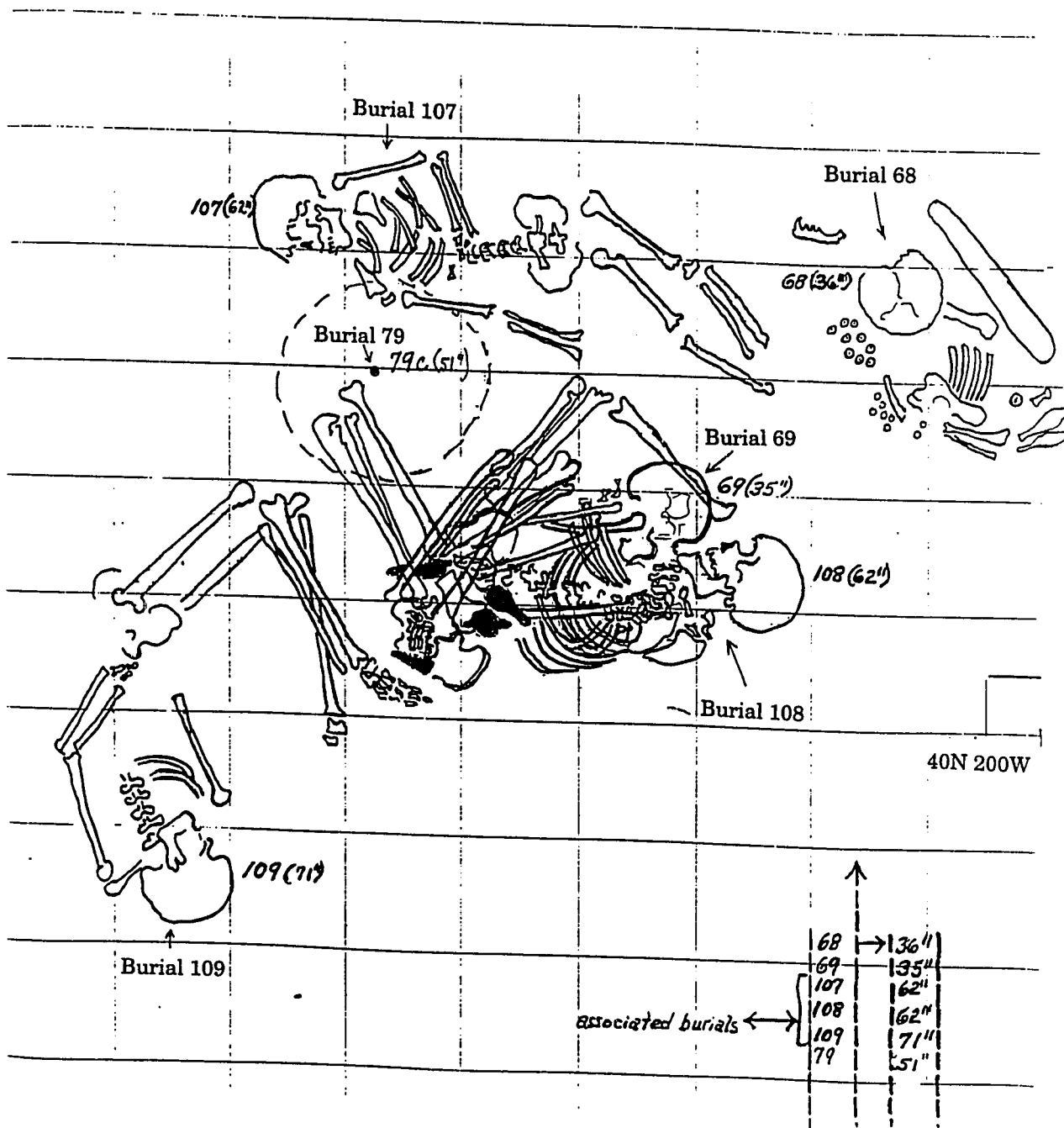


Figure 41

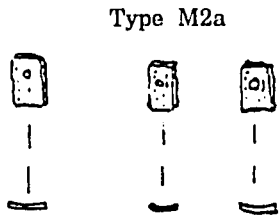


Appendix D

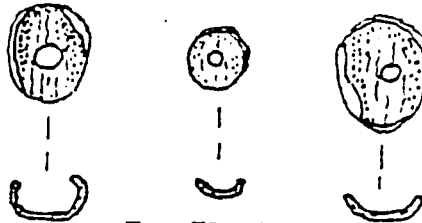
***Selected Artifact Illustrations from the
Ala-329 SJSU Excavations**

(Figures 42 - 91)

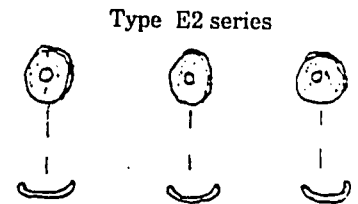
***Artifacts illustrated by Glen Wilson**



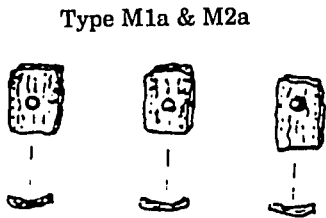
Burial 23
D-48" 50N-80W



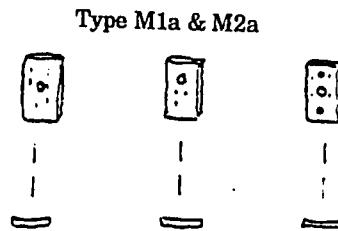
Burial 24
D-40" 50N-40W



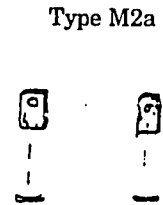
Burial 37
D-30" 50N-90W



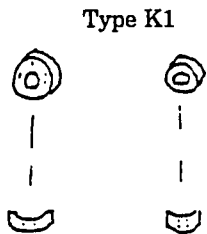
Burial 49
D-84" 60N-70W



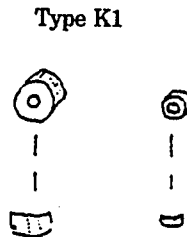
Burial 78
D-32" 50N-170W



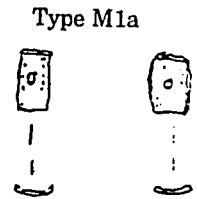
Burial 79
D-4" 50N-200W



Burial 80
D-28" 50N-130W



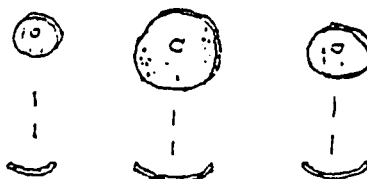
Burial 86
D-46" 50N-140W



Burial 96
D-46" 50N-130W



Burial 104
D-65" 50N-130W



Burial 113
D-74" 60N-120W

Figure 42

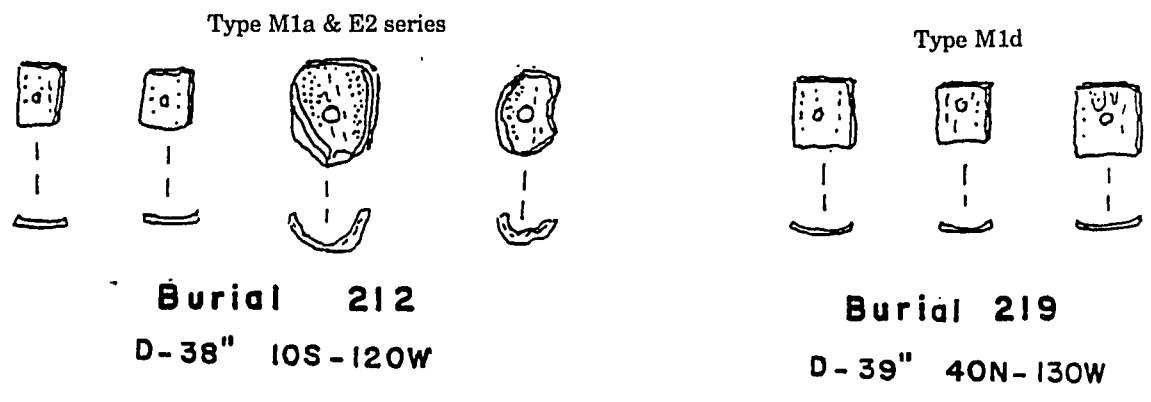
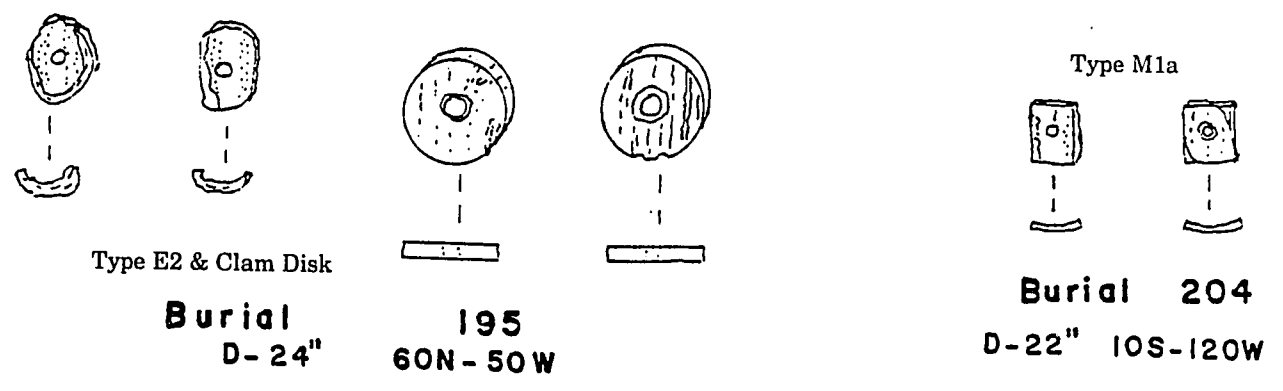
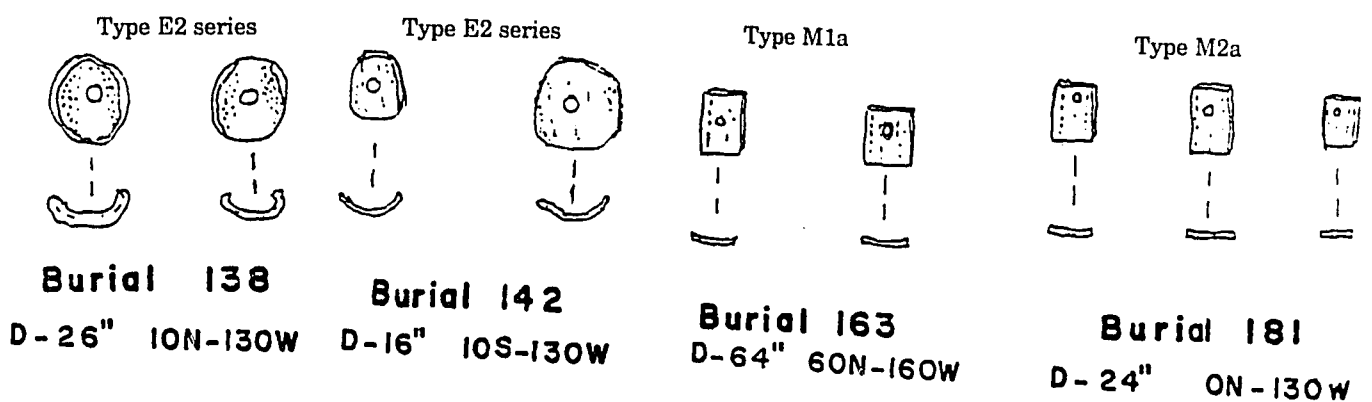
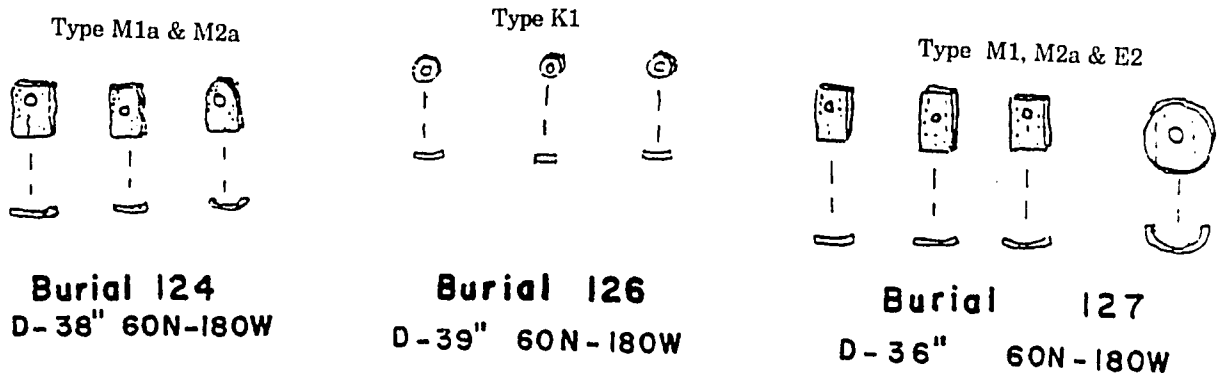


Figure 43

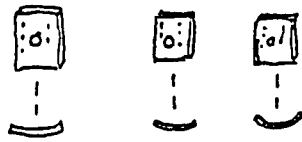
Type M1a



Burial 222

D-47" 20 S-130W

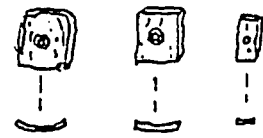
Type M1a



Burial 224

D-48" 0S-130W

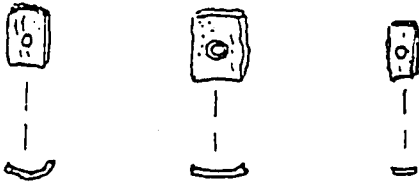
Type M1a



Burial 226 & 227

D-66" 20S-120W

Type M1a



Burial 239

D-75" 10S-120W

Type F2 & F3 saddles



Burial 240

D-77" 20S-120W

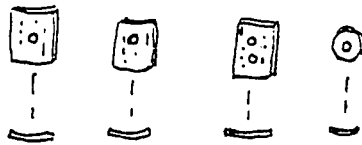
Type F2 & F3 saddles



Burial 244

D-81" 20S-120W

Type M1a



Burial 248

D-60" 60N-60W

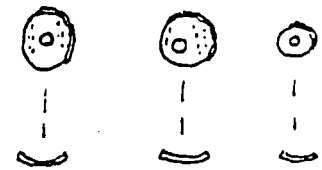
Type F2 saddles



Burial 250

D-64" 20N-150W

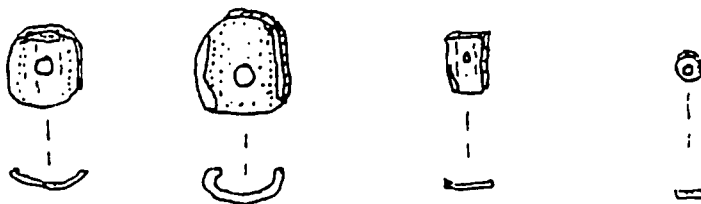
Type F4 oval saddles



Burial 265

D-73" 10N-140W

Type C7, D1, F3bII & G1



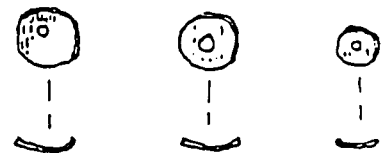
Burial

D-41"

251

40N-220W

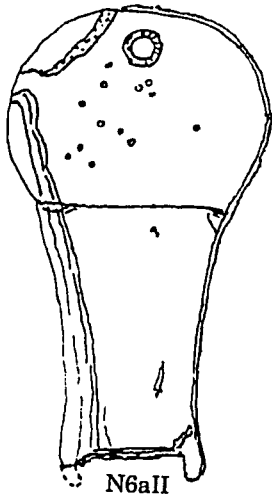
Type F2 & F3 saddles



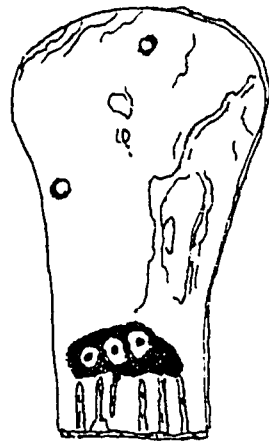
Burial 260 & 261

D-67" 10N-120W

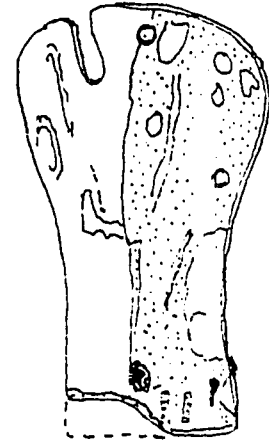
Figure 44



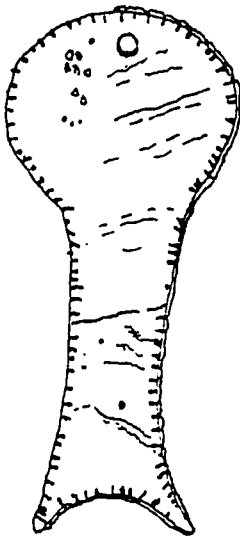
N6aII
1323



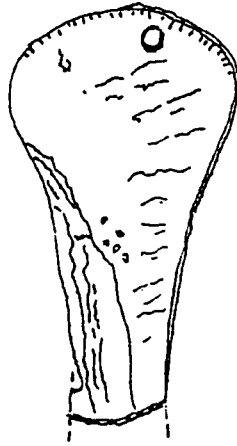
N4aI
1322



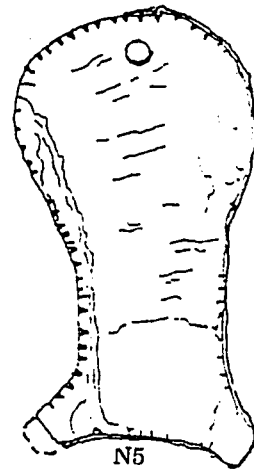
N4aI
1320



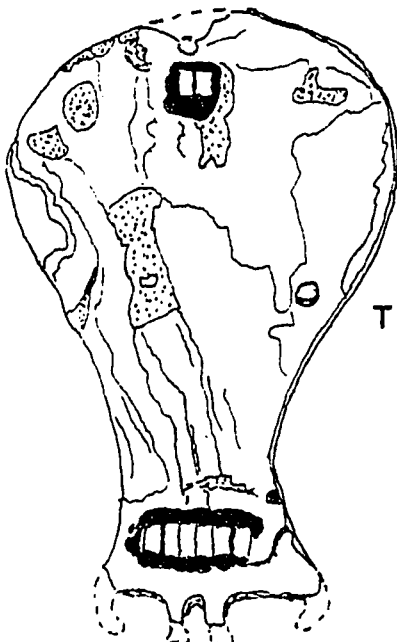
1324



N series
1321



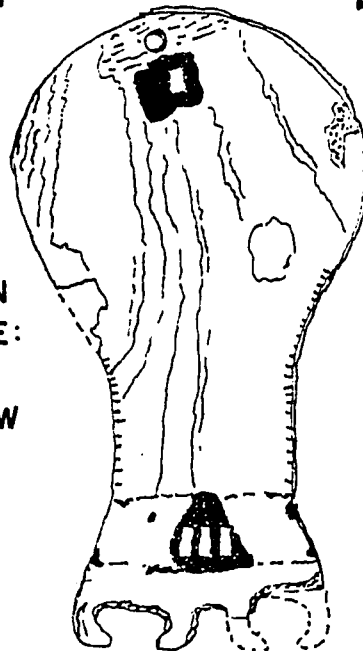
N5
1325



1318
N6bIII

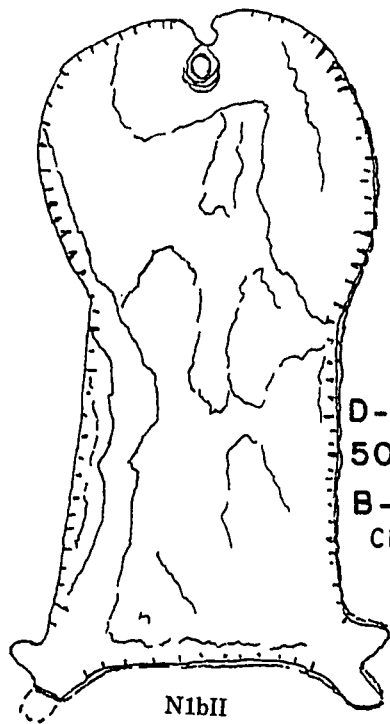
ALL ON
THIS PAGE:
D-86"
60N-70W
B-49
ADULT
FEMALE

394



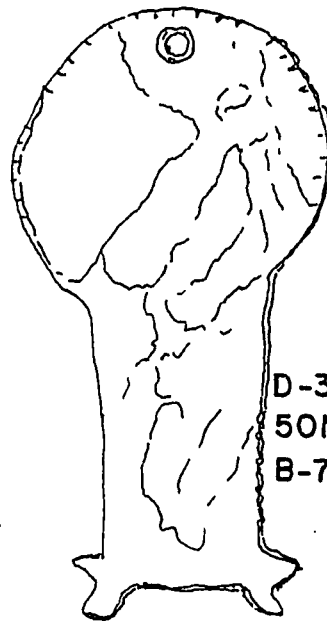
1319
N6bIII

Figure 45



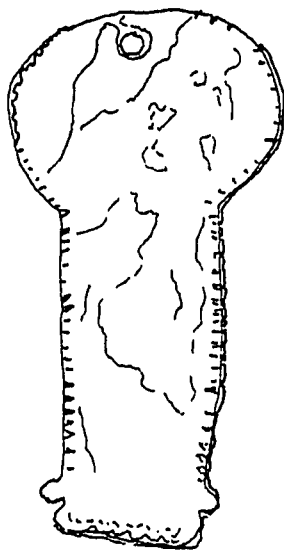
D-39"
50N-200W
B-79
CHILD

N1bII
1572



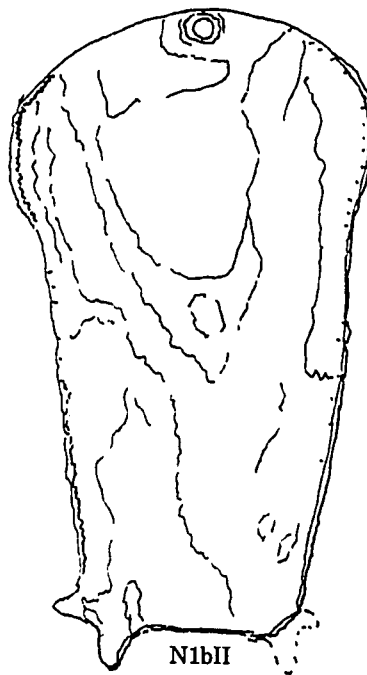
D-33"
50N-200W
B-79

N1bII
1582



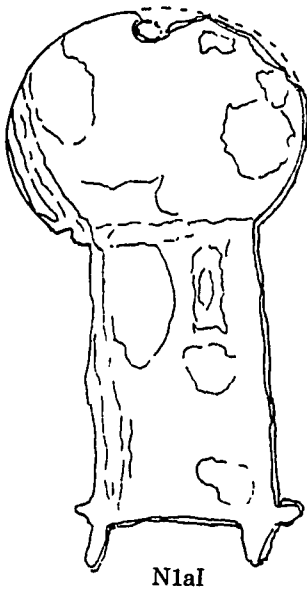
BOTH:
D-39"
50N-200W
B-79
CHILD

N1aII
1577



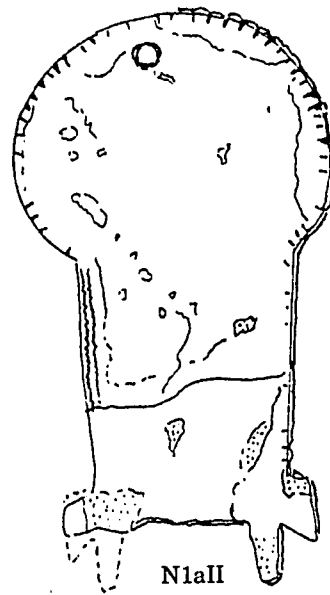
N1bII
1580

Figure 46



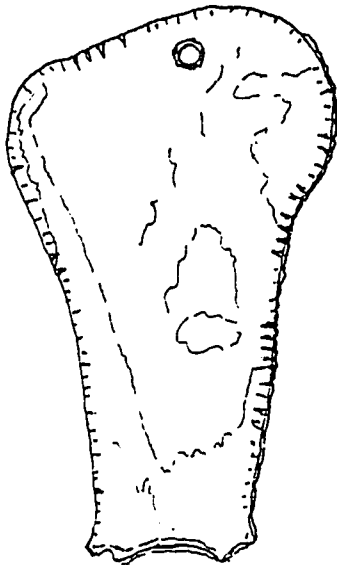
N1aI

1740 J



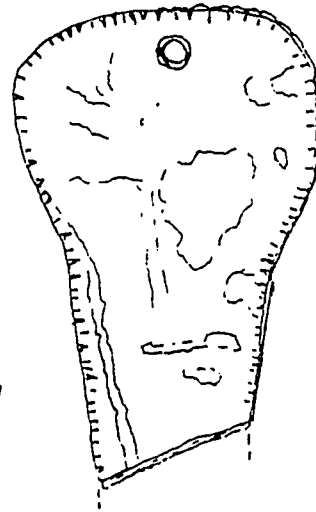
N1aII

1740 K



N1aIII

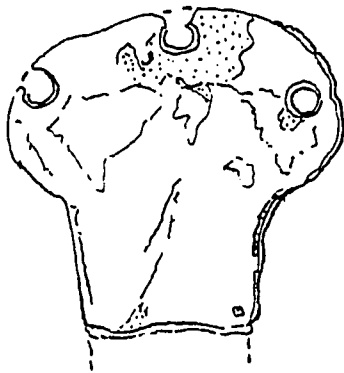
1740 L



N series

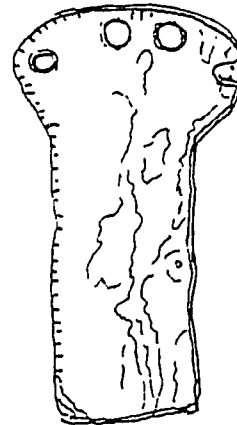
1740 O

ALL 1740:
D - 46"
50N - 130W
B - 96
ADULT
FEMALE



N series

1740 B



N series

1740 A

Figure 47



1780c

U2aI

ALL 1780
D-62"
50N-200W
B-107
FEMALE CHILD



1780b

P1a



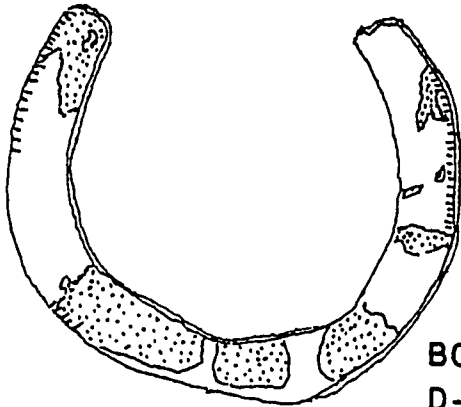
Q2aIII

1780a



2404B

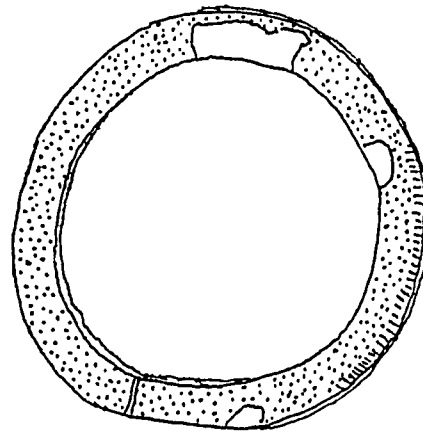
D-67"
ON-150W
B-236
INFANT



2375a

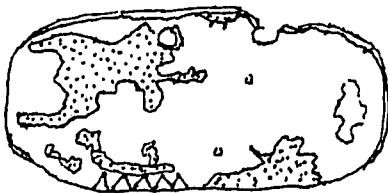
J2bI

BOTH:
D-60"
OS-150W
B-228
INFANT

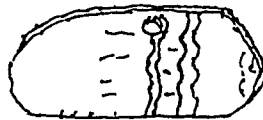


2375b

J2bIII



2163
D-10"
20S-140W
B-NA

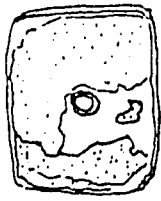


1285
D-60"
50N-80
B-NA



2404a
D-67"
ON-150W
B-236

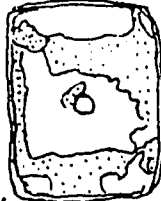
Figure 48



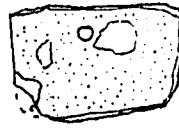
S5aIV

BOTH:
OS-150W
B-228
INFANT

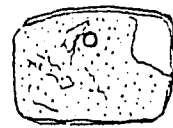
2377 b



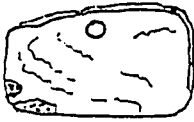
2377 a



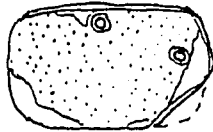
2374 c



2374 g



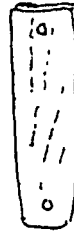
2374 k



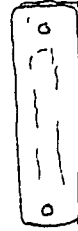
2374

ALL 2374: D-72" 3OS-140W
B-226-227

OLDER ADULT
MALE MALE



2434 a



2434 b



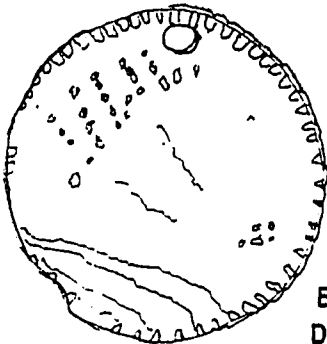
2434 c



2434 d

S7aI

ALL 2434: D-75" 1OS-140W B-239
YOUNG ADULT MALE

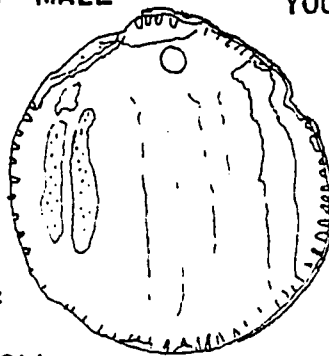


K2bII

2433 a

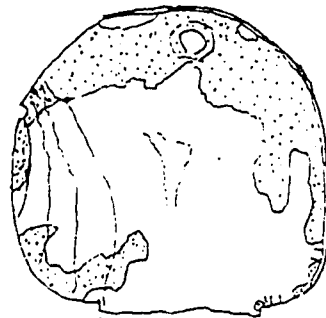
BOTH:
D-75"
1OS-140W
B-239

YOUNG ADULT
MALE



K2bII

2433 b

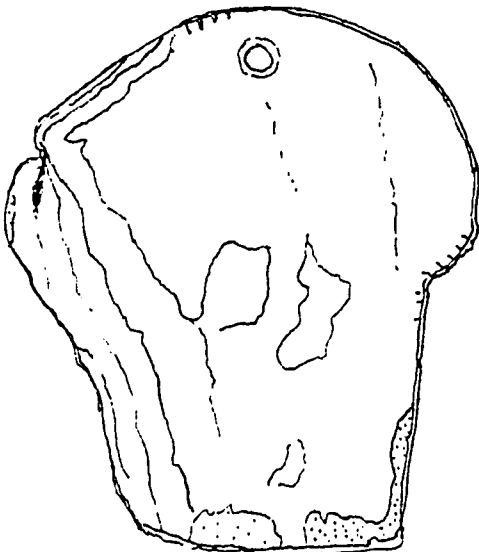


D-21"

20S-150W
B-199
ADULT MALE

N series

2245



N series

2149

BOTH:
D-10"
20S-140W
B-NA

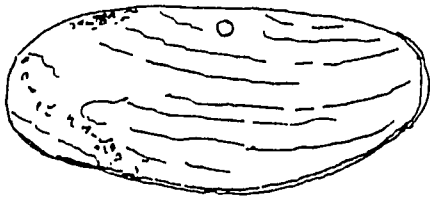
398



N1a3

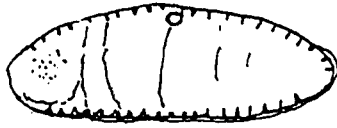
2155

Figure 49



2514 a

AB2c



AB3b2

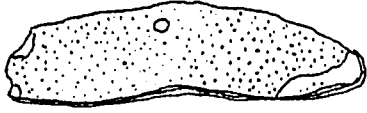
2514 b



AB3a

2514 c

ALL 2514: D-64" 20N-150W B-250
YOUNG ADULT FEMALE



AB3a

2514 d



AB3a

2514 f



AB3c

2514 h



U2bI

2493 a



U2bI

2493 b



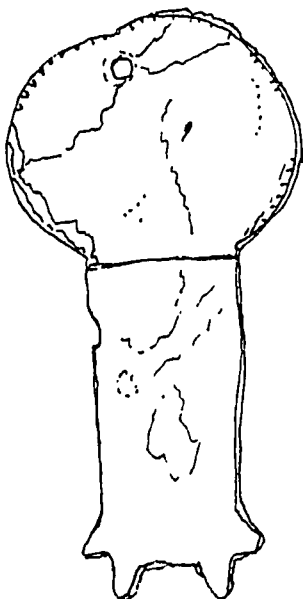
Z4aI

2493 c



ALL 2493:
D-41"
40N-220W Q1bIII
B-251
ADULT FEMALE

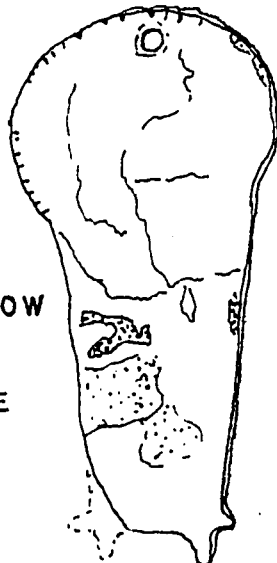
2493 h



2503 a

N1a3

BOTH:
D-42"
60N-170W
B-254
OLDER
FEMALE



2503 b

N1a3

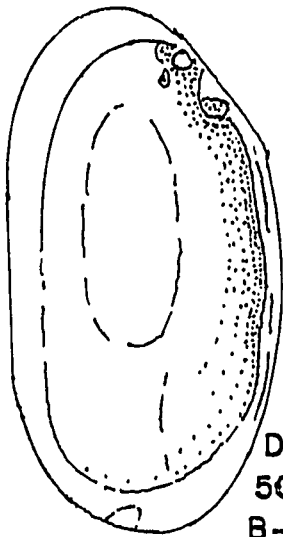


D-42"
60N-170W
B-254
OLDER
FEMALE

2498 b

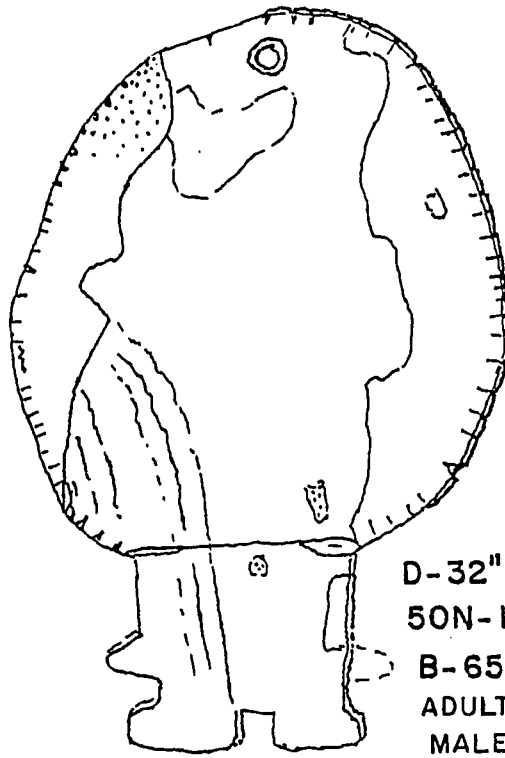
N series

Figure 50



1294

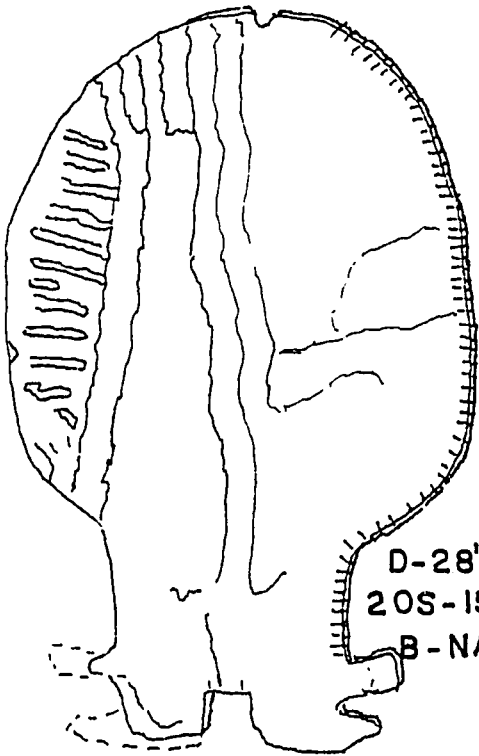
D-51"
50N-90W
B-31
ADULT



1467

N1bIII

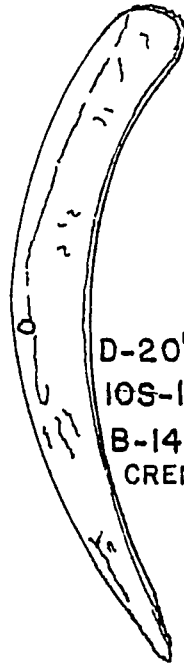
D-32"
50N-150W
B-65
ADULT
MALE



N1bIII

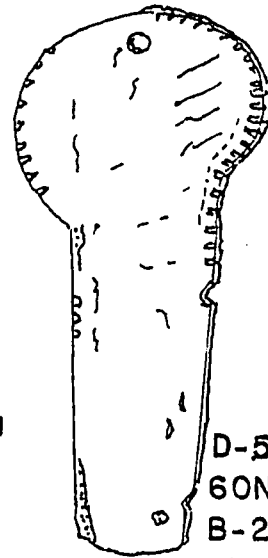
2165

D-28"
20S-150W
B-NA



2006

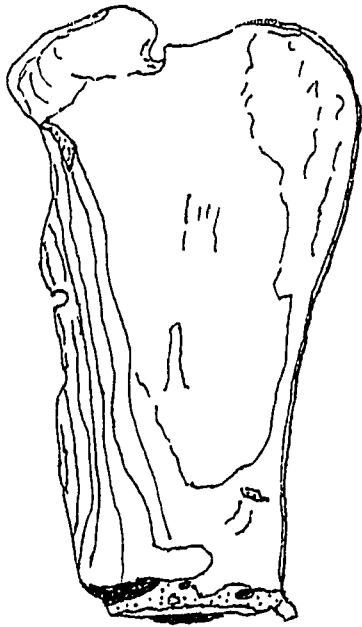
D-20"
10S-150W
B-141
CREMATION



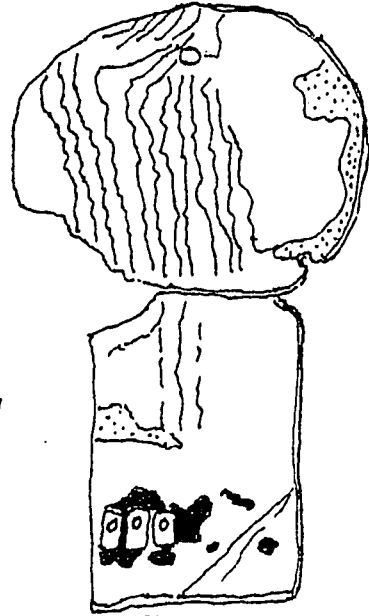
2507
N4a

D-51"
60N-170W
B-256
H-
ADULT
MALE

Figure 51

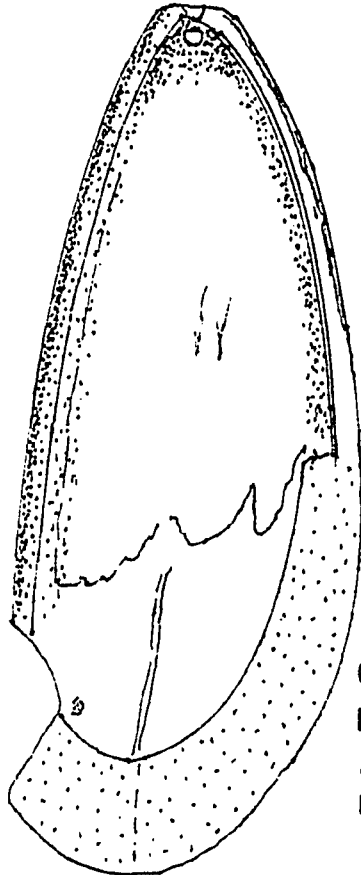


N6aII?
2369 a



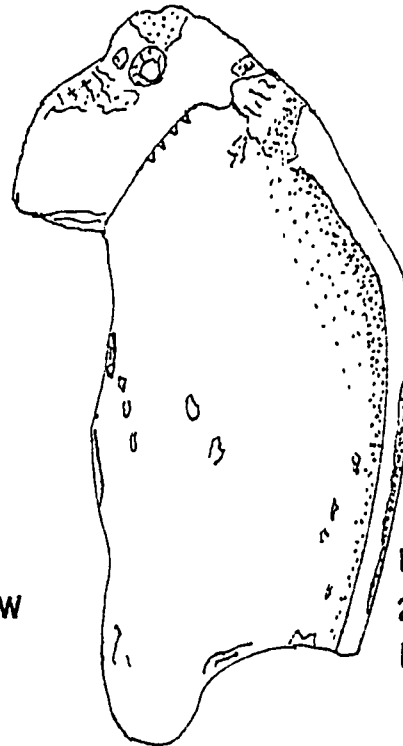
N6aII?
2369 c

BOTH:
D-72"
30S-140W
B-226
OLDER
MALE



2506

D-51"
60N-170W
B-256
ADULT
MALE



2495

D-50"
20S-150W
B-252
ADULT
MALE

Figure 52

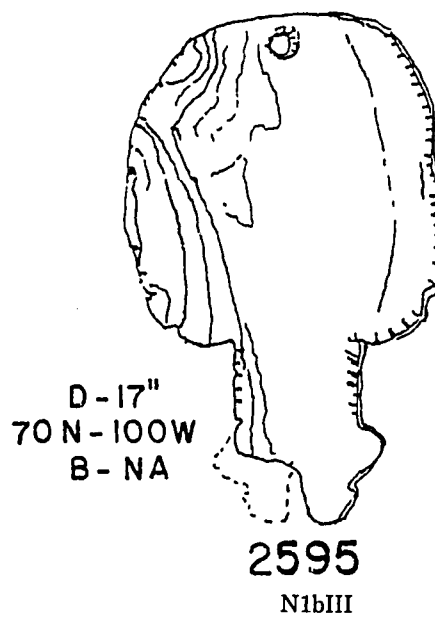
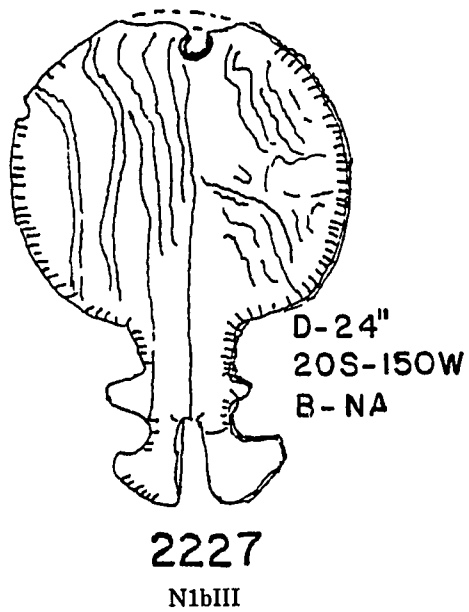
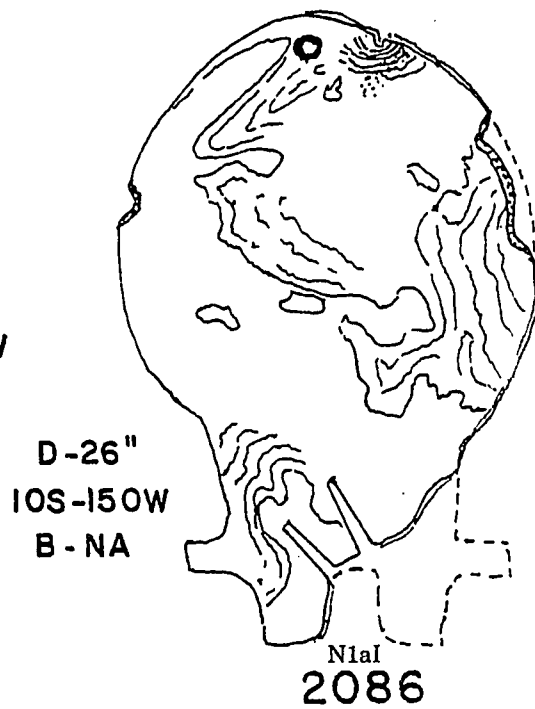
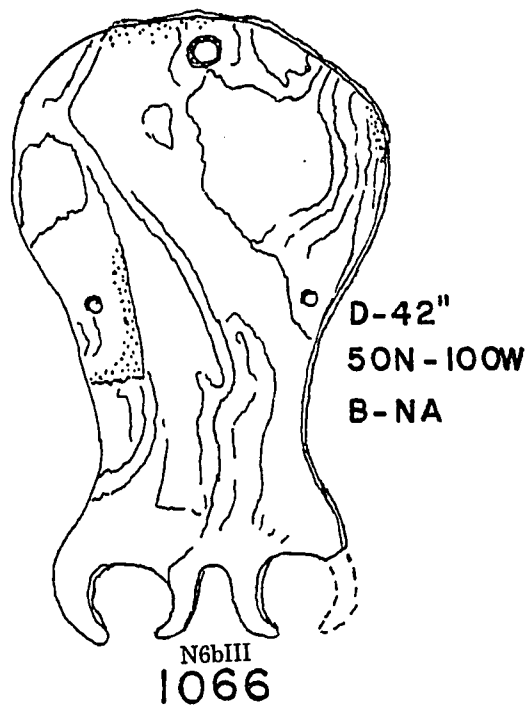
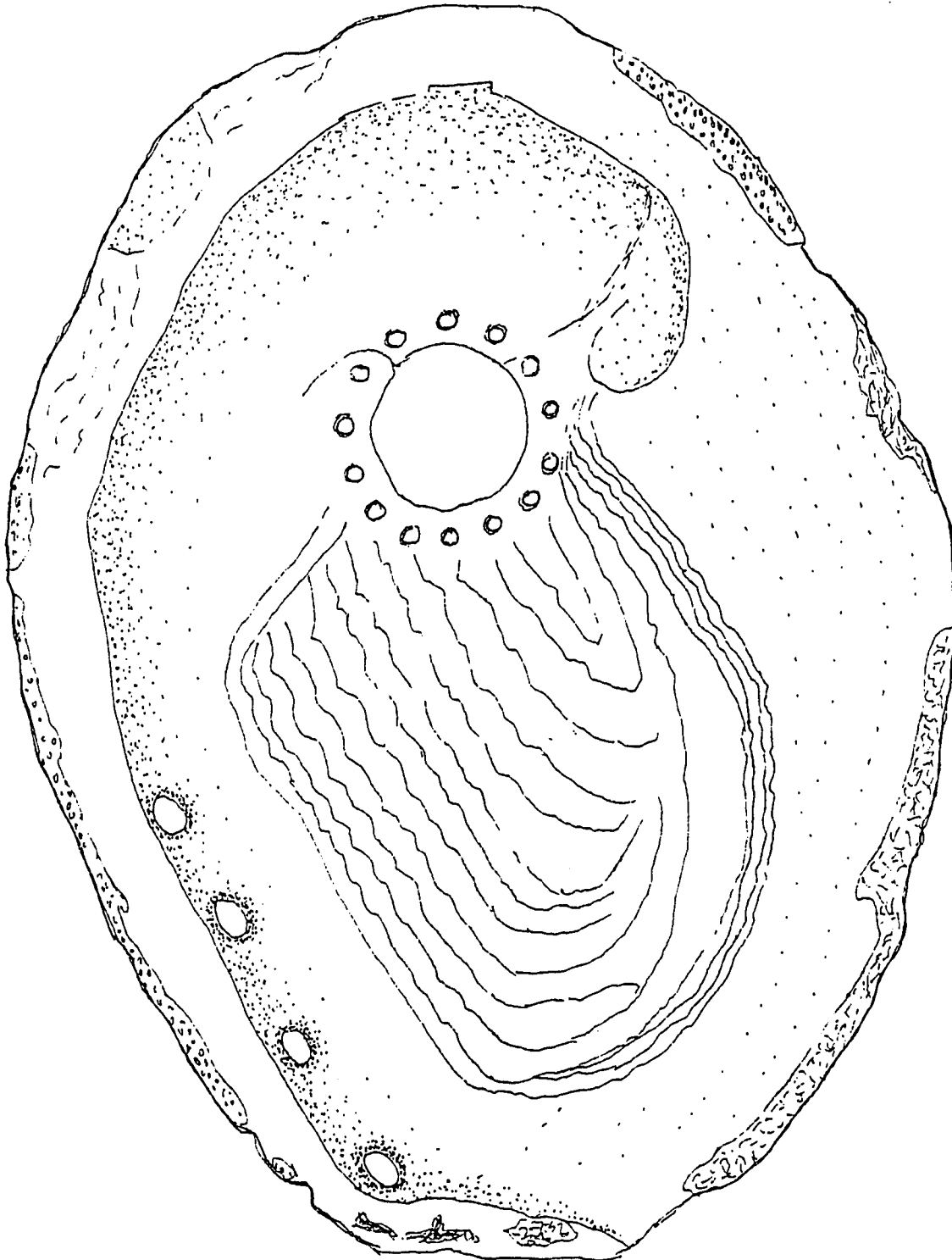


Figure 53



2269

(3/4 SCALE)

D-39" 20S-150W B-208

YOUNG ADULT FEMALE

403

Figure 54

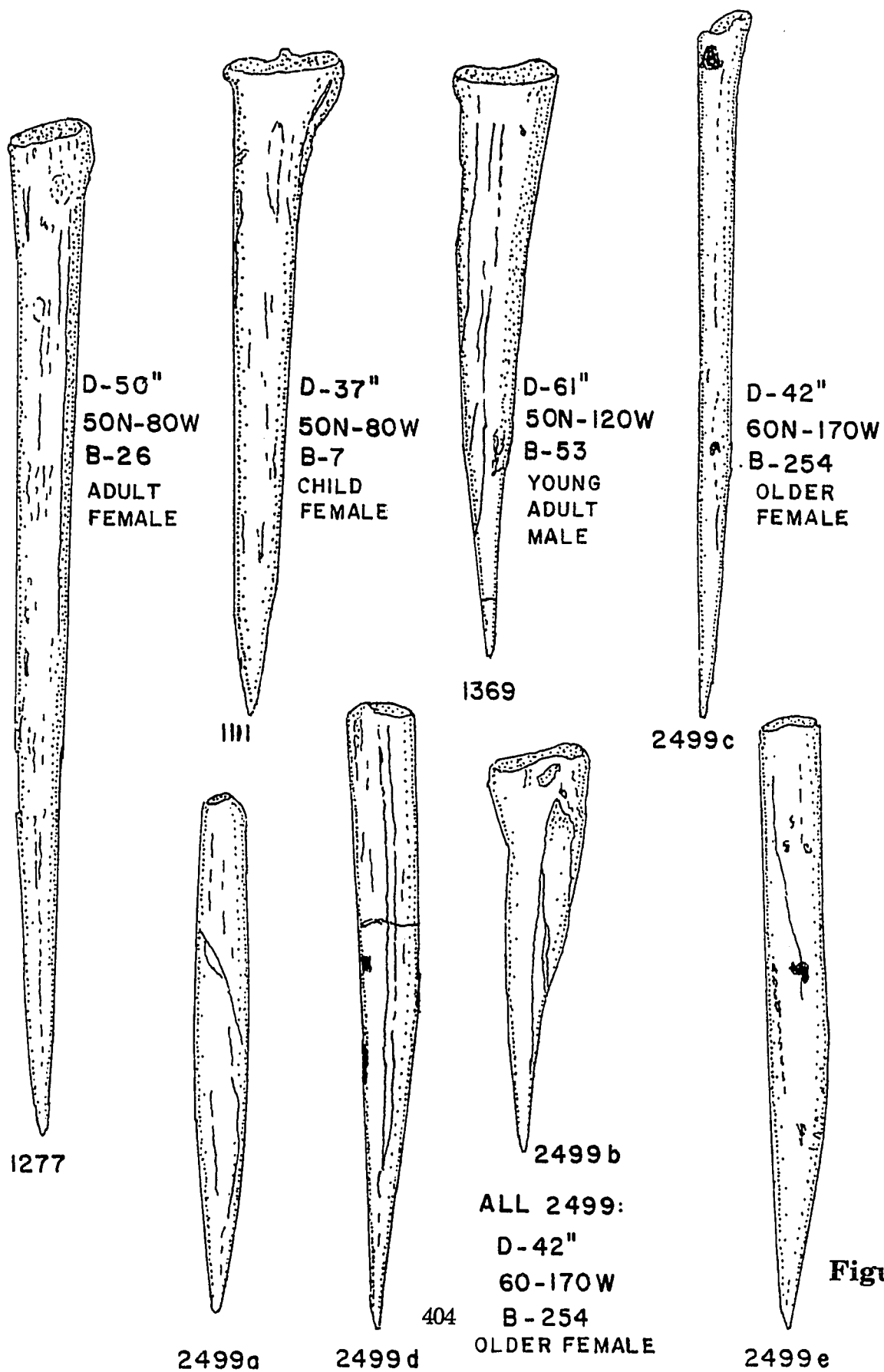


Figure 55

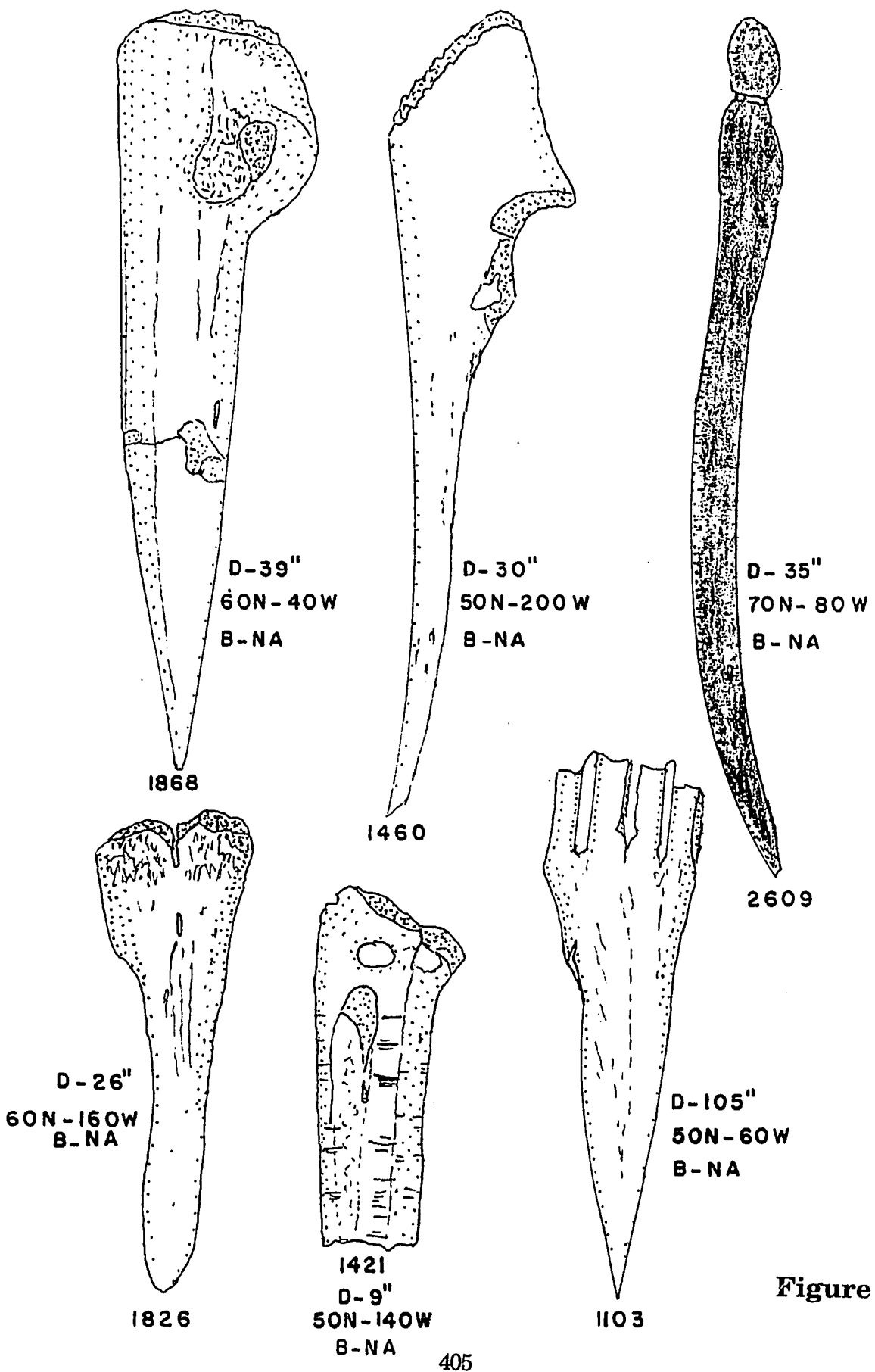
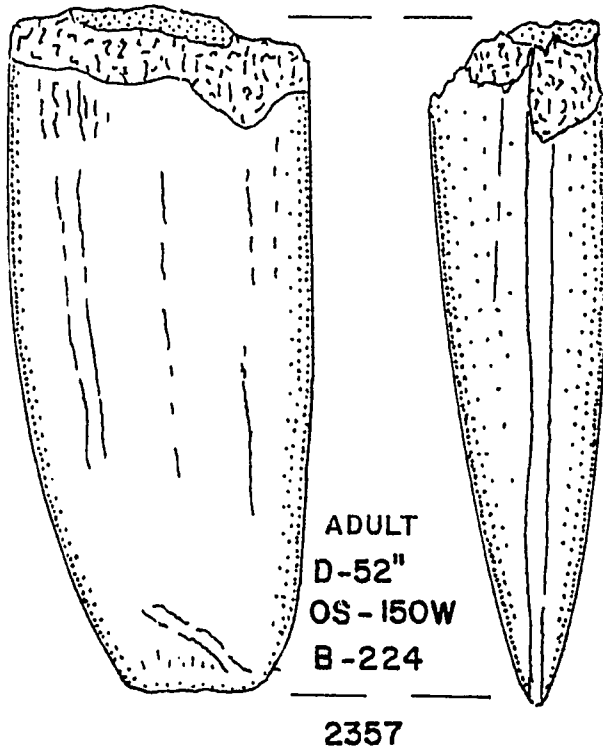


Figure 56



ADULT
D-52"
OS-150W
B-224

2357



1071

D-24"
50N-80W
B-2
YOUNG
ADULT FEMALE

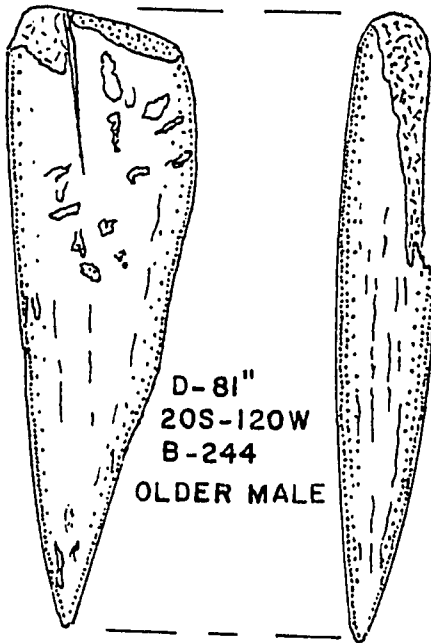


1782b

BOTH
D-62"
50N-200
B-107
FEMALE
CHILD

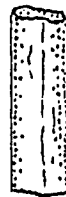


1782a

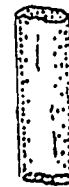


D-81"
20S-120W
B-244
OLDER MALE

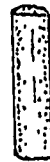
2484



1781a

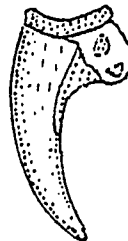


1781b



1781c

ALL: D-62" 50N-200W B-107
FEMALE CHILD



1048d

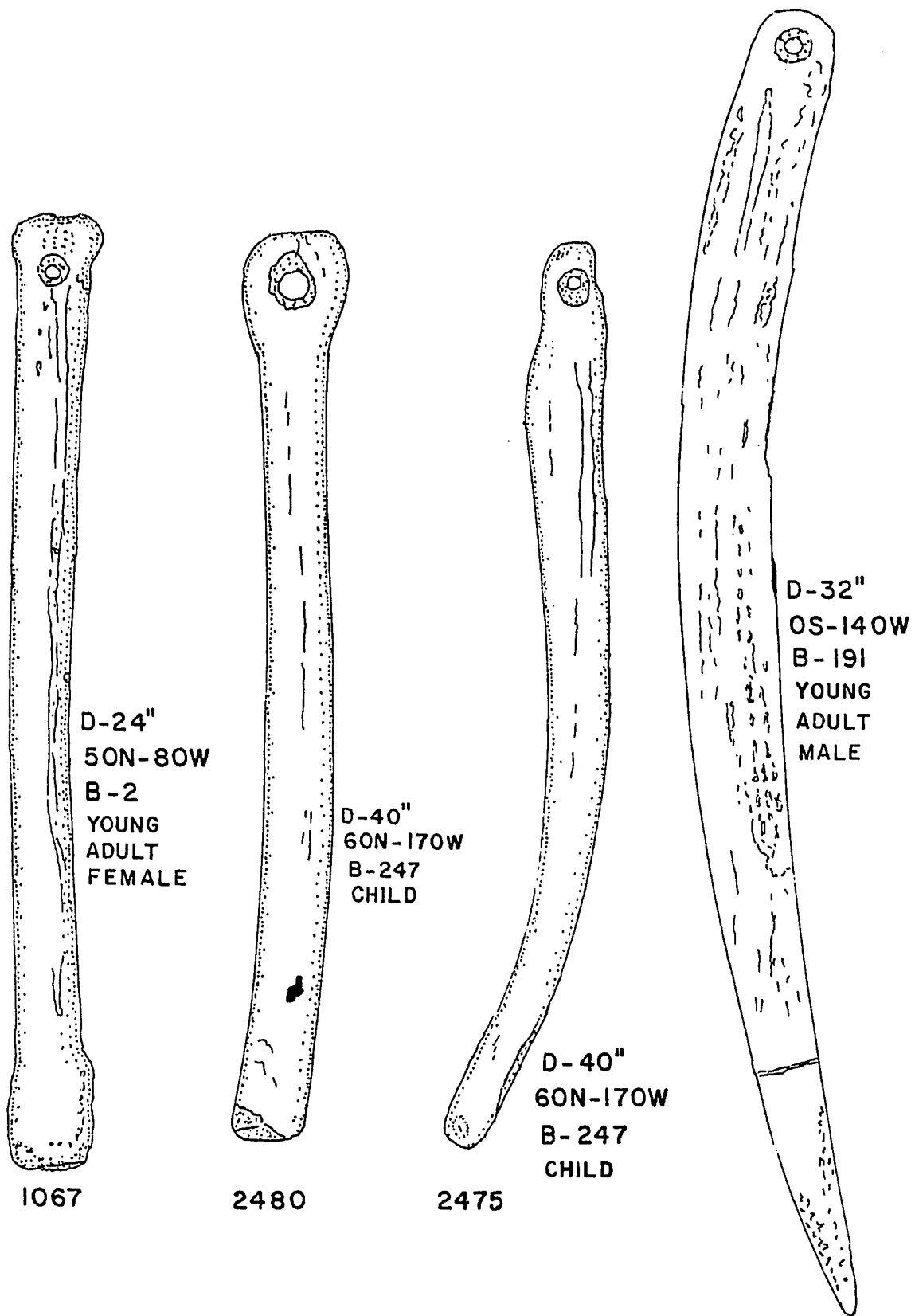


1048e



1048f

ALL: D-13" 60N-100W B-1
ADULT MALE



1067

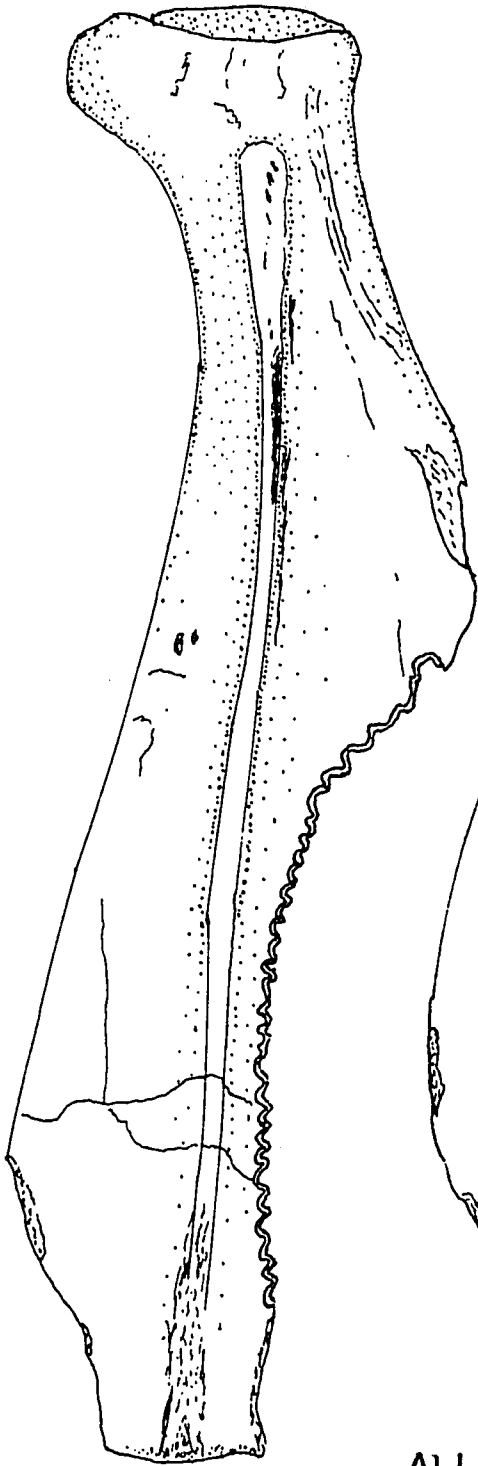
2480

2475

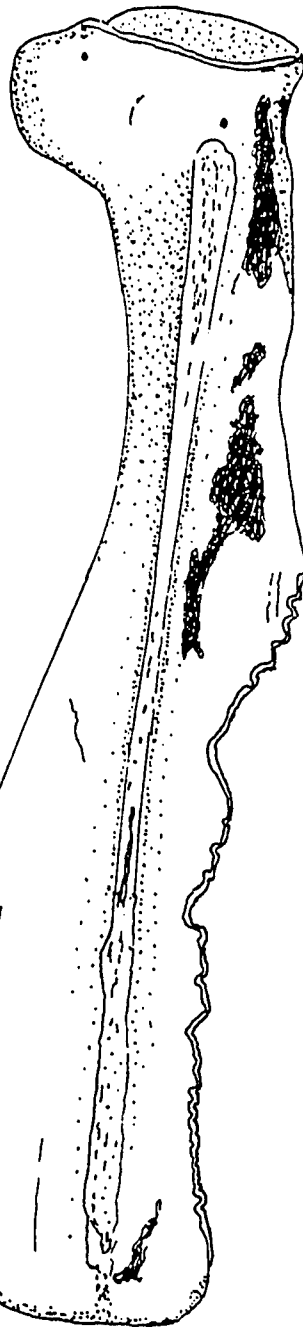
2219

Figure 58

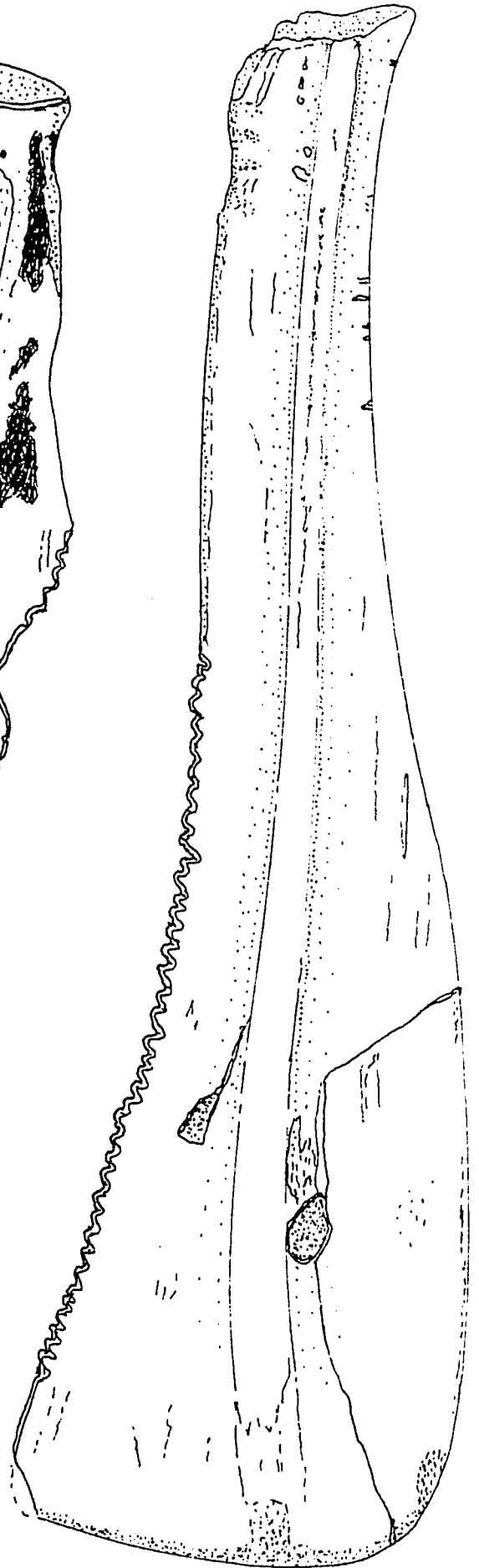
(2/3 ACTUAL SIZE)



2504 b



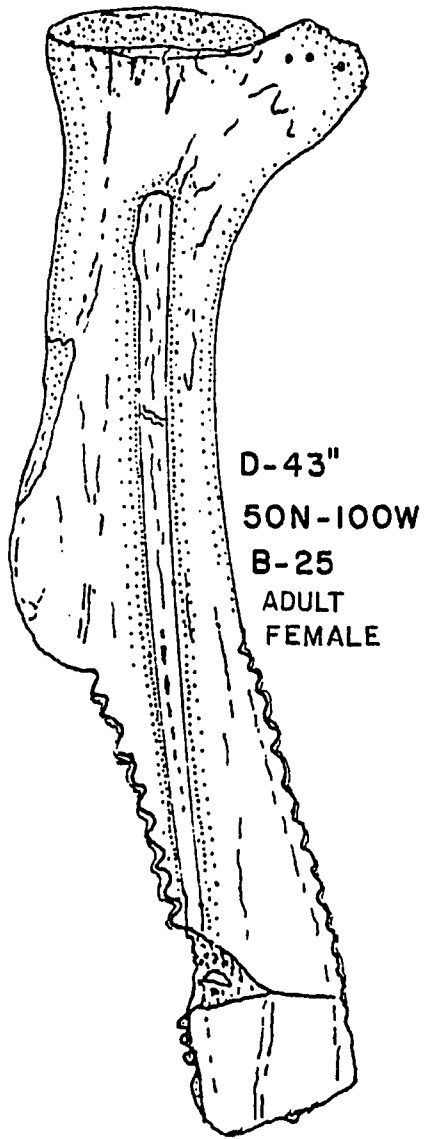
2504 c



2504 a

ALL 2504:
D-42"
60N-170W
B-254
OLDER FEMALE

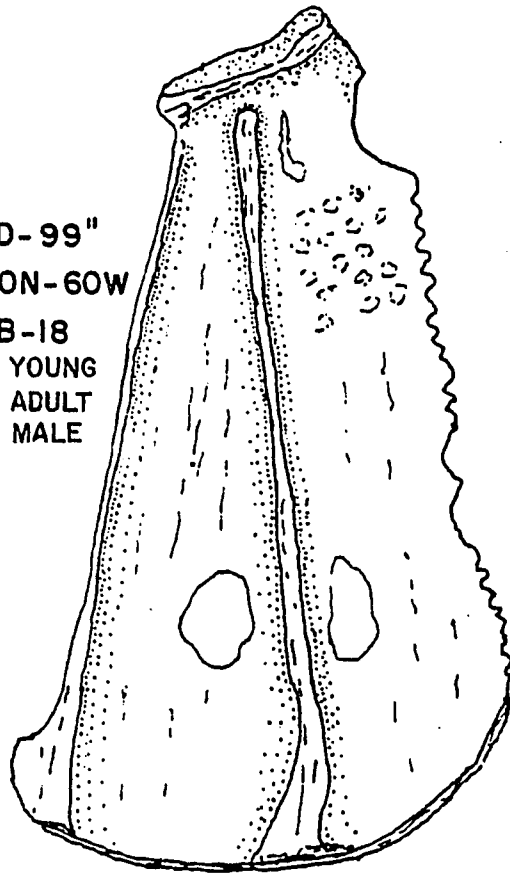
Figure 59 408



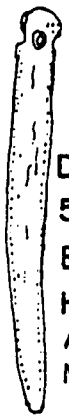
D-43"
50N-100W
B-25
ADULT
FEMALE

1133

D-99"
50N-60W
B-18
YOUNG
ADULT
MALE



1161



D-21"
50N-100W
B-5
H-
ADULT
MALE

1022



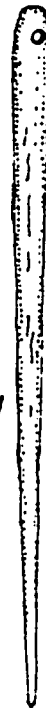
D-21"
50N-100W
B-5

1009



D-31"
50N-90W
B-17
H-
CHILD

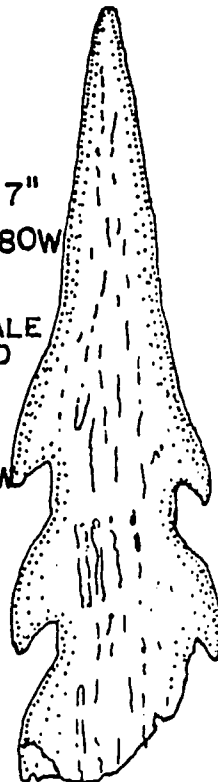
1201 409



D-28"
50N-90W
B-17

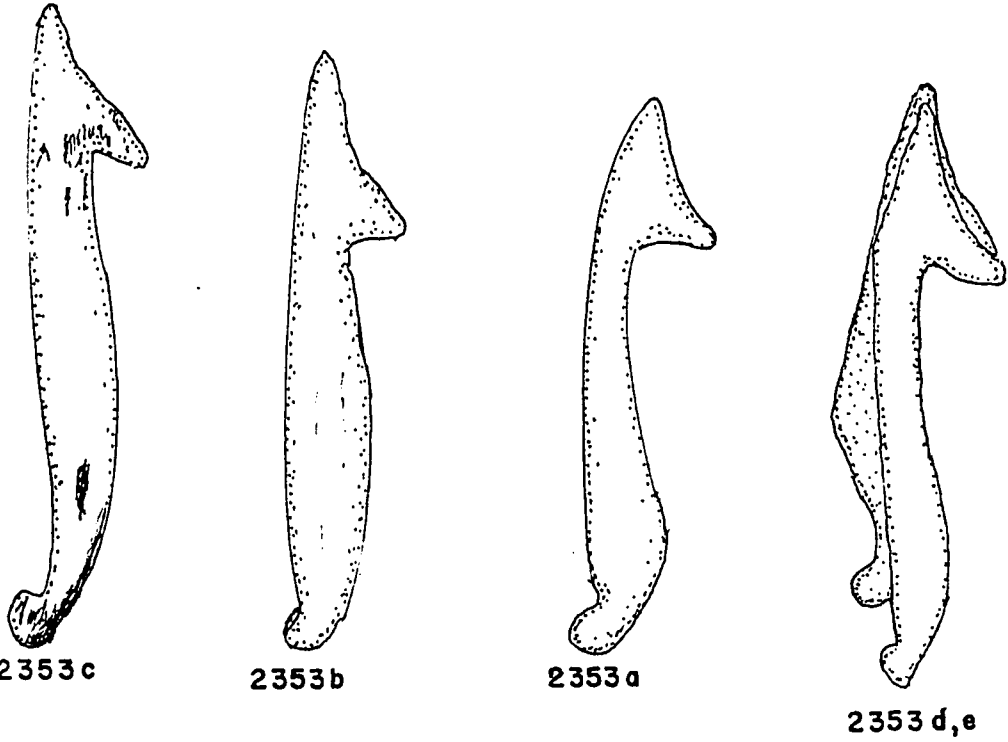
1184

D-37"
50N-80W
B-7
FEMALE
CHILD

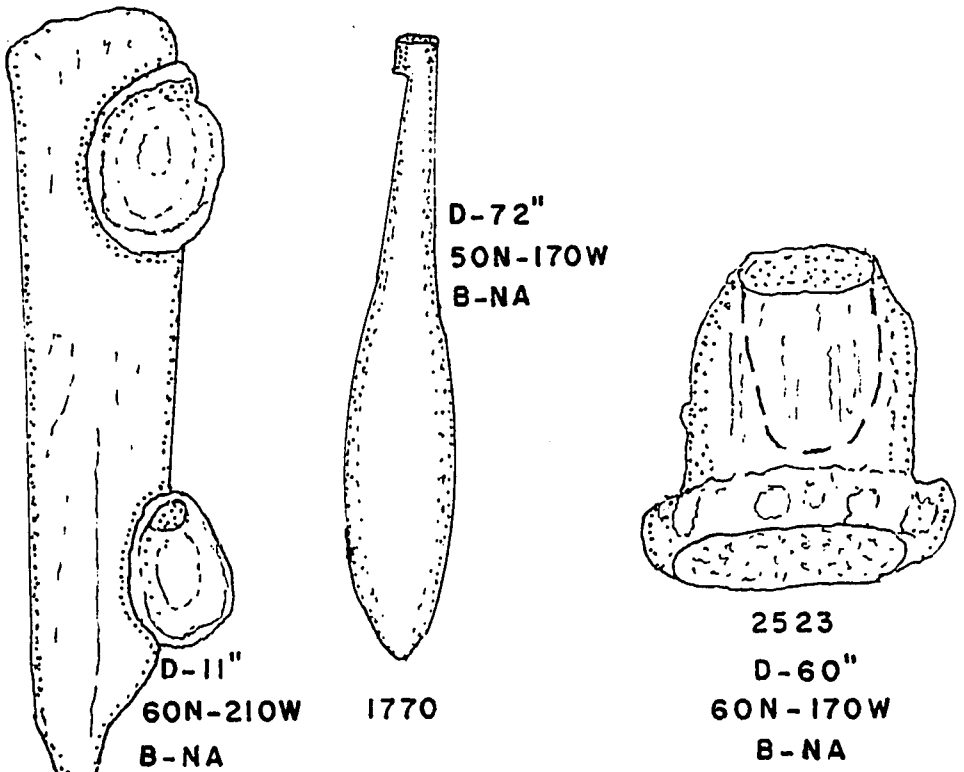


1136

Figure 60



ALL 2353: D-56" 10S-150W B-NA



2560

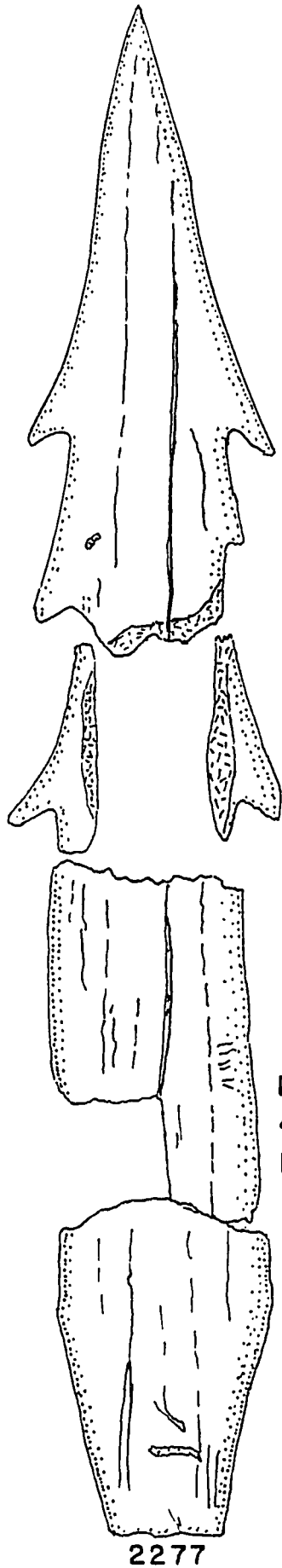
D-11"
60N-210W
B-NA

1770

D-72"
50N-170W
B-NA

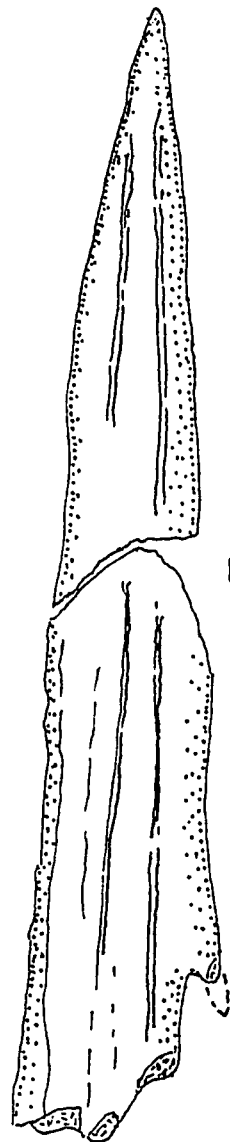
2523
D-60"
60N-170W
B-NA

Figure 61



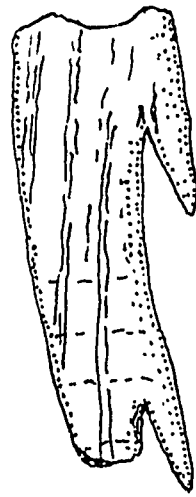
2277

D-25"
40N-150W
B-211
ADULT
FEMALE



1832

D-24-30"
60N-40W
B-NA

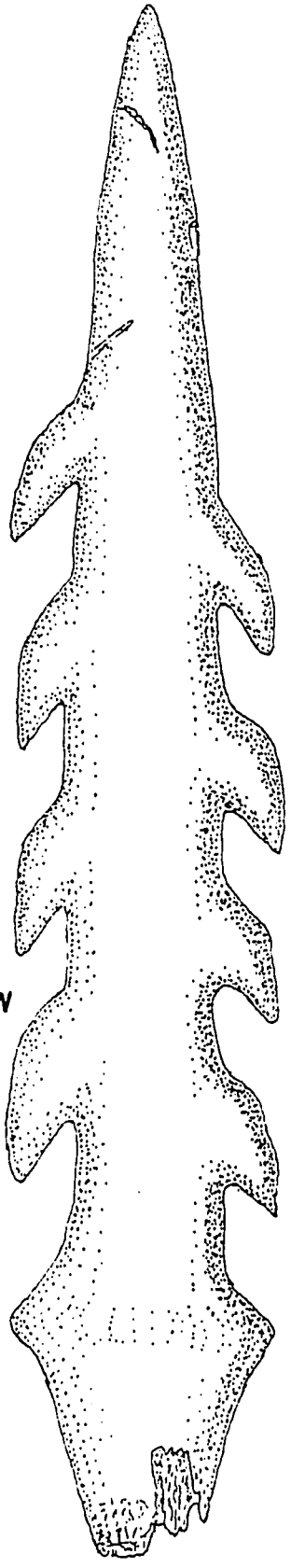


2203

D-30"
60N-40W
B-115
H-1.0 N
1.7
2.1 N
YOUNG
ADULT
MALE

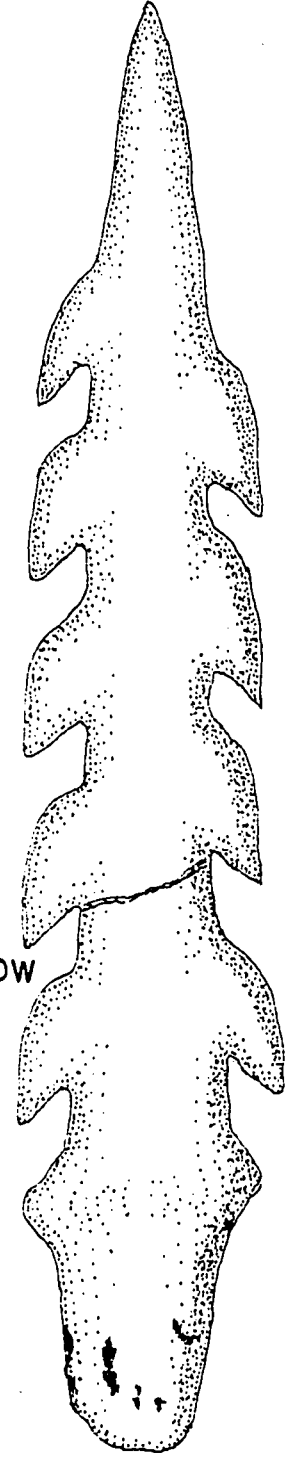
Figure 62

D-51"
50N-80-90W
B-31
ADULT



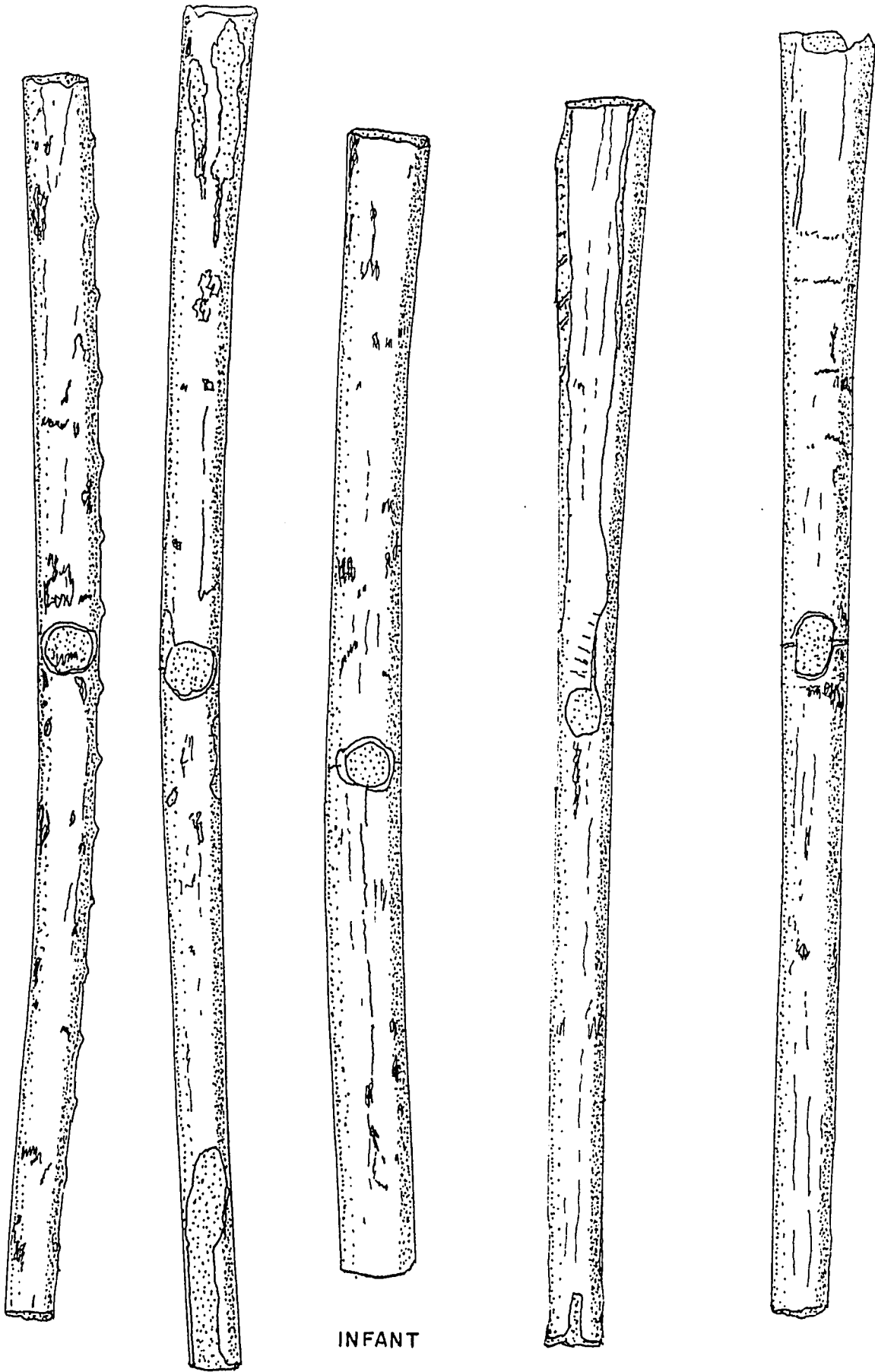
1260

D-46"
50N-80-90W
B-31
ADULT



1261

Figure 63



2406 a

2406 b

2406 c 413

2406 e

2406 d

ALL: D-67 " ON-150W B-236

Figure 64



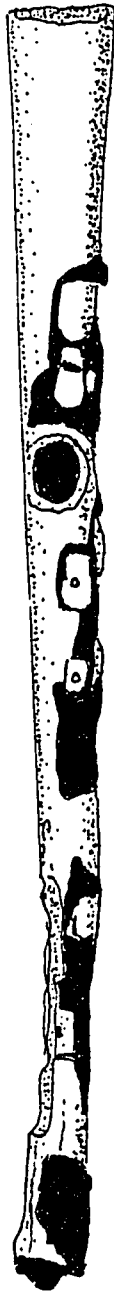
2437 a



2437 b

BOTH:
D-75"
IOS-140W
B-239

YOUNG
ADULT
MALE



2439 a



2439 c



2439 b



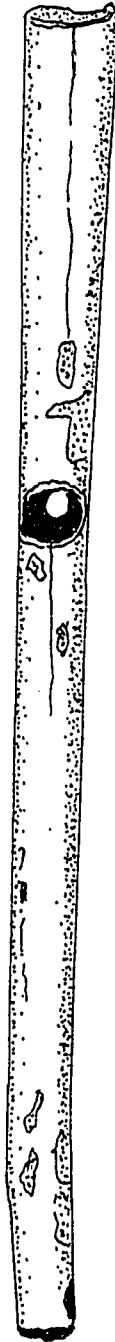
2439 d

ALL: 2439
SERIES
D-75"
IOS-140W
B-239
YOUNG
ADULT
MALE

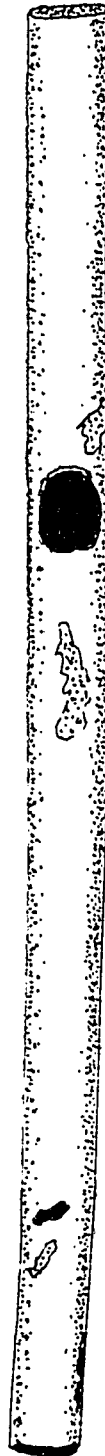
Figure 65



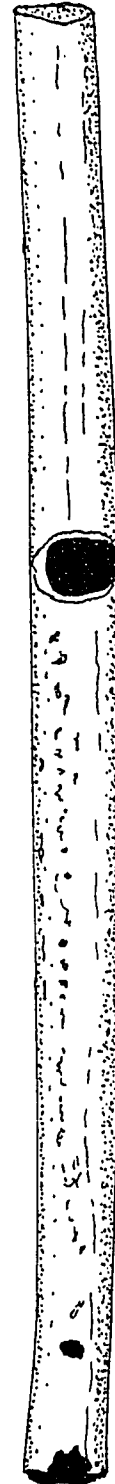
2440 a



2440 b



2440 c



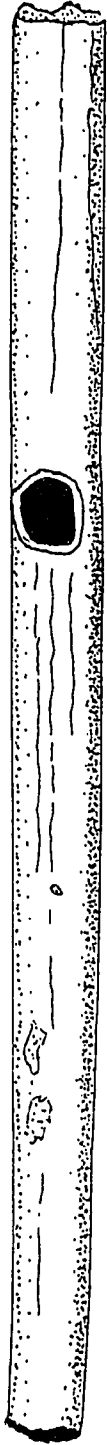
2440 d

ALL: D-75" IOS-140W B239

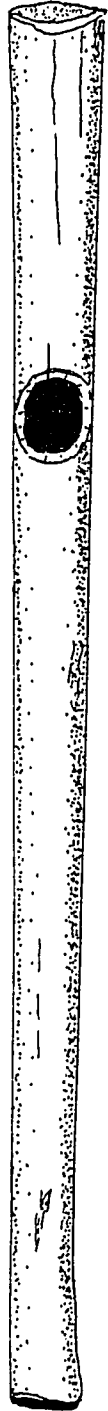
YOUNG ADULT MALE

415

Figure 66



2440 e



2440 f



2440 g



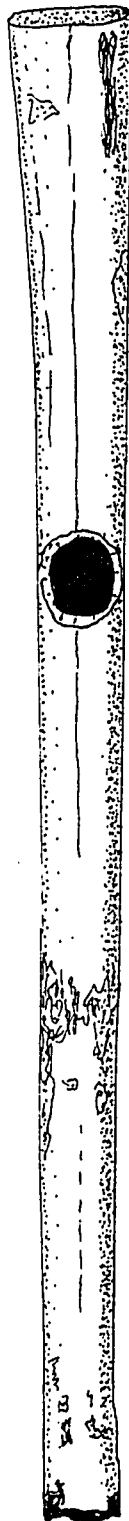
2440 h

ALL: D-75" IOS-140W B239
YOUNG ADULT MALE

Figure 67



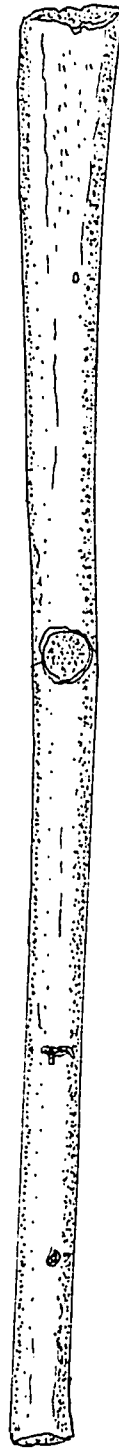
YOUNG
ADULT
MALE



417



YOUNG
ADULT
FEMALE



2441 a

2441 d

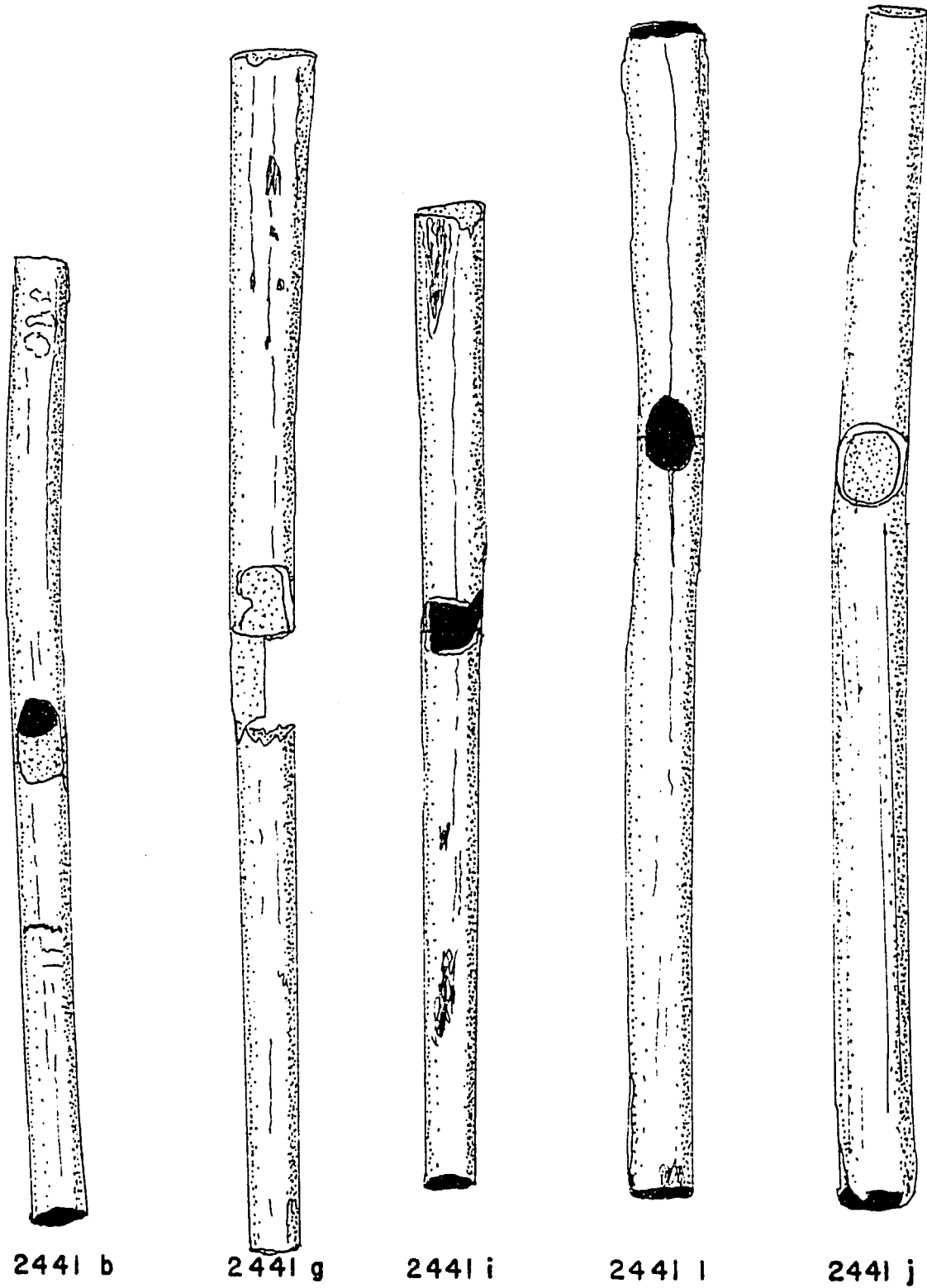
2515 e

2515 f

BOTH: D-75" 10S-140W B-239

BOTH: D-64" 20N-150W B-250

Figure 68

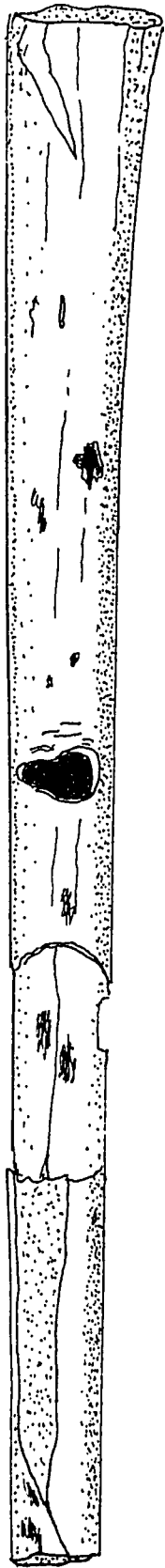


ALL: D-75" 10S-140W B-239

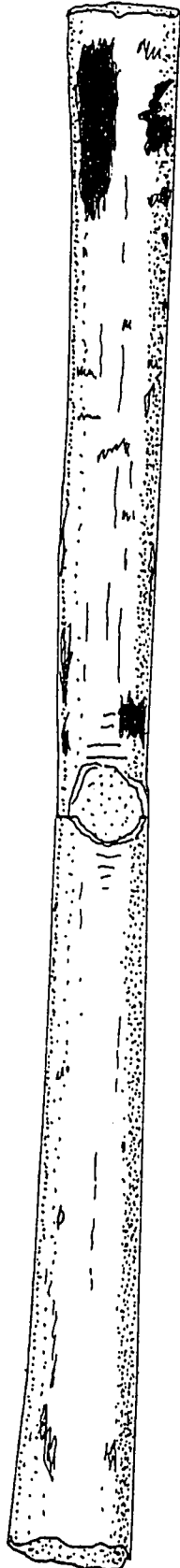
YOUNG ADULT MALE

418

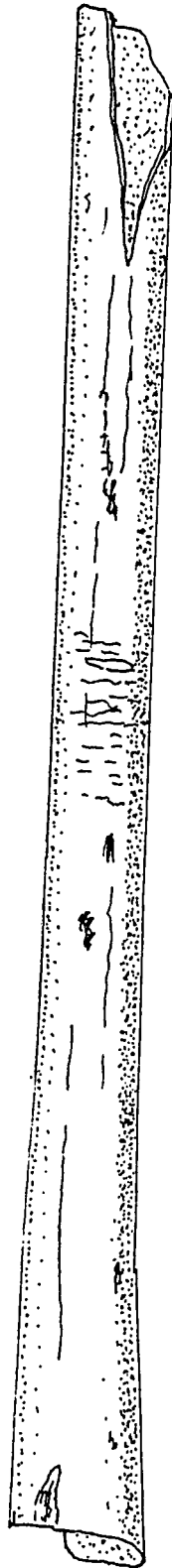
Figure 69



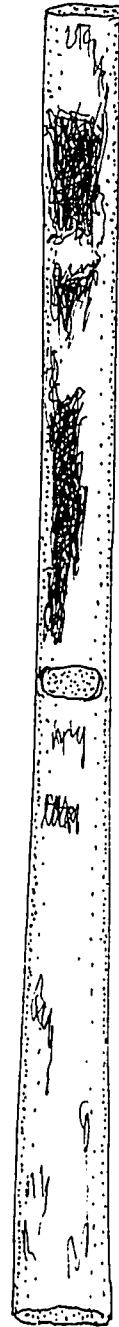
2482 a



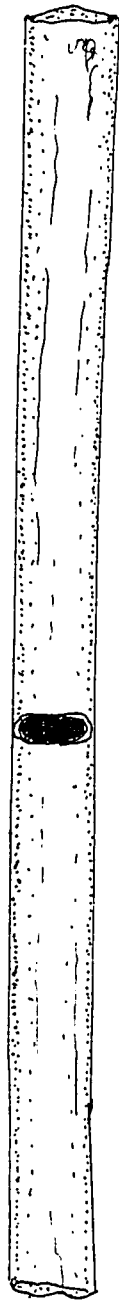
2482 b



2482 d



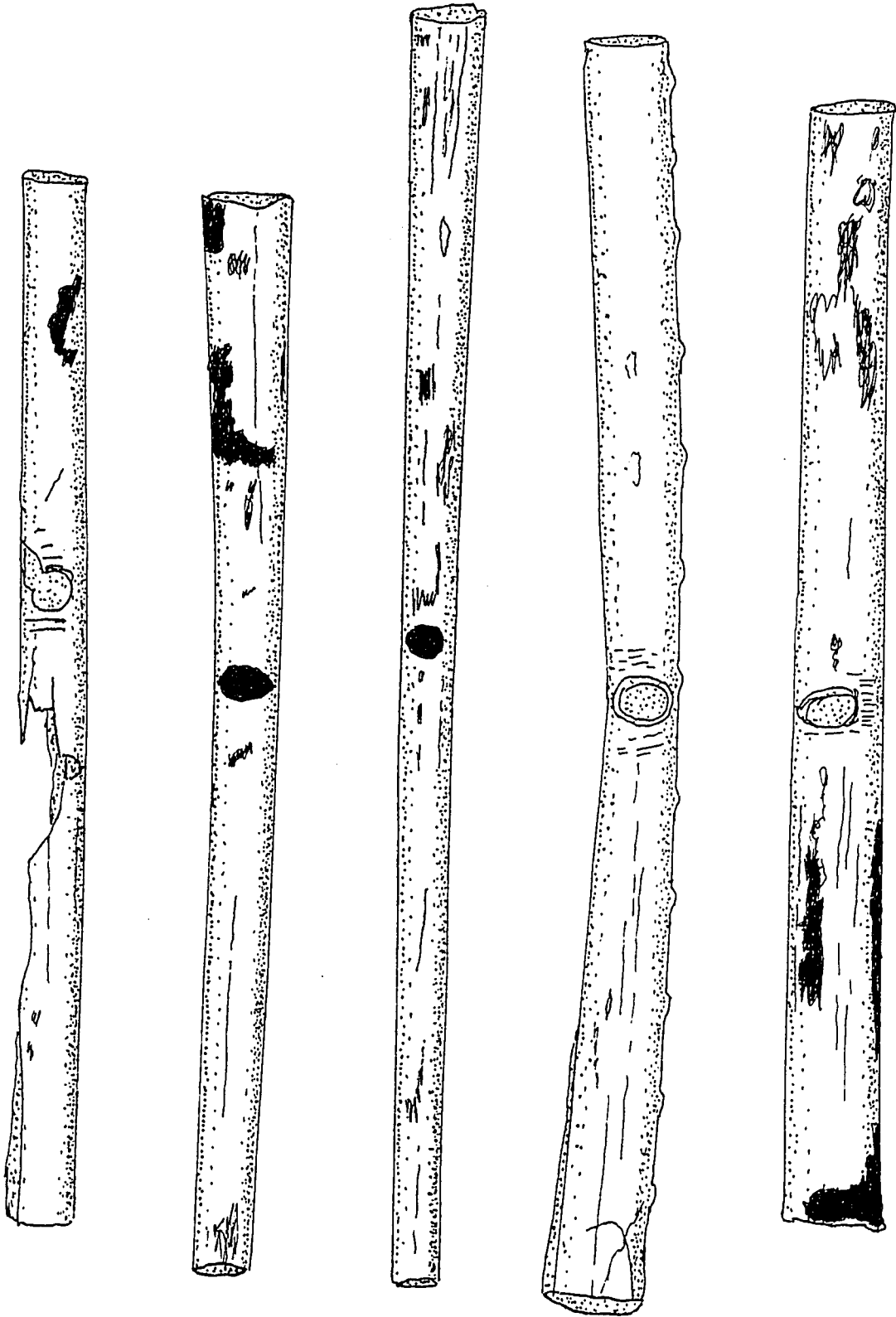
2482 e



2482 g

B-249 20S-120W D-77" OLDER MALE
419

Figure 70



2482 h

2482 i

2482 j

2482 k

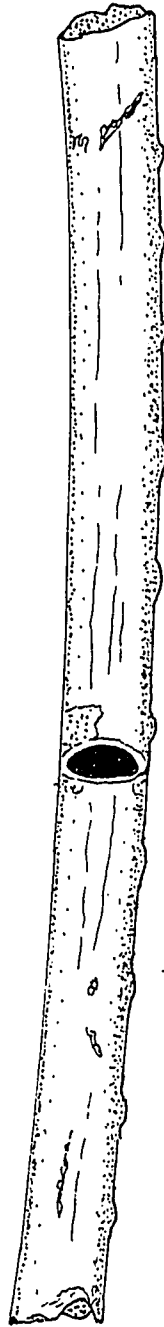
2482 l

D-77" 20S-120W B-249 OLDER MALE

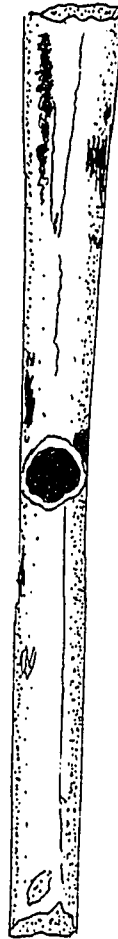
Figure 71



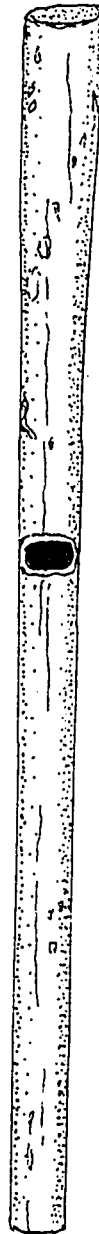
2542 a



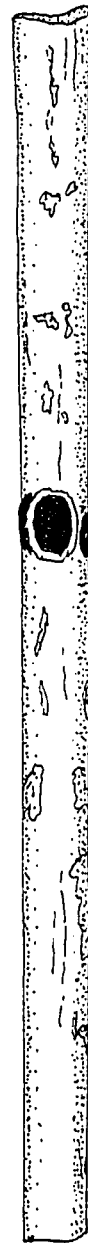
2542 b



2542 c



2542 d



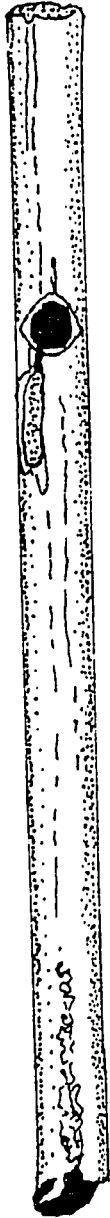
2542 e

ALL: D-77" ION 150W B-267
YOUNG ADULT MALE

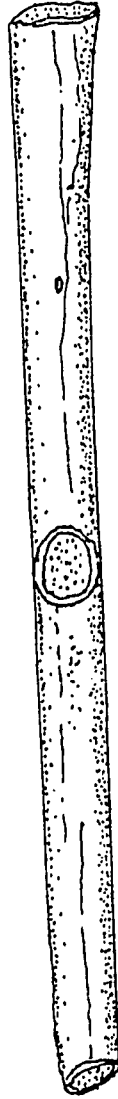
Figure 72



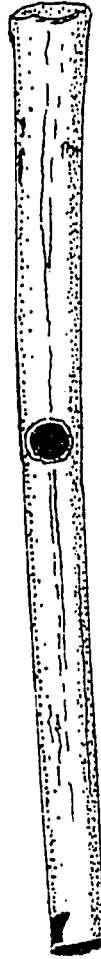
2634 a



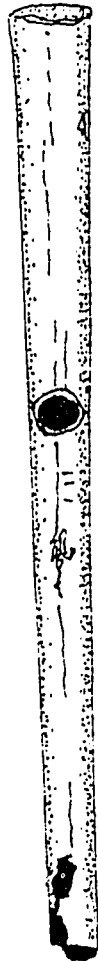
2634 b



2634 c



2646 a



2646 b

ALL: D-53" 70N-140W B-279
ADULT FEMALE

BOTH:
D-49"
70N-110W
B-280
ADULT FEMALE

Figure 73



2367

D-66"
30S-140W
B-226
H-3.2N
OLDER
MALE



2371A

D-72"
30S-140W
B-227
H-2.0A
ADULT
MALE



2372

D-72"
30S-140W
B-227
H-2.9N
ADULT
MALE



1717

D-42"
50N-140W
B-NA
H-2.0N



2521

D-66"
60N-170W
B-259
H-3.2N
MALE
CHILD



2347

D-62"
10S-140W
B-NA
H-3.4N

Figure 74



D-67"
30S-140W
B-226
H-2.4A
OLDER
MALE

2371B



D-87"
50N-50W
B-54
H-1.7N

ADULT
FEMALE

1392



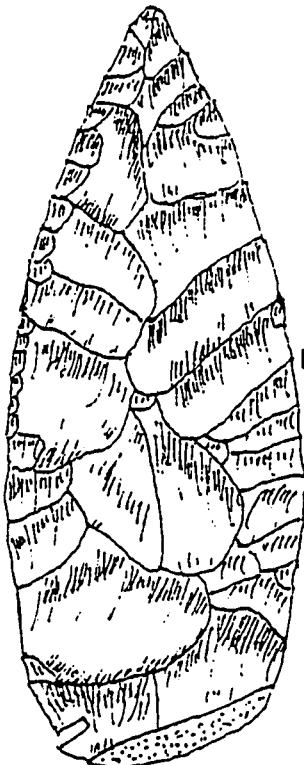
D-15"
50N-30W
B-NA
H-1.7N

1041



D-35"
20S-140W
B-209
H-1.9N
YOUNG
ADULT
FEMALE

2274



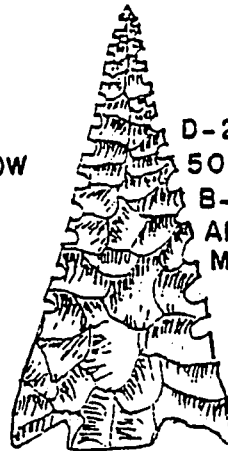
D-57"
60N-120W
B-110
H-2.4N
ADULT
MALE

1788



D-98"
50N-60W
B-18
YOUNG
ADULT
MALE

1162



D-24"
50N-80W
B-8
ADULT
MALE

1040B



D-29"
60N-140W
B-115
H-1.2N
YOUNG
ADULT
MALE

1850



D-24"
50N-80W
B-8
H-1.6?
ADULT
MALE

1042



D-6"
60N-110W
B-NA

1957

Figure 75



1025
D-12"
50N-40W
B-NA
CHERT



2286
D-30"
10S-140W
B-213 OLDER
H-1.5N MALE



1077

D-24"
50N-60W
B-NA
H-1.6N



1247

D-33"
50N-50W
B-NA



1656
D-28"
50N-130W
B-67 YOUNG
H-1.5N ADULT
MALE



1847
D-30"
60N-40W
B-115 YOUNG
H-2.1N ADULT
MALE



1821

D-27"
60N-40W
B-115 YOUNG
H-1.0 ADULT
MALE



2136
D-9"
60N-220W
B-NA
H-2.0N



2337
D-42"
10S-150W
B-NA
H-3.0N



1703
D-104
50N-50W
B-94 YOUNG
H-1.9N ADULT
MALE



2178
D-24"
60N-50W
B-195 ADULT
H-1.3 MALE



1217
D-9"
50N-50W
B-NA
H-1.3N



1839
D-27"
60N-40W
B-115
H-0.9
YOUNG
ADULT
MALE



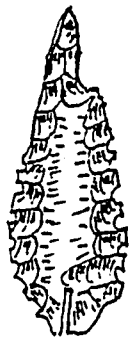
1351
D-6"
50N-140W
B-NA
CHERT



2147
D-9"
60N-70W
B-177
OLDER
MALE



2222
D-22" YOUNG
10S-140W ADULT
B-189 MALE
H-2.7N



1210
D-41"
50N-90W
B-NA
H-1.8N



1274
D-26"
50N-20W
B-NA
H-2.6N



1819
D-?
50N-60W
B-NA

Figure 76

D-13"
50N-100W
B-1
H-2.0N
ADULT
MALE
1048 G

D-99"
50N-60W
B-18
H-1.1N
YOUNG
ADULT
MALE
1062

D-80"
50N-60W
B-48
H-1.2A
ADULT
MALE
1117

D-99"
50N-60W
B-18
H-1.6N
YOUNG
ADULT
MALE
1059

D-96"
50N-60W
B-18
H-1.3N
YOUNG
ADULT
MALE
1163

D-15"
50N-30W
B-NA
1065

D-15"
50N-190W
B-NA
H-1.6N
1413

D-4"
60N-130W
B-NA
H-1.0N
1973

D-49"
60S-70W
B-NA
H-2.6N
2425

1076 C
D-51"
50N-60W
B-NA

1100
D-45"
50N-60W
B-NA
H-1.3N

1048 A
D-13"
50N-100W
B-1
H-1.6N
ADULT MALE

1279
D-45"
50N-50W
B-NA
H-1.3N

1363
D-6"
50N-130W
B-NA
H-1.9N

1076 A
D-51"
50N-60W
B-NA
H-1.2 N

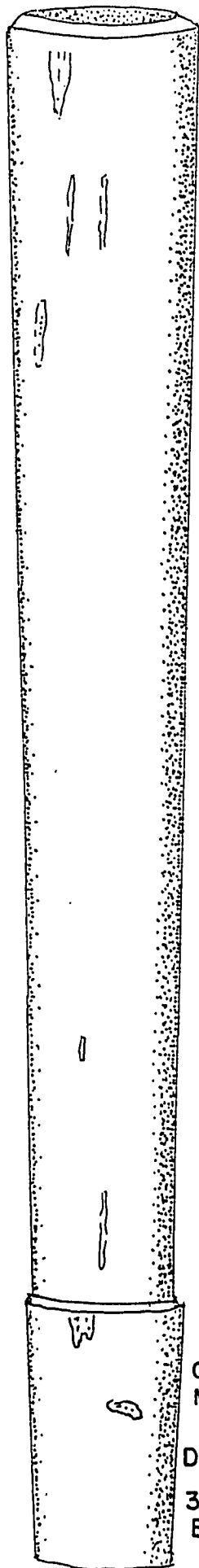
D-51"
50N-60W
B-NA
H-1.7N
1080

D-34"
20S-140W
B-NA
2259

D-66"
60N-120W
B-NA
1795

D-9"
50N-50W
B-NA

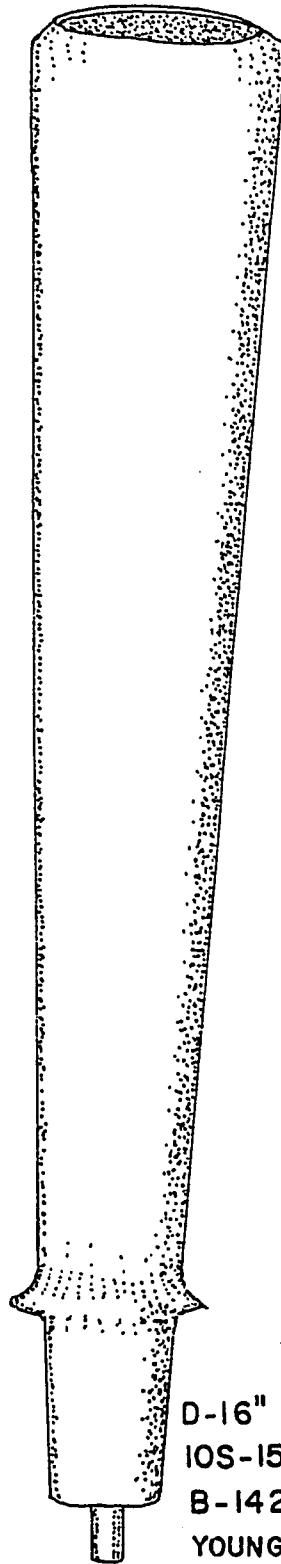
Figure 77



2366

OLDER
MALE

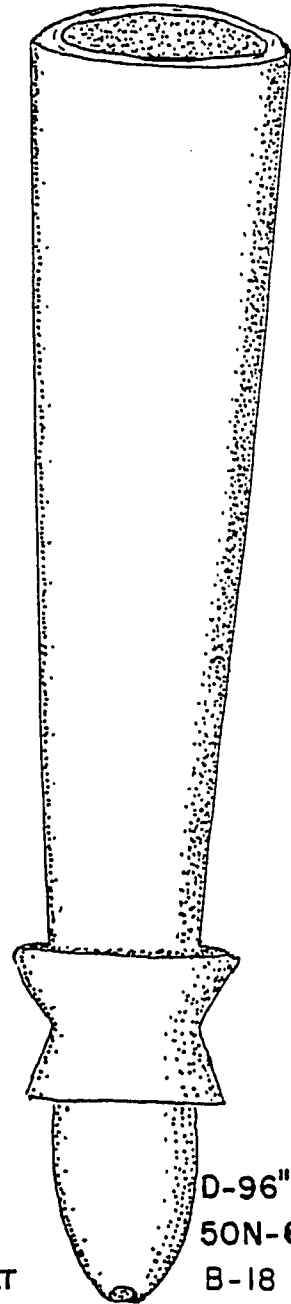
D-72"
30S-140W
B-226



2046

427

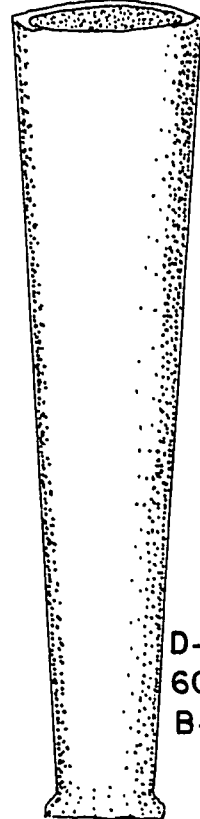
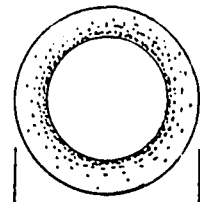
D-16"
10S-150W
B-142
YOUNG ADULT
FEMALE



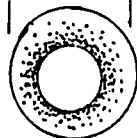
1054

D-96"
50N-60W
B-18
YOUNG
ADULT
MALE

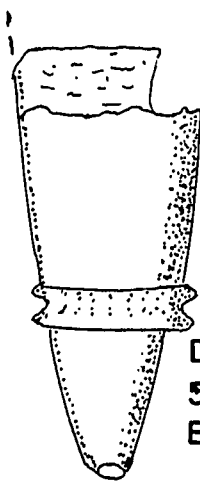
Figure 78



D-22"
60N-50
B-NA

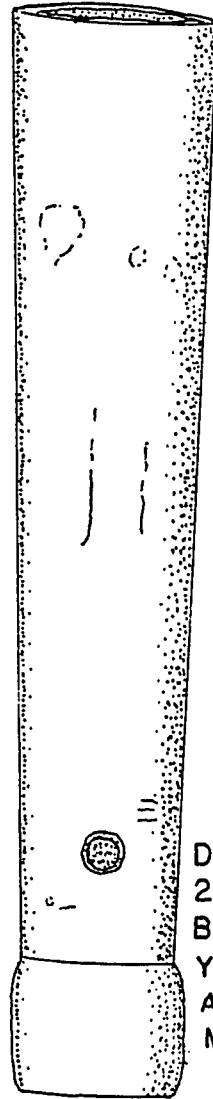


2156



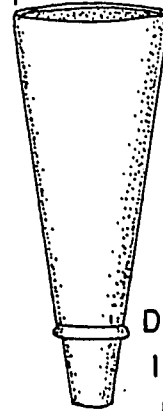
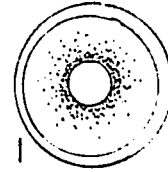
D-21"
50N-120W
B-9

1017



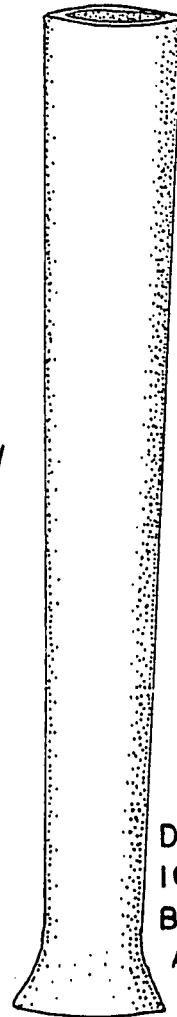
D-50"
20S-140W
B-223
YOUNG
ADULT
MALE

2349



D-28"
10S-140W
B-204
ADULT

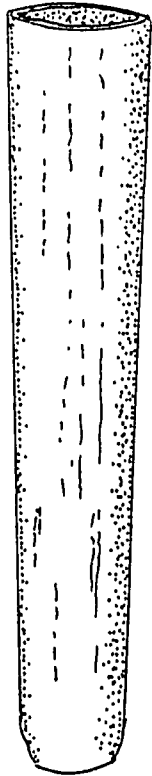
2258



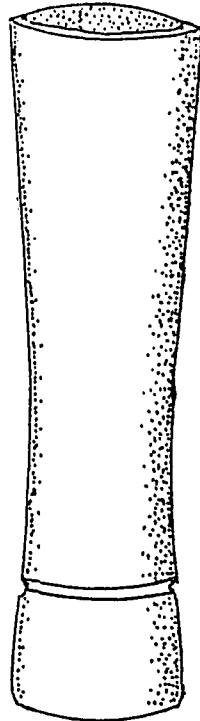
D-38"
10S-140W
B-212
ADULT
MALE

2283

Figure 79

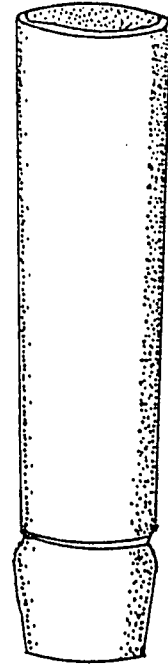


2478



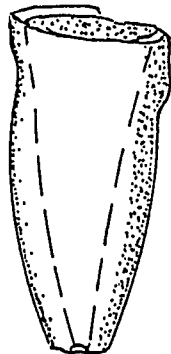
2438A

BOTH:
D-75"
IOS-140W
B-239

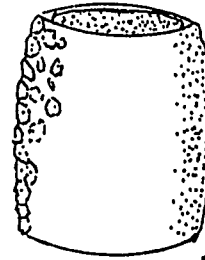


2438B

D-36"
60N-170W
B-NA

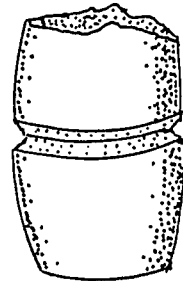


2433



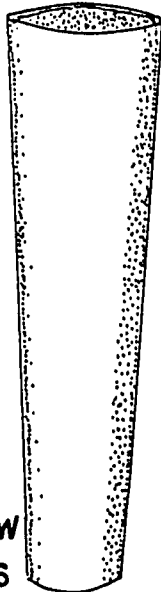
2532

D-67"
10N-140W
B-260
261



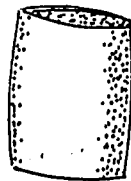
1944

D-55"
60N-180W
B-NA



D-51"
60N-170W
B-256

2059



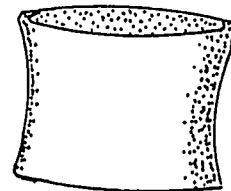
2380

D-68"
20S-150W
B-NA



1169

D-3"
50N-50W
B-NA



1589
D-41"

50N-170W
B-NA

Figure 80

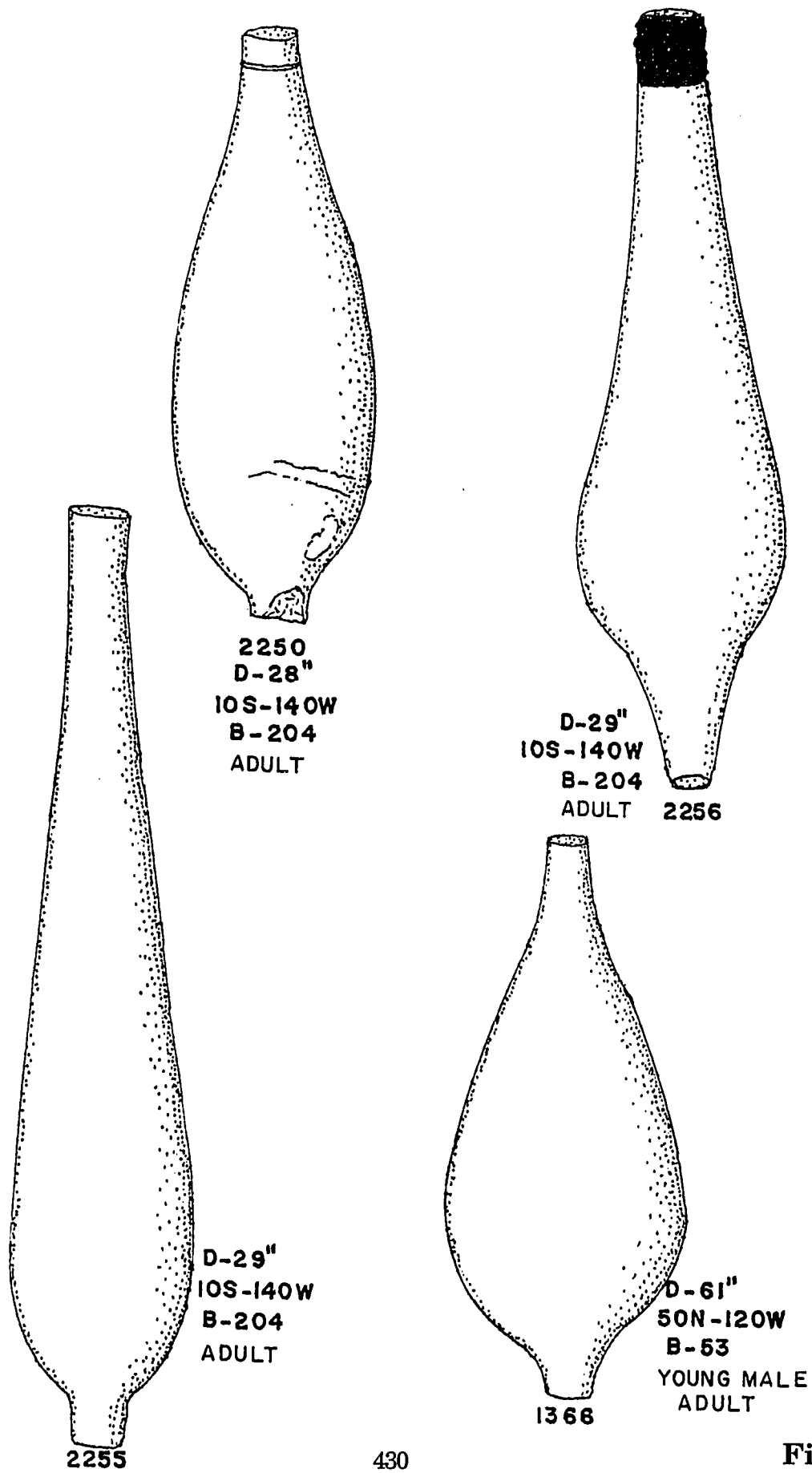
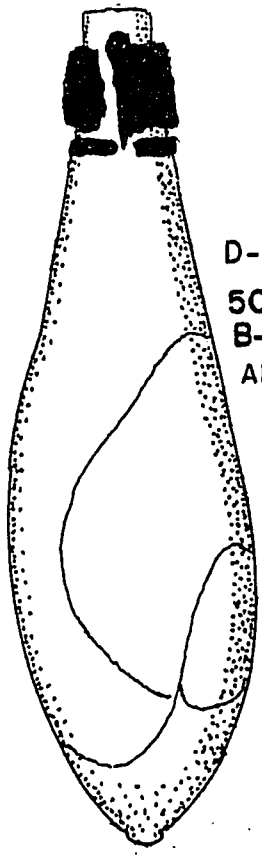
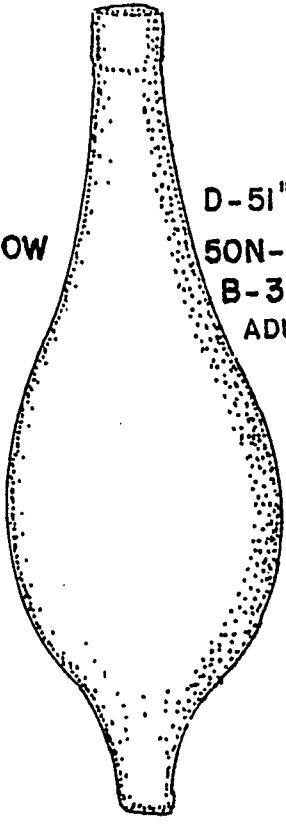


Figure 81



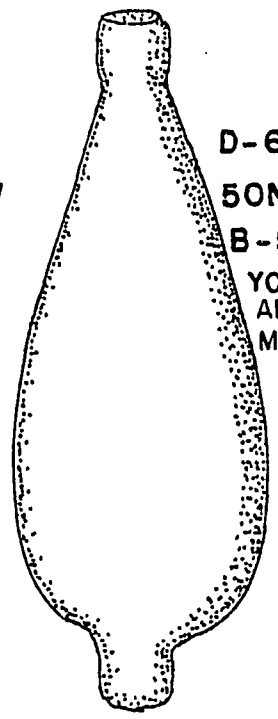
D-45"
50N-80/90W
B-31
ADULT

1258



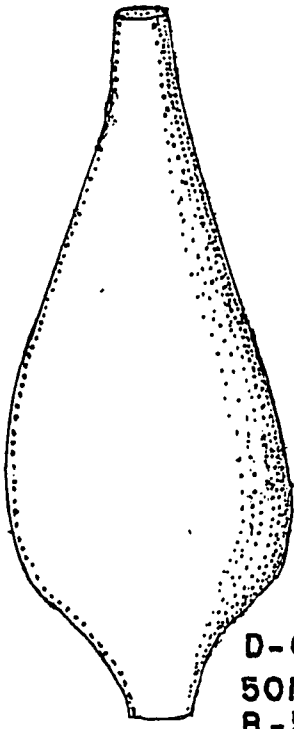
D-51"
50N-80/90W
B-31
ADULT

1259



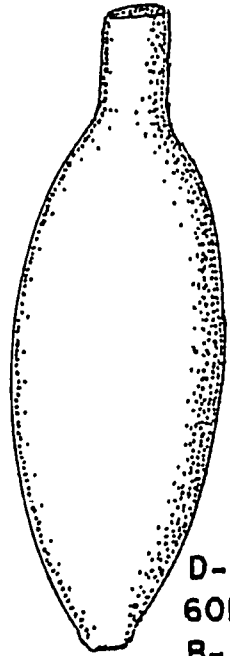
D-61"
50N-120W
B-53
YOUNG
ADULT
MALE

1366



D-61"
50N-120W
B-53
YOUNG
ADULT
MALE

1367



D-43"
60N-90W
B-134
OLDER
FEMALE

1965



D-12
50N-220W
B-171
ADULT
MALE

2152

Figure 8

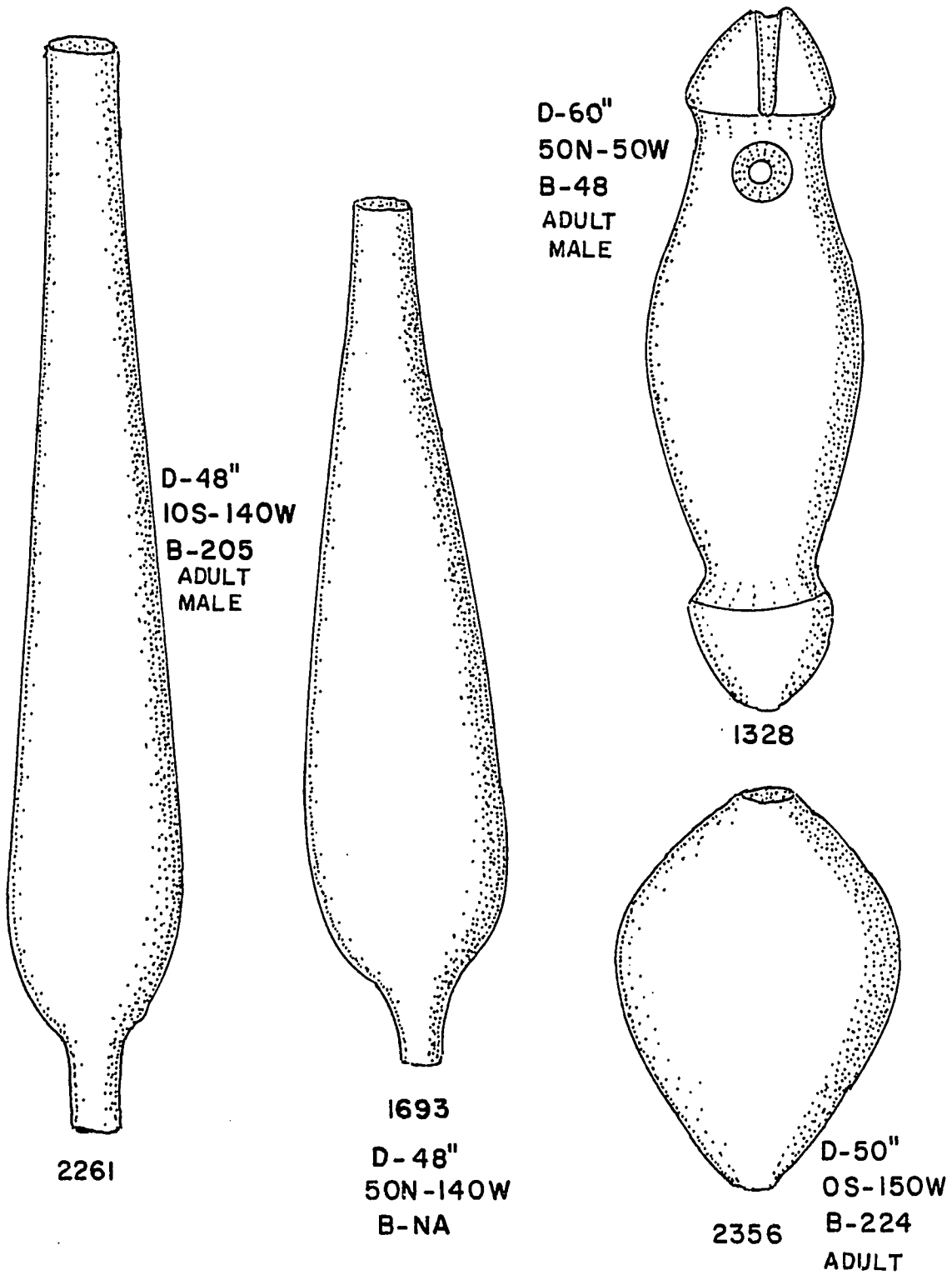
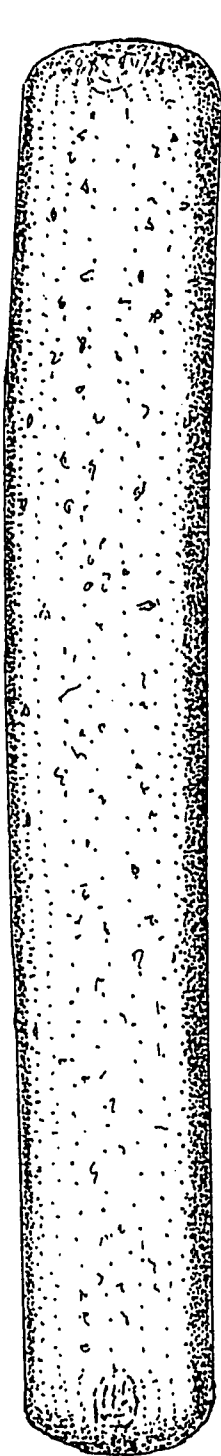
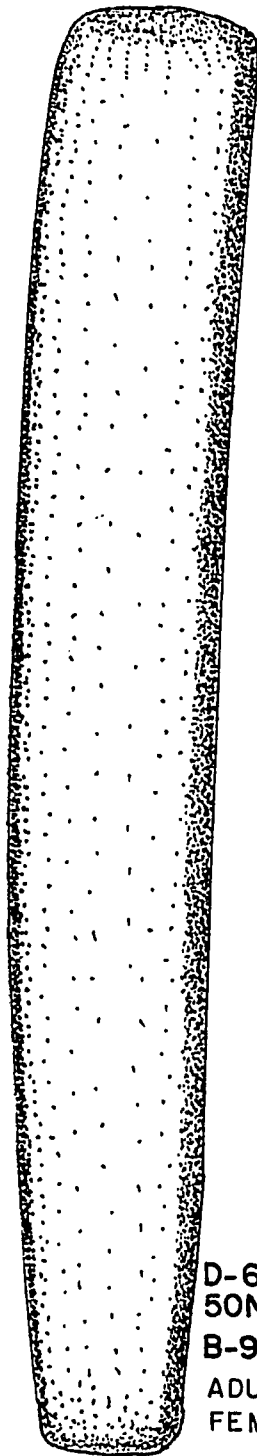


Figure 83



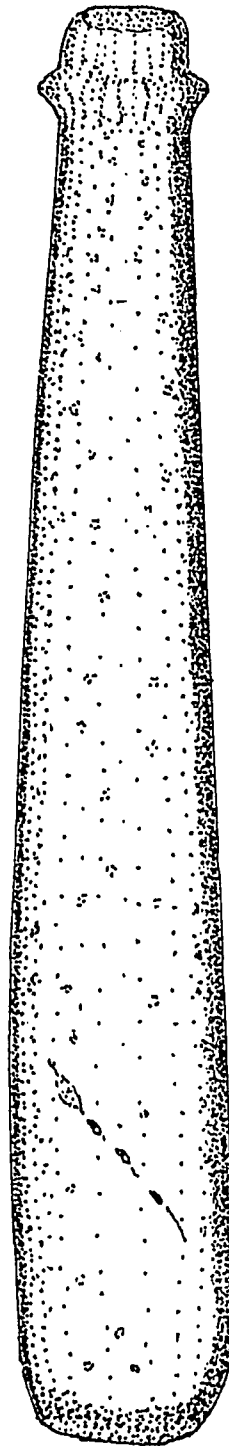
D-39"
40N-150W
B-219
ADULT
FEMALE

2309



D-60"
50N-130W
B-96
ADULT
FEMALE

1736

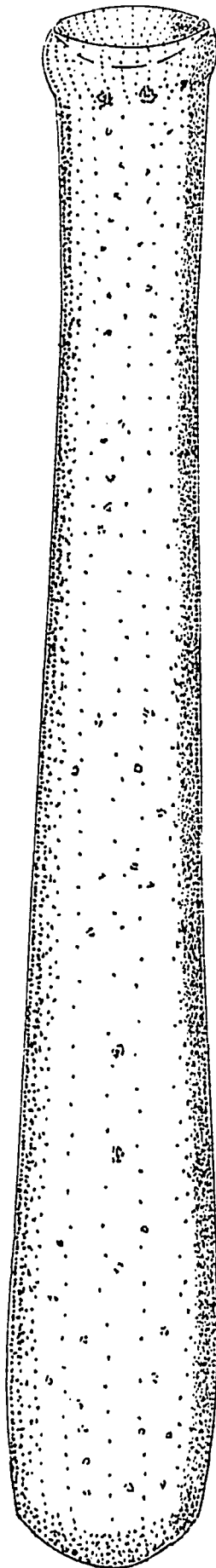


D-35"
20S-140W
B-209
H-1.8N
YOUNG
ADULT
FEMALE

2272

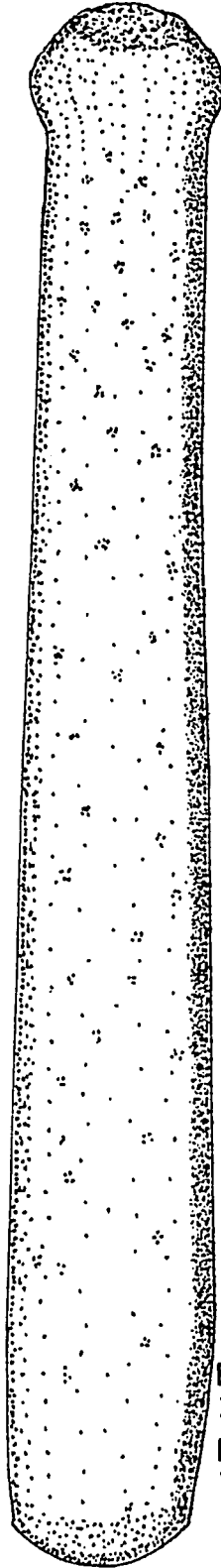
(ALL 1/2 SCALE)

Figure 84



D-43"
20S-150W
B-206
ADULT
MALE

2266

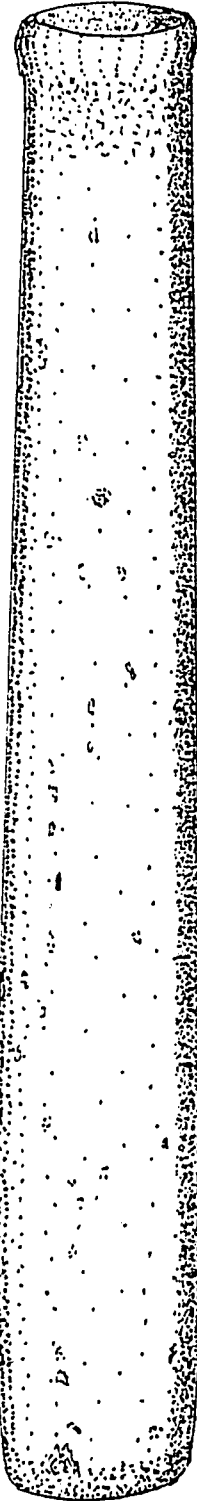


D-17"
30N-150W
B-179
YOUNG
ADULT

2144

434

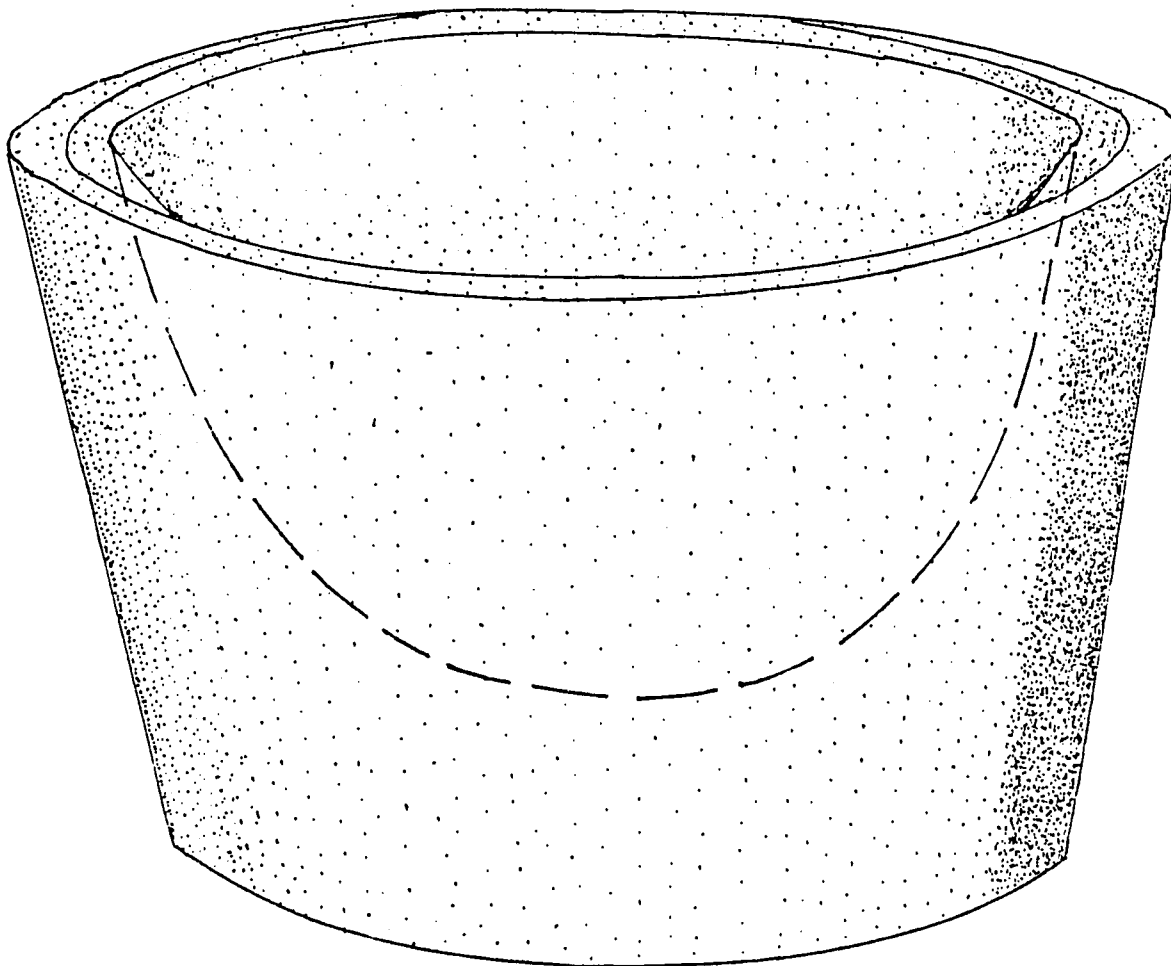
(1/2 SCALE)



D-48"
70N-110W
B-280
ADULT
FEMALE

2645

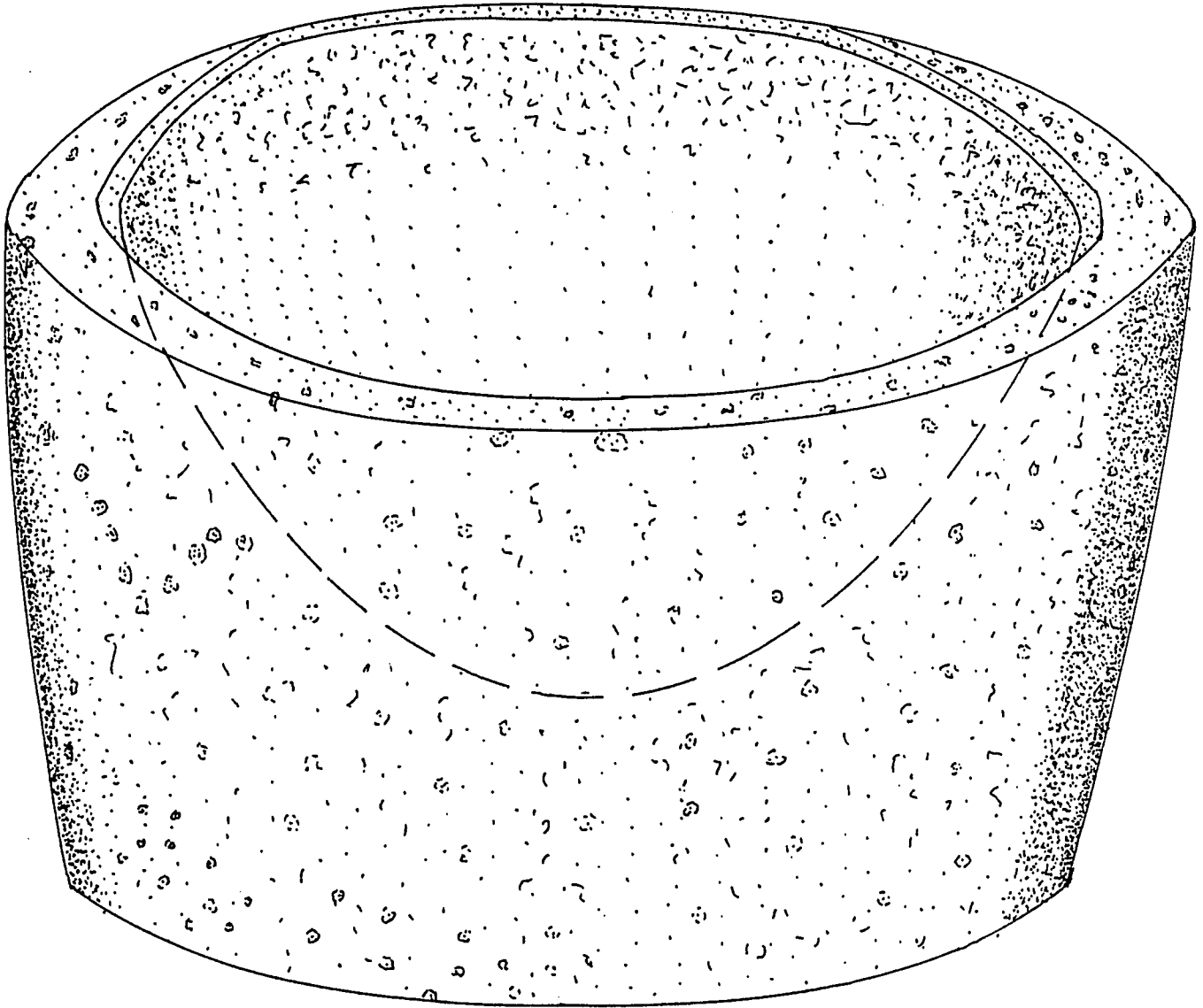
Figure 85



1315
(1/2 SCALE)

D-77"
60N-70W
B-49
ADULT
FEMALE

Figure 86



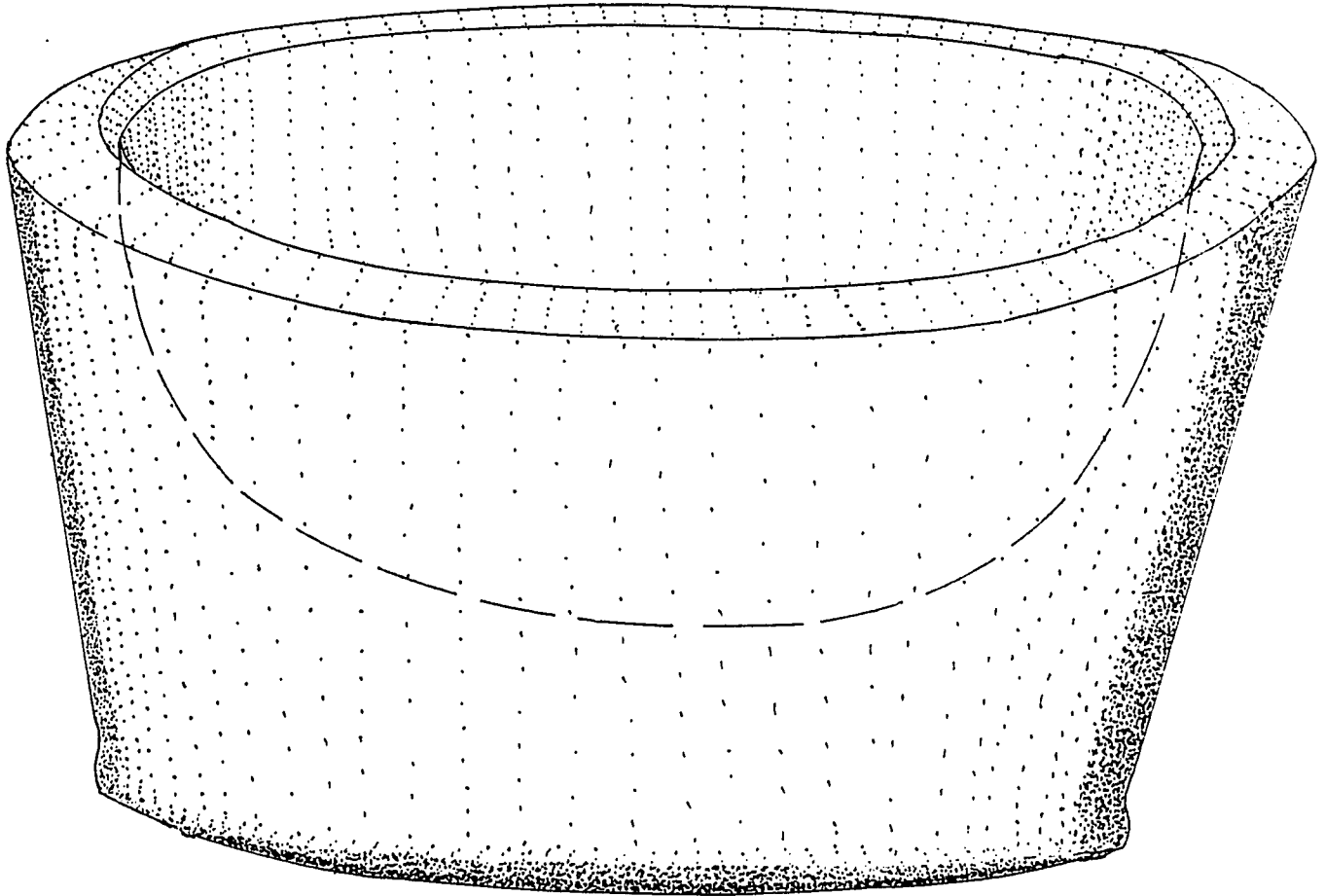
1464

D-26
50N-150W
B-65

ADULT
MALE

(1/2 SCALE)

Figure 87



1737

(1/2 SCALE)

D-46"

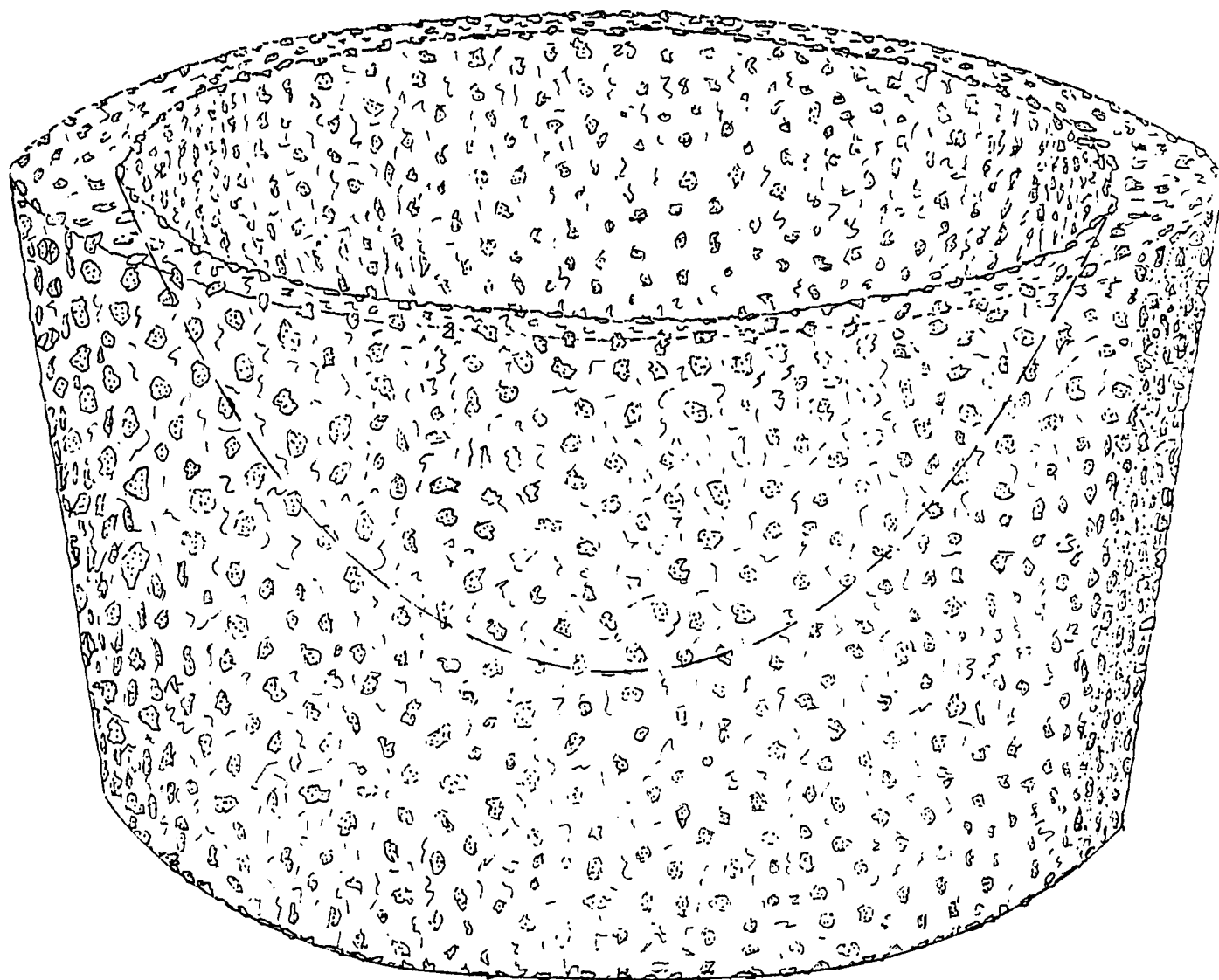
50-130W

B-96

ADULT

FEMALE

Figure 88

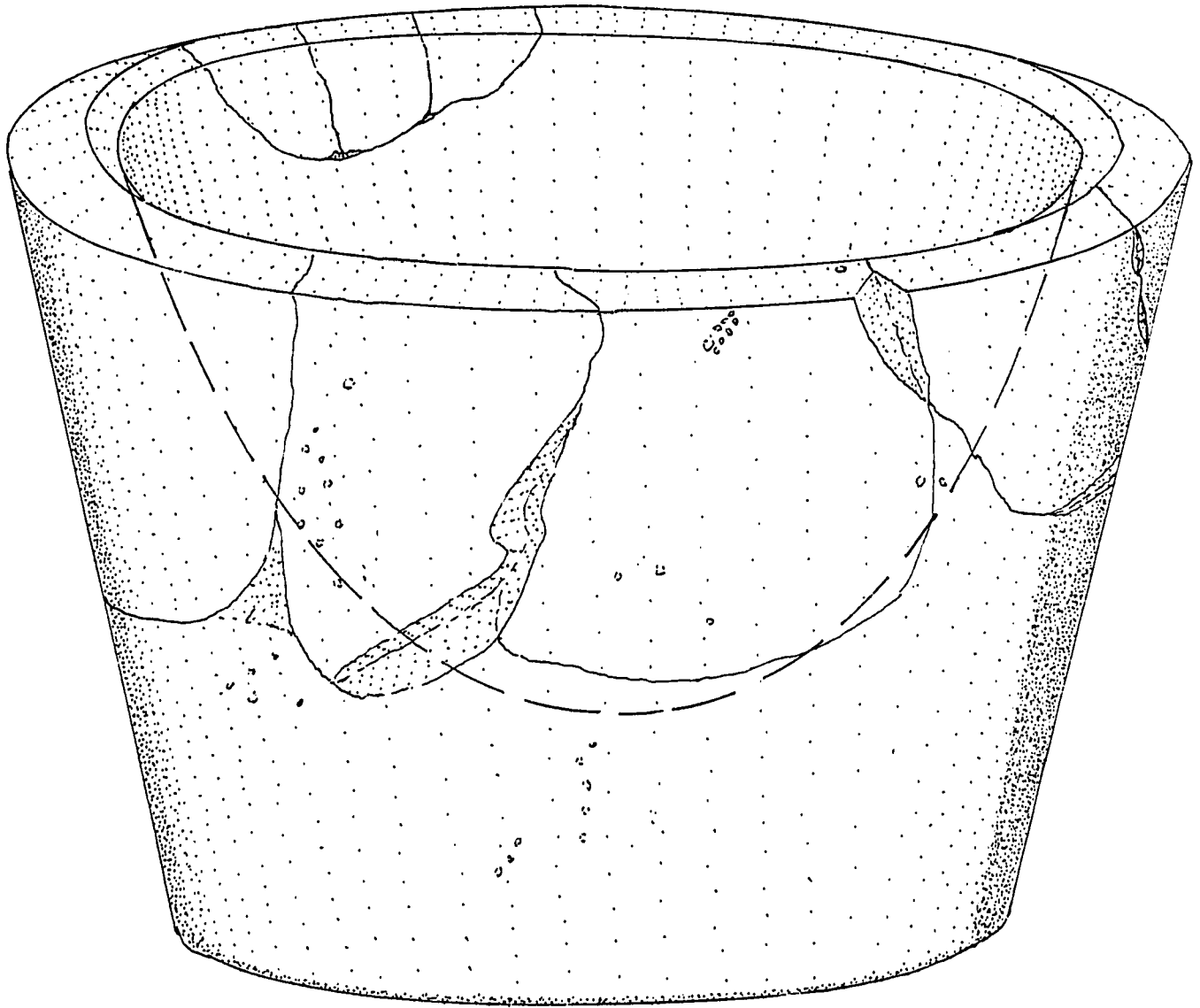


2103

(1/2 SCALE)

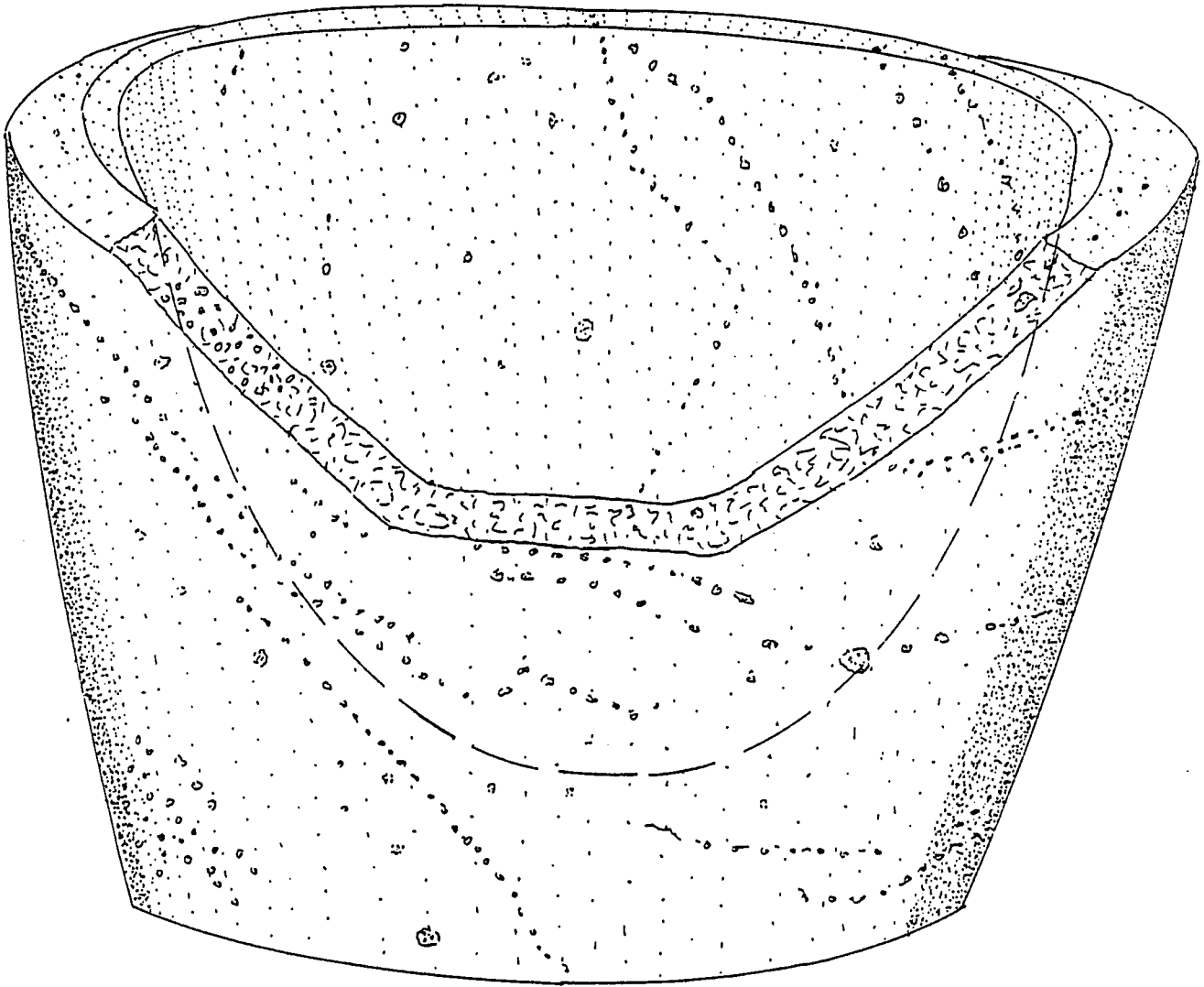
D- 36"
ON-150W
B-164
INFANT

Figure 89



2249
(1/2 SCALE)

D - 22"
IOS-140W
B-200
OLDER MALE **Figure 90**



2661
(1/2 SCALE)

D-60"
70N-110W
B-284

ADULT
FEMALE

Figure 91

Appendix E

**Radiocarbon Dating Reports from
Washington State University,
Department of Chemical Engineering**

WASHINGTON STATE UNIVERSITY

Department of Chemical Engineering Pullman, Washington 99164-2710 509-335-4332

RADIOCARBON DATING LABORATORY

WASHINGTON STATE UNIVERSITY
Pullman, Washington, 99164-2710
Office: (509) 335-4731
Lab: (509) 335-2417

SAMPLE REPORT FORM - FINAL REPORT

NAME OF SUBMITTER

Alan Leventhal

DATE RECEIVED

June 27, 1988

DATE REPORTED

September 27, 1988

WSU ACCOUNT NUMBER

15L 3813 1002 #54

WSU SAMPLE NUMBER

YOUR SAMPLE NUMBER

¹⁴C AGE, YEARS B.P.

3846	CA-Ala-329	B-49	835 ± 90
3847	CA-Ala-329	B-244	1400 ± 110
3848	CA-Ala-329	B-265	1235 ± 65

Sample Processed by: Welter
Sample Calculated by: Welter/Sheppard
Sample Reported by: Sheppard

NOTE: All analyses are based upon the Libby half-life (5570 ± 30 years) for radiocarbon. To convert ages to the half-life of 5730 years, multiply the age given above by 1.03. Zero age date is A.D. 1950. (Reference: Editorial Comment, RADIOCARBON, Vol. 7, 1965.)

Washington State University

Department of Chemical Engineering

Pullman, WA 99164-2710

(509) 335-4332

FAX: (509) 335-7632

RADIOCARBON DATING LABORATORY

Office: (509) 335-4731

Lab: (509) 335-2417

SAMPLE REPORT FORM - FINAL REPORT

NAME OF SUBMITTER

Alan Leventhal

DATE RECEIVED

December 23, 1991

DATE REPORTED

March 26, 1992

WSU ACCOUNT NUMBER

15L 3813 1002 #175

WSU SAMPLE NUMBER

YOUR SAMPLE NUMBER

¹⁴C AGE, YEARS B.P.

4359	Ca-Ala-329 Burial 34 127"	530 ± 80 (contaminated)
4360	Ca-Ala-329 Burial 104 65"	1690 ± 90
4361	Ca-Ala-329 Burial 143 63"	1220 ± 90
4362	Ca-Ala-329 Burial 257 80"	1690 ± 80
4363	Ca-Ala-329 Burial 273 85"	2080 ± 90

Sample Processed by: Welter
Sample Calculated by: Welter/Sheppard
Sample Reported by: Sheppard

444

NOTE: All analyses are based upon the Libby half-life (5570 ± 30 years) for radiocarbon. To convert ages to the half-life of 5730 years, multiply the age given above by 1.03. Zero age date is A.D. 1950. (Reference: Editorial Comment, RADIOCARBON, Vol. 7, 1965.)

Appendix F

Minimum Number of Individuals of Bird Remains

Per 6 Inch Level, Derived from Excavation Units:

50N 110W, 50N 120W, 50N 140W, 60N 70W & 60N 150W

(From Wilson 1993)

MNI Bird Species in Each 6" of Depth.

Species	0 6	6 12	12 18	18 24	24 30	30 36	36 42	42 48	48 54	54 60	60 66	66 72	72 78	Totals
Ross' goose	4	6	4	2	2	3	2	6	16	3	0	2	0	50
Snow goose	3	4	3	4	5	2	5	5	5	2	1	2	0	41
Lesser snow goose	6	12	10	8	1	8	11	6	20	2	2	4	0	90
Canada goose	0	3	0	0	0	0	2	0	1	1	0	0	0	7
Lesser Canada goose	2	5	3	4	3	3	5	4	10	0	0	2	0	41
Canvasback duck	6	4	9	3	2	5	4	9	6	2	1	1	0	52
Ring necked duck	3	2	2	1	1	5	3	0	4	3	0	1	1	26
Mallard	2	3	6	3	0	1	1	1	1	0	0	0	0	18
Cinnamon teal	3	6	3	4	1	1	1	2	1	1	0	0	0	23
Green winged teal	5	10	15	8	3	3	3	1	2	1	0	0	0	51
American pintail	3	5	12	2	2	2	5	6	2	0	0	0	0	39
Baldpate	3	10	10	4	0	6	3	3	0	0	0	0	0	39
Northern shoveler	4	5	10	4	1	4	1	2	1	0	0	0	0	32
Wood duck	0	4	0	1	1	0	0	0	0	0	0	0	0	6
Northern ruddy duck	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Western grebe	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Spectacled eider	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Double crested corm.	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Brant cormorant	0	0	2	0	0	0	0	1	1	0	0	0	0	4
Baird pelagic corm.	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Red throated loon	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Common loon	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Calif. common murre	0	0	1	0	0	0	0	0	1	0	0	0	0	2
Marbled godwit	2	1	1	0	0	0	1	1	0	1	0	0	0	7
Calif. gt. blue heron	1	0	0	0	0	0	0	0	0	0	0	1	0	2
American egret	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Anthony green heron	0	0	0	0	0	0	0	0	1	1	0	0	0	2
American royal tern	0	0	1	0	1	1	0	0	0	0	0	0	0	3
California gull	1	1	1	0	0	0	0	0	0	0	0	0	0	3
Heerman's gull	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Northern western gull	1	1	0	1	0	1	0	0	0	0	0	0	0	4
Ring billed gull	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Pacific fulmar	0	0	0	0	0	0	0	0	0	1	1	0	0	2
American wh. winged scoter	1	0	1	0	0	0	0	0	1	0	0	0	0	3
Surf scoter	1	0	2	0	0	0	0	2	0	0	0	0	0	5
Curlew	2	0	0	0	0	0	0	0	0	0	0	0	0	2
American avocet	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Ferrug. rough legged hawk	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Barn owl	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Pelican	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
TOTALS	53	84	101	52	25	45	51	52	74	18	5	13	1	574

(From Wilson 1993)