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ETHNOGEOGRAPHY AND ARCHAEOLOGY OF
THE WIYOT TERRITORY

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INTRODUCTION

California is almost entirely lacking in coastal plain, there being only a half dozen places along the entire coast from Oregon to Mexico where the 1000-foot contour line is more than ten miles inland, and some of these places are mere breaks in the coast where rivers have their outlets. On most of the California coast the 100-foot contour line is practically the coast line itself, hence the area occupied by low plain, marsh, or tide lands is very restricted.

The chief salt marsh and tide-flat area in California is about San Francisco bay. Here there was an abundance of mollusks as an aboriginal food supply. Hence shellmounds and refuse heaps are very numerous. The Department of Anthropology of the University of California having located about 450 such archaeological sites and having excavated in 13 (a partial report of which is found in several papers of the present series),¹ it was deemed best to undertake similar work farther up the coast. Because of the abrupt character of the coast, the locality promising best results appeared to be around Humboldt bay, about 220 miles up the coast from San Francisco. Accordingly, from July 15 to November 5, 1913, the writer was engaged in an archaeological exploration of the territory about this bay, and around the lower courses of Mad and Eel rivers. About half of the time in the field was spent in excavating one of the most prominent shellmounds of the region, situated on Gunther island in the bay opposite Eureka. The other half of the time was spent in making various trips by foot, by team, by stage, and by rowboat about the bay and the rivers mentioned.

Considerable information as to former conditions was gathered from pioneers of the region and particularly from Robert Gunther, the owner of the island where the excavation was made. The Indian informants were: John Stevens, who gave the Athapascan names of the places between Blue Lake and Maple creek; Jim Brock, of Blue Lake, who gave the Athapascan names of villages along Mad river from its mouth to Maple creek; Tom Brown and Aleck Sam, at the mouth of Mad river, who gave the Wiyot names of places on Mad river from its mouth to Blue Lake, as well as several sites on the

¹ Max Uhle, Emeryville Shellmound, 1907; N. C. Nelson, Shellmounds of the San Francisco Bay Region, 1909; N. C. Nelson, Ellis Landing Shellmound, 1910: present series, VII. E. W. Gifford, Composition of California Shellmounds, 1916, present series XII.

coast; and Dandy Bill, an old Indian patriarch, who lived at Indianola, at the south end of the bay. The last named gave the Wiyot names of places on Humboldt bay, on Eel river from its mouth to Scotia, and on the coast from Trinidad Head to Cape Mendocino, as well as considerable history and general information concerning his people.

While the manuscript as a whole was read and criticized by Professor A. L. Kroeber, the writer submitted to authorities in various branches of learning those portions of his manuscript dealing with sciences other than anthropology, and in this connection wishes to acknowledge his obligations to the following persons for their criticism: W. L. Jepson, Professor of botany; Joseph Grinnell, Professor of Zoology; B. L. Clark, Conchologist; J. C. Merriam, Professor of palaeontology and geology; H. E. Bolton, Professor of American history; and O. C. Coy, Secretary of the California Historical Survey Commission.

The writer also wishes to acknowledge his obligation to Dr. A. L. Kroeber and to Dr. T. T. Waterman for their courtesy in allowing him to make use of manuscript lists of geographical names which they had previously obtained. These lists of names together with notes will be found appended to the lists of geographical names obtained by the writer.

ENVIRONMENT OF HUMBOLDT BAY REGION

PHYSIOGRAPHY

Humboldt bay is fourteen miles long and from half a mile to three and one-half miles wide. It is separated from the ocean by a sand-dune ridge, having a width of a quarter of a mile to one mile. This dune reaches in places an elevation of 85 feet. The channels in the bay are quite narrow, but in places are 50 feet deep, and maintain depths of 10 to 20 feet at low tide clear to the very extremities of the bay. With the exception of these narrow channels, the bay is only 3 to 5 feet deep at low tide, and exhibits extensive mud flats (pls. 1, 2, and 3).

The largest marsh areas are to the northeast, up Eureka slough, and to the southeast, up Hookton slough and Salmon creek. At the north end of the bay a marshy area connects with Mad river, which in times past undoubtedly had two or more outlets, one channel leading direct to the ocean, the other channel passing into and through

Humboldt bay. It is likely that there was always one channel direct to the sea, because if there had once been an interruption in the flow of the stream, sand-dunes would soon have piled to a sufficient height to block the flow in that direction. Mad River slough nearly connects with the river, and in early days lumbermen finished the connection so as to float logs from the river into the bay. There might also have been a connection at one time with the bay by way of Daniels slough, near Arcata.

Between Mad and Little rivers there is a plateau of over 100 feet elevation. The edges of this plateau form a steep bluff close to Mad river, and less than half a mile from the ocean. Plate 5, figure 1 shows the mouth of Little river, and the more rugged character of the coast for three miles to the northward. In the center of the picture is shown Little River Rock, 120 feet elevation; to the left in the distance is Pilot Rock, 103 feet elevation, and in the background is Trinidad Head, 380 feet elevation. At the mouth of Little river the change from an abrupt rocky coast to a sandy beach and sand-dunes is very marked. To the left of the picture is seen the sandy beach, which extends southward uninterruptedly nearly to Cape Fortunas. Plate 8, figure 1, and plate 10 show the character of the sand-dunes to the south of Mad river.

Between the mouth of Little river and Cape Fortunas, as well as on the shore of the bay, there are no rocks suitable for the attachment of mussels, though there used to be many redwood logs in the bay to which the small mussel, *Mytilus edulis*, could attach. The large rock mussel, *Mytilus californianus*, is abundant north of Little river, and also about Cape Fortunas, off which are numerous rocks.

Between Eureka and Salmon creek there are bluffs twenty feet high or more. Some of the Indian village sites were on top of the bluffs, and some on the lowlands. Red Bluff, 100 feet in elevation, made the discovery of the entrance to the bay from any ship impossible, being situated, as it is, directly back of the opening in the sand-dune ridge, thus making the shore line appear continuous at a little distance. To the southeast of the bay, Humboldt hill rises direct from the shore to an elevation of 600 feet (pl. 5, fig. 2). The south end of the bay is separated from the delta of Eel river by a small plateau, Table Bluff, 165 feet in elevation.

Eel river delta has a frontage on the ocean of eight miles and stretches inland eight or ten miles, tidewater reaching as far as Fortuna. Here the course of the river had been so erratic that the

Indian village sites could not be located with any degree of accuracy. The delta, triangular in shape, is bordered by steep hills, the position of which can be judged from the map (pl. 1) by the position of the three towns, Loleta, Ferndale, and Fortuna, all of which lie at the base of the hills.

It will be readily understood that the area of lowland and marsh is rather restricted, when we learn that the distance between the mouth of Mad river and the southern edge of the Eel river delta is only twenty-seven miles. This area is shut in on all sides by mountain ridges rising to an elevation of over 3000 feet, and sweeping around in a semicircle from Trinidad Head to Cape Mendocino, fifteen miles south of Eel river, where the 1000-foot contour line is within half a mile of the coast.

FOREST

This encircling mountain ridge would act, to a considerable extent, as a barrier in keeping separate peoples apart, but of much greater importance would be the barriers of vegetation. The chief forest tree is the coast redwood, *Sequoia sempervirens*, which is found only within reach of the ocean fogs, or inland for a distance of about thirty-five miles at most. The eastern boundary of the redwood belt is shown on the map (pl. 1). Professor Jepson says of this tree:²

It is the tallest tree on the American continent. In the forests near Scotia, a tree 662 years old . . . had a trunk diameter of 10 ft. 5 in., at 6 ft. above the ground, and was 340 ft. in height. Trunks from 15 to 20 ft. in diameter are not uncommon in that region.

The first land party, coming from the Sacramento valley by way of the Trinity mines, reaching the coast just a little south of Little river December 16, 1849, describes the journey through the forest as follows:³

Through this forest we could not travel to exceed two miles a day. The reason of this was the immense quantity of fallen timber that lay upon the ground in every conceivable shape and direction, and in very many instances one piled upon

² W. L. Jepson, *Flora of Western Middle California* (Berkeley, Encina Publ. Co., 1901), p. 24. For the largest tree known see W. W. Elliott & Co., *History of Humboldt County, California* (San Francisco, 1881), p. 141, referring to Hutchings' *California Magazine*, 1856. This was a hollow tree measuring thirty-three feet in diameter, situated near where the early trail from Trinidad to the Klamath mines crossed Redwood creek. It was frequently used as a shelter by parties composing pack-trains.

³ *The Discovery of Humboldt Bay*, a narrative by L. K. Wood, first published in *Humboldt Times*, 1856, revised and republished 1872 (?) in *West Coast Signal*, republished in W. W. Elliott & Co., *History of Humboldt County, California* (San Francisco, 1881), pp. 83-95.

another so that the only alternative left us was literally to cut our way through. To go around them was often as impossible as to go over them. We were obliged, therefore, constantly to keep two men ahead with axes, who, as occasion required, would chop into and slab off sufficient to construct a sort of platform by means of which the animals were driven upon the log and forced to jump off on the opposite side. There was not the least sign indicative of the presence of any of the animal creation; indeed it was almost as impenetrable for them as for us, and doubtless was never resorted to save for purposes of shelter.

Some idea of the density of these forests can be gained when we learn that single acres have yielded as high as 1,300,000 board feet of lumber, while other claims have been made that two and a half million board feet stand on some acres.⁴ This is equivalent, in the first instance, after all the waste of cutting and manufacture, to a solid layer of wood evenly spread over an acre of ground to a depth of thirty inches in thickness, or in the second instance, to a depth of fifty-seven inches.

Associated with the redwood is not over twenty-five per cent mixture of Douglas spruce, tideland spruce, coast hemlock, red cedar, and tan oak. On the top of the ridges to the east of the redwood belt lies a second timber belt composed of tan oak, black oak, Oregon oak, madroña, California chestnut, California laurel, and yellow pine. The North Spit for about half of its width is occupied by sand-dunes without any trees or shrubs, but there is a strip next the bay with shrubs and beach or scrub pine.

W. L. Jepson, in his memoir on the *Silva of California*, describes ninety-two species of trees in the state, which he divides into five forest provinces, the North Coast Range province having the greatest number of species, namely, fifty-nine. This is the chief forest area of the state because of the greater rainfall, and the species are numerous because of the mingling here of the typically Californian forms and the northern coast forms. Many of the species reach their greatest dimensions in the North Coast province, though others grow to larger size in Oregon and Washington. Table 1 at the end of this paper shows the great variety of species found in the territory under consideration, that is, in the territory within the limits of the map, plate 1. A few of the species included in the table may not be very common, but on the other hand the writer may have left out two or three which should be included. A perusal of the table, with a note of the size to which the several species grow, will show most conclusively that the Wiyot Indians lived in a true forest environ-

⁴ W. L. Jepson, *Silva of California*, Mem. Univ. Calif., II, 131, 1910.

ment—a forest not to be excelled outside of the tropics. Even plants, which in other climates are mere bushes, here become trees of considerable size.

PRAIRIE

Within the forests, at all elevations from sea level to the top of the ridges, there were small open patches, known locally as “prairies,” producing grass, ferns, and various small plants. These prairies are too numerous to mention in detail. A few of the more important are located on the map. Most of these patches if left to themselves would doubtless soon have produced forests, but the Indians were accustomed to burn them annually so as to gather various seeds, especially a species of sunflower,⁵ probably *Wyethia longicaulis*. The statement of Professor Jepson⁶ that “there is today more wooded area in Humboldt County than when the white man came over a half century since,” was confirmed by reports made to the writer that some of the old prairies had come up to young growth of forest.

These prairies were of incalculable value to the Indians, not alone for their vegetable products, but also for the game found upon them. A sharp contrast is drawn between the animal life in the forests and on these prairies, in the accounts of the exploration party previously mentioned.⁷ At one time the party fasted three days and lost two pack mules by hunger and exhaustion, before they came to a prairie stocked with game and grass. From there they went on for ten days without “the sight of any living thing that could be made available or useful for food.” Then ascending a rocky eminence they reached another prairie where they saw “on one side . . . little knots of deer, on another and nearer . . . a large herd of elk, and still in another direction both.” Before reaching any of this game they met and shot five grizzly bears.

INDIAN TRAILS

One of the men in the above mentioned party and several of the mules starved to death before the trip ended, but the Indians were better acquainted with the location of these oases, as it were, in the

⁵ George Gibbs, Journal of the expedition of R. McKee from Sonoma to the Klamath river in 1851, in H. R. Schoolcraft, *Indian Tribes*, III, 127, 1852, published by authority of Congress, 1860.

⁶ W. L. Jepson, *Silva of California*, *op. cit.*, p. 16.

⁷ L. K. Wood, *op. cit.*, pp. 86–87.

midst of desolation, and they maintained regular trails between them. A few of the trails are located on the map, plate 1. The principal ones are as follows:

1. From the mouth of Mad river down the coast and down the North Spit to site 23, where visitors to Gunther island would shout or build a fire to attract attention so that a boat would come for them.

2. From the mouth of Mad river to Arcata Prairie; thence around the marsh on the east side of the bay to site AN on Eureka slough; thence over the hills to the rear of Eureka direct to site 73; thence down the east side of the bay and up Salmon creek, crossing it just below site 91; and then continuing southward to Eel river near Fortuna. This is the trail over which the Indians guided the party of L. K. Wood. That portion, at least, extending from Salmon creek to Eel river was called *wozlok*.⁸

3. Beginning on Mad river two or three miles below Blue Lake and extending to Redwood creek. Name, *tätëkwowok*.

4. From Blue Lake, site γ , to Liscom hill.

5. From Blue Lake to Bald mountain, passing the "arrow tree," site AH.

6. From Mad river, site AX, to Boynton Prairie.

7. Up Jacoby creek to Boynton Prairie.

8. From Jacoby creek to Blue Lake.

9. From Eureka slough, site AM, to Kneeland Prairie.

10. From the head of canoe navigation on Elk river to Kneeland Prairie.

11. From the entrance to the harbor, site 112, following the bay shore down the South Spit to site 109; thence crossing over to the ocean beach and following that southward to Table Bluff; then following the ridge of Table Bluff in a south-easterly direction ending at site AW on Eel river. The name of this trail was *lalöekä* or *lalöwokä*. It had five branch trails connecting with the chief villages at the south end of the bay.

12. From site 100, *yawonawok*, to the main trail on top of Table Bluff. The name of this trail was *yawonawok-holowol*. The word *holowol* seems to be a compound from *ho'l*, "water," and *wol*, "trail."

13. From site 90, *toktowoka*, to the main trail along the ridge. Name, *toktowoka-holowol*.

ETHNOBOTANY

As the writer devoted his main inquiry to the location of village sites and facts regarding them, he did not have a great amount of time to spend in the study of ethnobotany, however desirable that might have been. Nevertheless, he noted a few of the more useful plant species and obtained their Wiyot or Athapascan names. Other Wiyot names, those in parentheses, are taken from A. L. Kroeber's "The Languages of the Coast of California North of San Francisco."⁹

⁸ For orthography of Indian names obtained by the writer see introductory remarks preceding the Lists of Geographical Names.

⁹ A. L. Kroeber, present series, IX, 409, 1911. A more specific account of the ethnobotany of the region eighty miles southeast of Humboldt bay can be found in V. K. Chesnut, *Plants Used by the Indians of Mendocino County*, U. S. National Herbarium Contributions, VII, 1902.

Wiyot Plant Names and Uses

TREES

Redwood, mōpel (wopl).
 Pine (mukweti).
 Spruce, two species, tok, wonok (dak, dāp).
 Willow (tigel).
 Alder (wīt).

BERRIES

Currant, *Ribes sanguineum*.
 Blackberry, *Rubus vitifolius* (mīp).
 Thimbleberry, *Rubus parviflorus* (kiwāchokwere).
 Salmon-berry, *Rubus menziesii* (we'taw).
 Sand Strawberry, *Fragaria chilensis*.
 Salal-berry, *Gaultheria shallon* (mīkwel).
 Sand-berry, *Arctostaphylos uva-ursi*, shogowi.
 Huckleberry, *Vaccinium ovatum* (mò'kel).
 Red Bilberry, *Vaccinium parvifolium*.

SEEDS

Wild oats, *Avena* sp. (rakwiyidāg'eral).
 Sunflower, *Wyethia longicaulis* (?).
 Other edible seeds (ecerāwen, mokerits, raladethen, Lòkài).

EDIBLE HERBS

Clover, *Trifolium* sp., rokoiyi.
 Sweet anise, *Carum kelloggii*, siswileatkok.
 Other edible herbs, wau.

EDIBLE ROOTS

Indian "potato," *Brodiaea coronaria*, topödērōs (bòderūc).
 Other edible roots (wel, blòkat, bokitchere, rapcaue).

OTHER PLANTS OF VALUE

Soap-root, *Chlorogalum pomeridianum* (kātserā).
 Fern, *Woodwardia* sp. (tigwametsha-wèl).
 Squaw-grass, *Xerophyllum tenax* (himene-wèl).
 Tule, *Scirpus* sp. (sòpitk).
 Hazel, *Corylus rostrata* (legolès-wèl).
 Viburnum, *Viburnum ellipticum*.
 Iris, *Iris macrosiphon*.
 Tobacco, *Nicotiana* sp.

The redwood was indispensable to the modern Indians. Without it their culture would have been altogether different, but with it their culture is remarkably similar in many respects to that of the coast from Oregon to Alaska, where cedar is used, both woods being similar in texture and easily worked with primitive tools. Cedar though present on Wiyot territory, is not abundant enough for the purposes for which a soft wood is needed. With elk-horn wedges, planks 10 to 16 feet long and 2 to 5 feet wide were split out for house building,

the planks being sometimes put on end and sometimes on edge. Numerous inquiries were made of the pioneers as to the size of these houses and all the answers were remarkably uniform, some estimating the size to be 10 to 14 feet long, others 12 to 16 feet long. They were usually nearly square, but had some variation in different villages, which will be noted later.

A second important use to which redwood was put was in canoe making. A good sized canoe would be 18 feet long and 4 feet wide. It was made from a log by being hollowed out with fire. This work was done a little at a time during the evenings so as to drive away mosquitoes. In former days, when there was a considerable Indian population on Eel river, these lights, as seen from a distance, were very numerous along the river. It is interesting to note that the Wiyot name for boat is not a simple root but a compound, *ho'l-owi*, "water-go." With the exception of the Sinkyone and the Indians of the Santa Barbara islands, none of the Indians of California to the south of the Wiyot had canoes, but used tule rafts¹⁰ instead, while all the tribes to the north had canoes which they used not alone on lakes, rivers, and bays, but on the ocean as well.

The digger pine, *Pinus sabiniana*, though not so abundant as other trees in the Wiyot area, was found on the eastern border of the redwood belt. It furnished nuts both for food and for making beads used in decorating the skirts of women. Both pine nut beads and beads made from small nutlets of *Viburnum* were found in a carbonized condition while excavating in a shellmound. Hazelnuts and acorns were obtained in large quantities on the ridges to the east of the redwood belt, though perhaps acorns were a somewhat less important food than in other parts of the state.

The huckleberry was the most important of the numerous berries, and at certain seasons the Indians established camps to gather it on the North Spit, where the plant developed to greatest perfection. Strawberries were formerly much more plentiful than at present, especially on the sand-dunes between the entrance to the harbor and the mouth of Eel river. The sand-berry or bearberry, a rather dry

¹⁰ For canoes among the Sinkyone, and tule rafts on Clear lake, see George Gibbs, *op. cit.*, pp. 107, 125. For canoes on Trinidad bay see below under Early Voyages. Stephen Powers, *Tribes of California*, *Contrib. N. Am. Ethn.*, III, 48, 1877, gives what is to say the least a somewhat exaggerated description of the canoes on Klamath river which are practically identical with the Wiyot canoe. He says that the Indians would take a large canoe carrying five tons of dried fish, shoot the dangerous rapids and the surf at the mouth of the river, then go twenty-two miles up the coast to Crescent City, where the fish were exchanged for a boatload of merchandise.

drupe belonging to the heath family, was eaten after being cooked. The berries, together with hot coals, were put in a basket and shaken until nearly ready to pop. They were not allowed to burst because then too much of the starchlike pulp would be wasted.

Various seeds of grasses, Compositae, etc., were obtained from the prairies, as previously stated. These were ground into flour, which was cooked in the form of soup or porridge. They were also eaten dry, after being parched.

The blossoms and leaves from several species of clover were eaten raw. The stalks of sweet anise, a species of parsley, were also eaten raw after the skin was removed. This plant was abundant on Arcata Prairie and was called *siswileatkok*¹¹ because it made the lips black, *siswa*.

Various roots and bulbs were used for food, of which one of the most desirable was that of *Brodiaea coronaria*, a blue-flowered, onion-like plant called "Indian potato" or *topōdērōs*. This was important enough as a food product of the prairie to the north of Mad river, to give its name to Lindsey creek and to a camp site near its head where many of the corms were gathered at certain seasons.

Fish nets and rope, for snaring game such as elk and bear as well as smaller animals, were made from the fiber of iris leaves.¹² A species of tobacco native to California was the only plant cultivated, and has been mentioned in the Spanish account of the discovery of Trinidad bay.¹³

Athapascan Plant Names

Several plants and trees found in Wiyot territory were mentioned by the Athapascan informants living at Blue Lake. They are as follows:

- Pine, *Pinus ponderosa*, djemēwhung.
- Redwood, *Sequoia sempervirens*, khōkwo.
- "Dark wood, 4 inches in diameter," dāmā.
- Brush, *tef*.
- "Wild Potato," *Brodiaea* (?) sp., kos.
- Wild oats, *Avena* sp., klokā'.
- Nettle, *Urtica lyallii* (?), holchēk.
- Edible "grass," honsisaliwheh.
- Edible fern roots, *Pteridium aquilinum* (?), tāchenkā'.
- Another fern, djemāshun.

¹¹ A. L. Kroeber, *Jour. Am. Folk-Lore*, xxi, 38, 1908, says that the root of *sisuloiyatgaktl* was used for purification after handling the dead.

¹² P. E. Goddard, *Life and Culture of the Hupa*, present series, I, 35, 1903.

¹³ See description of tobacco and tobacco pipes under the heading, Objects of Steatite and Slate.

The name *honsisaliwheh* was given as that of "a kind of grass that Indians eat," a plant growing three feet high and especially abundant near site B. It is possibly the same plant that the Wiyot call *sis-wileatkok*, a species of parsley, *Carum kelloggii*. The "wild potato," *kos*, was described as being dug from wet and marshy ground and washed in a "lake" at site D, *kos-tenaiete-ten*. Nettle, which has a medicine in its roots, furnished the name for site F. In like manner wild oats, the two species of ferns, and "dark wood," furnish the names for sites K, S, I, and V, respectively, while Maple creek was named, *djemētāwhot*, after the pine trees, *djemēwhung*, growing there.

FAUNA

Animal bones were obtained by excavation in site 67 at various depths to nine feet. During the excavation an impression was gained that, compared with at least some of the mounds at San Francisco bay, there were relatively fewer mammal bones, more fish bones, and far more bird bones, perhaps twice as many. The observations were made from appearances only and not by any method of measuring. Later, when an analysis of the mound composition was attempted, the figures obtained seemed to be in harmony with this judgment. However, as the analysis itself (see table 3 and the section on Composition of the Mound) is more or less faulty, too much reliance should not be placed in these statements.

Mammals

Owing both to the fragmentary condition of the mammal bones and the lack of comparative material, some of the bones cannot be positively identified. Only five species were recognized, and these seem to occur at all depths in about the same proportions. They are given in the order of their abundance.

- Roosevelt wapiti or "elk," *Cervus roosevelti*.
- Pacific harbor seal, *Phoca richardi*.
- Steller sea-lion, *Eumetopias stelleri*.
- Cetaceans, indet.
- Black-tailed deer, *Odocoileus columbianus*.
- Sea-otter, *Latax lutris*.

Quite a few bones were gathered on sites 10, 11, and 12, including elk, seal, sea-lion, whale, and sea-otter bones. Owing to the lack of mammal remains in the shellmounds, we can do no better than to take a list of the animals of the region obtained from Wiyot inform-

ants.¹⁴ To this list we add the scientific names of the species to which they should probably be referred.¹⁵

CETACEA

- Killer-whale, *Orcinus rectipinna* or *O. ater*, delabelil.¹⁶
 Whales, sp. indet., kimak, dayugele.
 Porpoise, *Phocaena phocaena*, kerawagatkari.

CERVIDAE

- "Elk," *Cervus roosevelti*, me'lakw.
 Deer, *Odocoileus columbianus*, hālakw, hōlakw.¹⁷

PINNIPEDIA

- Seal, *Phoca richardi*, mātswapsire.
 Sea-lion, *Eumetopias stelleri*, gūmāyōlil.

FELIDAE

- Panther, *Felis oregonensis*, datgacānil, datkalānil.
 Wild-cat, *Lynx fasciatus*, datsgagererar.

CANIDAE

- Coyote, *Canis ochropus*, witskererar, witkal.
 Wolf, *Canis gigas*, rākwuliril.
 Dog, *Canis familiaris*, wāiyits, wāiyēts.
 Fox, *Urocyon cinereoargenteus*, hālikwilil.

PROCYONIDAE

- "Civet-cat," *Bassariscus astutus raptor*, teigerēlāril.
 Raccoon, *Procyon psora pacifica*, ra'rawēic, tewēlig'atcātei.

URSIDAE

- Bear, *Ursus americanus*, tsetsgeruligerer.
 Grizzly, *Ursus horribilis*, mākww, kanāpelil.¹⁸

MUSTELIDAE

- Otter, *Lutra canadensis pacifica*, sekseswil.
 Sea-otter, *Lutra lutris nereis*, da'kere.
 Skunk, *Mephitis occidentalis*, bōtewi, būteiwī.¹⁹
 Fisher, *Martes pennanti pacifica*, dikwagāwī.²⁰
 Mink, *Mustela vison energumenos*, gō'miri.
 Weasel, *Mustela xanthogenys munda*, tsugatLaiugoner.

RODENTIA

- Chipmunk, *Eutamias townsendi ochrogenys*, seles, becdūlil.
 Gray squirrel, *Sciurus griseus*, wit'hōt.
 Gopher, *Thomomys bottae laticeps*, yacūcagātek.
 Hare, *Sylvilagus bachmani*.
 Wood-rat, *Neotoma* sp., Letc.
 Wood-mouse, sp., indet., tseretshigarer.

¹⁴ A. L. Krober, present series, ix, 407, 1911.

¹⁵ Joseph Grinnell, Distributional List of Mammals of California, Proc. Cal. Acad. Sci., ser. 4, iii, 1913.

¹⁶ Bel, to catch fish.

¹⁷ Hō'l-akw, water-at.

¹⁸ Kanāp-el-īl, biter.

¹⁹ Cawet, white.

²⁰ Dikwa, poison.

In early days it was said to be no uncommon thing to see herds of forty and fifty elk. In 1850 a herd, judged to contain five hundred, was said to have been seen near Crescent City. Other game was also plentiful, but all accounts speak of the Wiyot as very indifferent hunters: "not very expert with the bow, and it is not considered a dangerous weapon in their hands at the distance of *fifty* yards."²¹ However, they somewhat made up for their inexpertness with the bow by their ability as trappers. With iris fiber ropes they snared deer, elk, bear, and panther, though the bear and panther sometimes chewed the rope and got away. If they caught a grizzly after the arrival of the whites, they usually let them do the killing rather than venture to do it themselves.

Birds

Water fowl are still numerous enough to make excellent hunting in season, and formerly they were very abundant, as is evident both by report and by the quantities of bones found in excavation of mounds and refuse heaps. No attempt has been made to identify the species to which these should be referred, but it is reported that the most common were: ducks, geese, brant, curlew, mud-hen, swan, crane, pelican, gull, and cormorant. Other birds were eagle, bald eagle, condor, buzzard, hawk, crow, raven, blackbird, bluejay, kingfisher, woodpecker, robin, and "turtle" dove. There were such large flocks of the last near Little river that the Spanish explorer Bodega named it Rio de las Tortolas.

Fish

The fish of this region include salmon, crooked nose salmon, steelhead, trout, bass, lamprey-eel, herring, halibut, smelt, sardine, flounder, rock cod, shark, dogfish, stingray, and sturgeon. Jim Brock, a half Wiyot, half Chilula Indian, of Blue Lake, stated that when he was a boy they used to eat more fish than elk or deer, and lower down the river the proportion of fish eaten would doubtless be greater than at Blue Lake. The statement is made by a white man that "you could load wagons with salmon that got stalled on Mad river. I heard a man report once that he was afraid to drive a horse across Mad river the salmon ran so thick. At the little sloughs near Arcata you could get salmon with pitch-forks and fork them on to the bank."

²¹ R. C. Buchanan, Number, characteristics, etc., of Indians of California, Oregon and Washington; report dated Aug. 1, 1853, 34 Cong. 3 sess., serial no. 906, doc. 76, p. 24.

Whether the reader is inclined to take this as literally correct, a true fish story, or as a figure of rhetoric, makes little difference. If we ourselves had been present at some of the runs in those days we would doubtless have been led to use equally expressive language. Though salmon was the chief food fish, sturgeon was important enough to furnish the Athapascan name for site J, klokwō'-seskō-ten, "sturgeon-?-place."²² Here there was shallow water where the Indians lined up and speared the fish as they passed.

Eel river, being the fourth largest river in California, was an excellent stream for fishing, and here was gathered the bulk of the Wiyot population. The river was named by the whites from the abundance of lamprey-eel which furnished a supply of food to the starving party of explorers with L. K. Wood. The first salmon cannery on Eel river was established in 1853 by Dungan & Denman, and by 1858 half of the salmon packed in the state came from this river. In the early part of the fall fishing season of 1859 the newspapers²³ report that eight companies, all within four miles of the mouth, employing one hundred men, had already caught over 1200 barrels, and that before the end of the season they expected to catch over 6000 barrels.

The fishing grounds of the Indians were not limited to the rivers, for the ocean shore furnished an abundant supply of fish as well. The *Crescent City Herald*²⁴ in 1857 described a school of fish, including smelt, sardines, and other fish so small that ninety could be dipped up with one sweep of a cigar box. The shore at Crescent City was covered with fish a foot deep. Judging from the actions of water fowl, the fish extended three-quarters of a mile seaward, and they were so numerous that three men found it impossible to row a skiff through them. Methods of surf-fishing are described in a section to follow.

The Wiyot were preëminently a fisher folk, and no doubt the prehistoric people of this region were the same, as is evidenced by the quantities of fish bones in the excavated site, though there was no special stratum of fish bones, except one pocket at the depth of three and a quarter feet around a whale vertebra. As a rule the fish bones were evenly distributed throughout the mound, usually in such small

²² For the use of hyphens and question marks in the translation of Indian stems see remarks preceding the Lists of Geographical Names.

²³ San Francisco Bulletin, Apr. 14, 1858; Dec. 4, 1858; Nov. 19, 1859, copied from Humboldt Times, published in Eureka.

²⁴ Copied by San Francisco Bulletin, Aug. 26, 1857.

fragments that they were inconspicuous. However, their presence was made plain by putting the mound material through screens. The results obtained by screening will be more fully discussed later under the heading of Composition of the Mound. At the depth of three and a quarter feet there were pockets of fish scales too conspicuous to need screening.

Mollusks

The mollusks obtained from the excavation on site 67, as identified by B. L. Clark, are given in the order of their apparent abundance, no exact measurement being made.

- Paphia staminea* Con., hard-shelled clam, carpet-shell.
- Cardium corbis* Mart., heart-shell, basket cockle.
- Schizothaerus nuttallii* Con., Washington clam.
- Macoma nasuta* Con., soft-shelled clam, bent-nosed macoma.
- Saxidomus nuttallii* Con., giant saxidome.
- Mytilus edulis* Linn., soft-shelled mussel, edible mussel.
- Epiphragmophora fidelis* Gray, land snail, faithful snail.
- Natica lewisii* Gld., sea snail, moon-shell.
- Haliotis rufescens* Swains., red abalone.
- Olivella biplicata* Sby., purple olive-shell.
- Dentalium pretiosum* Nutt., dentalium, tusk-shell.
- Hinnites giganteus* Gray, purple-hinged pecten, rock-oyster.
- Zirphaea crispata* Linn., rough piddock.

The first six comprised the food species from which the mound was built up, and of these the mussel was rather negligible in quantity. The land snails were found only in what were at one time the bottoms of house-pits, now filled in with recent material to a depth of two feet. In each pit there was a distinct layer containing many of these shells in unbroken condition. The house pits formed a particularly moist and favorable habitat for this species. The sea snail was not numerous, there being only fifteen specimens from the upper three feet, and only fifty specimens at a depth of three to six feet.

Abalone was present usually as an artifact, though there were a few fragments that showed no signs of workmanship. Abalone is practically limited to the coast to the south of Cape Mendocino, though a few rare specimens have been found on the rocks about Trinidad bay. The olive-shell is usually found as a bead in association with human remains, though a few which showed no signs of workmanship occurred in streaks of sand. It is considered probable that these were brought to the mound quite unintentionally in sand, which was transported thither for some reason or other. The den-

talium shells were found only in association with human remains. They are of a species obtained rarely from the waters of Puget sound and northward, and used as money by most of the Indians of the Pacific slope. There were but three specimens of the pecten, one being found on the surface of the mound, the other two in association with human remains. The piddock was found only as traces in samples of mound material analyzed by E. W. Gifford.

Sites 10 and 13 contained the same six food species as site 67, and in addition the razor-shell, *Siliqua patula* Dixon, and a few large mussels, *Mytilus californianus* Con. At Brainards Point there is a hill reaching out through the marsh exposing a bluff to the waters of the bay, and here, on one of the village sites, 49 or 50, two specimens of the rough piddock, *Zirphaea crispata* Linn., were found.

The soft-shelled mussel, *Mytilus edulis* Linn., the most abundant species in the majority of the San Francisco bay mounds, takes a rather backward place on Humboldt bay, where there are a few deposits several inches in thickness on the North Spit and on Eureka slough. Site 59 had a deposit seventy-five feet long and eight inches deep largely composed of mussel shell.²⁵ The mussels of the bay were not attached to rocks, for there were none, but rather to the trunks of trees washed into the bay by freshets.

Other Fauna

Five samples of crab claws were obtained from site 67 at depths down to four and a half feet, while a few of the samples analyzed showed small traces of crab shell. One specimen of the barnacle parasite of whales, *Coronula diadema* Linn., was found at a depth of three feet, while three other specimens were at a depth of five and a half feet. On site 11 or 12 there was a quart or two of these in one heap. Other species of barnacles were found only as small traces.

Ethnopalaeontology may be an unusual topic, but a few words might be said under this heading. Among other Indian relics obtained by Robert Gunther from site 68 is a tooth of a mastodon. This was possibly obtained by the Indians at the base of Red Bluff, for George Davidson²⁶ says he found specimens of the "primitive

²⁵ E. W. Gifford (present series, XII) gives the composition of this deposit as follows: 39.73% mussel, 2.05% barnacle, 26.68% other shell, 12.08% ash, .21% charcoal, .01% fish bones, and 19.23% residue.

²⁶ George Davidson, *Pacific Coast Pilot, California, Oregon and Washington*, p. 102, 1869.

elephant" there in 1854, or it might have come from any one of several other fossil beds of the region. On Eel river above How creek there is a slide containing clam shell, abalone, etc. This place was called kotwāryūwok by the Wiyot. To the south of Little river along the ocean coast there are bluffs, over one hundred feet high, composed of blue clay, and filled with springs which cause slides, exposing fossil shells. There is another place on Mad river above Maple creek known as Blue Slide.

DISCOVERY AND SETTLEMENT BY WHITES

EARLY VOYAGES

The first navigator to pass up the northern California coast was Ferrelo, Cabrillo's pilot, in the winter of 1543. He and his associates described San Diego bay, Santa Barbara islands and adjacent coast, the mountains of San Francisco peninsula, a great gulf to the north of them, with a suspicion of a river, perhaps from muddy water, Point Reyes, Point Arena, and a few other faint glimpses of the coast as far north as the mouth of Rogue river, Oregon. Because of severe storms he was almost shipwrecked, and to the northward was compelled to keep seventy or eighty miles off coast.

Francis Drake passed southward along the California coast in June, 1579. His ship was leaking badly, so that after anchoring in Chetco Cove, near the northern boundary of California, he spent twelve days in the "thicke and stinking fogges" searching for a safe harbor where he might make repairs. But he discovered nothing until he reached Drakes bay, thirty miles northwest of San Francisco.

Vizcaino passed Cape Mendocino in 1603, but after this the Spaniards did nothing for one hundred and sixty-six years, until, aroused by jealousies caused by the Russian exploration of Alaska, they began to plant their missions in California in 1769. Then voyages of exploration up the coasts of California, Oregon, and Washington became quite numerous. Among these were expeditions by Perez, Ayala, Martinez, Haro, Artega, Fidalgo, and Quimper. But all of them failed to discover any very important details of the coast.

Bodega in 1775

The only early Spanish voyage of any interest to us is that of Bodega in 1775, who spent the time from June 9 to June 20 an-

chored in Trinidad bay.²⁷ This was a sufficient length of time to allow the explorers to chart the harbor, plant a cross on the hill, explore several miles of Little river, and make valuable observations on the rocks, tides, fish, birds, mammals, forests, flora, and inhabitants. There was a village almost within arrow shot of their point of anchorage, and during their stay, from more distant villages "more than 300 came down in different parties, with their women and children."²⁸ Several pages of description are devoted to the customs of these Yurok Indians, as they are now called—their clothing, ornamentation, tattooing, laws, government, language, canoes, houses, arms, and food.

The explorers believed themselves to be the only foreigners whom these Indians had ever seen, yet they mentioned some foreign influence in these words: "Their arms are chiefly arrows pointed with flint, and some of them with copper or iron,²⁹ which we understood were procured from the N." Another edition³⁰ mentions a further use of iron in the following language:

The arms which they used are arrows with flint points, knives of the same material, and some imperfect iron ones like a machete with wooden handles, it being understood that they provided themselves with these from farther north. They wear them hung around their necks, falling over their shoulders or tied to their wrists.

From these references to iron and copper it would appear to us that ships had previously stopped either at Trinidad bay or not far to the north. In the early days of exploration as well as in the succeeding days of the whale trade and fur trade, and also even after the establishment of trading posts by the Hudson Bay Company on the Columbia river, scraps of iron, barrel hoops, files, cooking utensils, and metal in any other form, were the most eagerly sought articles of trade. This metal was fashioned by the Indians into the shapes that they desired. There are at the University museum half a dozen iron knives ranging in length from thirteen to twenty-six inches.

²⁷ Journal of a Spanish Voyage in 1775, by Don Antonio Maurelle, second pilot of the expedition; translated by Daines Barrington in *Miscellanies*, London, 1781, pp. 471-534. A somewhat different account of this voyage is given under the title: *Primer viaje de... Bodega y Quadra... año de 1775*, published in *Anuario de la dirección de hidrografía*, año III, 1864, pp. 279-294, Madrid, 1865. There are some discrepancies in the dates, these here given being from the translation by Barrington.

²⁸ *Ibid.*, Barrington edition, p. 487.

²⁹ *Ibid.*, p. 489. The translator in a footnote states that similar arrow points made of metal could be seen in his day, 1781, in Sir Ashton Lever's Museum, in collections from St. George's sound, N. Lat. 50°, i.e., Vancouver island.

³⁰ *Ibid.*, Madrid edition, 1865, p. 284.

They were obtained from the Yurok and Tolowa Indians. They have elk horn handles and appear in every way to be of Indian make.

From the Spanish accounts quoted above there is a suggestion that the knives were used by the Indians of Trinidad bay for purposes of ostentation, suspended from the neck in a similar manner to that in which ceremonial knives of obsidian are worn in dances. At that date metal would quite likely be too highly prized by the Indians to the north to be parted with in trade between themselves and their southern neighbors.

In the matter of clothing, ornamentation and the like, the Indians at Trinidad bay in 1775 are described as having customs similar to those which were found to prevail from Humboldt bay to the Klamath river at the time of the American settlement. At the present time elderly women are to be seen at Humboldt bay with three vertical tattoo marks on the chin, though in almost all other respects these Indians have adopted the white man's ways. Of the houses at Trinidad bay in 1775 we have this description:³¹

Their houses were square, and built with large beams, the roofs being no higher than the surface of the ground, for the doors to which they make use of a circular hole just large enough for their bodies to pass through. The floors of these huts are perfectly smooth and clean, with a square hole two feet deep in the center, in which they make their fire, and around which they are continually warming themselves, on account of the great cold.

As to the use of canoes at Trinidad bay we will quote as follows:³²

On the 14th [July 1775] I awaited the high tide in order to leave. At this time numerous canoes of Indians gathered, very tractable apparently, who with the greatest docility sold their pelts to members of my crew. . . . After this reciprocal traffic I sent six men ashore well armed with the boatswain, to cut wood and timber . . . but on disembarking for their tasks more than 300 Indians attacked them, surprised them, and in my opinion, killed them; . . . but without any boat in my ship, and without the aid of either of the frigates, they being so far away that we could scarcely see them, and being without sufficient number of men, I had no recourse, at the time, than consider means of returning to punish the attack; for this purpose I prepared to set sail.

The savages observing my movements, and perhaps realizing the few persons who remained with me, and being moreover encouraged by the smallness of the sloop, embarked in about 10 canoes with 28 or 30 Indians in each, and approached my vessel with the object of impeding my departure. . . . Having succeeded in killing six Indians, wounded others, and overturned their canoes I succeeded in setting sail.

³¹ *Ibid.*, Barrington edition, p. 485.

³² *Ibid.*, Madrid edition, 1865, p. 285. This account of hostility does not agree with the Journal as translated by Barrington, which says: "we never observed anything contrary to the most perfect friendship and confidence which they seemed to repose in us. I may add, that their intercourse with us was not only kind, but affectionate."

Vancouver in 1793

In 1790 the king of England sent out two ships under command of George Vancouver to explore the Pacific. These ships were anchored in Trinidad bay May 2 to May 5, 1793, while the party spent two days on shore. Vancouver described the Indians here in the following words:³³

The next morning I went on shore . . . Most of the inhabitants of the village were absent in their canoes, trading alongside the ship, leaving a few old women only to attend us; these . . . I accompanied to their habitations, which consisted of five houses built of plank, rudely wrought . . . neither wind nor water tight. . . . Their roofs . . . rise with a small degree of elevation to a ridge in the middle . . . The upright boards forming the sides and ends of the house are not joined close enough to exclude the weather, the vacancies are filled up with fern leaves and small branches of pine trees. The entrance is a round hole in one corner of the house close to the ground, where with difficulty a grown person can find admittance. . . . Four of these houses seemed to have been recently built, and were on a level with the ground. These appeared to be calculated for two families of six or seven persons each; the other, which was smaller and nearly half underground, I supposed to be the residence of one family, making the village according to this estimate to contain about sixty persons. . . . Their merchandise consisted of bows, arrows, some very inferior sea otter skins, with a scanty supply of sardinias, small herring, and some flat fish. Their numbers during the forenoon seemed to multiply from all quarters, particularly from the southward, from whence they arrived both by land and in their canoes. These people seemed to have assembled in consequence of signals that had been made the preceding evening, soon after the last party returned to the shore. A fire had been then made, and was answered by another to the southward on a high rock in the bay; the same signal was repeated in the morning, and again answered to the southward. . . .

The number of inhabitants belonging to the village seemed to be about sixty; the others, who came from the southward, were all armed with bows and arrows. These they at first kept in constant readiness for action, and would not dispose of them, nor even allow of their being examined by our people. They seated themselves together, at a distance from our nearer neighbors, which indicated them to be under a different authority; at length however they became more docile and familiar, and offered for sale some of their bows, arrows, and sea otter skins. The bow and arrows were the only weapon these people appeared to possess. Their arrows were made very neatly, pointed with bone, agate, or common flint; we saw neither copper nor iron appropriated to that purpose; and they had knives also made of the same materials. . . .

Their clothing was chiefly made of the skins of land animals, with a few indifferent small skins of the sea otter. All these they readily disposed of for iron, which was in their estimation the most valuable commodity we had to offer.

The high rock where the fire was built was doubtless Little River Rock, 120 feet in elevation and less than a mile from both sites 1 and 2 (map, pl. 1). The half underground house, described also by Mau-

³³ George Vancouver, *Voyage of Discovery, 1790-1795* (London, 1798), II, 241-243, 247.

relle as the sacred palace of their ruler, is doubtless what is known to us as the sweat-house. Maurelle and Vancouver agree on many points of description. Their only disagreement is in regard to the use of metal for some of their arrow points, yet here the statement of Maurelle is too circumstantial for doubt as to its correctness. The apparent disagreement in regard to houses can be accounted for by supposing that in Maurelle's time the houses were nearly buried in clam and mussel shell, while eighteen years later they have been rebuilt.

Winship in 1806

In the early part of the nineteenth century the Russians in Alaska engaged a number of American "tramp" ships in trapping sea-otter on the coast of California and lower California. These ships sometimes brought back from two thousand to five thousand sea-otter skins, besides what they stole. There are accounts³⁴ of their visiting San Francisco bay, San Luis Obispo, and ports of Lower California, where it seems they obtained the most skins.

Quite a quantity of sea-otter bones are found in some of the San Francisco bay shellmounds, while less than half a dozen were obtained from the archaeological sites of Humboldt bay. Vancouver mentions the "very inferior sea otter skins" of Trinidad bay, and to make the emphasis doubly strong, speaks a second time of the "few indifferent small skins." This explains why the Russians so hastily passed by this part of the coast. However, to them belongs the honor of having first discovered Humboldt bay.

In May, 1806, Captain Jonathan Winship came to Sitka with an American ship and the Russian governor made a contract with him to take one hundred Aleuts with fifty small boats on a ten to fourteen months' hunting trip to California. On this trip Humboldt bay was discovered and charted. This chart was combined with that of Trinidad bay made by Vancouver, and published in an atlas compiled by Tebenkof in 1848. On page 42 of the explanatory volume this chart has the following description:³⁵

About eight and a half miles from the port of Trinidad [seventeen and a half miles really] is found the entrance to the Bay of Indians, called the entrance of Resanof. According to the Colonial Documents of the Russian American Com-

³⁴ George Davidson, *Discovery of Humboldt Bay*, in *Trans. and Proc. Geog. Soc. Pacific*, 1891, gives a bibliography and summary of the chief events.

³⁵ Tebenkof, *Atlas of the Northwest Coast of America, Aleutian Islands and North Pacific*, St. Petersburg, 1852; subchart to chart XIII, reproduced as plate 2 in this paper. The quotation is from George Davidson, *Discovery of Humboldt Bay*, *op. cit.*, p. 11.

pany, it appears that it was discovered by citizens of the United States. In 1806 there was in it (on an American vessel), under the command of Winship, a sea-otter party of Aleuts, under the leadership of Slabodtshikoff, which was met by the Indians inimically. This bay has not been carefully surveyed, but it is known that it is of considerable size; and somewhat resembles the Bay of San Francisco, except that the entrance to it for vessels of large class is not convenient, and with strong southwest winds it is even impassable for any kind of vessel. The depth at the entrance is two fathoms, and then the ocean swell breaks on the bar.

Lacking any narrative of the expedition, the chart itself furnishes us with our only evidence as to what the party did while in the bay. The writer has made several trips about the bay in a rowboat from the northernmost to the southernmost extremities, and feels himself competent to make the unqualified statement that Winship never spent more than two days inside the bay, because if he had stayed longer he would have discovered more of the details, though he was almost faultlessly accurate in charting everything that he did see, even to clumps of trees on Gunther island, and breaks in the hills where streams came down. His movements during a two days' stay were probably as follows:

He entered the harbor, taking soundings as he proceeded up the channel to his point of anchorage between Samoa and Gunther island. The next day, with the incoming tide, he proceeded up the bay in a rowboat as far as an Indian village on the North Spit, perhaps on site 29, which, being situated on top of an old sand-dune ridge, would be conspicuous from the bay. He did not go far enough to see Mad River slough. From this Indian village, at the time of high tide, he crossed the bay to Brainards Point, where there was another village conspicuous from the bay—site 48, 49, or 50. Here he climbed the hill, saw Jacoby creek to the north, and made his sketches of the northern part of the bay. From here he returned to the ship, keeping well to the west of the islands, as would be to his advantage in reaching his ship if the tide were falling.

The abnormal projection of the three islands to the northward shows that they were sketched while the tide was low, exposing the mud flats. Two of the most prominent archaeological sites (67, 68) of the region are situated on Gunther island, and it is inconceivable that one or both of them were not occupied by Indians in 1806, because the island is one of the most advantageous locations on the bay. The mounds of these sites were covered with trees or bushes, except for the area immediately about the houses. The approaches for canoes were on the southeastern rather than on the northwestern side. The Russians did not enter the channels to the southeast of the islands, for if they had they would have quickly seen that the shore of the bay here ran east and west, rather than north and south. They also failed to see Eureka slough. Under these conditions the villages on Gunther island, though so close to the ship, could have been overlooked, but on the other hand the settlements could not have missed being discovered by some of the Aleuts with their fifty boats if the ship had remained anchored for more than one day near the island. It would have been a most natural thing for all who had had no duties assigned to them to spend the first day on the North Spit, or on the shore below Eureka.

The second day, the officers, after visiting a village somewhere near Bucksport and another near the entrance to the harbor, and finding that there were no furs of value among the Indians, would naturally be inclined to proceed on their voyage, but before leaving the bay they doubtless ascended Red Bluff so as to get a look at the south end of the bay. They saw and entered on their chart the position of a slough behind Red Bluff, but did not see Elk river, unless Elk river at that time had its outlet through the slough. An examination of the United States Coast and Geodetic Survey chart of 1858 (see pl. 3) shows conclusively that the slough was an outlet to the river at one time, while at other times the outlet has perhaps even been to the north of Bucksport. As to the south end of the bay, none of the details, such as Salmon creek, Hooktown slough, or Table Bluff, could be seen from the top of Red Bluff, though the general rounding outline of this part of the bay could be determined.

After Winship left, it is not known that the Russians visited the bay again, in fact it seems to be the testimony of the Indians³⁶ that no other ship entered the bay previous to 1850.

Gold Seekers' Rush in 1850

It is an unsettled question whether Hudson Bay Company trappers ever saw Humboldt bay or not. In 1830 to 1835 there were trappers on Rogue, Scott, and Trinity rivers,³⁷ and doubtless on Trinidad bay. The writer is hardly qualified to express an opinion, but will say that he is yet to be convinced that any of them visited Humboldt bay. The Wiyot, Tom Brown, born about 1840, on site 7, a village much connected by intermarriage with the Yurok of Trinidad bay, was living as a boy on Gunther island, site 67, when the ships of the gold seekers entered the bay. He ran to his mother to ask what the strange white spots on the water meant, and she knew because she had seen Russian ships off Trinidad. This was the only mention by Indian informants of whites before the time of the gold rush, though if inquiry had been made it is barely possible that other facts might have been brought out.

The party of eight miners previously mentioned as coming from Trinity river, discovered the bay on December 20, 1849,³⁸ and were led by the Indians from the south end of the North Spit around the bay, and thence to the present location of Fortuna. After being put across Eel river, near the junction of Van Duzen river, they continued on their way to San Francisco, meeting with many mishaps, and one dying of starvation. The following quotation from the narrative of L. K. Wood is of interest:

³⁶ L. K. Wood, *op. cit.*, p. 95. See the quotation below.

³⁷ W. W. Elliott & Co., *op. cit.*, p. 129.

³⁸ L. K. Wood, *op. cit.*, p. 95.

On the 21st we made our camp close to the bay, and opposite the present town of Bucksport. We had been in camp but a short time when the chief *Ki-welat-tah*, alias "Old Coonskin," his two wives, and his brother *Shasepee*, came in a canoe from the headland known as Humboldt Point [site 79], to see us, and from them we learned that no white person had ever been on the shores of the bay before, but that a long time ago, when they were children, a sail vessel had entered, remained a short time, went to sea and never returned. During our whole stay here of about ten days, the chief and his party remained with us night and day, except the two days we were camped at the head of the bay where Arcata now stands.

We left the bay on our way south on the 1st day of January, 1850, and arrived at Sonoma on the 17th day of February, from whence two of our party went to San Francisco. The others immediately set about recruiting a company to return, and soon succeeded in making the party about thirty strong, and in the early part of March, 1850, when about to start, four of the recruits were arrested for murder (Indian killing), which delayed us. (Six should have been arrested, and five of the six hanged, as they never quit Indian killing, but kept it up after reaching here, which was the first cause of our Indian troubles). These worthies were taken to Benicia and confined on board a man-of-war, but by some means were released and soon returned to us, and we made our start the latter part of March, reaching the bay about the 19th day of April, 1850. We saw that the schooner *Laura Virginia* was inside, and that Humboldt Point was occupied by her party. They did not see us, and that they should not, we shifted our course.

This party divided and staked out the town sites of Arcata and Bucksport. Previous to this even the whereabouts of the port described by the Spaniards as Trinidad bay was unknown to American sailors. During the winter of 1849 no less than fourteen ships were fitted out to locate such a bay if it really existed, and a contest began to see which would be the first to discover anything of advantage. A part of the "Cameo" crew, in a rowboat, was the first to enter Trinidad bay, where they were abandoned by the rest of the crew on the ship, while the "Laura Virginia" was the first to discover the mouth of Klamath river, April 3.

The "Ryerson," the "General Morgan," and a whaleboat commanded by Captain McDonald, entered Eel river within a few days of each other, April 5 to April 9, and sent land parties north to Humboldt bay. A land party belonging to the "Laura Virginia," coming from Trinidad bay, located the entrance to Humboldt bay April 7; and on April 9 the "Laura Virginia" entered the harbor.³⁹ Numerous other ships came in after her, and within two months several parties arrived overland. The white men seemed to come from every direction at once. Each of these parties entered the real estate business and began to stake out town sites lining the shores of Eel river, Humboldt bay, Trinidad bay, and Klamath river, and the Indians took what was left.

³⁹ W. W. Elliott & Co., *op. cit.*, pp. 98-103.

INDIAN NEIGHBORS OF THE WIYOT

WIYOT BOUNDARIES

As already shown, the lowlands about Humboldt bay have two very effective barriers separating them from the rest of California, namely, physiography and vegetation. The resulting isolation favored the development of a specialized form of language known as Wiyot.⁴⁰ There was only one dialect for the region bounded on the north by the valley of Little river, and on the south by Bear River mountains. To the east the same dialect was spoken along Mad river for two or three miles above Blue Lake, and up Eel river for a mile or two above the mouth of the Van Duzen. On both of these rivers the eastern boundary of the Wiyot is where the deep cañons begin.

Wiyot informants stated positively that they never fished on Little river. To the south of Little river there was considerable prairie, which abounded in game and vegetable foods, especially the "wild potato," the name of which, *topōdērōs*, was also the Wiyot name of Lindsey creek, at the head of which was a camping place, site R, for gathering these food products. All of this prairie land should be regarded as Wiyot territory, while the lower waters of Little river must be considered as Yurok possession.

THE YUROK

To the north there was an important settlement of the Yurok on Trinidad bay, where in former years, there was a large shellmound which is now reported to be washed away. Another but less important village was at the mouth of Luffenholtz creek (pl. 1, site 1). This village was called *tā-pel-o* by the Wiyot, because arrow points were made here from flint, *pel*, broken from a boulder on the shore. A third Yurok settlement or camping place was at the mouth of Little river, where there is a small deposit of the large mussel, *Mytilus californianus*. Plate 5, figure 1, shows the mouth of Little river with a

⁴⁰ Wiyot is the native name for the Eel river delta. It has slightly varying forms of pronunciation in the different languages of the region, and was first applied to the native inhabitants of the delta by George Gibbs, *op. cit.*, p. 422. By more recent writers the name has been applied to all who speak this language, whether living on Eel river, Humboldt bay, or Mad river. Different Wiyot informants show considerable variation in the pronunciation of their language, but this is probably individual variation rather than dialectic difference. Stephen Powers, *op. cit.*, pp. 96, 101, noted two variations. Viard or Wiyot, on lower Humboldt bay and on Eel river, and Pat'awāt on Mad river, both however "very nearly identical."

large square rock and numerous smaller ones just around the first point. They lie directly in front of the village site, to which the Wiyot gave the name plet-kosom-ili, "rocks small."

Social Barriers to Intermarriage

The Wiyot appear to have always had friendly relations and some intermarriage, with the Yurok. Intermarriage, however, was somewhat hindered by the social customs common to the northwest coast, which made one person belong to the wealthy aristocracy, and another to the poor class. Wealth was reckoned in dentalium shells, long obsidian knives, scalps of the woodpecker, white deer skins, and other objects. The white deer skins are esteemed in northwest California because of their rarity.⁴¹ Wiyot informants knew of only three having been killed on Mad river, one of these being sold to the Klamath river Yurok, and the two others to the Hupa. Trinidad, which was Yurok, was reported to have had many "big man," that is, wealthy ones, while Mad river and Humboldt bay had but few moderately rich men. The village at the mouth of Eel river (site AQ) was the most noted of all Wiyot settlements for the number of its rich men. Tom Brown, belonging to the leading family of site 7 on Mad river, paid one horse and \$250.00 in American money for a Yurok wife from Big Lagoon. It will be readily understood that Yurok wives of the better class were entirely beyond the means of most Wiyot men, and the Wiyot being poorer than the Yurok, the export of women was greater than the import.

Yurok-Wiyot-Algonkin Linguistic Stock

The Wiyot and Yurok languages were until recently considered two independent and unrelated stocks of speech. Dr. A. L. Kroeber in 1910 made the following statement:⁴²

Loose unification of languages that may be entirely distinct, based only on general or partial grammatical similarities, is unwarranted. The structural resemblances between Yurok and Wiyot are however so close and often so detailed, as will be seen, as to create a presumption that lexical and genetic relationship may ultimately be established.

In 1913 Dixon and Kroeber made the following statement in volume 15 of the *American Anthropologist*: "Renewed examination

⁴¹ Albinos. See P. E. Goddard, present series, I, 84, 1903. The San Francisco Bulletin of Nov. 24, 1860, says that an American killed two white deer on the Klamath and sold them to the Indians for \$350.00.

⁴² A. L. Kroeber, present series, IX, 415, 1911.

reveals sufficient lexical correspondences between Yurok and Wiyot to make certain the genetic unity which structural similarities have previously indicated as possible." In the same volume of the *American Anthropologist*, Edward Sapir published a paper, the purpose of which was: "to show that not only are these so called stocks genetically related, but that they are outlying members—very divergent to be sure, but members nevertheless—of the Algonkin stock."

How they became so far separated from their eastern relatives it is impossible to say, but they must have been separated for a very long time. The Cheyenne, Arapaho, and Siksika or Blackfeet, until recently considered the westernmost members of the Algonkin stock, are found at the eastern base of the Rocky Mountains over seven hundred miles away.

ATHAPASCAN NEIGHBORS

To the east and south of the Wiyot lived people speaking the Chilula, Whilkut, Nongatl, Sinkyone, and Mattole dialects, all of which are variations of the Athapascan form of speech. The evidence of language would indicate that their ancestors came originally from western Canada. They are often reputed to be of greater physical and intellectual vigor than the lowland Indians about the bay, to whom they appear to have generally assumed a rather superior and hostile attitude, and by whom they were feared. Who the inhabitants of the uplands were before the arrival of the Athapascans can be only a matter of speculation. They might have been ancestors of the Wintun, the Yuki, or the Pomo. Whoever they were, because of their environment, they must always have been culturally distinct from the lowland people about Humboldt bay. The natural barriers, especially the redwood belt, would have always tended to keep the two apart. Hence the territory within the boundaries of the Wiyot language forms a convenient geographical unit for archaeological as well as ethnological study.

The Chilula

To the northeast, on Redwood creek, lived the Chilula. The writer is also inclined to regard the upper part of Little river as Chilula territory, though he has no very definite proofs to offer, except to say that the Chilula have a general reputation for establishing camping places wherever there was no one to check them. It appears that they frequently fought with both the Yurok and the Wiyot. At a

time since the American settlement they almost annihilated a Yurok rancheria on Big Lagoon.

The Wiyot at Blue Lake (site z) were nearly exterminated by an attack only a year or two previous to the settlement of the whites, who reported seeing thirty or forty graves here as the result. After this attack some of the surviving women lived near Blue Lake with Chilula husbands. Whether or not these women were married before the fight is not known. Jim Brock, one of our informants, had a Chilula father from Redwood creek, while his half brother, Kneeland Jack, is a full blooded Wiyot. At the time of the massacre, Blue Lake Bob was a baby or a child and wanted to cry while in hiding, but his mother held her hand over his mouth and so escaped detection. Bob was a boy in 1850; so the massacre could only have been a few years previous. Jim Brock volunteered the information that there was a time when the Chilula killed the Wiyot on opportunity.

The Arrow Tree.—One mile east of Korbel there is a redwood tree (pl. 1, site AH, and pl. 6, fig. 2), now dead, a little over eight feet in diameter. This tree was formerly "stuck so full of arrows that it was like a porcupine up to a height of thirty or forty feet." These "arrows" or darts were made on the spot from shoots of huckleberry, *Vaccinium*, or of hazel, *Corylus rostrata*. The writer obtained one specimen from a height of 22 feet, which was 16½ inches long and ½ inch in diameter. Two other specimens were from heights not exactly measured, but anywhere from 7 to 12 feet above the ground, the smallest specimen being 8¼ inches long and ⅜ of an inch in diameter. They were sharpened at both ends and hurled at the tree until they stuck in the soft bark.

John Stevens and Jim Brock were questioned concerning the significance of the tree, but there is reason to believe that they were a little reserved and did not tell the full story, for others report that John Stevens has told them more than he told the writer. These other informants were Mr. J. P. Blake and Mrs. Olive Stokes, both well qualified to speak on the subject. The full story is about as follows:

The Indians have a tradition, [or perhaps more properly a myth, partly based on facts, for real tradition is short lived] going back to the time when the tree was young. Two tribes were at war, the interior tribe and the coast tribe; the interior tribe was defeated and peace was made at or near the tree, which afterwards was considered as a boundary.

Members of both the Chilula and Wiyot tribes passed the tree on occasion, and as it was considered sacred, they left an arrow in its bark. At first the

arrows might have been real war arrows, but within the memory of living Indians they have been merely sharpened sticks. Gradually the original significance of the tree was partially lost sight of, and it became more and more an altar for worship and a place of prayer.

The men on passing the tree hurled the sharpened stick into the tree and made a prayer for good luck while making the trip. The women took a sprig of redwood and struck their legs with it, saying: "I leave you all my sickness," and then threw it at the base of the tree or stuck it in the crevices of the bark. There had accumulated a large heap of these, while the trunk bristled with the arrows, when a mischievous white man burned them, the fire spreading up the tree as far as the arrows went.

In more recent times the Chilula "used to come as far as the tree and no farther" except when bent on hostilities, while the Wiyot occasionally went to the top of the ridge and camped while killing elk or deer, snaring bear or panther, and gathering huckleberries, hazelnuts, acorns, and other food. The Athapascan name for the camping place or places seems to be the same as that for the tree, *tsē-inātūlwo-ten*, "sticks-?-place."

Whether or not there is any historical significance to the Arrow Tree, in recent times it has been only one of many such wayside shrines found from the Russian river northward. The informants stated that formerly there were many piles of brush, sticks, leaves, stones, or anything that could be piled up by passers along the trails over the Bald Hills and along the Klamath.⁴³

The Whilkut

Halfway between Blue Lake, and Cañon creek, there was a place called *tsē-tenā'tūlwo-ten* in the Athapascan dialect. There was never any village there, and in answer to inquiry Jim Brock briefly stated that the name had reference to "many rocks, *tse*, in the river there."⁴⁴ A great similarity will be noted between this name and that of the Arrow Tree, *tsē-inātūlwo-ten*, and it may be that this is another of the wayside shrines, where an adventurer cast a stone and prayed for a safe return when passing into strange territory.

A reference to the map shows what is a common condition among savage peoples, that is, that two separate tribes keep their villages at a respectful distance away from each other. Even at that, there is often a village composed of persons intermarried from both tribes,

⁴³ Cf. George Gibbs, *op. cit.*, pp. 103, 174; Stephen Powers, *op. cit.*, p. 58; P. E. Goddard, present series, x, 280, 1914; and P. E. Goddard, *Wayside Shrines in Northwestern California*, *Am. Anthr.*, n.s., xv, 702-703, 1913.

⁴⁴ On the map, plate 1, the Wiyot boundary line is made to pass through this place.

as is the case with the village of the Sinkyone farthest down stream on Eel river. The last Wiyot village upstream on Mad river (site AK), had only one plank house, and was chiefly used as a camping place. The first Whilkut village, who'ntā, was situated at the mouth of Cañon creek, over three miles by the bends in the river above the last Wiyot village. It was a small but permanent village, so John Stevens says, though he had seen but two bark winter houses there.

One of the chief Whilkut villages, and the place where John Stevens was born, was situated one and a half to two miles below Maple creek.⁴⁵ It was called tsē-didis-ten, "sticks-?-place," and had ten or twelve houses. The redwood belt ended near here, though there was one clump of the trees two miles above Maple creek.

There were five houses, mostly bark, but some of plank, at the mouth of Maple creek, while on Boulder creek, one and a half miles above Maple creek, there were a considerable number scattered about on both sides of the creek and also up the creek. Hence the Maple creek district was a comparatively populous center.

Mr. Wm. R. Lindsey described both the houses and funeral customs near Maple Creek as he saw them in 1858. As a rule the bark houses were eight or ten feet in diameter, round and peaked at the top. There were other bark houses ten or twelve feet long, with a ridge pole. They had no houses made of planks, like those of the Wiyot, because pine could not be so easily split as redwood with primitive tools. After the coming of the whites and owing to the availability of better tools, the Whilkut made houses twelve or fourteen feet long of split pine mixed with bark, which was set on end and fastened with withes.

As for burial customs, a body was seen brought to the grave lashed to a board. One of the mourners pierced the nose with an awl, crossed two pieces of shell money in the nose, took a piece of charcoal and marked lines from the forehead to the breast, down each arm, and down the front of the legs, and then buried the body.⁴⁶

Between tsē-didis-ten and Cañon creek there were six villages or camping places, but none of them could boast of having more than two plank houses, or two or three bark houses. Above Blue Lake, Mad river runs in a deep cañon, perhaps unsuitable for habitation, though there were deep holes in the river where fishing was good. John

⁴⁵ W. R. Lindsey informed the writer that about 1860 a party of whites raided a rancharia about one and a half miles below Maple creek and killed several. The San Francisco Bulletin of March 13, 1860, quoting the Humboldt Times, said that a rancharia opposite "The Slide," doubtless the same as "Blue Slide," was attacked and an unknown number, including "Washettes, a noted rascal," were killed.

⁴⁶ Stephen Powers, *op. cit.*, p. 88, being told by Mr. Hempfield, a pioneer of the region at the head of Cañon creek, that the Whilkut burned their dead, thought it probable that their custom was somewhat varied. P. E. Goddard, present series, I, 69-70, gives a burial custom of the Hupa similar to that of the Whilkut.

Stevens stated that a long time ago, before his father was born, there was a war in which the Chilua killed a number of Mad river people, but the writer failed to understand whether the latter were Whilkut or Wiyot.

On Kneeland Prairie, between the headwaters of Freshwater creek and Lawrence creek, there is an ancient site at a spring. Mortars, pestles, and arrow points have been found here; also a roughly worked stone about three inches in diameter, and globular, except for a slight projection on one side and a slight flattening on the opposite side. It bears some resemblance to objects found in central California and known as charmstones, though nothing similar has hitherto been known to occur in the northwestern part of the state. Without visiting the site, it is impossible to say whether it is a village site or whether the articles were left as offerings at the spring. Both the Wiyot and the Whilkut made use of the prairie for hunting and for gathering vegetable products, though they sometimes came into conflict in doing so. Site AM was a camp site for fishing on Freshwater creek, and for making excursions to the top of the ridge for acorns. About 1855 a party of Whilkut Indians from Kneeland Prairie and Lawrence creek went down and attacked this camp, with the loss of two of their number.

The Nongatl

The writer regrets that he has but little knowledge concerning the Athapascan Indians living on Lawrence and Yager creeks, and of the nature or usefulness of the country between these creeks and Elk river. Judging from the northern half of the Wiyot territory, we should expect to find occasional fishing camps on Elk river. We should also expect small patches of prairie with trails connecting them, and this would lead to some sort of relationship, either hostile or friendly, between the Wiyot and the Lawrence and Yager creek Indians, but owing to the lack of time no inquiry was made concerning this territory.

In answer to a letter of inquiry concerning the location of village sites in the Yager creek region, P. E. Goddard writes: "South and Middle Yager creeks belong in the Nongatl territory. North Yager and Lawrence creek seem to have belonged with the Whilkut." A manuscript map by Dr. Goddard at the University museum shows a group of six village sites on North Yager near where a military post, Camp Iaquá, was established at a date unknown to the writer, but

probably about 1860. These villages would have been in Whilkut territory according to Goddard, while four other villages on Middle Yager would belong to the Nongatl.

At the University museum are ten specimens of various colored flint fragments (numbers 1-19660 to 1-19664) obtained by Dr. Goddard at four different rocks situated on the ridge at the head of Salmon creek. The museum catalogue gives the Athapascan names of these rocks as *sentelduñ*, *senata*, *cacnundul*, and *senegintci*. There is also a specimen of flint said by an Indian to have been worked by Coyote. This was obtained from Salmon creek at a place called *se-teinuabatse-tcelindûñ*.

The Sinkyone and Mattole

The Athapascan Sinkyone, called Lokonkuk or Flonko by Powers,⁴⁷ had their main center at Bull creek, fifteen miles above Scotia. A village at Scotia called *tokēnēwoLok* by the Wiyot is considered by the writer, though perhaps with insufficient reasons, to be in Sinkyone territory. One and a half miles below Scotia there were a few houses occupied by people who had intermarried with the Wiyot. The *Mattole*, who were also Athapascan, lived on *Mattole* and *Bear* rivers to the south of the Wiyot, with whom they seem never to have entertained friendly relations. An ancient site, where there was considerable shell with a few arrow points, was reported to the writer as being some four miles above the mouth of *Bear* river, on the side of a ridge.

WIYOT ETHNOGEOGRAPHY

In numbering the village sites on the map we begin with the archaeological ones, commencing in the north and following the coast southward, going up each succeeding river as we come to it. There were 115 archaeological sites located in Wiyot territory besides two in Yurok territory. A few were shellmounds ten to fifteen feet high and several hundred feet in diameter; others were shell deposits of varying thicknesses ranging down to only a few inches in depth; and still others did not have enough shell to be readily noticed, but were patches of ground with a slightly darker tinge of color than the land surrounding them, caused by the greater amount of organic material as well as mixture with charcoal. Because the soil of sites is of differ-

⁴⁷ Stephen Powers, *op. cit.*, p. 113.

ent character from ordinary soil, it is a favorite with gophers. On examination of the dirt at the mouth of gopher holes, small particles of shell and charcoal can be seen, as well as burnt stones and other evidences of former human occupation of the site.

A few sites were reported as places where arrow points or other artifacts had been ploughed out. These are popularly termed "battle-grounds" and are sometimes mentioned as such in works of ethnology,⁴⁸ but a moment's consideration would convince one that it is practically impossible to locate an Indian battleground. As Indian warfare is a rather petty affair and as arrows are used over and over again where practicable until broken or lost, the number of points left upon either a battlefield or hunting-ground would be rather negligible. At village sites or at places of manufacture the case is different. At one village site that the writer located in Nevada he found nearly a thousand more or less fragmentary specimens that had been broken, rejected or lost.

Besides the archaeological sites, there were other places occupied by Indians in modern times. The location of these was learned from living Indians, but on visiting the spot little or nothing could be seen, the reason being, perhaps, that they were occupied for only one generation, or for so short a time that no noticeable deposit of black soil or anything else was left behind. House-pits were so shallow in this area, except on shellmounds or sandy ground, that they are unreliable as guides.

Most of the modern village sites on Mad river, from its mouth to Blue Lake, were located by the help of Aleck Sam, born on site 7 in 1849, a few days before Wood's party arrived from the interior. We drove up one side of the river in a wagon, the sites being pointed out as we passed them. This was done in one day's time, so only in a few cases did we get out of the wagon to take a look at the exact spot. Hence some of these sites may possibly show archaeological signs also. The village sites about Blue Lake were pointed out by Jim Brock, born at site γ. Others were located by the writer while walking up the river from Blue Lake with John Stevens, who was born near Maple creek.

On Eel river two days were spent with horse and wagon in company with Dandy Bill, born on site 112, but living as a boy at different times on sites 90, 92, 102, 114, and αx. Owing to Eel river being such

⁴⁸ For example, P. E. Goddard, *Notes on the Chilula*, present series, x, 278, 1914.

an excellent fishing stream, probably always supporting a large population, and also owing to the fact that tidewater reaches to Fortuna, with many sloughs containing mollusks, one should find here numerous archaeological sites, were it not that the river bed is shifting. Possibly they have been formed and covered with silt during freshets, and perhaps the river has carried others away. In fact the river has changed its bed to such an extent that Dandy Bill could hardly pretend to locate some of these sites within half a mile of their correct position, and the writer might as well confess that he may have erred another half mile in locating them on the map, though the relative position of most of them can not be far wrong.

The modern village and camp sites are designated on the map with letters of the alphabet, following the coast and rivers from north to south in the same order as with the archaeological sites. There are 57 of them, but this does not include all of the modern settlements, because at least 41 of the archaeological sites were occupied in recent times as well, which would make a total of 98 modern Wiyot village and camp sites. Including both the archaeological and the modern sites, we have therefore a total of 172 known sites situated in Wiyot territory. Of these the writer obtained the Wiyot names of about one hundred, besides about forty Wiyot names of creeks, mountains, and trails. The Athapascan names of over fifty places and about twenty streams in Wiyot and Whilkut territory were also obtained. These names will appear in lists at the end of the description of the more important localities:

CHIEF WIYOT SETTLEMENTS IN 1850

The recent inhabitants were not uniformly distributed in villages of equal size, but for the most part were rather inclined to gather in centers of population. A small part of the population lived widely scattered, in settlements of one, two, or three families at a place. The chief centers of population were: Mad river mouth, sites 4, A, 7, and c; Mad river bend, sites I, J, K, and 9; Blue Lake, sites Y and AD; Mad river slough, sites 33 and 34; vicinity of Eureka, sites 67, 68, 65, 58, 17, and 73; harbor entrance, sites 112, 77, 79; south end of the bay, sites 86, 92, and 102; and lastly, Eel river, sites AQ, AR, AU, AV, AW, AX, AZ, and BA. This makes a total of thirty-two leading villages, which we will proceed to describe.

Sites Near Mad River Mouth

Site 4.—This village, located near the mouth of Mad river on the north side, is described by Wm. R. Lindsey as being a considerable town with a population of seventy-five or eighty in 1855. Most of the houses, which were of two kinds, those with shed roof and those with gable roof, were estimated to be from ten to sixteen feet long. In three cases houses were built close together so as to make rows forty or fifty feet long. The house-pits were eight inches or a foot lower in the center than at the perimeter. Others state that there were ten or fifteen houses in 1853. Tom Brown said that his father used to hold a "Jumping dance" there every summer for ten days, with gambling, games, and foot races by both men and women. This village was situated on a prehistoric site that was washed out not many years ago. The skulls exposed were not modern enough to restrain the Indian boys from taking delight in throwing rocks at them.

Site A.—This village was located near the mouth of Mad river, on the south side. A white informant stated that there were eight houses in 1856. Another informant visited the place about 1858 and several times afterwards when dances were held.

Site 7.—Site 7 is located north of Mad river, just west of Mill creek. Jim Brock of Blue Lake makes mention of it as a village of a dozen houses, whose occupants were especially friendly with the Trinidad people, doubtless because of intermarriage. He also described the abundance of bushes along the edge of the village, for which reason it was called *tet-ming-a*, "brush-edge," in Athapascan. The Wiyot name was *gwisok*.

As this village was the birthplace of two Wiyot informants, Tom Brown and Aleck Sam, the writer obtained some information regarding the number of habitations. There were here two sweat-houses and eleven dwelling houses, with the following occupants: 1, father of Tom Brown; 2, Brokearm, uncle of Tom Brown; 3, grandfather of Tom Brown, or Brokearm's father; 4, grandfather of Jimmy Barto; 5, grandfather of Frank Brown; 6, father of Lookin; 7, uncle of Lookin's father; 8, grandfather of Aleck Sam; 9, father of Aleck Sam; 10, Bighead; 11, four widows whose husbands had been killed by Chilula Indians. One house was also said to have been occupied by the uncle of Aleck Sam, but probably he was one of the persons mentioned above.

It would appear that there was as much or more aristocracy in this village than in any other in the northern half of Wiyot territory.

Tom Brown belonged to the leading family. His grandfather was born on site 7, and obtained a wife from Eel river. His father was the rich and influential man of the district during his lifetime, but he died during the childhood of Tom, so that his mother reared him at her old home on Gunther island, site 67, while his father's wealth in woodpecker scalps and dentalia went to his uncle, Brokearm, who gambled most of it away. Jimmy Barto also belonged to an aristocratic family, both his grandfather and his great-grandmother possessing wealth. While Tom Brown boasted of his ancestry, he said that the father and grandfather of Aleck Sam were poor. Aleck Sam's mother was from Elk river, and he claimed Mad River Bill of site 9 as his cousin.

There were no chiefs, properly speaking, that is, men invested with political authority, either among the Wiyot or any of their neighbors. But there were men who enjoyed distinction because of their wealth, and these exercised a sort of advisory influence not possessed by the ordinary man. These leading men are known by the whites of Humboldt county as "mauweemas." This, as well as the term for dentalium shell money, *allikochik*,⁴⁹ seem to be fully incorporated into the English language so far as this region is concerned. All disputes, even murder, were settled by the payment of dentalium—an arrangement which put the rich man at considerable advantage, since it enabled him to do about as he pleased and then "settle quick." Brokearm, also called Captain Joe, was the mauweema of the group of villages near the mouth of Mad river, and also of those on Mad river slough down to site 35. Captain Jim, the mauweema of the northern half of Humboldt bay, made a dance on Gunther island, site 67, in February, 1860, when the Indians were taken by surprise and massacred by a few lawless whites. But luckily for the people of site 7, they had a quarrel with Captain Jim, which had then not been settled, so none of them attended the dance.

Site 6.—This was practically an outlying portion of the village just described, but it had a separate name in both the Wiyot and the Athapascan languages. There was also a separate archaeological deposit consisting of dark colored soil and many rocks, with a few particles of shell and charcoal at the widely scattered gopher holes, situated some little distance up the hill from site 7. Neither site makes much of an archaeological showing, but of the two, site 6 reveals more

⁴⁹ A. L. Kroeber states that both terms are of Yurok origin, the first, *mewimar*, meaning old man.

evidences of occupation, so that it may be considered the older and longer occupied of the two. But on the other hand, site 7 has been partly undermined by the river which has left a perpendicular bank twenty feet high and exposed an archaeological deposit of only a few inches in thickness. Hence it may be that nearly all of the archaeological evidence of the former importance of site 7 has been destroyed.

On site 6 there was one house-pit twenty-one feet in diameter and thirty inches deep. At the bottom of the pit, a foot below the surface, a pestle fragment was found, together with much charcoal, glass, tin, nails, and other refuse. It is said that Brokearm, who was so named because he had been shot in the arm by a white man, lived here as a blind old man until something over a dozen years ago, when his house caught fire and he was burnt to death, unable in his blindness to save himself.

Site C.—Located on the Samuel Turner ranch on top of a bluff to the east of Mill creek, this village contained five or six permanent houses. The Athapascan name, klōche-nā'lin-tin, "flat(?) -creek-place," was given because there was a flat place near the adjacent Mill creek. In the summer people gathered here from as far as Samoa and Bucksport to dry fish and dance, play games, shoot with bow and arrow, gamble, and do other things of a festive nature.

Sites at the Bend of Mad River

This was a very thickly settled district, with many villages so close together that, at the present time, it is difficult to identify them with the names of sites secured from native informants. Site 9, containing a considerable bed of shell, was the only one of these sites actually visited and located by the writer. It is located on the ranch of W. E. Clark, about the center of the southeast quarter of section 17, township 6 north, range 1 east. It becomes necessary to thus definitely locate this place, because there has been such a great change in the course of the river here, which formerly made a bend of over a mile to the south of its present channel. However, this change seems to be due to a definite local cause rather than to any general migratory character of the river bed, such as we find in the delta of Eel river. Mad river has a fairly definite channel.

The cause of the formation of this great bend seems to be revealed in the description of site H. Here a tremendous jam of logs had been piled up by the winter floods. It is possible that some generations ago, before the log jam was formed, the river had a straight channel

as at present, but that owing to the obstruction the river had to find a new channel. The bend to the south ran shallow, so that fish could be easily taken during the semiannual run, hence the unusually large population in the vicinity. The Indians burnt the jam at site H one summer. After that the place was a noted feeding ground for elk. There was also a good place for taking eels and salmon near this village, yet it contained only three houses within the memory of Aleck Sam. After the whites came, they cut a ditch across the peninsula-like bend, and the force of the current ripped out a new channel, tearing out great trees and straightening the river once more.

Site 9, Wiyot name *betsër*, had five or six houses with many people, according to Aleck Sam, and here his cousin, Mad River Bill, was born. The Athapascan name for the same place seems to be *tidil'-tin*. The meaning of this is said to be "smooth river to catch salmon in."

Besides sites H and 9, Jim Brock mentioned three other sites, and Tom Brown two, but whether those mentioned by Tom Brown are the same as those described by Jim Brock, the writer is not at all certain. Diagonally across the river and downstream from *tidil'-tin* (site 9) was *tächenkälchwhē-ten* (Athapascan, site 1). This was said to be one of the largest villages. The name was said to refer to the Indians digging out and eating certain kinds of fern roots, *tächenkā'*. The first village above the county bridge on the south side of Mad river, *klichibot* (Wiyot, site 1?), had a large graveyard and abounded in willows suitable for making eel pots.

Diagonally across the river downstream from *tidil'-tin*, near a little creek, was another village, *klokwō'-seskō-ten*, "sturgeon-?-place" (Athapascan, site J). Here the Indians used to spear sturgeon. *Tokelərboku'* (Wiyot, site J) seems to be the same place, except that in the description salmon is substituted for sturgeon, for here there was shallow water where the Indians lined up and speared the fish as they passed.

Opposite *tidil'-tin*, at a prairie, was *klökai-kemēklök* (Athapascan, site K), said to mean "they grow like wild oats." The wild oats, *klökā'*, were gathered and pounded into meal.

From pioneers living in Arcata, the following information was obtained regarding the group of villages about the bend of the river. One stated that there were probably twenty houses, including one sweat-house, covered with earth, within two hundred to three hundred yards of each other, situated on both sides of the river. Another said that about all the Indians of this vicinity lived on an area of

thirty acres. A third informant, who was often present at their dances, estimated that two hundred to three hundred Indians gathered at their summer festivities, erecting very large conical bark and brush houses. At such times the square plank houses were but few in comparison to the temporary conical houses.

The leading Indian of this vicinity was called by the whites "Old Mauweema," and his son was variously known as Indian Billy, Short Billy, Bat Head Billy, Mad River Bill, and Skoyer Bill,⁵⁰ that is, good Bill (Yurok *skuyu*, good), since he was deemed good enough to be honored with a burial in Arcata cemetery when he died several years ago at the age of about seventy-six. The community, in thus honoring him, endeavored to pay back in some measure the debt due him for what he had suffered when lawless members of the white race treacherously took from him in a single hour his wife, mother, sister, two brothers, and two little children.

After the massacre on Gunther island in 1860 three canoe loads of dead were buried across the river from the Clark place. Twenty years ago, when the place was purchased by Mr. Clark, there were 17 graves within 40 feet of each other on site 9, the position being marked by head boards 4 feet high, and foot boards 12 to 18 inches high, made of split stuff about 3 inches thick and 20 inches wide. When the ground was ploughed the following year, many glass beads and abalone pendants were found. Many graves were obliterated by sediment deposited by a freshet about 1875, when all the country about was flooded. But there were graveyards in the vicinity previous to the massacre, for twenty-five or thirty graves were seen on one site about 1850.

Sites Near Blue Lake

In the spring of 1850 the whites cut a trail from Arcata to Mad river, thence along the river to Blue Lake, then past the Arrow Tree, site AH, over the ridge to Redwood creek, and eastward to the mines, part of the way following old Indian trails. Scattered along the river, between the bend and Blue Lake, there were half a dozen small villages or camps. That is, about every mile there was an Indian house or two. High hills flanked both sides of the river, and the forest was dense, so the population here was not large. But near Blue Lake the conditions were more favorable. There was here a

⁵⁰ There is a single unconfirmed report by a white man that "Indian Billy" died about fifteen years ago and was buried on the south side of Hall creek. Hence it is possible that these various names refer to two different Indians.

valley, formed by the junction of the North fork with the main river, which contained several patches of prairie, notably at sites AE and AI, besides the more extensive ones on the ridges. There were good fishing holes on the North fork where the Indians regularly camped, especially a hole at site AF which is twelve feet deep even during the dry season (pl. 6, fig. 1). Another fishing place was at site AG at the base of a waterfall blocking the advance of salmon.

As a result of these natural advantages, it appears that the vicinity of Blue Lake was a populous center a few years before the arrival of the whites and before the murderous raid of the Chilula previously mentioned. Before the massacre the territory was unquestionably Wiyot, but after that time, and especially after the whites came and did away with tribal feuds, the Indian population became somewhat mixed by intermarriage, there being then a considerable number of Chilula. It is reported that in 1850 there were twenty houses built of slabs and poles within a radius of two miles from the present village of Blue Lake. The writer is not unwilling to believe that there may have been twenty houses standing, but is inclined to think that that number could not have been inhabited in 1850.

The account of the size of these houses as given by one pioneer differs from the usual description. He said that most of the houses were about twenty feet square, and made of redwood planks with the roof close to the ground, the floor being paved with stones. The sweat-houses were covered with earth. None of the other informants estimated Wiyot houses to be over sixteen feet square. The largest house-pit measured by the writer was that of Brokearm on site 6, it being a little less than twenty-one feet in diameter. When we allow for the caving of the soil, the size of the house would be somewhat less. Besides it is not known that this was a primitive Indian house. Of several pits on site 34 the two largest measured only eighteen feet in diameter. Hence we must conclude either that the houses at Blue Lake were somewhat larger than the average Wiyot house, or else that the informant, being more familiar with the houses on Redwood creek and Trinity and Klamath rivers, may have overestimated the size of the houses here. Goddard, who had opportunity for measuring Hupa houses, states that they were about twenty feet square.⁵¹ Not only was the Wiyot house smaller than that of the Hupa, but it was different in other respects, none of them having the square pit entered with a ladder, as described by Goddard.

⁵¹ P. E. Goddard, present series, I, 13, 1903.

Site Y.—After the time of the massacre by the Chilula, a new village was established at Blue Lake. Its Athapascan name was itsinohogindis-ten, “go down-?-place,” because there was a trail from Liscom hill down to the village. Aleck Sam mentioned four houses with the following occupants: 1, Kneeland Jack’s father, who was a mauweema, Kneeland Jack being a half brother to our informant, Jim Brock; 2, Blue Lake Bob’s father, who was born on site 7 and married a Chilula; 3, Short Bill’s⁵² father, who originally came from site 34; 4, an old fellow who spoke the Athapascan language.

Site AD.—John Stevens said that there was formerly a sweat-house here, a house or two of planks, and three or four bark houses. The people would camp in various places in summer, but in winter, when they had nowhere else to go, would come home to this place. It was given the name mis-kenē’hu-ten, “bluff-?-place,” because it was situated in front of a bluff where there are sometimes landslides.

In the villages about Blue Lake, the Wiyot had both plank houses and bark houses. Down river there were mostly plank houses with very few of bark, while up river it was the reverse.

Sites on Mad River Slough

Site 33.—This village was referred to as “a regular rancheria” when the whites first came, a statement which is confirmed by the numbers of skeletons that have been found here with white man’s articles buried with them. The village was situated on a sand-dune point reaching down through the marsh to the slough. The site is now occupied by farm buildings, but though it has been much disturbed, it still shows a deposit of shell, mostly the soft-shell mussel, twelve inches thick in places.

Site 34.—Sand-dunes covered with beach pine and huckleberry bushes here reach inland to the slough, where there is a bank twenty or thirty feet high. There is a deposit of shell, several inches in depth, mostly soft-shell mussel and soft-shell clam, with a few shells of other species, extending several hundred feet along the top of the ridge close to the slough. At one spot numerous pelican bones were found. There are two deep house-pits measuring eighteen feet in diameter, and six smaller and less definite depressions.

⁵² Aleck Sam said that the wife, or possibly the mother (the writer failed to understand which) of Short Bill was a Chilula. Whether or not the two Indians (Short Bill and Skoyer Bill) are the same, Mr. Lindsey said that Skoyer Bill had a Chilula wife.

There is a double row of graves near by with headposts varying in size from $1\frac{1}{2}$ to 2 inches thick, 4 to 16 inches wide, and from 1 to $3\frac{1}{2}$ feet high. The position of seven graves can be determined at the present time, and Mr. C. S. Ellis, whose father purchased the place about 1890, says that there might have been twenty graves at that time. They were then visited annually in September, during the huckleberry season, by parties of mourners who came from Mad river in canoes. Aleck Sam said that Short Bill's father, living at least part of the time at site γ , "belonged to" this place. It has now been about twenty years since the mourners have come. Another informant stated that Captain Jim, the mauweema of the northern part of Humboldt bay, died at this village but was buried on the North Spit opposite Eureka.

Amongst other badly decayed lumber scattered over the graves are to be seen fragments of a canoe. Mr. Ellis says that formerly there were several but slightly broken canoes on the graves. It seems that it was formerly a common practice to leave broken canoes on graves, since they can be seen at the present time not only at this place but also at graves on site A. Mr. Ellis has in his possession, obtained from this site, over thirty arrow points (text fig. 13), several abalone pendants and seventy large spherical glass beads, each $\frac{13}{16}$ of an inch in diameter.

Thinking that these graves might be those of victims of the Gunther island massacre, the writer made inquiry of Dandy Bill, who attributed them to persons who died naturally. He seemed quite positive that these graves were not the result of the massacre, although one or two of those buried here might have been killed by whites at other times, as was an altogether common occurrence in pioneer days.

Sites Near Eureka

Site 67.—This was one of the most important villages on Humboldt bay and was situated on an immense shellmound at the northeast extremity of Gunther island. When Robert Gunther obtained possession in 1860, there was a pine tree two feet in diameter on the center of the mound; all the remainder was covered with bushes except that on the eastern part of the mound a small cleared space was occupied by an Indian village (see plan of the mound, plate 11).

Tom Brown says there were nine houses with the following occupants: 1, mother of Tom Brown; 2, San Francisco John and Mary,

aunt of Tom Brown; 3, Tom, brother-in-law of Tom Brown; 4, another Tom; 5, Jack; 6, Judas; 7, Captain Jim, father of Jerry; 8, uncle of Jerry; 9, the sweat-house.

Robert Gunther described the type of house found here and drew some plans, which are reproduced, with but slight changes, in text figure 1. The usual size was sixteen feet square, a very small house being twelve feet. The sides of the house were of redwood planks four or five feet wide, placed on edge, and reaching to the eaves. Holes were burnt and the planks tied together with withes. Under the roof, reaching across the open space, were three or four poles or beams.

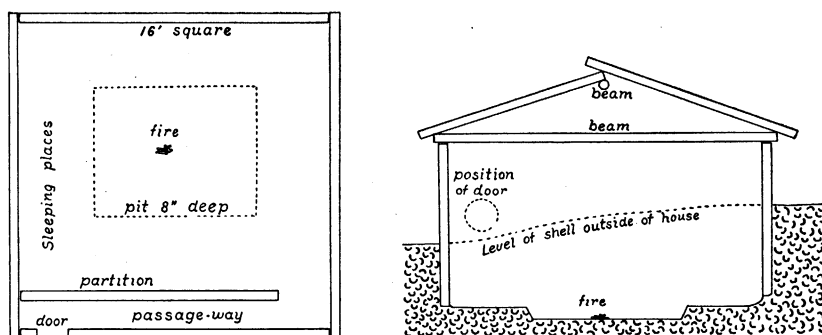


Fig. 1. Ground-plan and vertical cross-section of a Wiyot house.

The door was a round hole, eighteen inches in diameter, in one corner of the house. Twenty inches back from the door there was a partition extending nearly the entire width of the house. To enter one had first to stick an arm and shoulder into the door, then, on entering, make a sharp turn to the right and go down the passage way to the right side of the house, where there was a break in the partition. In the center of the house there was a pit six or eight inches deep, which contained the fire place. There was no provision for the escape of smoke, which filled the house and filtered through the cracks as best it could. The shell refuse was piled about the house until it nearly reached the eaves. Then the planks were pulled up to a higher level.

The sweat-house was half underground, at least sixteen feet square, having a door or scuttle in the roof near the southwest corner, where the roof was four feet above the floor, though in the farther corners the roof was higher above the floor. In taking a sweat-bath the perspiration was scraped from the body with a stick or bone. This house was also used for smoking fish.

As Robert Gunther recollects, there were six houses in all at the time of the massacre on February 26, 1860: one shack in the white man's style, one sweat-house, and three houses of the usual type, besides one that had just been burnt. The latter was situated somewhat apart from the others, being within the limits of what now constitutes the chicken yards, while the others were near where the present cabins are located. He estimated that there may have been a population of fifty or sixty living at the village previous to that time.

Estimates of the population at this village in 1850 have been placed much higher, but after the introduction of certain diseases by the whites, the population decreased somewhat, though tending to remain stationary owing to the number of refugees seeking a home here after being driven from localities on the mainland. This village was important in another respect, it being the seat of an annual dance ceremony held in the latter part of February and lasting for about a week.

Site 68.—This was a village of great importance some years previous to the coming of the whites, perhaps of greater importance than site 67, but by 1850 it had fallen to a secondary place. It was situated on another large shellmound near the center of Gunther island. On the top of the mound there is a level flat which Gunther says was used for dancing. It is stated that in 1850 there were about one-third as many Indians living here as on site 67, and that the last family moved to the latter village in 1857 when Captain Moore took up eighty acres on the island and began to build a house on the central mound.

Site 65.—This village was located at the base of the bluff on the point of land now occupied by the Occidental mill in Eureka. A considerable number of Indians lived here in 1852, there being at least three or four houses, but they were driven out soon afterwards, going probably to Gunther island. Mussel and clam shell can be seen beneath some of the buildings and lumber stacks.

Site 58.—A pioneer stated that a village was located on a shell deposit near the present brickyards⁵³ on Eureka slough. Lucas Prairie was situated up the hill back of the village. It is said that there were eight or ten houses in 1858, though this number may be a little large. At that time Nicodemus, Captain Jim, San Francisco John, and several others were living there. Captain Jim, the mau-

⁵³ The recent village ikatchipi may possibly have been located at site 57 instead of site 58 (see illustration, pl. 7, fig. 1).

weema, had his main home on Gunther island, but he was living at the time in this village drying fish. San Francisco John was so named because he had visited the great metropolis, which in his own estimation set him considerably above his fellows. It is said that he became "sassy" to the whites, for which reason certain lumbermen raided his village, shot and wounded him, and killed Nicodemus. San Francisco John was riddled with half a dozen shots, being wounded in the side and in the hand and having his arm and his jaw broken, but he "doctored up" on Gunther island and lived there until the massacre. The Indian account of this shooting will be given later.

Site 17.—This village was located on the North Spit about a quarter of a mile south of the Fairhaven shipyards. Shell of various species, including soft shell mussel, is scattered here over a considerable area with three main centers of deposit. When L. K. Wood's exploring party came down the coast "riding on the backs of big elks having long tails," they stopped two days near this village. When they found their advance southward blocked by the entrance to the harbor, they turned back and were guided around the north end of the bay by an Indian from this village, who was killed by the whites some years later. Captain Jim, the mauweema, made this village his headquarters a great deal of the time, he and his relatives occupying four or five houses. He was living here in 1873 and for four or five years afterwards, having escaped the Gunther island massacre, although his wife was killed there.

According to A. L. Kroeber,⁵⁴ a dance similar to the Jumping dance of the Yurok and Hupa was held indoors at this place, lasting about five days. At the dance obsidian blades were used, but were hung by strings on the breast instead of being held in the hand as in the White Deerskin dance of the Yurok and Hupa.

Site 73.—This village was located close to the bay shore in Bucksport near the present terminus of the street car line. One white informant reported that there were eight or ten plank houses there in 1851. During recent years, Jerry, the son of Captain Jim, has made his home in Bucksport.

Sites Near the Harbor Entrance

Site 112.—This village was situated on the South Spit near the entrance to the harbor. It was the boyhood home of Dandy Bill, who was the writer's most satisfactory informant and a very lovable char-

⁵⁴ A. L. Kroeber, *Jour. Am. Folk-Lore*, xxi, 38, 1908.

acter. He was about twelve years old, according to the testimony of Captain H. H. Buhne, when the latter entered the harbor in 1850. Dandy Bill said that most of the shell deposit there has been washed away. He also said that there were many graves, but the writer failed to inquire whether these existed before or after the massacre which occurred here February 26, 1860, on the same night as at Gunther island. In 1860 there were ten houses besides the sweat-house, scattered about over a rather wide area, and containing a population of at least fifty-one before the massacre. Some of the leading men of this village were: Kiwelattah or Old Coonskin,⁵⁵ the mauweema, and uncle of Dandy Bill; Shasepee, brother of Old Coonskin; Coonskin Ned, the son of Old Coonskin; Doctor and Jim, who lived together in the same house; Captain Joe, Sherman George, Peter, and Ben.

Site 77.—This village was located at the mouth of Elk river, which had the same name as the village, ikso'ri. According to the United States Coast and Geodetic Survey chart of 1858 (see pl. 3), the mouth of Elk river was formerly half a mile farther north than at present, with a sandspit between the river and the bay. The village was on this sandspit, which has since been washed away. Old Coonskin,⁵⁵ the mauweema, used to live here part of the time. It appears from the reports of white informants, that there were not more than half a dozen houses, though Dandy Bill said that many people used to live here.

Site 79.—This village was located on Buhnes Point, otherwise known as Humboldt Point, which was the first place on the bay where a town was laid out, under the name of Humboldt City. For this reason the site ceased to be occupied as an Indian village after 1850. White informants speak of numerous graves at this site, and from Dandy Bill it would appear that it was either an important ancient site or a place of traditional or mythological interest. The site has now been washed away. L. K. Wood in his narrative of discovery⁵⁶ mentions stopping there December 27, 1849, in these words:

The next day we followed down the bay, crossing Elk river, to Humboldt Point. Here we were visited by the Chief of the tribe of Indians in the vicinity of the bay, who was an elderly and very dignified and intelligent Indian. He appeared very friendly and seemed disposed to afford us every means of comfort in his power. He supplied us with a quantity of clams, upon which we feasted sumptuously. . . . This old man's name we learn was Ki-we-lat-tah. He is still living on the bay (1856) and has always been known as a quiet and friendly Indian.

⁵⁵ Mentioned below in the description of site 79, also in the quotation from L. K. Wood under the heading, *Gold Seekers' Rush* in 1850.

⁵⁶ L. K. Wood, *op. cit.*, p. 90.

Sites at the South End of the Bay

Site 86.—This was a permanent village situated close to the bay near Whites slough where a creek came down.

Site 92.—This village was at the upper end of Hookton slough. In addition to being a small, nearly permanent village, it was also a camping place for larger parties. Dandy Bill's father used to live here at times.

Site 102.—The mauweema Kiwelattah, his three brothers, and perhaps several others, built houses here on a point of land which they occupied at irregular intervals when gathering clams on the mud flats, which are here more extensive than elsewhere on the southern half of the bay. For this reason the site assumes a much greater importance archaeologically than the majority of the modern villages. There was a trail connecting this site with Eel river by way of Table Bluff, and although the spot is described as a frequent camping place, it was important enough to possess a sweat-house.

Sites on Eel River

As previously stated under the heading of Fauna, Eel river was formerly one of the best rivers of California for fishing and supported a comparatively numerous population. Dandy Bill said that when he was a boy, anyone camping at night on Table Bluff could see many lights scattered all along the river. Besides the regular permanent villages, there were camping places during the fishing season for people living at a distance. One of these camping places was site AX. This contained seven houses or more, occupied during the fishing season by the father and uncles of Dandy Bill as well as by Captain Joe and others from site 112.

The chief village was site AQ, situated on the south side of the river, near its mouth, surrounded by sloughs. The spot was formerly occupied by a fish cannery, but this has now been washed away. For salmon fishing a village downstream always has the advantage of those upstream, because the fish run up. It was stated that site AQ had very many houses with an extraordinary number of very wealthy men. This village was on friendly terms with the villages near Eureka because Captain Jim, the mauweema, obtained a wife here.

The writer did not get as many facts regarding the other villages on Eel river as would be desirable, but it was stated that sites AV, AW, AZ, and BA had each many houses and many people. Sites AR and AU

were also important. Site BA was mentioned as having an extraordinary number of graves. The Indians of Eel river had their full share of troubles with the whites, which matter will be treated separately below.

MINOR SETTLEMENTS AND CAMP SITES IN 1850

Sites 6, H, R, AE, AI, AG, AH, and AM have already been mentioned.⁵⁷ Other sites deserving of notice are as follows:

Jim Brock said that the Jumping dance used to be held at site E, but as no one else mentioned any dance at that place the writer suspects there has been a confusion with site C.

Site 14, at the entrance to the harbor, was sometimes used as a camping place for clam roasting. Soldiers also detained the Wiyot Indians here for a time after the massacre of February, 1860, before taking them to the reservations. Some died and were buried here at that time, and drifting sands have since exposed skeletons with blue cloth and soldier buttons. At several other places on the North Spit glass beads and other articles derived from white men have been found.

Site 31 had two houses, and is one of several places where Captain Jim lived at times, especially during the September huckleberry season. It would seem that some of the rich men had about as many different summer houses, winter houses, and camps as the very wealthy do among us. They would have one house convenient for berry picking, another where certain roots and herbs were plentiful, a third near extensive clam beds, a fourth at a position favorable for catching salmon, a fifth on the ocean coast for surf-fishing, and so on. Then, as one Indian put it, "in the winter time, when they had nowhere else to go, they went home." Captain Jim had houses at sites 17, 31, 58, and 67, while Dandy Bill speaks of living as a boy at sites 90, 92, 102, 112, 114, and AX.

Site 39 was situated on Daniels slough, which was navigable for canoes at high tide, and was used in traveling between the Mad river bend settlements and the bay. Two paternal uncles of Dandy Bill lived here. Arcata Prairie, which produced an abundance of the species of parsley previously mentioned, was near by.

Site 45 had at least two houses and twenty-five or thirty inhabitants in 1852. It was a small but permanent village at that time, situated near a slough navigable for canoes, and also near the old Indian trail that went around the bay. By 1860 it was deserted and the

⁵⁷ See pages 249, 252, 253, 355, 261, 262, 264.

house planks badly rotted. It was then an open space sixty feet across, covered with shell and surrounded with a tangled thicket of rose bushes, blackberry bushes, and other shrubs.

Site AL was situated near the mouth of Jacoby creek. There were several small plank houses here in 1856, one of which was occupied by Old Harry, who used to come during the salmon fishing season from Gunther island. There was an Indian trail going up to Boynton Prairie and the ridge where acorns were gathered.

Site 78, situated near the schoolhouse on Elk river, is chiefly of interest because of myths connected with the place. It was used as a camping place where salmon, caught in the river, were dried. The party with L. K. Wood camped here one night.

Site 90 was near the place where the Indian trail crossed Salmon creek. Dandy Bill's father was living there in 1849 when Wood's party passed down the coast. He acted as guide from Salmon creek to Eel river, site BB.

Site 91 was a favorite camping place for periods varying from a few nights to six months. Parties camped at different times over rather scattered areas on both sides of the creek, which was here just above the reach of the tide.

Site BB is the place where Wood's party crossed Eel river. It was at the mouth of Strongs creek, but the course of the river has changed greatly at this point since 1849.

Above Fortuna the population thinned out rapidly, until the last camping place at the mouth of Van Duzen river was reached. The first important Athapascan village on Eel river was at Scotia and was called tokēnēwoLok in Wiyot, but downstream a mile and a half there were a few houses at a place called tokēmuk. Some of the people living at the latter place were Wiyot intermarried with the Athapascans.

On the coast, sites 114, 115, and 117 were used at times by the Wiyot Indians as camping places when they caught surf fish or gathered mussels.

PLACES ABANDONED PREVIOUS TO 1850

Several places were mentioned as being modern village sites but abandoned for one reason or another some time previous to 1850. Usually the cause was some quarrel or tragedy that resulted in the making of many new graves, after which the survivors preferred to live in another locality.

Site Z.—This was the chief village in the vicinity of Blue Lake at the time of the Chilula attack, only a few years previous to the coming of the whites, who report seeing thirty or forty fresh graves as the result of the massacre. Jim Brock said that the place was populous, but he did not know how many people lived there at the time they were driven out, which was just before he was born. When he was a boy there were about a dozen abandoned plank houses still standing, besides a sweathouse. These were burnt at the time of the war, he said, probably meaning the Chilula raid in August, 1862, when Bates Hotel was burned and several whites were killed. The Athapascan name of the place, *mis-kritikrit*, was said to refer to the steep hillside on one side of the village and a slough or old channel of the river on the other side. Jim Brock had heard that, long before he was born, the river made a bend to the east and ran through the channel near the village.

Site AE.—This former village was situated on what appears from a little distance to be a mound, but as there is no deposit of black dirt or any other archaeological evidence, it is probably only a river bar deposited by the North fork. John Stevens had heard from his father that it used to be a permanent village, but in more recent times it was only a camping place with one or two bark houses.

Site 22, located in the mill yard at Samoa, according to tradition once had a large population.

Site 23, located one mile north of Samoa, is one of the largest shellmounds of the region and was said to be a regular rancheria one hundred years ago. In more recent times Indians living on Mad river when visiting Gunther island used to walk down the North Spit as far as this site and then shout or make a smoke to attract attention, when the people on the island would cross over in a canoe to get them as soon as the tide was favorable. Robert Gunther says that dances used to be held at this place.

Site 69.—This was formerly a very important village near the railroad station in Eureka. Dandy Bill said his father and five paternal uncles were born here. There was a fight with a neighboring village, so all left and moved towards the entrance of the harbor.

Site 81, situated on a point of land, now washed away, half a mile north of Bucksport, is a place where Dandy Bill's grandfather used to live part of the time. The site was abandoned before Dandy Bill can remember.

Site 110.—This was a place on the South Spit where someone had begun to hollow out a canoe from a log. The name of the place has an allusion to this abandoned log.

ARCHAEOLOGICAL SITES

The writer first attempted to locate the various ancient deposits by walking along the shores of the bay, but met with much difficulty from the density of brier bushes and underbrush of all kinds, as well as the number of small sloughs reaching up between points of land. Later he located many deposits by using a boat, and in so doing was impressed with the fact that the prehistoric inhabitants must have been users of canoes. Even were there no large deposits on islands this conclusion must be reached because of the close relationship between most of the deposits and small sloughs just large enough to navigate at high tide. Many of the deposits were situated at the tip end of ridges that reached out into the marshes and approached close to these small sloughs. This relationship of villages to sloughs is shown in one of the maps (pl. 2). A somewhat greater number of deposits would have been located, if all of the shores of the bay had been visited by boat instead of by walking. There were only about half a dozen deposits situated on marshes, these being chiefly on the islands near Eureka. A greater number were on ridges and bluffs at elevations ranging from twenty feet to over one hundred feet.

The six largest shellmounds that are in evidence at the present time are all situated within a mile and a half of Eureka. These are, in the order of their size, sites 23, 67, 68, 61, 58, and 69. The environment of these mounds will be discussed below under the description of site 67, where an excavation was made. This mound is irregularly pear shaped, 600 feet long by about 400 feet wide, and 14 feet high. Site 68 is a mound of about the same size, while site 23 has a deposit covering a larger area even though it may not be greater in depth.

On the northeast shore of the bay at site 48 there is a small crescent shaped shellmound not much over one hundred feet in length and several feet in depth, covering the tip of Brainards Point. On this mound there is a fir tree twenty-seven inches in diameter, also a spruce tree and a badly decayed stump each forty-five inches in diameter.

A mound of first-class importance could be expected somewhere near the mouth of Jacoby creek, since there seems to be here the right combination of wide tide flats and sloughs navigable for canoes,

as well as a large creek. However, there are indications that Jacoby creek during times of freshets has deposited much sediment over this area, perhaps covering some of such shell deposits as exist. The writer has learned since completing his field work that there are some shell deposits in this section, near the sloughs, which he overlooked.

The North Spit, which is one-half to three-quarters of a mile wide, with elevations reaching eighty-five feet, is composed entirely of sand cast up by the combined action of wind and wave. Plate 8, figure 1, is a view of the sand-dunes encroaching upon the timber belt to the north of site 37. Here there are fresh dunes nearly sixty feet in height, half burying and killing spruce trees which measure two and three feet in diameter where they reach above the sands. At the present time, only half of the width of the North Spit is covered with drifting sands; and the bay shore, being protected from cold ocean winds by the high sand ridge and a belt of beach pine, is a desirable place for habitation. Doubtless many villages have been established from time to time in the past along the shore between Samoa and Mad River slough only to be later rendered uninhabitable by encroaching sands.⁵⁸ Even a moderate amount of drifting sand would be sufficiently annoying to cause a village to be abandoned. A superficial examination of several sites indicated one or more periods of occupancy followed by periods of abandonment. At no place was a stratum of shell found to be over two feet in thickness, and more often the deposits were of one foot or less alternating with layers of sand. Doubtless shell deposits of the more distant past are deeply buried under large sand-dunes.

A number of sites had the outward form of mounds, one of which is illustrated in plate 8, figure 2. Other sites were strung along the tops of sand-dune ridges where they came close to the bay. At site 32 a ridge with an elevation of thirty or forty feet extends alongside Mad River slough. The top for a width of twenty-five to one hundred feet, and a length of eight hundred to a thousand feet is covered with shell not to exceed fifteen inches in depth.

Mussel shell of the small thin variety is conspicuous on nearly all of the sites along the North Spit, while on Gunther island it would require a diligent saving of all the fragments in a whole trench in order to get a handful.

⁵⁸ See footnote 152 in regard to site 31.

Along the east shore of the bay to the south of Eureka anything worthy of the name of a mound seems to be lacking, though there are reports that a number of sites have been washed away, including sites 71, 77, 79, and 85, as well as site 112 at the harbor entrance. There are quite a number of sites on the top of the bluffs and on the hillsides. The South Spit is low and narrow, has no timber or shelter against the wind, and is almost overwashed with waves at times of storm occurring at seasons of extremely high tides. Hence it doubtless never was very desirable except as a camping place.

At the south end of the bay there are two places where shell deposits reach a depth of several feet, sites 98 and 102, both situated near sloughs. Besides the main deposit at site 102, there is an arm reaching up the hill to an elevation of forty or fifty feet, and spreading out as a thin deposit over a wide area from which arrow points have been plowed out.

At site 103 the nearly perpendicular bluff is caving in at the present time so as to leave exposed to view a deposit of black dirt and shell about one foot in depth along the top of the bluff for a distance of nearly a thousand feet. Sites 99, 101, 105, and 106 are also deposits of black dirt on the bluff. Hence, it would appear that the Indians here preferred living at a considerable elevation where they could have a timber shelter, rather than near the water's edge where they would be exposed to the prevailing northwest winds. Shell deposits may be hidden beneath the tangled brush along the sides of the bluff; or the shells might have been opened where they were gathered and hence never have accumulated in large quantity. The people would be likely to do this rather than go to the trouble of carrying the heavy loads up to their elevated homes.

No shell deposits of any consequence were found on either Mad or Eel rivers. On the rocky coast south of Eel river shell was reported at sites 114, 115, and 117. A deposit of shell was also reported at site 116 near Guthrie creek, but two and one-half miles inland from the coast. It is said that when the whites first settled the district, there was here an open space of several acres within the forest.

Site 5, near the mouth of Mad river, is deserving of some notice because of Indian myths concerning the place. To the north of Mad river there is a tableland of an elevation of forty or more feet with a steep bluff on the ocean side. On the top of the tableland, at the edge of the bluff, a sand hill stretches for five or six hundred feet. This is perhaps a natural deposit except for the upper foot or two, which con-

sists of blackened sand filled with gopher holes. The surface is covered with an unusual number of burnt stones the size of one's fist and smaller. There are a few chert fragments, the refuse from implement making, but no signs of any shell fragments.

Sites for Surf-fishing

Powers says of the Wiyot that "their manner of smelt-fishing in the surf, whereby their eyes were often filled with brine, and the high, sand-driving winds which prevail at certain seasons about the estuary of Eel river, occasioned much ophthalmia among them, and eventually a great deal of blindness."⁵⁹ He also more fully describes fishing in the ocean surf at the mouth of the Klamath river in these words:⁶⁰

Along the coast they engage largely in smelt-fishing. The fisherman takes two long slender poles which he frames together with a cross-piece in the shape of the letter A, and across these he stretches a net with small meshes, bagging down considerably. This net he connects by a throat, with a long bag-net floating in the water behind him, and then, provided with a strong staff, he wades out up to his middle. When an unusually heavy billow surges in he plants his staff firmly on the bottom, ducks his head forward, and allows it to boom over him. After each wave he dips with his net and hoists it up, whereupon the smelt slide down to the point and through the throat into the bag-net. When the latter contains a bushel or so he wades ashore and empties it into his squaw's basket. About sunset appears to be the most favorable time for smelt-fishing, and at this time the great bar across the mouth of the Klamath presents a lively and interesting spectacle. Sometimes many scores of swarthy heads may be seen bobbing amid the surf like so many sea-lions.

It appears that smelt though fond of surf dislike beaches because the waves stir up the sand too much. Most of the Wiyot coast is sandy, but near the mouths of Eel and Mad rivers gravel has been washed down during the centuries by the rivers and distributed along the shore by the action of tide and storm. Back from the water's edge there is a ridge of sand ten feet or more in elevation, covered with logs and driftwood thrown up high and dry by storms at times of extremely high tide.

Back from this ridge to the south of Mad river all is drifting sand, which one-third of a mile from the ocean reach elevations of from sixty to eighty-five feet. To the rear of the ridge littered with driftwood, there is perhaps a greater aggregate of archaeological remains than anywhere else in the region, not excepting even the

⁵⁹ Stephen Powers, *op. cit.*, p. 103.

⁶⁰ *Ibid.*, p. 50.

larger shellmounds, for if the wind would uniformly blow away the sand we possibly might find a continuous strip of archaeological remains several hundred feet wide and over three miles long southward from Mad river mouth.

These remains are of two classes, as illustrated on plate 10, and must be of considerable age, to judge by their extent as well as the Indian myths concerning them. The first class consists of circular patches of ground six or eight feet in diameter covered with stones the size of one's fist and smaller. In some cases these stones lie only a few inches apart and nearly cover the ground. Many of them show signs of fire. The illustration is hardly typical, because in this case the stones are few in number and scattered over a wider area than usual. A partial count made fifteen such circles, and it is estimated that there are twenty or thirty in all. There were also several heaps two feet in diameter, composed of burnt stones.

The second class of remains in this shore district south of Mad river is made up of fifty or more patches of shell, chert fragments, and small stones or pebbles varying in size from hen's eggs to lentils. Why the small pebbles or coarse gravel should have been brought to the camp sites is not known, but that they were brought there by man is unquestionable, since they are not found apart from other evidences of human occupation. On the map these remains have been divided somewhat arbitrarily into four groups, sites 10, 11, 12, and 13, each being separated from the next by drifts of sand. The Wiyot also divide the remains into two or three groups, with names for each. The northern group, apparently equivalent to the group numbered as site 10, has two names, tokelibōwok and sho. The name, wadiswa, was given to remains situated south of site 10.

Small fragments of chert of various colors, blue, green, yellow, red, chocolate, and black, the refuse from implement making, are widely distributed and could be gathered by the bushel. Among them were found about forty more or less fragmentary chipped implements, including spear and arrow points, scrapers, knives, and drills. Eight of the better specimens are illustrated on plate 15. The writer knows nothing about the geology of the Humboldt bay region, but because about half of the gravel and small unbroken pebbles at these surf-fishing camps are composed of chert, there is every reason to believe that a formation of chert exists somewhere in the region, and the location would seem to be the area drained by Luffenholtz and Norton creeks, since the Wiyot names of these refer to flint. It is not unlikely

that this chert formation is of the same age and character as that in the Franciscan series on San Francisco peninsula.⁶¹

Only one specimen of obsidian was found in this district, a red and black knife about three inches long (pl. 15, fig. 2). This specimen must have been brought from a distance, since not the slightest particle of obsidian refuse could be found anywhere. Obsidian probably does not occur within the limits of the Wiyot area, and what the nearest source would be the writer is not prepared to say, but it occurs in abundance as boulders on the ridges at the head of Eel river.⁶²

A hard sandstone similar in texture to the rock from which many implements are made, and a very small amount of quartz, are the other rock materials composing the gravel and pebbles. Some of the patches covered with gravel, pebbles, and chert fragments are almost devoid of shell.

In each of the patches of shell there seems to be a tendency for one species of mollusk to predominate. In general, the most common species are those of the larger clams, *Paphia*, *Schizothaerus*, and *Saxidomus*. Next in order of abundance are the soft shell clam, *Macoma nasuta*, the razor-shell, *Siliqua patula*, and two species of mussel, *Mytilus californianus* and *M. edulis*. There were but few cockle shells, *Cardium*. As a rule the shell is very much scattered, seldom being in beds. One bed of mussel two and a half feet in diameter and six inches thick was found overlaid with charcoal. This would indicate the amount cooked at one time by baking in the shell, but for some reason the shell was left undisturbed after being baked.

Animal bones were sufficiently few to allow of all (with the exception of a few whale bones) being taken away in a sack along with the stone artifacts. They included, in order of abundance, elk, seal, sea-lion, whale, and sea-otter. Only three small fragments of human bones could be found. This fact might lead to the conclusion that there were here no permanent villages but only temporary places of abode. However, the dead might have been cremated, and the large number of burnt stones indicates that a great deal of cooking has been done here.

Nearly fifty stone sinkers were found, and a dozen stones that had been used probably in breaking up chert for manufacture into implé-

⁶¹ The chert formation, which appears to be of Jurassic age, and which is formed from an accumulation of the silicious skeletons or tests of microscopic, marine animals known as radiolaria, is found on San Francisco peninsula and northward. See Univ. Calif. Publ., Bull. Dept. Geol.; and especially A. C. Lawson, 15th Ann. Rep. U. S. Geol. Surv., 1893-94.

⁶² George Gibbs, *op. cit.*, pp. 114, 116.

ments (pl. 17, fig. 6). The great number of sinkers and the hammer stones, together with the abundance of chert refuse, would indicate that the campers engaged in fishing when the fishing was good and between times worked at flaking implements.

Wiyot informants did not mention ever having camped on the sites described above, but said that they were formerly occupied by a now extinct race. They did admit that three spots between Eel river and Cape Fortunas were used as camp sites by them while surf-fishing and gathering mollusks. The writer did not visit this stretch of coast, but was told that at site 114 the wind exposes shell and arrow points.

PLACES OF MYTHOLOGICAL INTEREST

Sites 10, 11, 12, and 13.—Chief among the places of mythological interest are the surf-fishing camps on the ocean shore south of Mad river. There are several names for these sites. Dandy Bill gave the name, tokelibōwok, for the northern site, while he said there was another name that he could not remember for the prehistoric remains opposite site 36. He was not familiar with the two names given by Aleck Sam, sho, for the northern, and wadiswa, for the southern part of the stretch of remains.

On these sites the "Old Nation" known as the wigidokōwok⁶³ used to live. The informants stated that they did not know much about these ancient people because their fathers never told them much, but that a long time ago there used to be a great many of these beings and that they were about as much like animals as they were like men. Perhaps they were the deer people, or the elk people, or possibly the duck people. The informants did not know. By and by another people came and constantly tricked the first people. One way in which they annoyed them was by dropping excrement down the smoke holes into

⁶³ The mythological material in the following pages was obtained only incidentally, and is given with the hope that it may serve as a clue to future investigation. Sketches of Wiyot mythology have also been made by A. L. Kroeber under the titles: *Wishok Myths*, *Jour. Am. Folk-Lore*, xviii, 85, 1905; *Wiyot Folk-lore*, *ibid.*, xxi, 35, 1908; *Religion of the Indians of California*, present series, iv, 348, 1907. In the last paper cited (p. 342), Kroeber says: "The Northwestern mythologies are characterized primarily by a very deeply impressed conception of a previous, now vanished, race, who by first living the life and performing the actions of mankind were the producers of all human institutions and arts as well as of some of the phenomena of nature. Second in importance in the Northwest are myths dealing with culture-heroes more or less of the trickster type." In the second citation (p. 38), Kroeber gives the name, wigidokōwok, in a slightly varying form. He says: "Powerful supernatural beings are called wakirash, or yagabichirakw. Among such are the inhabitants of lakes. When one of these takes pity on a man, he becomes physically strong and fierce."

their dwellings. These droppings can be seen now as the circles of stones that have been described (pl. 10, fig. 2). So the first people became angry and left. Some say that they went far to the south, and that perhaps their descendants are now the Mexicans.

Site 8.—These same ancient people used to live also on site 8 near a waterfall on Mill creek. According to a manuscript of A. L. Kroeber, the Yurok believed that the trail to the world of the dead began at a place near here.⁶⁴

Site 5.—This site, located at the top of the bluff near the mouth of Mad river, is associated with the Old Nation by both the Wiyot and the Athapascans living on Mad river. Tom Brown, who is getting old and in consequence is somewhat incoherent in his remarks, said that his father used to make a Jumping dance for ten days every summer at the recent village at site 4, and the same kind of a dance every winter on top of the bluff where the "first people" used to live. He said in connection with this dance that if one dreamed of snakes he would have no luck in fishing for four or five days. He also made several statements regarding a flood that was understood to apply to the people of this place. There was a flood that three times drowned all the people on earth, but they said: "Next time we will grow up." One man always came back again and was the beginning of another people, which in its turn was drowned.

Table Bluff.—Dandy Bill associated Table Bluff with the flood.⁶⁵ He said that "many thousands of years ago" there was a flood all around Table Bluff. One man prophesied that a flood would cover all the earth and all the hills; but some people would not believe him. A woman made a water-tight basket large enough to hold a boy and his sister. She gave the boy a stone knife about four inches long, put a tight cover on the basket, and smeared it with pitch. Roll! roll! roll! went the basket in the waves. By and by the boy could not feel it rolling any more. He cut a hole in the basket and found that there was no more water, that it had all gone down. Then he saw raccoon tracks and frog tracks. He built a brush hut, married his sister, and the world became peopled again.

Site 78.—Another place where the Old Nation used to live was at site 78, near Elk river. The first people that ever lived made a name for this place, calling it chwānochkok. That was the "old fashioned

⁶⁴ See footnote 170.

⁶⁵ A. L. Kroeber, *Jour. Am. Folk-Lore*, xviii, 96, says that a high mountain between Mad river and Redwood creek was another elevation of this region that reached above the waters of the flood. See page 296.

name" which the fathers passed along to their sons, so that the place has always been called by that name.

Site 68.—Dandy Bill said that there were many stories about the large shellmound on the center of Gunther island. His accounts are about as follows: For thousands and thousands of years this place has been occupied by a very large village belonging to one "nation" after another. Two hundred years ago⁶⁶ there was a medicine-man living here who was the first man of one of the nations. One day just after breakfast he saw five pelicans flying overhead. He made a "roll" (charm) and said: "I wish you would fall." Four of the pelicans fell but the fifth flew away. After getting the pelicans the medicine-man had great success in fishing and became a powerful man, inducing many people to live at his village.

At one time fish were very scarce and could not be caught. Then this medicine-man took an old pipe about four inches in diameter and filled it with native tobacco. He smoked the pipe and "wished" for fish and all kinds of food. He took two men in a canoe and paddled all about the bay. He went toward Arcata wishing for fish, and did not come home until daylight. Then he lay down in the sweat-house and said to the two men with him: "You can catch fish now. I felt it some little time ago." The two men came back with a boat-load of fish.

Site L, gērāri-dērsiskadawin.—At this place, located near a county bridge on Mad river, there is a big rock in the river bed, with peculiar natural markings across its top. There was a young unmarried woman, *gērāri*, who came from a far away country, and who had a baby by a man living at this place. The child matured at a phenomenal rate. Then the young woman was homesick. The man tried to persuade her to stay, but she was obstinate; so he pressed her down into the river and made her stay there.

The Athapascan account is very similar, adding that the man was the very first of the Indian race, and that when he found that he could not keep the woman he killed her, making several slashes with his knife across her body, which are now the marks on the rock.

Other places.—On Eel river near site AZ, according to an old tale, there used to be a little animal, something like a coyote, that came to the top of the water and barked. The details of this story were not obtained.

⁶⁶ The informant, although thoroughly reliable in other respects, was very inconsistent in his statements regarding the duration of time, two or three hundreds of years apparently often meaning as much to him as the same number of thousands or hundreds of thousands.

There were several other sites concerning which informants said there were stories of the people who used to live on them. Two informants hinted that there were tales about site 22 at Samoa. Sites 79, 108, and 23 were occupied by villages "a long time ago," that is, "one hundred," or "two hundred," or "three hundred years ago" in the Indian's vague, indefinite way of reckoning the passage of time. Site 23 besides being perhaps the largest shellmound of the region, and hence undoubtedly ancient, was a place where a dance was held. People also lived on sites 2 and 3 "a long time ago." As time was limited, the writer did not press his inquiry, and so is unable to say whether these stories belong to the realm of mythology or to that of historical tradition.

Athapascan Myths.—The Athapascans say that before the Indians existed there was another race, the first people, called *djiholdjwhe*.⁶⁷ These people were born at the mouth of Mad river at site 5. There were also many of them up the river at site N, where the county road, following an old Indian trail, goes around a rock, *tsa*, the name of the place being *tsa-minilgetindik-tin*. Farther up the river at site P, the first man met a woman and tore her dress.

LISTS OF GEOGRAPHICAL NAMES

The writer has had no training in phonetics and in consequence can lay no claim to great accuracy in the orthography of the following Indian names of places. All the Wiyot names were obtained from Tom Brown and Aleck Sam, who live at the mouth of Mad river, and from Dandy Bill, who lives at the south end of the bay. The Athapascan names were obtained from Jim Brock, born at site Y, and John Stevens, born near Maple creek. Both men have Whilkut wives and their dialect is probably Whilkut, although they have had considerable association with the Chilula. About three-quarters of the words, or those obtained from Dandy Bill and the two Athapascan informants, were recorded on a phonograph, so that the writer's memory might be refreshed and inconsistencies eliminated. Unfortunately the record obtained from Jim Brock was broken in transit. Owing to this fact as well as to the extreme difficulties of Athapascan to a beginner, the writer is much less satisfied with his orthography of these names than with his Wiyot names.

⁶⁷ The writer is not certain whether the word is in the singular or the plural, whether it is the name of a race or the name of the first man of that race.

In the various Wiyot names all the consonant sounds found in English were encountered, except *f*, *v*, and *z*. In addition to these there were several other sounds. One of these is similar to the Welsh *ll*, and has been written *L* in conformity with the usage of American anthropologists. A catch has been written ' . *Ch* is as in church ; *x*, met with only three times, has a sound similar to German *ch* in buch ; *g* denotes the sound as in go ; *j* has the English sound, written *dj*, never the French *zj* sound ; *t* has a sound similar to *th* in thin. Where a syllable is strongly accented it has been marked thus : ' . The vowel sounds are as follows :

ā as in father	ō as in note
a as in Cuba	o as in hot
a as in hat	ū as oo in boot
ē as in they	u as in put
e as in met	ai as in aisle
ë as in her	au as ou in loud
ī as in machine	oi as in oil
i as in pin	

In some cases an informant gave a second name for a locality. In other cases different informants either pronounced differently or used another name. In the latter case it is possible that a different locality in the near vicinity was intended. When inquiry was made as to the meaning of a name, it was frequently stated that it was merely the name and without any meaning, though there is little doubt that a greater expenditure of time might have found meanings for most of the names. Sometimes either a very free translation was given or something descriptive of the surroundings. Literal meanings, whether obtained from informants or from existing vocabularies, are presented with hyphens connecting the stems, and with corresponding hyphens connecting the English translations of these stems. A question mark in connection with the translation of a stem indicates that the exact correctness of the translation is doubtful, while the same sign separated from the remainder of the translation by a hyphen shows that no meaning is known for the Indian stem which occupies a corresponding position.

The same system of orthography is used for the Athapascan names as for the Wiyot names. One sound noted neither in Wiyot names nor known in English is rendered by the letter *w* in conformity with the usage of Dr. P. E. Goddard.

Wiyot Geographical Names

The following are the names of archaeological sites which were used in 1850 by the Wiyot as village or camp sites:

- Site 1, tā-pel-o, “?-flint”
- Site 2, plet-kosom-ili, “rock-small-?”
- Site 4, kōlikē⁶⁸me⁶⁸
- Site 6, chumī’, djōme
- Site 7, gwisok⁶⁹
- Site 9, betsēr⁷⁰
- Site 14, hotwaiyorwok
- Site 17, iugutkuk
- Site 19, tsērketso⁷¹
- Site 26, lekaliwīL, sgekeliwisg
- Site 31, tokalewīLk, tokelibesL, tokalibwīL
- Site 32, tāgoriok
- Site 33, tāpō’t, howetotōl
- Site 34, mōle’l
- Site 34, (graves), witāchwhāyuwin
- Site 36, bikatslikātwayāwik, bēgutsglits
- Site 39, mipa’t
- Site 48, plets-wok, “rock-at”
- Site 58, ikatchipi
- Site 65, tōlōiapLk
- Site 67, tōlōwot
- Site 68, etpidol wotpērōL
- Site 73, kutsērwaLk⁷²
- Site 77, ikso’ri
- Site 78, chwānochkok
- Site 79, djorōkēgochkok
- Site 80, mōroLrok
- Site 83, dolawotkuk
- Site 84, topōrok
- Site 86, potatoli
- Site 88, ātwhutkārūwiltaliwēL
- Site 90, toktowoka
- Site 91, kosubopla
- Site 92, sowokwokērtsokowēL
- Site 93, yowo
- Site 98, tsok
- Site 100, yawonawoch
- Site 102, tolēL
- Site 104, twetkoka, twetkok’kēr

⁶⁸ Meaning said to be “across the river.”

⁶⁹ The ending *-ok* is met with over twenty times; cf. Wiyot locative suffix *-akw*, on, in, at (present series, IX, 395).

⁷⁰ Cf. *bātwar*, freshet; *gawu-betser*, it is becoming dry (present series, IX, 409, 398).

⁷¹ Cf. *tsar*, small species of mussel.

⁷² Cf. *guts*, good.

- Site 109, lokelébū⁷³
- Site 112, bētmēt
- Site 114, tokértāyērwoK
- Site 115, lolito'dek, loliso'tak
- Site 117, dat-ōwoK, "up-at"

The following archaeological sites are not known to have been used by the Wiyot in modern times as dwelling places. In addition to these, there were nearly fifty other sites, for which no names were obtained.

- Site 3, doLokoli
- Site 5, kliwatkut⁷⁴
- Site 8, dje'gedjoho
- Site 10, tokelibōwoK, sho
- Site 11, wadiswa
- Site 22, djō'mak
- Site 23, digawethatkiL, tekewethatki
- Site 37, klauwēgidil, drauarērkwēratchkēr
- Site 38, shotoshērōkotkērel, miset'
- Site 69, djērōchichichiwil
- Site 70, toLokoliL, toklokoliL⁷⁵
- Site 71, wots-atklik⁷⁶
- Site 82, toLokobidjwotno, tokōbidjwotno
- Site 85, ērotpiL
- Site 87, totērnrēklomuk⁷⁷
- Site 108, likagērolik⁷⁸
- Site 110, wērkatkōlūitōli, wērkatkōlowotōleL⁷⁹
- Site 113, welapL

The village and camp sites in the following list were located by the help of Wiyot informants. They were either not visited by the writer or if visited were found to contain no noticeable archaeological remains.

- Site A, hatpile'kā
- Site B, krochgro'yēkruk, tāsiswa⁸⁰
- Site C, tisopiligeLi
- Site E, plet-ēr-sowet, "rock-?white"
- Site F, klichimāt

⁷³ Name refers to the trail crossing the peninsula from the bay to the ocean beach. Cf. the names for sites 10, 26, and 31.

⁷⁴ Name said to refer to a rise of ground.

⁷⁵ Cf. *lolix*, slough; *lalil*, creek.

⁷⁶ Cf. *wāts*, diminutive.

⁷⁷ Name said to refer to an extra large spring.

⁷⁸ Name said to refer to a marshy point. Cf. *likogērleli*, point or cape.

⁷⁹ Name said to refer to a log partly made into a canoe, then abandoned. Cf. *ikatāti*, house boards or lumber; *holōwi*, canoe; and *dale*, stand. *Holōwi* is itself a compound from *hō'l*, water, and *ōwi*, go.

⁸⁰ *Siswa*, black, probably referring to an edible plant growing there. See under Ethnobotany, also footnote 98.

Site H, tokoktāweLēr
 Site I, klichibot
 Site J, tokelērboku⁸¹
 Site L, gērāri-dēsiskāwin, gērāri-dēsiskadawin⁸²
 Site O, tāriwērwiyūgun⁸³
 Site P, kotsil-howi-loli, "crow-come-creek"
 Site E, topōdērōs, tāpōtērōs⁸⁴
 Site AL, kōkte'
 Site AM, gōmēodo'dog
 Site AN, kwetōLS
 Site AO, totokuk
 Site AP, wotsaLīk
 Site AQ, tolotpLīk⁸⁵
 Site AR, tekwoGok
 Site AS, itegok'whule⁸⁶
 Site AT, mīplok
 Site AU, hochwochkor
 Site AV, tokwhērok
 Site AW, howotkiL
 Site AX, wosala
 Site AY, swēanawochkro
 Site AZ, hokōnwoyok
 Site BA, kwigērgoyok
 Site BB, tswokērok
 Site BC, tsolskoge
 Site BD, kigērgodolil, kigdērgōdolti
 Site BE, wotwetwok
 Site below Scotia, tokēmuk
 Site at Scotia, tokēnēwoLok

The following list includes the Wiyot names of rivers and creeks arranged in their order from north to south:

Luffenholtz creek, tā-pel-ō, "ʔ-flint"
 Little river, itehgāro'⁸⁷
 Strawberry creek, kwespērkogoli
 Creek at site 3, loliz⁸⁸
 Mad river, bātwtō⁸⁹
 Mouth of Mill creek, tūneskut
 Mill Creek falls, tāLe', tōLi

⁸¹ Name said to refer to spearing salmon.

⁸² *Gērāri*, young unmarried woman.

⁸³ Name said to refer to Warren creek cañon being like a split crotch.

⁸⁴ *Topōdērōs*, an onion-like food plant. See under Ethnobotany.

⁸⁵ Name said to refer to a slough around it.

⁸⁶ Name said to refer to a leaning spruce; cf. *tok*, spruce.

⁸⁷ Name said to refer to a kind of footprint in the flat rock at the crossing.

⁸⁸ The word for slough, though the application here is not known.

⁸⁹ Stephen Powers, *op. cit.*, p. 96, used the term *Patawāt* to designate the inhabitants of lower Mad river.

Vance creek, kotsil-howi-loli, "crow-come-creek"
 Lindsey creek mouth, topodēros-dotigērdol⁹⁰
 Lindsey creek, tāpōtērōs
 Hall creek, djonokut-otigērdol
 Norton creek, pel-taliwēL, "flint-?"
 North fork of Mad river, rō'lit
 Humboldt bay, wikē⁹¹
 Jacoby creek, kōktē'
 Freshwater creek, gōmēododog
 Clark slough, toLokolil, toklokolil⁹²
 Elk river, ikso'ri⁹³
 Salmon creek, toktowoka
 Eel river, wiyot
 Palmer creek, wedjodjtog
 Strongs creek, geLwot
 Price creek, weLok
 Van Duzen river, kigērgodolil, kigdērgōdolti
 Salt river, oka't
 Francis creek, topōchochwil
 Williams creek, Lōwē'aka
 Branstadter creek, gigērton
 Guthrie creek, lolito'dek, loliso'tak
 Oil creek, datōwok

Tom Brown gave metchkor as the name of the Yurok dialect spoken at Trinidad and Little river, saying that the people at Big Lagoon to the north of Trinidad spoke differently.⁹⁴

Grizzly Bluff, the ridge between Williams creek and Price creek, was called wiritildodj, and the point of Grizzly Bluff opposite Van Duzen river was kadjo'h-dätigērdoli.⁹⁵ There were many acorns produced on this ridge, which furnished food for numerous grizzly bears.

Above How creek there is a slide where fossil clams, abalone, etc., are said to be found. It is called kotwāryūwok. The name of only one of the numerous prairies was obtained, that of Arcata Prairie, gudini'. The names of the trails have been given on page 231.

⁹⁰ *Topōdērōs*, an onion-like food plant. Name said to mean "wild potato creek come out to the river."

⁹¹ George Davidson, *Pacific Coast Pilot*, p. 102, 1869, gives Qualawaloo as being the Indian name of Humboldt bay.

⁹² See footnote 75.

⁹³ George Gibbs, *op. cit.*, p. 131, gives the name as Kashareh. The Coast and Geodetic Survey chart of 1858 gives the name, Mowitch, but this is a name introduced by the whites from a Chinook word meaning deer or elk.

⁹⁴ According to A. L. Kroeber this name is probably the Yurok name of Little river, metsko, and site 2 at its mouth, see page 297.

⁹⁵ The latter half of this name occurs also in the name of two creeks tributary to Mad river. See footnote 90.

Athapascan Geographical Names

Jim Brock, born at site x, gave the Athapascan names of places along Mad river as far up as Maple creek, and John Stevens, born at tsē-didis-ten, two miles below Maple creek, gave the names of places between there and Blue Lake. The following are the place names:

- Site 4, kidjēhōlin-tin⁹⁶
 Site 5, djēdjōlineme
 Site A, enukakachi⁹⁷
 Island, tāsāsāntasukut, tāsāsānukut
 Site B, tāsol-tin⁹⁸
 Site 6, yegidilos-ten
 Site 7, tet-ming-a, "brush-edge"
 Mill Creek falls, nilin
 Site c, klōche-nā'lin-tin, "flat(?)-creek-place"
 Site D, kos-tenaiete-ten, "wild potato-?place"⁹⁹
 Site E, mis-krit, "bluff along"¹⁰⁰
 Site F, holchē'k-me', "nettle-?"
 Site G, klōchimēik'il-tin¹⁰¹
 Site I, tāchenkālchwhē-ten¹⁰²
 Site 9, tidil'tin¹⁰³
 Site J, klokwō'seskō-ten, "sturgeon-?place"
 Site K, klōkai-kemēklōk¹⁰⁴
 Site L, yāhōtkete-ten
 Site M, genāsā'nime
 Site N, tsa-minilgetindik-tin, "rock-?place"
 Site O, tōi-hunsēl-ten, "?-sun-place"¹⁰⁵
 Site P, kaiai'dikik-tin
 Site Q, tsa-tikai-tin, "rock-?place"¹⁰⁶
 Site S, djemashun-dāsun-den, "fern-?place"
 Site T, kōchwēkē-ten¹⁰⁷
 Site U, khōkwo-siltin-tin, "redwood-?place"¹⁰⁸

⁹⁶ Name said to refer to the "river going down." Nearly two-thirds of the names have the locative suffix, of which the variations -tin, -ten, and -den were noted. P. E. Goddard, Notes on the Chilula, present series, x, 282, 1914, uniformly writes -dīñ.

⁹⁷ Name said to refer to the "village on the other side."

⁹⁸ Name said to refer to a kind of edible "grass" growing there, a plant three feet high called *honsisaliwheh*, probably wild caraway. See heading, Ethnobotany, and footnote 80.

⁹⁹ Name said to refer to digging "wild potatoes" growing in wet and marshy ground and washing them in a "lake" at this place.

¹⁰⁰ The Jumping dance was said to be held here.

¹⁰¹ Name said to refer to getting fish here, including smelt, *tedintil*.

¹⁰² Name said to mean "fern roots make them place," *tāchenkā* being the edible fern roots.

¹⁰³ Name said to refer to a smooth river, favorable for catching salmon.

¹⁰⁴ Name said to mean "they grow like wild oats." A prairie was near by on which *klōkā*, wild oats, grew, and there were pounded into meal to be eaten.

¹⁰⁵ Name refers to the timber being so dense that there was but little sunshine.

¹⁰⁶ Name refers to white rock, now buried in sand, which was visible for a long distance.

¹⁰⁷ *Kōchwēkē* is an onomatopoeic name of a bird, possibly the quail.

¹⁰⁸ A flat prairie with one big redwood log to which the name refers.

- Site v, *dāmā-miLauilin-tin*¹⁰⁹
 Site w, *itsin-ietū'lin-tin*, "go down-?-place"¹¹⁰
 Site x, *itikikū'mān-tin*, "woodpecker-?-place"
 Site y, *itsin-ohogindis-ten*, "go down-?-place"¹¹¹
 Site z, *mis-kritikrit*, "bluff-?"
 Site AA, *klokeche*
 Site AB, *djādenesnō-ten*
 Site AC, *taikēw-shun-den*, "sweathouse-?-place"
 Site AD, *mis-kenē'hu-ten*, "bluff-?-place"
 Site AE, *mikētime*¹¹²
 Site AF, *gestakat*¹¹³
 Site AG, *khayame*¹¹⁴
 Site AH, *tsē-inātūlwo-ten*¹¹⁵
 Site AI, *djinākhōe-ten*¹¹⁶
 Site AJ, *tolkai'e-ten*¹¹⁷
 Site AK, *dj'ēndjēe-ten*, *dj'ēndjē-whot*¹¹⁸
 Wiyot boundary, *tsē-tenā'tūlwo-ten*¹¹⁹
 Cañon creek mouth, *who'ntā*, "houses"
 —, *mis-tā-ten*, "bluff-?-place"¹²⁰
 —, *khōkwo-tāche-ten*, "redwood-?-place"¹²¹
 Dry creek mouth, *ārtēs-slandjēōlin-tin*, "grasshopper-?-place"
 Site below Foster creek, *whotsdjōtāche-tin*¹²²
 Site on Foster creek, *ituke-nōle'tin*, "up-waterfall-place"¹²³
 —, *k'ēyāme*¹²⁴
 —, *yinok*, "south," or "up stream"¹²⁵
 —, *tsē-didis-ten*¹²⁶
 Black creek mouth, *hotintēlime*¹²⁷
 Maple creek mouth, *tilchēhūērkut*, *dilchērhūērkut*
 Boulder creek mouth, *yinālinōwhot*

¹⁰⁹ *Dāmā*, a kind of dark wood growing to a size of four inches in diameter.

¹¹⁰ Name said to refer to a bend in the river here.

¹¹¹ Name refers to the trail going down from Liscom Hill Prairie, *holtsista-tin*, to the village.

¹¹² Name said to refer to being behind North fork of Mad river.

¹¹³ Name said to refer to a deep fishing hole.

¹¹⁴ Name said to refer to an eddy at the base of a waterfall.

¹¹⁵ *Tsē*, sticks, which were left there after a prayer. See page 253.

¹¹⁶ Name said to refer to a prairie.

¹¹⁷ Name said to refer to shining gravel.

¹¹⁸ Name refers to a strong sweep of the wind at that place.

¹¹⁹ Name said to refer to "many rocks in the river." Cf. the name for site AH. *Tsē* means rocks, also sticks.

¹²⁰ First village above Cañon creek on the northeast side of the river, position not definitely located.

¹²¹ Second village above Cañon creek on the northeast side of the river, position not definitely located.

¹²² Three houses, three or four miles below the mouth of Maple creek. Name said to refer to a low prairie.

¹²³ Same name also given to a prairie half a mile up the creek from its mouth; *ituk*, up, also, east.

¹²⁴ Location not determined; an eddy, a deep fishing hole. See similar name for site AG.

¹²⁵ Two houses on the east side of the river, two or three miles below Maple creek.

¹²⁶ Ten or more houses two miles below Maple creek.

¹²⁷ Name said to refer to a prairie near by, known as *hinukērchēnditen*.

The following are the Athapascan names of creeks along Mad river:

Mad river, *nilin-taike*¹²⁸
 Mill creek, *nāwilin*
 Warren creek, *kāghuntaui-tin*¹²⁹
 Lindsey creek, *honsokhot*
 Hall creek, *djonohat*
 North fork of Mad river, *gināndē'hōt*
 Wind creek, *dj'ēndjē-what*¹³⁰
 —, *ārtēs-slanke*, "grasshopper-?"
 First creek below Cañon creek, *mis-kwo*
 Cañon creek, *ginātsānō-whot*
 Next creek east, *getsēēr-whot*
 Dry creek, *ārtēs-slandjēōlin*, "grasshopper-?"
 First creek north of Foster creek, *sitdjikaite*, *sitdjitā-whot*
 Foster creek, *djelūō-whut*¹³¹
 Butler creek, *dj'ēndjē-whot*¹³²
 Black creek, *tsē-tāk-whot*
 Maple creek, *djemētā-whot*¹³³
 Boulder creek, *ynālinōwhot*

Wiyot Names Obtained by Kroeber and Waterman

A. L. Kroeber and T. T. Waterman in the course of other studies obtained a considerable number of Wiyot names of places, not alone in the territory of the Wiyot but in the territory of the surrounding peoples as well, and also a list of Yurok names of places in Wiyot territory. The orthography in these lists is as taken from a manuscript of Dr. Kroeber's and is as follows: L, surd l, perhaps usually spirant, but probably sometimes affricative; g, spirant, always in Yurok, often in Wiyot; q, velar; x, postpalatal spirant; š, nearly like sh; er, vocalic r; a, similar to a in hat. The Wiyot names for the various neighboring peoples follow:

Crescent City and Smith river Indians, *dalawa*
 Karok Indians, *gura-dalil*
 Karok language, *gura-dalil-rakwe-lak* or *denakwate-lak*
 Hupa Indians, *hap'tana*
 Upper Trinity river Indians, *deiwin*
 Chilula and Whilkut, *wiš-ašk*¹³⁴

¹²⁸ A small river or creek is called *nilin*, a large river, *hantne*.

¹²⁹ Name said to refer to birds, like crows, flying about.

¹³⁰ See footnote 118.

¹³¹ Name said to refer to the many fish, including crooked nose salmon, that go up this large creek.

¹³² See footnote 118.

¹³³ *Djemēwhung*, white pine.

¹³⁴ *Wiši*, inland, east. The term *Wishosk*, through a misunderstanding, has been erroneously applied as a designation of the Wiyot by early writers.

Athapascan language, wiši-lak
 Non-Athapascan people of upper Mad river, da-sulatelu
 Wiyot Indians on Mad river, batwat-dare-dalil
 Indians on Humboldt bay, wiki-dare-dalil
 Wiyot Indians on Eel river, wiyot-dare-dalil

The Wiyot place names, presumably either archaeological or modern village sites, as obtained by A. L. Kroeber and T. T. Waterman, follow. They are arranged in order down the coast and up each succeeding river. Some of them can be identified with sites located by the writer; others are perhaps second names for sites mentioned in the writer's lists; while still others are undoubtedly sites either not located at all by the writer or sites for which he obtained no names. Two of the informants were Yurok Indians at Trinidad who knew both the Wiyot and the Yurok names, but doubtless the pronunciation of Wiyot names is more or less modified. And for that matter, the writer noticed a considerable variety of pronunciation among the Wiyot themselves.

Mouth of Wilsons creek, dalil-rukiwar, "stream-?"
 Requa, katka-dalil
 Weitchpec, takeluwaliL
 Orleans, gatsewinas¹³⁵
 Medildiñ (Hupa), haluwi-tulaliyut-hu, haluwi-talaleyul¹³⁶
 Xōwuñkut (Hupa), dabotšere
 Gold Bluff (Yurok ešpeu), eškapš
 Orick, hapš
 Below Bair, kawa 'Lakw¹³⁷
 Bair, tanatapLagerawakw¹³⁸
 Berry, dalekwuta 'n, dalekwuta 'L¹³⁹
 Stone Lagoon (Yurok, tsahpek), tsi'puš
 Big Lagoon (Yurok oketo), ri'tsap
 Patricks Point, tširokwan¹⁴⁰
 Wooded point beyond, datšai
 Near a mill, talalkakwo
 Trinidad, dakatšawayawan, dakatšawayawik¹⁴¹
 Site 1, dapelo 'L
 Honda Landing, dotwiL
 Site 2, pletkašamale, pletkašamalil¹⁴²

¹³⁵ Orleans is the seat of several Karok villages.

¹³⁶ *Haluwi*, boat. For location see map in present series, I.

¹³⁷ -*akw*, locative suffix, at, in, on. This village on Redwood creek is perhaps site M in P. E. Goddard's Notes on the Chilula, present series, X, 1914.

¹³⁸ Site P of Goddard's Notes on the Chilula.

¹³⁹ At the bridge five miles above Bair.

¹⁴⁰ An important place in myths.

¹⁴¹ George Davidson, Pacific Coast Pilot, p. 104, 1869, gives the Indian name of Trinidad bay as Sho'-ran.

¹⁴² *Plet*, rock; *kasam*, small.

Mad River bridge, katšewinatš
 Site 9, we'tso
 Site o, derawa-weraya-yegani
 Site z, dat-ikwog-ak, "up-f-at"
 Site Y(?), (Yurok ošlegoi), daridiwiyagak
 Site AH(?), dagatša-wogerak¹⁴³
 Murphy, dat-hanetkek, "up-ŋ"¹⁴⁴
 —, dariwetšaruwe¹⁴⁵
 Three Cabins, pleta-lauleli'n, "rocks crossed"
 Rock point, plet-kukatš¹⁴⁶
 North Spit lighthouse, kas-wegaramek¹⁴⁷
 Site 14, katawayawik
 Site 15(?), walepL¹⁴⁸
 Site 16(?), lalil-wak, "stream-at"¹⁴⁹
 Site 17, hiegatgak, hieratgak
 Site 21, watšelwatšk
 Samoa, tabayat
 Site 23, witki¹⁵⁰
 —, kotsir, "crow"¹⁵¹
 Site 31, tokelomigimil¹⁵²
 Site 39, mipet
 Site AL, goketen, koktin
 Jacoby creek mouth, širuktami
 Site AM, kumaidada
 Site AN, kawelats
 Near Eureka, moper-akw
 Site 67, dulawat
 Site 68, atberol
 Site 69, tšarutšitšiwil
 Site 70, taLekalil
 Flanagan mill, hakweša

¹⁴³ Described as being west of Bald mountain in the drainage area of North fork.

¹⁴⁴ On the ridge northeast of Maple creek.

¹⁴⁵ On Mad river about fifteen miles above Blue Lake, which would make it near Boulder creek, if any reliance can be placed on the estimate of the distance.

¹⁴⁶ A large point of rock on Mad river upstream from the last.

¹⁴⁷ South end of North Spit; *kas*, small.

¹⁴⁸ Cf. name for site 113.

¹⁴⁹ There is a small marsh and slough in front of site 16, which, according to early Coast and Geodetic Survey charts, were formerly more pronounced than at present.

¹⁵⁰ Given by a Yurok as the Wiyot equivalent for his name teuho, which was near Samoa on the line of travel from Gunther island to Mad river; hence it must be site 23. The name witki was said to refer to a dance held here, agreeing with a statement of Robert Gunther that the Indians used to dance at site 23.

¹⁵¹ The Yurok name erterqer was said to refer to a creek or slough running parallel, probably meaning either a small slough in a marsh or a channel in the tide flats. It was south of site 31 (Yurok eni'qoleL; Wiyot, tokelomigimil) with two inhabited places between, whose names had been forgotten.

¹⁵² The Yurok equivalent eni'qoleL is said to mean "sand-dunes go over." Old sand-dunes over twenty feet in elevation now covered with beach pine reach to the bay near site 31 and the name was given perhaps in memory of the time when fresh sand-dunes encroached upon the bay.

Butcher, site 71, tšewakwer-akw
 Fort Humboldt, site 72, tšuwatškerer
 —, wamel
 Site 73, kutsowerlik
 Site 77, ikšare
 South of Elk river, tarogapli
 Site 79, tšerokigetšk
 —, potilik
 —, plets-wak, "rocks-at"¹⁵³
 Fields Landing, dji'djar
 Site 90, dakduwaka
 —, legetku¹⁵⁴
 Site 112, bimiri¹⁵⁵
 Loleta, katawalat
 Fortuna, dakwagerawak¹⁵⁶
 Rohnerville, haki-gaswa
 Alton, watsayeridil
 Hydesville, tšiwilit
 Riodel, dakimak¹⁵⁷
 Ferndale, butšatšwil
 Site 114, dakdayogak
 Site 115, lalitara'dek
 Site 117, datogak
 Bear river mouth, tšwaregadatšil
 Mattole river mouth, wetšaril

The following are the Wiyot names of rivers and creeks as obtained by Kroeber and Waterman:

Klamath river, ikti'n, hikti'n
 Trinity river, takeluwali
 Redwood creek, darebus, hale-wiši¹⁵⁸
 Stone Lagoon, tsi'puš
 Big Lagoon, ri'tsap
 Little river, plet-kašam-ale, "rock-small-?"; plet-kašamali
 Mad river district, batawat
 Mad river crossing, takelawaku¹⁵⁹
 Warren creek, derawa-weraya-yegani
 Vance creek, swaptil-haluwi-lalil, "f-boat-creek"
 Lindsey creek, taboderuš-datige-ralil, "wild potato-?creek"

¹⁵³ This name is identical with that of site 48, but judging from the meaning, "rocks-at," there might be more than one place with this name.

¹⁵⁴ The Yurok equivalent leplen was on a promontory, perhaps meaning a point of high land as at site 102, or perhaps a point of marsh as at site 108, see footnote 78. Two Yurok informants disagreed as to its position, one placing it on the South Spit and the other at the south end of the bay.

¹⁵⁵ The location was somewhat confused in the information given by the Yurok informants, but was definitely placed by one Wiyot at the breakwater, site 112.

¹⁵⁶ Cf. with names of sites AR and AV.

¹⁵⁷ Below Scotia.

¹⁵⁸ *Wiš*, east or inland.

¹⁵⁹ Probably opposite site 7, which Tom Brown mentioned as a ferry.

North fork, rilit
 Mad River slough, tabagaukwa
 Humboldt bay district, wiki
 Daniels slough, mipet
 Freshwater creek, kumaidada
 Ryan slough, kawelats
 Elk river, ikšare
 Salmon creek, dakduwaka
 Eel river district, wiyot
 Van Duzen river, haki-tege-raliL¹⁶⁰
 Salt river, hoket
 Guthrie creek, lalitara'dek
 Oil creek, datogak
 Bear river, tšwaregadatšil
 Mattole river, me'dol metol

Among the miscellaneous Wiyot names obtained by Kroeber and Waterman are the following:

Bedding Rock, tšugitšetšwelage. This is a rock 94 feet in elevation and famous for its mussels, situated five miles offshore opposite Gold Bluff.

Trinidad Head, klonetšk.

A marsh near site 67, hetšel. This is probably Bird island.

Cape Mendocino, tsekiot.

Bald Hills, between lower Redwood creek and the Klamath, talawulitskilik.

A high mountain between Mad river and Redwood creek, probably Chaparral mountain, yerded'hi.¹⁶¹

Bear River mountains, tsakiuwit.

Dows Prairie, plet-alawakwaun, "rock-?"

Arcata Prairie, gudene, gudinin.

Kneeland Prairie, guketš.

A place near Singley on Eel river, wukl-akw. This corresponds with the name wozlok obtained by the writer for the trail over which the party of L. K. Wood was guided to Eel river.

Table Bluff, raluaka. This corresponds with lalöekā, the trail along the ridge of Table Bluff.

Some of the Yurok information regarding the south end of the bay was confusing, ayo, "ferry," being given as the Yurok name of a village whose Wiyot equivalent was variously given as haluwil, "ferry," and tektuwit. The two names together would correspond to toktowoka-hollowol, the trail from site 90 to the top of Table Bluff.

In the *Journal of American Folk-Lore*, A. L. Kroeber¹⁶² mentions twutka-dalagerili as being on Eel river opposite Table Bluff. As the ending of the name seems to be the same as the ending of the names for the mouths of Lindsey and Hall creeks, the writer surmises that this is the name for the mouth of McNulty slough or some other slough of the vicinity. In the myth concerning this place men embark in a boat and go across the ocean to a place called shure, where a woman is obtained. After the marriage the couple live at dapeletgek, Arcata Bottom.

¹⁶⁰ Cf. *haki* with the name for Rohnerville; and for *tege-raliL* see footnotes 95 and 90.

¹⁶¹ See footnote 65.

¹⁶² A. L. Kroeber, *Wishok Myths*, *op. cit.*, p. 105.

Yurok Names Obtained by Kroeber and Waterman

The Yurok called their southern neighbors speaking the Wiyot language the weyet or weyot. Such Yurok geographical names obtained by Kroeber and Waterman as occur within the limits of the accompanying map, plate 1, will here be given.

- Trinidad, tsurai
 Site 2, metsko¹⁶³
 —, neqeqwie¹⁶⁴
 Strawberry creek, poyura
 —, pa'oluš, "water find"¹⁶⁵
 Site 4, ma'awor¹⁶⁶
 Site 5, šepola, "prairie"¹⁶⁷
 Site A, tegwol¹⁶⁸
 Site 7 (?), ošoq¹⁶⁹
 Mill Creek falls (?), lohLqoekonan, "rock has"¹⁷⁰
 Site 9, erlerw¹⁷¹
 —, nerqerq, wo'men¹⁷²
 Lindsey creek (?), otegoišolege'L, "they dig wild potatoes"
 —, otegoiumneri
 Blue Lake, ošlegoi
 Site 23, teuho¹⁷³
 —, erterqer¹⁷⁴
 Site 31, eni'qoleL, "sand-dunes go over"¹⁷⁵

¹⁶³ Had four houses and one sweat-house. See footnote 94.

¹⁶⁴ Location unknown, but to the south of Little river there is a cliff of blue clay filled with fossil mollusks and springs, the water of which accumulates in freshwater lagoons worthy of names.

¹⁶⁵ Possibly either the creek at site 3 or a freshwater lagoon.

¹⁶⁶ Had seven houses and one sweat-house.

¹⁶⁷ Described by different informants, both Yurok and Wiyot, as a place of unusual importance, being the seat of the Jumping dance. Located upstream from erlerw, but only about half a mile from the ocean. It must be site 5. It was said to have ten or fifteen houses and two sweat-houses. The writer regarded site 5 as an uninhabited archaeological site on top of the bluff just above site 4. It was used at times somewhat as we use picnic grounds, hence the "ten or fifteen houses" must be considered to comprise all the houses at site 4 together with any and all houses in the vicinity.

¹⁶⁸ Had three houses.

¹⁶⁹ Upstream from šepola; had five houses and a sweat-house.

¹⁷⁰ The only description is that it was on Mad river about a mile from the mouth. The trail to the world of the dead was believed to begin here. The name meaning "rock has" would suggest Mill Creek falls. Site 8, a place of mythological interest, was either at the falls or not far away.

¹⁷¹ The name was said to refer to an abundance of green grass, perhaps some food species. It was located about two miles upstream from tegwol and had twenty houses. We would hardly expect one village to have so many houses, hence we must conclude that the name was given to the district, comprising several villages in the vicinity of site 9.

¹⁷² Two uninhabited places apparently on the north side of Mad river somewhere below Lindsey creek.

¹⁷³ See footnote 150.

¹⁷⁴ See footnote 151.

¹⁷⁵ See footnote 152.

- , yotsoqegei, "boat portage"¹⁷⁶
 —, olog, "floats" or "swamp"¹⁷⁷
 Freshwater, site AM(†), hiketš
 Site 67, olog, "floats"
 —, qwo'mo'
 Site 79, oknuL, eknUL, "deep water"
 Salmon creek mouth, lamaL, "eel-pot"
 Site 90(†), ayo, "ferry"¹⁷⁸
 —, lepleN, leplem¹⁷⁹
 Site 112, pimin¹⁸⁰

ABORIGINAL POPULATION

Expedition of McKee, 1851.—At the time of the gold excitement in California, the federal government had no satisfactory information regarding the numbers, characteristics, and environment of the Indian population of the state, and in consequence Congress made a special appropriation for the purpose of obtaining the desired information. Three special commissioners were appointed, Colonel G. W. Barbour, Dr. O. M. Wozencraft, and Colonel Redick McKee, who had all arrived in California by January 8, 1851.

In less than two months this commission made a majority report estimating, on the basis of information derived from such of the old settlers as had travelled extensively among the various tribes, that the Indian population of the state was between 200,000 and 300,000. But McKee sent in a minority report in which he said that from his information he "would greatly reduce the number" of Indians as estimated by the other commissioners. His opinion no doubt was influenced by the rugged, barren aspect of the coast as seen from aboard ship, and noting the altogether too frequent tendency of the Californian to exaggerate, he decided to take the opposite extreme.

In August, 1851, McKee left Sonoma, heading an expedition which spent four months visiting the Indians of Clear lake, Eel river valley, Humboldt bay, and Klamath, Salmon and Scott rivers. The party contained about forty men, of whom most were an escort of soldiers under Major H. W. Wessells, U. S. A. The entire scientific staff consisted of one person, George Gibbs, a practical topographical engineer

¹⁷⁶ An undetermined place understood to be a portage between the ocean and Mad River slough.

¹⁷⁷ The most important place with this name was on Gunther island, but there was understood to be a second place with the same name on Mad River slough.

¹⁷⁸ See page 296.

¹⁷⁹ See footnote 154.

¹⁸⁰ See footnote 155.

who had previously been attached to the Indian commission in Oregon, and who was acquainted with the Chinook jargon which it was erroneously supposed would be of service in communicating with California Indians. Gibbs mingled freely with the Indians, dividing his time between map making and language study, although hampered by lack of interpreters.

Redick McKee occupied himself with his duties as business manager of the expedition and in gathering knowledge concerning the Indians by conversing with the "gentlemen" of various callings found in the mining camps. John McKee acted as secretary. The several journals kept by members of this expedition and their notes and correspondence furnish us with some of our first information of the Wiyot as well as other tribes of northern California.¹⁸¹

It might be mentioned that the object of the expedition was to make an impression upon the "savage" by a display of pomp, by expending an enormous amount of money in the distribution of a few cheap presents, and by making treaties with promises of enough annuities to bankrupt the government. The *Alta California* of July 10, 1852, says: "The act creating three Indian Commissioners for California was passed during the session of 1849-50. . . . \$30,000 was appropriated. . . . At the session of 1850-51, \$25,000 more was appropriated. . . . Thus upon a cash basis of \$55,000, a debt of nearly \$800,000 has been created!"

McKee's Estimate of Population.—McKee reports that "on this journey, as elsewhere in California, I have found the Indian population almost universally *overrated* as to numbers, and *underrated* as to intelligence and capacity for improvement. . . . I make the actual number less than one-half (generally about two-fifths) of the number usually estimated by the settlers." He estimated the Indian population of the greater half of the drainage area of Eel river—"on the mountains and valleys of Eel river, south, middle, and Vanduzen's forks, and about its mouth"—to be about five hundred, a most curious estimate indeed when we consider that the river is the fourth largest in California. He also placed the population of "Humboldt bay and north to Mad river" at three hundred.

In order for us to put the correct value upon these figures it would be well to bear in mind that parties of white men had begun to over-

¹⁸¹ R. McKee, 33 Cong. spec. sess., serial no. 688, doc. 4, pp. 134-235; H. W. Wessells, 34 Cong. 3 sess., serial no. 906, doc. 76, pp. 59-68; George Gibbs, *Journal, vocabularies, etc.*, in H. R. Schoolcraft, *Indian Tribes*, III, 99-177, 428-455.

run the country a few months previously and had already fired upon the Indians in several places, killing some, so that it was with great difficulty that McKee induced them to come into his camps. Hence it was that the preconceived ideas of McKee in regard to the number of Indians in California were confirmed.

McKee made a few statements indicating that he found the Indian population of northern California on the decline. He said: "For many years past the Indian population has been rapidly diminishing by diseases introduced by the whites, internal dissensions, and in some cases by want of food. At Humboldt bay and at other places on the coast, where they depend almost wholly on fish, crabs, etc., many sicken and die every winter."

Estimates of Gibbs and Wessells.—Probably most of the information on the Wiyot Indians was obtained during a five days' stay near the present site of Fortuna. Though only sixteen months had elapsed since the discovery of Eel river, there were already about thirty settlers with seven or eight farms taken up. One of these settlers had married a Wiyot woman but had not had time to acquire much of the language. However, he was of some service to Gibbs and accompanied him wherever he went while in Wiyot territory.

Gibbs made a two days' canoe trip down the river to within two miles of the mouth, visiting the Indian villages, which "were very numerous, but consisting generally of only two or three families," whose appearance was very wretched, much sickness prevailing everywhere. "The principal diseases noticed," says Gibbs, "were sore eyes and blindness, consumption, and a species of leprosy; not however, the result of syphilis, which has never been introduced. From their own accounts, their numbers have been greatly thinned by a disease, from the description appearing to have been *gastritis*." In addition to other information it was learned that the tribes on the coast from Cape Mendocino to Mad river and as far up Eel river as the mouth of Van Duzen river spoke substantially the same language, though the dialect on the bay differed from that on Eel river. The people in this area were known by their neighbors as Wee-yot. The number of those on Eel river and Humboldt bay was thought to fall short of five hundred.

Captain H. W. Wessells says that five days were consumed in a fruitless endeavor to gather the Indians, numbering about three hundred on lower Eel river, that a treaty might be made; but the means of communication proved so imperfect that nothing could be done.

The three accounts of McKee, Gibbs, and Wessells together throw light on the condition of the Wiyot, but when it comes to an estimate of population, McKee comments upon the difficulty of forming an opinion. In all the accounts scarcely any mention is made of the Indians living on the bay or on Mad river and, judging by the route taken, the principal Indian settlements were probably not visited at all. Hence the estimates are decidedly too low.

As a consignment of goods was landed at Trinidad, McKee made a side trip by going from Arcata to that place, where he found fifty Indians whom he called the Kiri, their chief being Oq-qua.

Estimate of Buchanan, 1853.—In February, 1852, Colonel R. C. Buchanan was sent to establish a military post on Humboldt bay. Eighteen months later he forwarded a most excellent, four-page report on what he called the So-lot-luck Indians¹⁸² living on Humboldt bay and on lower Eel and Mad rivers. Though the entire report contains much of ethnological value, we will quote but a little concerning the population, diseases, and probable ultimate extinction of the tribe.

Their peculiar habits of life render them especially liable to scrofulous complaints, and accordingly it is a most common thing to see them grievously afflicted in this way. From the character of their food, the very general habit of continued intermarriage, and the miserable huts in which they dwell, it follows that they have much hereditary disease, and are consequently not long lived. The majority of those with whom I have met seem to be chiefly affected in their *eyes*, in very many instances having *lost one*; and I am informed by assistant Surgeon Dyerle, who has been over a large portion of California, that there are decidedly more severe cases of these scrofulous affections among them than among any others that he has seen. . . . The *So-lot-lucks* number about eight hundred souls, two-thirds of whom are women and children, and about two hundred and fifty warriors. . . .

It would . . . seem unnecessary for me to favor the department with any reflections on the subject of our Indian relations, as such reflections would probably be considered much more sound by myself than by any one who might read them. I will, therefore, content myself with the remark, that among these people, and all others of the Indian tribes of our country, the great laws of civilization and progress are surely developing themselves, and as a consequence a few years more will number them with the things that *were*. From their difference of habits and interests, engendering hostility among themselves, no *general war with them* need ever be apprehended; and hence the steady encroachments of the white man, from every direction, will produce the certain, though perhaps gradual, result of their utter annihilation.

Summary of Estimates.—Buchanan's estimate of 800 Wiyot in 1853 is probably very near the correct number for that date, though that would not be at the time of their greatest prosperity.

¹⁸² R. C. Buchanan, *op. cit.* (see footnote 21 of present paper), pp. 23-26. According to A. L. Kroeber *da-sulatelu* is the Wiyot name of a non-Athapascan people of upper Mad river. See page 293.

Various epidemics, like smallpox, measles, and fevers, starting in the frontier settlements of the whites, are known to have spread over the country in advance of the settlers themselves,¹⁸³ one example being the epidemic of smallpox in 1781 sweeping from the Missouri river to the Pacific. After the settlement of the Columbia river there were several epidemics of measles and fevers. In 1838 an epidemic of smallpox originating in these settlements travelled south as far as San Francisco bay, and General Vallejo thought that 70,000 Indians died in northern California from its effects.¹⁸⁴ It is not positively known that any of these epidemics earlier than 1850 reached Humboldt bay, but at that date consumption was doing its deadly work and subsequently has been the disease claiming most victims. Pioneers of the region speak of the large number of graves found at various places as early as 1850.

Venereal diseases, both syphilis and gonorrhoea, were introduced after 1850, and though the Wiyot were probably as restrained as most peoples, when once these diseases obtained a start they spread with rapidity because of the crowded conditions in which the Indians lived. It is claimed that gonorrhoea quickly became well nigh universal among the Indians, who had no method of treating the disease; with the result that after a number of years of constant drain upon their vitality great numbers died, especially when other afflictions supervened. It also lowered the birth rate, so that at the present time there are but few children among the Wiyot.

Now as 450 Wiyot (constituting the entire stock, except for a few who were intermarried with whites) were removed to the reservation in 1860, and as 800 appears to be a conservative estimate for 1853 after some decrease had taken place, we might venture to put the Wiyot population at 1000 previous to any white influence. These are likely to have been distributed about as follows: 250 on Mad river, 350 on Humboldt bay, and 400 on Eel river. If asked to give an extreme figure for the native population residing within the limits of the Wiyot territory at any past time, the writer would say 1500, and consider any higher figure pure folly.

Comparative Density of Population.—James Mooney¹⁸⁵ has esti-

¹⁸³ James Mooney, *Bur. Am. Ethn.*, Bull. 30, part 2, p. 286, 1910; John Dunn, of Hudson Bay Co., eight years resident of company's territories, *The Oregon Territory and the British North American Fur Trade* (Philadelphia, 1845), pp. 83-85.

¹⁸⁴ *The Works of Herbert Howe Bancroft* (San Francisco, Bancroft Publishing Co., 1886), xxi, 73-74.

¹⁸⁵ James Mooney, *op. cit.*

mated the aboriginal population of the United States (3,025,000 square miles exclusive of outlying possessions) before the arrival of whites at 846,000, which would make an average density of .28 per square mile. But California was much more densely populated, the estimates varying from 705,000 as made by Stephen Powers¹⁸⁶ to 260,000 as made by C. Hart Merriam,¹⁸⁷ and 150,000 as made by A. L. Kroeber.¹⁸⁸ No serious attention should be paid to the first estimate, although made by a man having a most unusually comprehensive knowledge of the California Indian.

If the estimate made by Dr. Merriam be taken as a mean, although possibly it is too high, it would make a density of population of 1.64 per square mile for a total area of 158,000 square miles of forest, desert, and mountain together with the fertile prairies, marshes, lakes, and bays. Thus it will be seen that at this estimate California had an Indian population proportionately eight times as heavy as the remainder of the United States.

The Wiyot held about 465 square miles of territory, including the 24 square miles of Humboldt bay. If we set the population at 1000, this would make a density of 2.17 per square mile of land and water. Though the heavy redwood forest would furnish scarcely any food, either animal or vegetable, yet it is believed that there was a sufficient amount of prairie land, together with the unusually excellent fisheries, to enable the Wiyot area to support a population somewhat larger than the average throughout California, though perhaps not so large as at a few other of the more favorable locations in the state.

If we compare the Humboldt bay region with the San Francisco bay region, we find that in the latter area the principal tree growth is of scattered oaks, which both furnish an abundant food and leave room for other species of food plants. We should expect the fishing to be poorer at San Francisco bay, especially to a people not possessing boats. However, there is a considerable amount of fish bones in all the mounds, and the vegetable foods being more abundant, on the whole a larger population could be supported on San Francisco bay than on Humboldt bay.

N. C. Nelson,¹⁸⁹ in his paper, *Shellmounds of the San Francisco*

¹⁸⁶ Stephen Powers, *op. cit.*, p. 416.

¹⁸⁷ C. Hart Merriam, *Am. Anthr.*, n.s., vii, 594, 1905. See also similar figures in *San Francisco Bulletin*, Mar. 21, 1860, quoting A. S. Taylor in *California Farmer*.

¹⁸⁸ A. L. Kroeber, *Bur. Am. Ethn.*, Bull. 30, part 1, p. 190, 1905.

¹⁸⁹ N. C. Nelson, *Shellmounds of the San Francisco Bay Region*, *op. cit.*, p. 348.

Bay Region, makes a rough estimate of 12,000 as the possible aboriginal population. Within the boundaries of the area shown on his map there are 1650 square miles of land and 460 square miles occupied by the waters of the bay,¹⁹⁰ making a total of 2110 square miles. This would make 5.58 people per square mile of land and water. This appears as a rather large estimate, but is not altogether unbelievable when we consider that the Spaniards planted four missions within the area mapped, besides one just beyond its boundaries, or five out of the twenty-one in all California. The mission records and early historical accounts need to be reviewed in the light of recent investigations in archaeology and ethnology, but until this is done we can perhaps do no better than to accept the figures given above.

Population per Linear Mile of Streams.—The population of different parts of the world are usually compared by noting the density per square mile. This may be a correct method of comparing nations who draw their sustenance chiefly from the land, but it may lead to error when comparing peoples who are sustained largely by fisheries. In the latter case a more correct comparison might be made by noting the number of people per linear mile of sea coast where they derive their food from the ocean, or per linear mile of fishable streams.

The Wiyot had 40 miles of ocean coast, of which only 3 miles near Mad river and 6 or 8 miles of rocky and gravelly coast south of Eel river would be of much value as a source of food supply, the remainder of the coast being sandy and not adapted for the best of fishing. Humboldt bay has an area of 24 square miles, of which 12 square miles are mud flats at extreme low tide. The circumference of the bay is about 40 miles, and it has about 30 miles of deep and narrow channels reaching to its extremities. These channels could be used in trawling for salmon at the time of the semiannual runs. The tide extends up Eureka slough and Freshwater creek 5 miles, up Elk river $2\frac{1}{3}$ miles, and up Salmon creek $3\frac{3}{4}$ miles. These stretches of salt and brackish water, together with a few of the main sloughs, would make a total of 30 miles of streams emptying into Humboldt bay navigable for canoes, and this without counting the multiplicity of minor sloughs, which, should they all be counted, would probably make an additional

¹⁹⁰ Univ. Calif. Publ. Zool., xiv, 20, 1914, giving the area of San Francisco bay as 287.7 square miles and San Pablo bay as 112.3 square miles. To this we have added 60 square miles for the area of Suisun bay, Carquinez straits, and several of the larger estuaries. Of this total of 460 square miles about 70 square miles would be mud flats at low tide.

30 miles of navigable channels. Eel river also has about 30 miles of sloughs, counting only the main channels. Adding together, we have:

10 miles of ocean coast suitable for fishing
30 miles of channels in Humboldt bay
30 miles of larger sloughs on Humboldt bay
30 miles of larger sloughs on Eel river
<hr/> 100 miles of salt and brackish channels

To the above should be added the number of miles of freshwater streams up which salmon could ascend. Unfortunately, this figure cannot be given with exactness, because the location of falls on many of the streams is not known. However, counting 12 miles of Mad river and 5 miles of Eel river as not affected by tides, there should be between 50 and 80 miles of fresh water streams up which salmon could ascend. This makes all told from 150 to 180 miles of streams and channels for fishing. With the Wiyot population in the neighborhood of 1000, we should then have a population of 5 to 7 per linear mile of fishing streams.

RELATION OF INDIANS TO WHITES

It can be said for the Humboldt bay region that on the whole the relations between the Indians and whites in early days were here as harmonious as elsewhere in the Pacific states, which, however, is not saying a great deal, because some of the contacts were such that the present inhabitants are thoroughly ashamed of them.

To a member of the present generation, learning only a few isolated facts of the early history, it may seem that Humboldt county is preëminently disgraced by a blot of greater foulness than was ever attached to any other locality. But it is unfair to take a partial view of a few isolated facts and then sit in hasty judgment. As we increase our fund of knowledge concerning a certain period of time or a certain set of circumstances, our sympathies should be broadened. Even in the worst of criminal cases, extenuating circumstances are often found. We would make a grievous mistake by considering an isolated act in a past age apart from the environment of that age. So long as there is any degree of injustice in this present generation for which we by our toleration are more or less responsible, we have no right to judge too harshly a preceding generation.

CHARACTER OF THE SETTLERS

It is a fact that ever since the Atlantic seaboard was first settled, especially since the first wave of western migration broke through the passes of the Appalachian mountains, there have been elements of anarchy upon our frontier. The frontier has always had a noble, vigorous, intelligent, hardy, pioneer population, but at the same time it has had an ignoble, mean, shiftless, ignorant, vicious, and treacherous element of brutes, who boasted that they were white men and went armed to the teeth with rifle, pistol, and bowie-knife ready to back up their assertions. This class upon all our frontiers has been a prolific cause of many of our Indian troubles. They lorded it over the Indian and rode roughshod over all his rights; they appropriated or outraged his women; and they shot him down if he raised the slightest objection. Some Indian tribes had vigor enough to resent such mistreatment and take revenge. In such cases innocent whites often suffered severely for their inability to control the vicious element of their own race.

In the settlement of California and the other Pacific states we had the same conditions as on other frontiers, only multiplied many fold. Most of the eastern states were settled by a gradual movement which allowed the Indians time to adapt themselves to changed conditions. The Pacific states in general, and California in particular, which it is asserted was at one time about eight times as densely populated by Indians as the remainder of the United States,¹⁹¹ were settled with a rush on the discovery of gold in 1848. At that date there were many thousands of Indians in northern California who had never seen nor, perhaps, even heard of white men.

In the stream of immigration every nationality and every extreme of class and character were represented—the best and the worst from every clime. The energetic, enterprising, intelligent, forceful personality here found an arena for action. Thither also came the ne'er-do-well, the loafer, the debtor, the defaulter, the criminal, the convict, to escape the consequences of their misdeeds elsewhere and to acquire wealth, as they thought, without effort. There were college men and professional men in abundance; there were the spoiled sons of wealth and nobility. On the one hand there were the educated, the refined hothouse products of older civilizations, the virtuous who had come from sheltered communities where it was easy to be good, and

¹⁹¹ See discussion under heading *Aboriginal Population*.

on the other hand the illiterate frontiersman, the coarse, the brutal, and the professional scoundrel. In fact, during the early mining days in California, there were gathered together some of the wildest, most reckless, savage, and dangerous men ever collected in a similar area anywhere in the world. As Bancroft says:¹⁹² "Human nature turned loose into an unfenced field cuts queer capers. . . . It was a paradise for wild men."

Most of the crime took the form of murder or assault with deadly weapons, there being wholesale violence and murder in many of the mining camps, and for this there was little or no punishment because every man, going about constantly armed, was considered fully capable of self defense. The murderer making the plea of self defense stood a good chance with any jury unless "Judge Lynch" presided over the trial. Helper's¹⁹³ *Land of Gold* estimates in 1854 that since the opening of the mines, California had "invested upwards of six millions of dollars in bowie-knives and pistols," and he finds for the same period 4,200 murders and 1,400 suicides, besides 10,000 more miserable deaths.

In seeking a cause for such a state of society as existed, we must bear in mind that the Argonaut came with hopes raised to the skies, unmindful of the economic laws of supply and demand which would make it imperative that a dollar's worth of labor must be performed, on the average, in order to obtain a dollar's worth of gold, lest it become as cheap as the more abundant metals. According to Bancroft,¹⁹⁴ the production of gold in California during the nine years from 1848 to 1856 was \$456,000,000, which would be about what the whole world had produced during the forty years preceding that time. Thus excitement was kept up and wealth was made by those whom fortune favored, but multitudes were doomed to disappointment, since on the whole the gold taken out cost about three times its value. It has been estimated¹⁹⁴ that in 1852 there were 100,000 men actually engaged in mining or prospecting, and that the gold production for that year averaged \$600 per man. Taking into account the good fortune of a few, this means that the majority would get one dollar a day or less, which would be quite inadequate for the bare necessities of life at the prices prevailing when almost all goods were carried around Cape Horn.

¹⁹² H. H. Bancroft, *op. cit.*, xxxv, 248, 253, 1888.

¹⁹³ H. R. Helper, *Land of Gold: Reality Versus Fiction* (Baltimore, Md.), p. 158, 1855.

¹⁹⁴ H. H. Bancroft, *op. cit.*, xxiii, 423, 1888.

Great numbers out of employment, stranded without a "grub-stake" to start for themselves, hung around the chief mining camps waiting for a change of fortune or for any excitement that might turn up. Some rallied again and again and sought new diggings, others went into a cataleptic state, a living death. Hardships were great; the death rate was high, thousands dying of privation; there was no cheering presence of women¹⁹⁵ when hope was gone; the percentage of insanity¹⁹⁶ was higher than elsewhere in the world; multitudes sought suicide; what wonder then that some became desperadoes?

CHARACTER OF HOSTILITIES

Alongside of such a society, the Indians' chances in the struggle for existence were decidedly unfavorable and they rapidly decreased in numbers throughout the state. The California Indian has almost universally been characterized by every writer of unprejudiced mind as being the most docile and harmless of creatures. He made but little resistance, yet was frequently killed for the most trivial of causes. As a newspaper editorial of the mining days states:¹⁹⁷

A horse is stolen or lost—a traveler disappears or is found slain by the roadside; the Indians are at once accused as the robbers or murderers. Execution follows quickly upon suspicion. No proofs are sought for, no trial is dreamed of. There are certain rude and turbulent characters, among all frontier populations, who delight in violence; to such men the hasty foray upon an Indian camp, and the merciless slaughter of its inmates, afford unspeakable pleasure.

In most cases where an Indian or even a dozen were killed, there were no serious consequences in the way of revenge, as was the case with more vigorous tribes in other parts of the United States. In the matter of revenge the following comments by the *New York Times* are of interest:¹⁹⁸

The country is perfectly wild...and, with the well known injustice of the miner towards anything of the genus Indian or Chinaman, and their foolhardiness, they will get up a series of little amusements in the way of pistoling and scalping,

¹⁹⁵ For some years after the discovery of gold several of the mining counties had less than two per cent females in the white population; in 1852 Trinity county (comprising all the present area of Trinity county and in addition that part of Humboldt county lying south of a line passing through the mouth of Mad river), had 23 females in a white population of 1,764. See appendix to U. S. Census of 1850, page 969.

¹⁹⁶ In 1858 a legislative committee appointed to examine the Stockton Insane Asylum reported through Dr. A. W. Taliaferro: "We believe the causes of it operate more strongly here than in any other portion of the world." See San Francisco Bulletin, Feb. 22, 1858.

¹⁹⁷ San Francisco Bulletin, Dec. 14, 1859.

¹⁹⁸ New York Times, July or August, 1858, copied by San Francisco Bulletin, May 9, 1859.

quite edifying. It is the custom of miners generally to shoot an Indian as he would a dog; and it is considered a very good joke to shoot at one at long shot, to see him jump as the fatal bullet pierces his heart. And when, in the spirit of retaliation, some poor hunted relative watches his opportunity, and attacks a straggling white man, the papers at once teem with long accounts of Indian outrages.

Not only was there the occasional killing of small numbers of Indians, but between 1850 and 1873 a considerable number of slaughters, either by state troops or by unauthorized "volunteer companies," occurred on such a scale as to be dignified by the term of "Indian wars." In 1854 Congress passed an act¹⁹⁹ appropriating \$924,259.65 to reimburse the State of California for the alleged "expense incurred and now actually paid, by the State of California, in the suppression of Indian hostilities within the said State, prior to" January 1, 1854. Again in 1861 another act²⁰⁰ appropriated \$400,000 to quiet the claims for nine "Indian wars" conducted in California during the years 1854 to 1859. One or two examples will illustrate the character of these wars. In 1859, in the vicinity of Round Valley reservation, seventy miles southeast of Humboldt bay, a campaign was conducted under the command of W. S. Jarboe from whose report to the governor we take the following extract:²⁰¹

On the 16th day of September, in Eden valley, I mustered into the service of the State of California twenty men possessing the requisite qualifications, mounted on horseback, and armed with rifles and pistols. Up to that time the Indians had killed nineteen settlers and about six hundred head of stock... and were daily committing their depredations. . . . On the night of the 20th September, they came to Eden Valley and drove off some cattle; I followed and fought them with a detachment of ten men; and from the same date to the 24th of January, I fought them twenty-three times, killed 283 warriors, the number of wounded was not known, took 292 prisoners, sent them to the Reservation. In the several engagements, I had four men severely wounded, as well as myself.

The figures here given of the number of Indians killed and captured are only for that period of time when the company was acting under the authority of the state. For a much longer time previously, parties of armed men were engaged in attacking Indians camps, and

¹⁹⁹ U. S. Statutes, x, 33 Cong. 1 sess., chap. 267, approved Aug. 5, 1854. The total expense of these wars previous to 1854 was claimed to be \$1,194,000, but in 1860 the governor showed that the real expense was not much over \$100,000. See *San Francisco Bulletin*, Feb. 24, 1860.

²⁰⁰ U. S. Statutes xii, 36 Cong. 2 sess., chap. 71, approved Mar. 2, 1861. See also chap. 70 for an appropriation of a like sum for wars of a similar nature in Oregon and Washington.

²⁰¹ Letter of W. S. Jarboe to the governor, submitted by him to the legislature on Feb. 21, 1860. An extract was published in the *San Francisco Bulletin*, Feb. 24, 1860. The original, if published by the legislature, was not located by the writer.

it was only when they had proven themselves to be "men possessing the requisite qualifications" that they got their commission, or it might better be called license, from the state. A newspaper of the time comments on this report of Jarboe as follows:²⁰²

He *fought* the Indians 23 times! Deliberate, cowardly, brutal massacre of defenceless men, women and children he calls *fighting*! He killed nearly 300 of these poor people. The *pretext* upon which these butcheries were perpetrated is that 19 settlers had been killed and 600 head of stock stolen. Now, we have the testimony of Major Johnson²⁰³ and Lieut. Dillon²⁰⁴ that not one white settler had lost his life in that region at the hands of Indians during the past year—except a person who was killed in revenge for outraging an Indian woman. In fact, all these tales of Indian hostilities, when sifted, are proved to be arrant fabrications. . . . Jarboe reports the total expense of his expeditions at \$11,143—which is the smallest amount of blood-money we ever heard demanded in proportion to the murders committed. In the slaughter of this hecatomb of victims, it is said that five of the butchers were *severely* wounded, one of whom was Jarboe himself. He has been in Sacramento nearly all winter, and his wounds have never before been heard of.

A similar war of extermination against the Pit River Indians took place in 1859. Here, where the Indians had the reputation of being the most "courageous, ferocious, resourceful" savages of California, about 200 were killed of all ages and sexes and 1200 taken prisoners. The loss to the American side was: "killed none, wounded 2," which in itself shows the desperate character of the fighting, especially when we are told that the wounded would recover.²⁰⁵

Besides the campaigns authorized by the state, volunteer companies were frequently raised for the purpose of making a sally on some Indian village. Then, if more serious troubles arose, a town would have a mass meeting and raise a company to be kept in the field sometimes for months, supported either by private subscription or by a special tax, always with the hope that the state would eventually muster the company into its service and reimburse for the outlay. A common practice of these companies was to make a day-break attack on some Indian rancheria and kill all its inmates without regard to age or sex, unless perchance they spared one or two of the younger females of pleasing appearance to take along with them.

Often a few men followed these companies for the special purpose of taking possession of young women or children whose parents were

²⁰² San Francisco Bulletin, Feb. 24, 1860.

²⁰³ Maj. Edward Johnson, U. S. A., Letter of Aug. 21, 1859, to Maj. W. W. Mackall, U. S. A., published in San Francisco Bulletin, Jan. 30, 1860.

²⁰⁴ Lieut. Edward Dillon, U. S. A., Report of Jan. 27, 1860, published in Calif. Ass. Jour., 11 sess., p. 302.

²⁰⁵ San Francisco Bulletin, Jan. 28, 1860.

slain, and selling them in the centers of population either for immoral purposes or as servants. There was a state law which contributed much to the success of this enterprise. According to this law Indians could be made apprentices or indentured to citizens for terms of ten to fifteen years. It may or may not have been intended for the good of the Indians to teach them the arts of civilization, but in practice it encouraged the kidnapping²⁰⁶ and sanctioned virtual slavery for the young and able-bodied, while the old and worn-out were left to shift for themselves.

An illuminating newspaper²⁰⁷ article on kidnapping in the Mattole valley, which is about thirty miles south of the mouth of Eel river, shows some of the causes contributing toward Indian troubles:

The region is filled at this season with American hunters, . . . many of the hunters were . . . carrying on a traffic in which they had previously been engaged, to wit: kidnapping Digger children and selling them in different parts of the country. A great many Indians have thus been shot down in cold blood by these white savages, and the inhuman practice of kidnapping is now going on with the steadiness of a regular system. . . .

Hundreds of lawless white men [throughout northern California] . . . pitch their camps from place to place through the mountains, and make their money partly by hunting, partly by stealing cattle and laying it to the Indians, and partly by the system of kidnapping above alluded to.

Humboldt county had its full share of hunters, cattle thieves, and kidnappers, and several campaigns, similar in nature to the examples²⁰⁸ given, were conducted in the Bald Hills during the years from 1858 to 1864. These led to the undoing of the Wiyot Indians, but before we proceed to show how this result came about, it will be well to say a few words about the reservation system of northern California.

RESERVATION SYSTEM

As if California did not have enough troubles of her own, she was in addition burdened with the appointees of the federal government, whose chief, if not only qualification for office was that they were good

²⁰⁶ E. A. Stevenson, agent Nome Lackee Reservation, Report July 31, 1856, 34 Cong. 3 sess., serial no. 893, doc. 1, p. 802; J. W. Denver, com'r Ind. aff., Report, Nov. 30, 1857, 35 Cong. 1 sess., serial no. 919, doc. 11, p. 298; G. M. Hanson, supt. Ind. Aff. N. Cal., Report, July 15, 1861, 37 Cong. 2 sess., serial no. 1117, doc. 1, pp. 757, 759; G. M. Hanson, Report, Dec. 31, 1861, 37 Cong. 3 sess., serial no. 1157, doc. 1, p. 459.

²⁰⁷ San Francisco Bulletin, July 23, 1857, copying Sacramento Bee.

²⁰⁸ H. H. Bancroft, *op. cit.*, xxiv, 477, 1890, says that California "cannot grace her annals with a single Indian war bordering on respectability. It can boast, however, a hundred or two of as brutal butcherings, on the part of our honest miners and brave pioneers, as any area of equal extent in our republic."

campaigners at election time. To summarize as briefly as possible the conditions in northwestern California, there were five reservations established previous to 1860. Scott River reservation, founded in 1851 about eighty miles northeast of Humboldt bay, was abandoned in a year or two. Klamath River reservation, forty miles north of the bay, was perhaps as well managed as any in the state, or perhaps misconduct on the part of the agents was not so easily noticed, there being plenty of food in the river to which the Indians could help themselves. Three other reservations, Mendocino Coast, Round Valley, and Nome Lackee were established to the south and southeast at distances varying from seventy to ninety miles from Humboldt bay.

More or less futile attempts were made to gather the Indians onto these reservations. Most of them found the kind of "civilization" introduced by the reservations an unendurable one. Hence they were continually running off and returning to their old homes at every opportunity.

In the first place, the reservations were little better than pest-houses, as a few quotations will show. A newspaper of 1856 says:²⁰⁹

Some of the agents, and nearly all of the employees, we are informed, on one of these reservations at least, are daily and nightly engaged in kidnapping the younger portion of the females, for the vilest of purposes. The wives and daughters of the defenceless Diggers are prostituted before the very eyes of their husbands and fathers, by these civilized monsters, and they dare not resent the insult, or even complain of the hideous outrage.

It is not at all essential to know to which of the reservations the above refers, since all reservations were very much alike. The progressive result of such conduct is shown by a report of a military officer²¹⁰ in 1859, who has this to say about Round Valley reservation:

A war of extermination is being vigorously waged by the citizens of Round and Eden valleys and a company of men, under one Jarboe, from Russian river, against the Indians who inhabit the country adjacent. . . . Col. Henley [ex-superintendent of Indian Affairs in California] approved of their course, and defends the acts of Jarboe and party. . . . We believe it to be the settled determination of many of the inhabitants to exterminate the Indians; and I see no way of preventing it. I have endeavored to collect them on the Reservation, and several hundred are now there—but they doubtless have a great aversion to coming in, doubtless owing in a great measure to the mortality at this time prevailing among them; some eight or ten per day having died, some days previous to my leaving the valley. This mortality is attributed to a change of diet, scarcity of food, and the great prevalence of syphilitic diseases among them.

²⁰⁹ San Francisco Bulletin, Sept. 13, 1856, quoting the California American.

²¹⁰ Maj. Edward Johnson, *op. cit.*

In 1861 Round Valley is reported to have perhaps fifty white men but only three white women.²¹¹ No self respecting Indian though a "savage" cared for such society as his wife and daughters were compelled to associate with.

In the second place, the Indian found difficulty enough in providing food under changed conditions for himself and family, without contributing his time to help support a system from which he derived but little benefit. During the two or three years of their existence previous to June 30, 1858, the three reservations, Mendocino Coast, Round Valley, and Nome Lackee dissipated a total of over \$250,000, about two-fifths going direct as salaries to the agents and the numerous white employees, while most of the remaining three-fifths went through various indirect channels to the same goal.²¹² Here are some of the processes by which public property changed to private property:

Cattle.—In founding the reservations, which are at first not surveyed, the agents bring some "civilized Indians" to help control "wild Indians" and show them how to work. Cattle are brought in at the same time at public expense. The agents, government employees, and their friends next take up claims in their own names alongside, or even within the limits of the reservation, designating them as "overflow and swamp lands" and thus acquiring in some cases one thousand acres to a claim.²¹³ For some unaccountable reason the cattle feed upon the publicly owned reservation during the time that they are being counted for the annual report but at all other times they feed upon the privately owned "overflow and swamp lands" and are considered as privately owned animals. In one case where the Indians are reduced to starvation and help themselves to a few of these cattle, the agent and government employees charged with the duty of protecting the Indians decide that an example must be made, and so shoot fourteen in one day,²¹⁴ and then find it convenient to discover in the nick of time that they had formed a conspiracy to murder all the "settlers" in the valley.

Crops.—At the time of greatest prosperity these three reservations report some 2,000 acres under cultivation producing 27,000 bushels of grain, potatoes, etc.

²¹¹ G. M. Hanson, Report of July 15, 1861, *op. cit.*, p. 758.

²¹² Round Valley reservation from the time of foundation in 1856 to July 1, 1858, expended \$34,000. The first white "settlers" entered the valley at the time the reservation was founded and in less than two years' time, while drawing salaries from the government, their improvements upon "their own land" were valued at \$25,000 to \$30,000. See Report of Agent S. P. Storms dated Aug. 14, 1858, 35 Cong. 2 sess., serial no. 974, doc. 1, pp. 658-59. Mendocino reservation for the year ending June 30, 1858, expended \$50,858 and Nome Lackee for the same year about the same amount or from the time of foundation in 1855 to 1858 a total of about \$125,000. See Report of Special Agent G. Bailey dated Nov. 4, 1858, 35 Cong. 2 sess., serial no. 974, doc. 1, pp. 650-53. H. H. Bancroft, Works, xxiv, 942, 1890, says that the reservations of California, presumably during the years 1853 to 1858, had expended a total of \$1,170,000.

²¹³ G. M. Hanson, Report of July 15, 1861, *op. cit.*, p. 758.

²¹⁴ Tehama Gazette, Dec. 4, 1858, copied by San Francisco Bulletin, Dec. 8, 1858.

Rations are issued to the white overseers and to such of the Indians as are actually engaged in work upon the reservations. The number of Indians upon these reservations is reported to be some five or six thousands, with others in the vicinity making the reservations their headquarters; but whenever a visitor comes, all but a few hundred happen to be at the time out on the hills gathering stores of acorns, seeds, and berries. Needless to say, the crops are put to a good use by those for whose especial benefit they are raised. In case of a failure in the crop, or destruction by settlers' cattle, "the cheapest and best feed that could be got would be shorts"²¹⁵ (that is, wheat bran fit only for cattle feed) brought over the mountains from the Sacramento valley.

Improvements.—As government funds become available, they are expended in the building of cattle corrals, barns, hog-sheds, store-houses, dams, aqueducts, grist-mills, and other improvements. A few years later, when the reservation is surveyed, most of these improvements as well as the growing crops and the cattle, are found to be outside the limits of the reservation upon lands acquired by the "settlers" as overflow and swamp lands, under school warrants and in other ways. Then it is that either the whole reservation is abandoned by the government or that the "settlers" are bought out for what the settlers think the improvements are worth.

The reservation system in California was at its worst during the administration of T. J. Henley (July 26, 1854, to June 3, 1859) and for some years following his term of office. Mismanagement was soon apparent,²¹⁶ though it required investigations by several special agents before he was ousted, while some of the worst of his appointees continued in office until the summer of 1861. The following quotations taken from the reports of J. R. Browne,²¹⁷ special agent of the Treasury Department, show to what extremes the government appointees would go. Speaking first of Nome Lackee reservation, Browne says:

Most of the Indians have left it, and now . . . there are not more than fifty to be seen within several miles of headquarters. No evidence of the results of attention, labor or the expenditure of public money is anywhere manifest. When it is considered that forty-five or fifty thousand dollars have been expended on this reservation during the past year . . . the result is very discouraging . . .

The condition of affairs at Nome Cult [Round Valley] is even more discouraging than at Nome Lackee. The former employés, some of whom reside within the limits of the Indian farms, on claims purchased by them while in public employ, refuse to remove, and defy the new overseer to dispossess them. Insubordination amongst the Indians is instigated, the fences are broken down, the cattle and hogs driven in on the crops, and all authority put at defiance. The

²¹⁵ G. M. Hanson, Report of Oct. 10, 1862, 37 Cong. 3 sess., serial no. 1157, doc. 1, p. 456.

²¹⁶ San Francisco Bulletin, Sept. 13, 1856, and various other newspapers of the state at that time.

²¹⁷ J. R. Browne, reports dated Sept. 19 and Oct. 18, 1859, 36 Cong. 1 sess., serial no. 1033, doc. 46, pp. 14-16, 18-20. For other descriptions of the reservation system in California see J. R. Browne, in Harper's Magazine, Aug., 1861, reprinted in W. W. Beach, Indian Miscellany (Albany, J. Munsell, 1877), pp. 303-322.

official notices issued by the superintendent...are treated with contempt and derision. Nothing short of military force can restrain the settlers from these outrages....

Many Indians have been killed by private companies during the past winter and spring, and a man named Jarboe now holds a commission from the governor of the State, in virtue of which he has raised a company, and has been engaged for some months past in a cruel and relentless pursuit of the Indians in this vicinity, slaughtering...without regard to age or sex...I would earnestly impress upon the department the miserable and forlorn condition of the Indians of this State. In the history of Indian races I have seen nothing so cruel and relentless as the treatment of these unhappy people by the authorities constituted by law for their protection. Instead of receiving aid and succor, they have been starved and driven away from the reservations, and then followed into their remote hiding places, where they sought to die in peace, and cruelly slaughtered, till but a few are left, and that few without hope....

The debts of the past year are so complicated with private accounts, that I am utterly at a loss to say what bills ought to be paid, and what rejected...I would also call your attention to the fact that the expenses of the service, as now conducted, are considerably in excess of the appropriation...Another confused state of affairs will be the result, and a call will be necessary for a deficiency appropriation amounting probably to \$50,000....

In April, 1858, I forwarded charges of fraud and malfeasance against the late superintendent, T. J. Henley, and transmitted additional charges and proofs by nearly every succeeding mail during that year...Nevertheless, Mr. Henly continued to act in his capacity of superintendent up to June 3, 1859, fourteen months after the original charges were preferred, and nearly a year after they were proved. The agents, sub-agents, and employés, whose testimony presented the best evidence of their unfitness for the trusts reposed in them, continued to act in their respective capacities, and no change took place except a limitation of the number of employés on the 31st of December, 1858. No remittance to pay the current expenses of the reservations, or the wages of the discharged employés, was received from May, 1858, till August, 1859, during which period there appears to have been no check upon the expenditures beyond the discretion of the late superintendent and the agents, and the power of final approval vested in the department. The great evils experienced from this condition of affairs were: the enhanced price of articles purchased on credit...; the discontent of the discharged employés, who had acquired some influence over the Indians; and the popular clamor throughout the State against what was regarded as unreasonable and unjustifiable neglect of the public interests.

Notwithstanding the reduced number of employés since December 31, 1851, the agents and sub-agents have encumbered the service with debts, of which they are either unable or unwilling to render a correct account...They have kept running accounts at stores, and no books or accounts to show the articles purchased or the prices agreed upon;...they have suffered the reservations to fall into a state of neglect and decay wholly at variance with the published reports of their prosperity. The property returns and abstracts of issues show that the amount of property accounted for is but a fraction of that which should be on hand...No adequate return of the large bands of cattle, for which vouchers have been transmitted, has been made; and the agents and sub-agents have failed to show what became of them. The independent treasury act has been violated, ...in the transmission of fraudulent vouchers;...The reservations have been diverted from their legitimate purpose, and in some cases the Indians have been

slaughtered in consequence of alleged depredations upon private property belonging to officers of the superintendency. . . . I am confident that nothing can be done by the new superintendent, under such a complication of affairs, to promote the welfare of the Indians. Either an entirely new *régime* must be established, or he will be hopelessly involved in trouble, and compelled . . . to resign.

By his original instructions, he was required to ascertain the outstanding indebtedness, and forward all claims. . . . While engaged in the prosecution of this inquiry, a remittance of \$80,000 was made to the agents. . . . But they have failed to furnish him with an intelligible account of the particular disbursement made; and he is at a loss to know what bills have been paid and what remain to be paid. . . . In San Francisco alone it is estimated that \$13,000 is due for purchases made by the late superintendent. . . . But the superintendent cannot ascertain whether the goods so purchased ever went to the reservations, or what portion of them were for public or private purposes. . . . Mr. McDuffie [the superintendent] seems desirous of performing his duty. . . . The department has refused its assent to any removals which he has recommended . . . without a statement of reasons. He can give no reasons without incurring the personal hostility of men who have acquired a powerful influence over the Indians, which they can, if so inclined, exercise to the absolute destruction of the service. . . .

TROUBLES IN THE BALD HILLS

We will now speak of some of the relations of the whites to the Indians of Athapascan stock living immediately to the east and south of the Wiyot territory. Of these Indians the Chilula were among the first to come in contact with miners and pack-trains, as the trails to the mines ran through their territory. Redick McKee,²¹⁸ Indian commissioner, learned in 1851 from these "gentlemen" from the mines that:

The Trinity, Redwood,²¹⁹ and Klamath bands are a brave, warlike people . . . that it is not safe for parties less than eight or ten in number to travel through the country; . . . that mules are stolen from the pack-trains, and the drivers murdered and robbed when returning, a short distance from the party. In return the packers *shoot Indians* at every opportunity, killing innocent persons more frequently than the guilty. The whites are very much exasperated against the Indians.

As for this charge against the Indians, it may or may not be in part the truth, for all reports of the mountain Indians are consistent in describing them as having more spirit than the lowland Indians, about Humboldt bay. However, great allowances have to be made for the characteristic trait of the Argonauts to exaggerate on any and every subject. The statements to the effect that the miners and packers took frequent occasion to let the Indians know that they were

²¹⁸ Redick McKee, *op. cit.* (see footnote 181 of present paper), p. 154.

²¹⁹ In quotations from early sources Redwood Indian is synonymous with Chilula, and Humboldt or lowland Indian is equivalent to Wiyot.

not overdesirous of cultivating friendly relations, we need not have the slightest hesitation in believing. Aside from an occasional Indian being killed by the whites, and the annoyance to the whites caused by petty thievery on the part of the Indians, the two races had but little effect on each other for several years, so far as the hill country is concerned.

One of the first effects of the arrival of the Americans was the slaughter of game. Game was at first everywhere abundant, but it was not inexhaustible. Hunters often shot wantonly just to satisfy their propensity for destruction. Thus in 1859 in Pit River valley²²⁰ "the deer killed were almost innumerable. One gentleman, a John Longley, killed five hundred since the commencement of winter! . . . This statement . . . may be implicitly relied upon as true, and is fully vouched for." After such a use of firearms, much of the game would be scared away to more remote regions, and Indians could not get near enough to what was left to shoot with bow and arrow.

In reading early newspapers, it became quite apparent to the writer that Indian depredations were particularly apt to follow closely upon the heels of unusual successes by white hunters. For example, in 1857 hunters are mentioned as being very numerous in the Mattole valley as well as elsewhere, while in 1858 the Indians of Eel river, in both Humboldt and Mendocino counties, are reported as being in a starving condition and committing depredations on settlers' cattle. In the same way the great success of the salmon fishing industry at the mouth of Eel river in 1858 and 1859 undoubtedly had an effect in causing a shortage in the food supply of the Indians living on the tributaries of this stream. At any rate, during the winter of 1858-1859 the Indians on the Bald Hills are reported as being "entirely starved out," and troubles continued in that quarter without interruption until 1864.

Following the wholesale slaughter of game came another encroachment of the white race. The custom of the Indians in annually burning the grass on the prairie patches to the east of the redwood belt, for the purpose of providing a supply of seeds for food, had kept down the growth of both timber and chaparral, so that on the arrival of the American he found ready pasturage for his cattle. By November, 1857, Humboldt county is reported to have 6597 cattle besides 3995 horses, mules, and hogs,²²¹ while in 1860, according to

²²⁰ San Francisco Bulletin, May 3, 1859, copying Shasta Republican.

²²¹ San Francisco Bulletin, Nov. 23, 1857.

military officers,²²² there were in the Van Duzen river region within a circle of twenty-five miles only ten or twelve whites and about two thousand cattle, with one or two exceptions not guarded or herded. Some of the cattle ranged twenty-five or thirty miles from where their owners lived. There was thus considerable temptation to the starving Indians to commit depredations, of which the newspapers of the time had considerable to say. Though specific details are not very often mentioned, the killing of one or two cattle was enough to bring out a broadside of editorial comment. In one instance²²³ as many as five cattle and one mule are mentioned as having been killed within three miles of Hydesville.

The writer does not claim to have made an exhaustive search by any means, but so far as he investigated he has learned of only thirteen white men being killed and eight wounded²²⁴ previous to the summer of 1860 within the limits of the accompanying map, plate 1, or not far beyond its borders. The best sources of information would be the early newspapers of Humboldt county, but the writer not having access to these, has searched through the files of the *San Francisco Bulletin* from October, 1855, to February, 1861. This paper made a practice of reporting quite fully and impartially all Indian troubles throughout the state, and is often a better source, where accuracy is desired, than a paper published nearer the scene of action and, consequently, more likely to appeal to local prejudice. The list of white men killed or wounded by Indians, with dates and circumstances, is as follows:

- 1852, February. McDermitt and Merrill killed in revenge near site BD on Van Duzen river.
- 1852, in the fall, two Cooper brothers killed at the head of Little Yager creek.
- 1854, September 18. Arthur Wigmore killed on Eel river at site AQ in a quarrel over a squaw.
- 1855, March. J. W. Cooper wounded at Cooper's Mills on Yager creek.
- 1856, October. Hempfield wounded in "battle" at the head of Cañon creek.
- 1856, October. Charles Hicks killed in Bear River mountains.
- 1856, November. Man at Trinidad killed for abusing a squaw.
- 1857, March. Charles Cook and James Granger killed while hunting on Mad river.
- 1857, August. Man wounded (?) on the trail beyond Mad river.

²²² Maj. G. J. Rains, commanding at Fort Humboldt, in letters published in the *San Francisco Bulletin*, May 24, 1860.

²²³ *San Francisco Bulletin*, Mar. 28, 1860.

²²⁴ A. J. Bledsoe, *Indian Wars of the Northwest* (San Francisco, Bacon, 1885), gives the names of several other men who were wounded during engagements with Indians in the campaign of the winter of 1858-1859. Because competent testimony in the U. S. Court of Claims in cases of Indian depredations has seriously called in question the authenticity of this work, very few data from it, other than a few dates, have been incorporated in this paper.

- 1858, June 3. Asa Jordan and John Mackey wounded (?) on Freshwater creek.
 1858, June 23. W. E. Ross wounded on the trail near Grouse Creek hill, ten miles east of Three Cabins.
 1858, July 16. Orin Stevens killed in "battle" on Grouse creek.
 1858, August 2. Chauncy Miller killed and Winslett wounded in "battle" at Three Creeks eight miles northeast of Bald mountain.
 1858, August. John Mann, while asleep, had his throat cut by his own squaw because he had killed her brother. In return he killed her.
 1858, September 14. Paul Boynton killed on Boynton Prairie.
 1859, May 10. J. C. Ellison killed in "battle" on Yager creek.
 1860, January. Hitchcock wounded in "battle" on the North fork of Yager creek.

As a matter of course a "punitive expedition" followed every "outbreak" of the Indians, but it was not until June, 1858, when Ross,²²⁵ a packer, was wounded on the trail at the head of Grouse creek, that we have a very extensive campaign. Though the Indians probably had a grudge against Ross only, as they had previously made an attempt on his life and on this occasion stood and watched the white party care for the wounded man without making any attack upon them, yet it proved a sufficient cause in the minds of the whites for a general attack upon all the Indians living on the Bald Hills, to which three companies of volunteers at once proceeded. One of these divisions was repulsed at the head of Grouse creek on July 16 with the loss of one man. The other divisions took up positions at Iaqua Buttes and on Redwood creek at Bair.²²⁶

It was a few months later, when Paul Boynton was killed within a short distance of his own home and apparently without cause that the state commissioned troops to the number of ninety men under the command of Adjutant-General W. C. Kibbe, Captain I. G. Messie, Lieutenant Prosser, and Lieutenant Winslett. These troops were kept in service on Redwood creek, upper Mad river, and in the Yager creek and Van Duzen river country from October 15, 1858, to March 31, 1859, by which time "above one hundred Indians had been killed, and three hundred and fifty taken prisoners."²²⁷ The difficulties of the campaign and the hardships of the Indians were increased by the unusual severity of the winter, there being three feet of snow in places on the hills for several months, while it was so cold that packer's mules are said to have frozen to death.²²⁸

²²⁵ San Francisco Bulletin, June 28, 1858.

²²⁶ *Ibid.*, July 26, 1858. It is presumed by the writer that Pardee's ranch, the camping place frequently mentioned in the newspapers, is the same as that owned later by Isaac Minor and now known as Bair.

²²⁷ California Assembly Journal, 10. sess., 1859, p. 699.

²²⁸ San Francisco Bulletin, Dec. 14, 1858, April 25, 1859.

After the Indians were "entirely starved out," those who were taken prisoners were sent to the Mendocino Coast reservation, where a government report dated November 4, 1858, says that there were already 722 Indians with a crop insufficient to feed more than 420 Indians for ten months.²²⁹ The result was that in less than a year most of the Indians from the Bald Hills were back in their old territory,²³⁰ very much embittered against the whites. Yet the marvel is that we can find no record of more than one man being killed and one slightly wounded in the region under consideration during the years 1859 and 1860.

As to the extent of depredations on stock, it was doubtless at first much overestimated, because in May, 1859, we have the statement of a local paper,²³¹ which has never been charged with unduly favoring the Indians, that "the number of stock killed will not be so great as was anticipated. The owners say that probably fifty head will cover all the losses" in the Yager creek country.

Among the Indians taken to Mendocino reservation in the spring of 1859, was a band gathered into an old house belonging to Isaac Minor²³² on Redwood creek under a false pretense that a council and settlement were desired. Here eighty-four young men were shut in, chained two and two to a rope, and rushed to the reservation along with their women and children and the older men. Here they were half starved for four or five months, when they returned and camped near Minor's place. Then, about January, 1860, depredations being reported twelve or fourteen miles above, a volunteer company led by Jim Brown went to punish the Indians. Stopping at Minor's to feed their horses, they found the well behaved Indians camped in his field and killed seven or eight non-combatants, while the young men escaped. These formed the nucleus of a band of fifty-one, which, finally driven to desperation, killed or drove out all the settlers on the Bald Hills in the spring and summer of 1861 and continued to

²²⁹ G. Bailey, spec. agent Dept. Interior, Report of Nov. 4, 1858, 35 Cong. 2 sess., serial no. 974, doc. 1, p. 653.

²³⁰ J. Y. McDuffie, supt. Ind. Aff. N. Cal., reported Sept. 4, 1859, that there were not over five hundred Indians resident at Mendocino reservation, 36 Cong. 1 sess., serial no. 1033, doc. 46, p. 7. The San Francisco Bulletin of Mar. 13, 1860, says that 350 of the Indians taken from the Bald Hills to Mendocino the previous season had returned because they had nothing to eat.

²³¹ Humboldt Times, May 21, 1859, copied by San Francisco Bulletin, May 26, 1859.

²³² Isaac Minor in a manuscript in his own possession, which is a stenographic record of testimony before Commissioner H. L. Ford, Court of Claims, at Eureka, 1893: Indian Depredation no. 1,032 Isaac Minor, plaintiff, v. U. S. and Redwood and Hoopa tribes, defendants.

burn buildings and do all the mischief possible over an area forty miles square, finally burning Bates' hotel at Blue Lake, killing several persons there, and otherwise threatening the settlements at the head of Humboldt bay, until they were tracked to Little river. Here, on August 24, 1862, all but two were surprised and killed while bathing.

During the summer and fall of 1859, a small company of United States troops under Lieutenant Collins were stationed at Bair on Redwood creek and another under Captain Lovell near Yager creek. A few cattle being killed in spite of their presence, the citizens of Hydesville on February 4, 1860, held a mass meeting and organized a company of fifty-five under the command of Captain Seaman Wright.²³³ This company was composed in part of Eel river settlers and in part of a class of persons "having neither home nor kindred." They ranged the Yager hills for some weeks, killing every Indian they could find. Like numerous other volunteer companies in California, their desire was not merely to be of the greatest possible service to the cattle-owning citizens, but more especially to be of service to the politicians, thus hoping to secure for themselves a commission from the governor. They killed a considerable number of Indians, but only a fraction of the three thousand of Athapascan stock who were then supposed to live within the drainage area of Eel river. However, they did succeed in stirring up new enmity between the Indians and whites which lasted until the Indians were nearly exterminated.

Campaigns by volunteer companies, state troops, and federal troops continued for several years against the Bald Hills Indians. Prisoners were taken to the reservations and starved and abused until they returned to their native haunts, only to be chased off again to some reservation in a fresh campaign.

Properly speaking, there never was a state of war on the Bald Hills. There were on the one hand irresponsible whites—drunkards and gamblers looking for excitement, propertyless and with nothing to lose, but with a chance of getting rations for nothing—whom the better element could not control; on the other hand, there was a small class of bad Indians whom the great majority of friendly Indians could not restrain. T. M. Brown,²³⁴ sheriff of Klamath and Humboldt counties for about forty years, who knew the Indians

²³³ These figures and the date are taken from A. J. Bledsoe, *op. cit.*, p. 299.

²³⁴ T. M. Brown (sheriff of Klamath county 1861-1874 and after consolidation of counties, sheriff of Humboldt county 1879-1906), testimony before Court of Claims, case of Isaac Minor, etc. See footnote 232.

thoroughly and earned the universal respect of Indians and whites alike, testifies that the marauding Indian bands contained as low as four and as high as eighteen men. All of the mauweemas or head men that he knew were friendly, except three in Hoopa valley and one on Redwood creek. The friendly chiefs seemed even more concerned in keeping the peace and stopping depredation than were the whites.

Over against the record of depredations on the part of the Indians, we have the report²³⁵ of one white man on Van Duzen river who boasted of having killed sixty infants with his own hatchet at the different slaughtering grounds. He had an Indian boy working for him whose family lived within half a mile of his place. Being angered because the boy occasionally visited his relatives, he went down one morning and slaughtered the family of about six persons, boy and all, and sent the bodies of the victims on a rude raft down the river, labeled with the name of an American who was known to be opposed to indiscriminate Indian killing.

One of the neighbors had had about his premises for the preceding two years an old Indian called Yo-keel-le-bah or Ukillaboy who acted as a faithful guardian to the ranch as well as being a reliable interpreter and aid to the white officials. About April 26, 1860, the old Indian, feeling perfectly secure, paid the vicious white man a friendly visit, and was immediately tied up and shot without any explanation.

This vicious white man was a leader and model of a certain class of settlers on Van Duzen and Eel rivers known as the "thugs."²³⁶ These thugs not only went about the country attacking Indian villages at early dawn and slaughtering the inhabitants of all ages and sexes, but they threatened and terrorized²³⁷ their more peaceable white neighbors. They had the sheriff,²³⁸ a certain influential newspaper, and a number of the members of the grand jury²³⁷ on their side, and became so bold that certain of their number, on drunken sprees if not at other times, threatened to "clean out" the small batch of federal soldiers who had been sent to Eel river in answer to a petition of the better class of citizens desiring protection for both themselves and the friendly Indians.

²³⁵ San Francisco Bulletin, Mar. 13, June 1, and June 4, 1860.

²³⁶ *Ibid.*, Mar. 28, June 1, 1860.

²³⁷ *Ibid.*, June 1, 1860.

²³⁸ *Ibid.*, Mar. 13, 30, 1860. Also Maj. G. J. Rains, commanding at Fort Humboldt, in a letter to Sheriff Van Ness warning "a certain faction favorable to the interests of the assassins in this county" of which the sheriff is charged with being the spokesman. Letter published in San Francisco Bulletin, May 24, 1860.

EARLY AGGRESSIONS AGAINST THE WIYOT

After the character of the whites as exhibited in their conduct toward Indians in general is noted, it will appear quite remarkable that only two men, Arthur Wigmore and Charles Hicks, are known to have lost their lives at the hands of the Wiyot Indians. The Wiyot are usually considered as possessing much less physical vigor and prowess than the Indians of Athapascan stock living in the mountains, and they offered no resistance to the encroachments of the whites. Whenever the presence of an Indian village was undesirable to the whites the Indians were required to move, so that in a few years the larger part of the Indians on Humboldt bay were concentrated on Gunther island at site 67, at the mouth of Elk river, site 77, and at the harbor entrance, site 112. But as the expulsion of the Indians from a particular place was usually accomplished at the hands of lumbermen and others of the rougher element among the whites, they seem to have showed no ill feeling toward the whites in general. In fact toward most of the whites the Wiyot seem to have had nothing but decidedly amicable relations. Such sentiments as they may have harbored toward the particular aggressors they feared to express.

Eel River Murders in 1852

One of the first clashes with the Eel river Wiyot occurred in the spring of 1852. As we have previously mentioned, the two lower Athapascan villages on Eel river had a few cases of intermarriage with the Wiyot. When a Wiyot, whose son, Charles Shakespere, is now living at Indianola, was killed by an irresponsible white man on the trail near where Loleta now stands, some of the Indian's relatives living near Scotia thought to settle the score by killing McDermitt and Merrill, who lived together in an isolated spot near the mouth of Van Duzen river. As soon as the bodies of the victims were discovered a few weeks later and the report reached Humboldt bay, a party was fitted out with the object of impressing upon the minds of the savages the sacredness of human life when that life happened to belong to a person of a "superior race." The following quotation taken from a letter of the Indian commissioner, Redick McKee,²³⁹ April 5, 1852, to the governor of California, shows what happened:

²³⁹ R. McKee, Correspondence with Governor Bigler, Calif. Sen. Jour., 3 sess., appendix, p. 712, 1852. The same (with a misprint, Eel river instead of Elk river), is also found in reports to 33 Cong., *op. cit.*, p. 310. See footnote 181 of present paper.

It appears that, some time in February, two men living on the north side of Eel River, some fifteen or twenty miles from Humboldt [City], in a retired, out-of-the-way place, were murdered and their house robbed. As the river was unusually high, and canoes scarce, the fact did not become known to the settlers of the east side of the river for several weeks. It was then concluded, as a matter of course, that the Indians had killed them; and meetings were immediately held at the towns on the bay, and parties organized to hunt up and punish the guilty; but no sooner were these brave warriors clothed with authority to represent and defend the country, than they commenced an indiscriminate attack upon the poor, defenceless, and wholly unsuspecting Indian settlements on and about the bay, near Eureka and the mouth of Elk river, killing several; then proceeding out to Eel river, renewed the work of death, and finally succeeded in destroying the lives of fifteen or twenty naked and defenceless natives, without finding even one of those generally suspected of being most likely to be concerned in the murder. A week or two later, some three or four other Indians who *were suspected* of being concerned in the murder, (*if committed by Indians at all,*) were overtaken on Eel river, and summarily shot down. A gentleman from the bay informs me that these rash, cruel, blood-thirsty proceedings, were wholly disapproved by many of the best men in the country; but they could not arrest them, and were indeed almost afraid to let their disapprobation be known.

In reality there were only three persons concerned in the murder of the white men, a young Indian, his father, and an uncle, but the members of the expedition displayed no fine sense of discrimination by making an investigation and then punishing those responsible, neither did they take it for granted that the responsibility lay with the Indian village nearest to the home of McDermitt and Merrill. What they did was to consider all Indians equally guilty, and so they attacked the first villages that they came to, namely, site 77 at the mouth of Elk river and site AZ on Eel river. Here they killed many of the Indians who failed to escape to the bushes. Neither of these villages had the least thing to do with the murder of the settlers, and to save themselves from further trouble their inhabitants guided the whites, some time later, to the village near Scotia where at least the three guilty Indians were found and killed. There may have been more killed, but the Indian informant was not certain on this point.

“Squaw-men” on Eel River in 1854

As there were but very few white women in the mining counties during early years, hundreds if not thousands of white men throughout the state took Indian wives. These men are often given the opprobrious name of “squaw-men” and it is frequently asserted that the descendants of such unions inherit none of the virtues of either race but all of their vices. It does at times seem as if there were some foundation for such a belief, but it is probably true that the results

asserted are more apparent than real, since a great many unions of the two races have produced offspring worthy in every respect. On the other hand, when the father was without redeeming traits of character while the mother had been secured at the cost of the lives of her male relatives and held to a union to which she did not yield a hearty response, the offspring could hardly fail to inherit the predominating traits of their progenitors, intensified perhaps by the environment in which they were reared.

As a solution of the Indian problem in early days there were various theories. Some advocated subjection of the Indian to slavery, some, his removal beyond the limits of the state to the deserts of Nevada. Some believed in concentrating the Indians on reservations where they could be taught husbandry and the mechanical trades. Many advocated extermination, some amalgamation. Thus the *Sacramento Bee* in 1857 says:²⁴⁰ "Our idea" is "amalgamation. Persons who have been in the mountains, and seen as we have, hundreds of white men living with their Digger wives, will not be so much surprised at this declaration of opinion."

At Humboldt bay there was considerable intermarriage of the two races, and on the whole the unions appear to have been quite satisfactory, since the Wiyot women have generally made the best of housekeepers, keeping everything faultlessly clean. The writer can see no reason why such intermarriages should be looked upon with disfavor, provided the unions are mutually satisfactory and permanent. Unfortunately, in pioneer days such unions were too frequently neither mutual nor permanent, and this often led to grave consequences.

Thus, in September, 1854, at the mouth of Eel river,²⁴¹ site AQ, there was an Indian called Sherman George who had two wives. A white man by the name of Arthur Wigmore wanted one of these women, and threatened to harm George unless he left the district. George's father was afraid and so moved about two miles off to East-lake slough. This move of the Indians then furnished a good basis for a trumped-up charge of stealing. Wigmore attempted to "arrest" George, but the latter avoided being caught. Next day Wigmore came again for a rope left behind the previous day and intended to be used in securing George. He was in a very surly state of mind at

²⁴⁰ *Sacramento Bee*, copied by *San Francisco Bulletin*, Apr. 9, 1857.

²⁴¹ The date is taken from A. J. Bledsoe, *op. cit.* (see footnote 224 of present paper), pp. 179-181. The details, as given by Indian informants, differ materially from the accounts chronicled in the white man's history.

being frustrated in his designs and said to George's father, "You — — —, give me the rope." He attempted at the same time to shoot, but George held the gun, whereupon he drew his pistol and shot George's father in the head. The bullet, however, did not kill, since it failed to pierce the skull. Then George disabled the white man, while another Indian finished the job by knocking him on the head, thereby taking revenge for a brother who had previously been killed. Then all the Indians were afraid and took to the brush.

At this time Dandy Bill, his five brothers, and a sister were living at site 92 and digging potatoes for a white man on Table Bluff. When Dandy Bill came home from his work, his mother was crying. The Wiyot had learned from experience what to expect in a case like this. Having finished digging a boat-load of potatoes Dandy Bill with his father and an uncle went to site 17 in time to warn the Indians there to be on their guard against a party of white men. This party was already crossing the bay to Samoa and was suspected of designing a surprise attack on the Indians living on the North Spit.

Shortly after this, Dandy Bill saw Jess Dungan who was married to an Indian woman and had a salmon cannery and ferry on Eel river near site AU. Dungan advised the Indians to avert more serious trouble by capturing those who had killed Wigmore. Dandy Bill, Doctor, and a few other Wiyot, together with seven Mattole Indians and Mattole-Wiyot half breeds, went after George and his friends, who had fled down the coast to site 114. Doctor killed and brought to the whites the head of the Indian who had knocked in the skull of Wigmore, but the whites wanted also a certain Indian who was known as a thief. As some of the Indians did not like the thief, he too was secured, and together with George was turned over to the military officers. After two months of jail at Fort Humboldt, a disagreement arose between the officer in command and the civil authority; hence, the two Indians were turned loose.

Murder of Charles Hicks in 1856

The next trouble in point of time was in October, 1856. Charles Hicks, according to the newspapers,²⁴² was hunting on Bear river, and was attacked by five or six Indians and shot. Several weeks later when he died from the effects of his wound, a party of whites attacked an Indian band on Eel river near Grizzly Bluff and killed

²⁴² San Francisco Bulletin, Nov. 4, 29, 1856. Cf. also A. J. Bledsoe, *op. cit.*, p. 210.

seven. The shooting of Hicks seems to have occurred beyond the limits of Wiyot territory, but Dandy Bill, though claiming to be unacquainted with the particulars, thought that some Wiyot were among the band that killed the white man. Those guilty tried to hide at kadjo'h-dätigërdoli, the point of Grizzly Bluff reaching down toward the mouth of Van Duzen river.

Consequences of Theft by Indians

The Wiyot Indians are not known to have ever killed a single head of cattle and they seldom stole anything of much value, though doubtless on occasion they pilfered. One Indian informant told his boyhood experiences in stealing. One day he entered a white man's cabin by the chimney and took some fish-hooks. Some of these he gave away to his boy friends, and in this way his parents found out that he had been stealing. He was made to understand that it was a very serious offense. He must go to the white man and confess, even if he paid the penalty of death for his crime. His father and uncle took him into the terrible presence of the white man, who blustered considerably when he found out who had taken the hooks—possibly for effect, since he ended by giving back to the boy some of the articles he had returned. The man put one hand beneath the boy's fallen chin, made him look straight into his eye, then laid an ice-cold finger on his throbbing forehead, and said: "If I ever catch you stealing again I will put a bullet right through there." The lesson was enough. Never again through a long life has this Indian been tempted to steal again.

In May, 1858, a theft occurred on Eel river which was more serious in its consequences to the Indians. Robertson Jack, a bad Indian, stole a Mr. Kady's gun, hiding it and not advising even his relatives that he had it. Kady was very angry about his loss for two or three days. Then, when one day Jack brought home ten rabbits, his uncle suspected, watched him, and discovered the hiding place. Dandy Bill and his uncle started to take the gun back to its owner, but, fearing trouble, left it with Dungan. Kady was satisfied when he got his gun, but certain other white men desired to punish the Indians and attacked the village, site AX, at daybreak one morning, killing Dandy Bill's uncle, the uncle's wife, and a baby, and wounding another woman so that she died later. Dandy Bill's father buried his brother at site 104, while Dandy Bill went to Fort Humboldt and carried legal papers back and forth between the judge and the sheriff, who subse-

quently arrested three white men, C. A. Sherman, William McDonald, and a man named Baker.

At this time there was a Mr. Knight, a lumberman, living on Freshwater creek with a Wiyot woman. A Redwood Creek Indian, shooting at him and missing him, he went to some lumbermen friends of the same disposition as himself and with them made up a story to get an excuse for killing certain Indians whom they disliked. Captain Jim and San Francisco John were accused of having done the shooting, and a very ragged hole in the hat of Knight was, in the minds of the predetermined lumbermen, sufficient proof of the guilt of these Indians. Captain Jim's home was on Gunther island, but he was living at the time at site 58, drying fish.²⁴³ Knight's squaw cried and said that her people had nothing to do with the shooting, but that it was a Redwood Indian. However, the whites would not listen to her pleading but attacked site 58. They killed Nicodemus, wounded Billy in the leg, and frightfully crippled San Francisco John with three or four bullets which broke his arm and jaw and pierced his side.

The wounded Indians fled for safety to site 31, while the soldiers took Dandy Bill, Peter, Henry, Ben, Joe, and Doctor to jail as hostages and sweated them for a confession of their knowledge concerning Captain Jim's shooting at Knight. Six logging men met Dandy Bill in the courthouse and urged him to persuade Captain Jim and San Francisco John to come to the courthouse past a certain clump of bushes at a certain hour. The two Indians, in a very weak condition, came of their own accord, but to avoid the bushes and the logging men they marched to the court house between soldiers.

A few additional details, learned from newspapers,²⁴⁴ are to the effect that the attack on the Eel river village was made by eight or ten men on the morning of May 29, 1858. No mention is made of Kady or of Knight, but an assertion, apparently false, is made that "two innocent" logging men, Asa Jordan and John Mackey, were wounded with buckshot about four miles above Eureka on June 3, the very afternoon of the day that Sherman, McDonald, and Baker, "notorious" squaw-men, were arrested on Eel river. Though there were eight or ten men concerned in the attack on the Eel river village only these three, who were subsequently held to bail in the sum of

²⁴³ See footnote 53.

²⁴⁴ San Francisco Bulletin, June 22, 1858, copying Humboldt Times of June 12. A pioneer's account has already been given on page 269. Cf. also A. J. Bledsoe, *op. cit.*, p. 281.

\$3000 each on a charge of murder, could be found by the sheriff. It was considered that the trouble on Freshwater creek was a result of the Eel river affair, but the writer is of the opinion that the two cases were entirely independent, although happening at about the same time. Afterwards, during the trial, the lumbermen on Freshwater, the "peaceable and industrious men who attend to their own business and do not meddle with the Indians," had an understanding with the "notorious" degenerates of Eel river. Quite a number of the more prominent Indians were held in jail for a time, but as nothing could be proved against them they were dismissed. Since it would have been a flagrant miscarriage of justice for a white man's court, supported by white man's taxes, to convict a white man of any crime against an Indian, all the murderers, both of Eel river and of Freshwater creek were set at liberty.

MASSACRES BY THE WHITES IN 1860

We have now mentioned every case of trouble between the whites and the Wiyot, occurring previous to 1860, of which we are able to learn. It remains to speak of the climactic act of barbarity and inhumanity on the part of a half dozen vicious whites. It seems almost beyond belief that men could do such a deed as was perpetrated by them. Indeed there are no men who could commit such crimes unless they had long been trained to deeds of violence. But such training had not been neglected.

From the very earliest times of settlement in California and Oregon, Indians had been killed for the most trivial of causes. All the newspapers during the years previous to 1860 teemed with the words *annihilation* and *extermination*.²⁴⁵ True, the Indians had their friends among the newspapers as well as among individual whites. These strove as best they could to protect the Indian and give him justice at a time when life was none too secure for anyone. On the other hand there were newspapers that in a sinister manner, if not openly, advocated extermination. These poisoned public opinion by cultivating race prejudice and charging every possible crime against Indians. Thus shielded and encouraged, the rougher element among the whites gradually went from bad to worse.

²⁴⁵ As early as October, 1852, the superintendent of Indian Affairs in California recommended to the government the quartering of troops on the reservations for the protection of the Indians against lawless whites. Gen. E. A. Hitchcock, commander of the Department of the Pacific, endorsed the plan as "perhaps the only one calculated to prevent the extermination of the Indians." See 33 Cong. spec. sess., serial no. 688, doc. 4, p. 377.

At Humboldt bay the troubles on the Bald Hills several succeeding seasons had prepared the way for what occurred during the night preceding February 26, 1860. At site 67 on Gunther island an Indian festival had been in progress for a whole week, ending in a dance on a Saturday night. While the dance was in progress, white visitors came over from Eureka, and among them spies who learned the exact situation and made their plans. At the close of the festival, those of the Indians who lived at the south end of the bay went home; but because of a strong wind those living to the north stayed for the night with the inhabitants of the village, and soon all were fast asleep after their strenuous days and nights of harmless excitement.

About four o'clock Sunday morning five or six men came to the island armed with hatchets. One of the Indian women, the wife of a white man named Hatteway, could not sleep, and so had arisen and, going down to the beach, saw the men coming. Knowing that they came for no good, she attempted to arouse the drowsy sleepers, but her efforts were largely in vain or too late. A few, mostly men, escaped to the bushes, while the others were caught in their houses like rats in a trap. Mercilessly the hatchet descended on all alike, old and young, women, children, and infants. Their skulls were cleft, their spines severed, their bodies thrust with bowie-knives. Among the children and infants killed were a few who had white fathers.²⁴⁶ The work of destruction was finished in a few minutes, and while the dead and dying lay strewn over the ground, the fire from one of the burning cabins lit up the ghastly scene.

The murderers departed, while in a short time sympathetic whites, including one doctor, arrived from Eureka to witness the dreadful sight and do what little they could to allay the sufferings of those still living. One of these visitors gives a description of the slaughter which, though perhaps not to be taken as literally exact in every particular, appears to the writer to have avoided exaggeration as much as any of the various accounts published in the newspapers of the

²⁴⁶ San Francisco Bulletin, Mar. 13, 1860. A correspondent often addressing his letters from "Murderville," signing as "Anti-Thug," and sometimes given to exaggeration in speaking of the friendly relations existing between the Indians and the whites, says that there were "not less than ten or fifteen half-breed infants among the squaws." Two constructions might be placed on this passage, one, that ten or fifteen half-breed children were killed, which would be quite impossible; the other, that the total number of offspring resulting from the intermarriage of the two races amounted to ten or fifteen. This latter construction might be readily accepted as the truth. The same writer also states that "at Eagle Prairie, a few nights since, they slew several half-breed squaws, who were crying for mercy in plain English." In this case, owing to very recent settlement, the "squaws" could scarcely have exceeded the age of eight years, whereas the word is usually understood to mean an adult female.

time and, in general, to have adhered quite closely to the real facts. The description follows:²⁴⁷

Amidst the wailing of mutilated infants, the cries of agony of children, the shrieks and groans of mothers in death, the savage blows are given, cutting through bone and brain. The cries for mercy are met by joke and libidinous remark, while the bloody ax descends with un pitying stroke, again and again, doing its work of death, the hatchet and knife finishing what the ax left undone. A few escaped—a child under the body of its dead mother; a young woman wounded, and another who hid in the bushes. . . .

Here was a mother fatally wounded hugging the mutilated carcass of her dying infant to her bosom; there, a poor child of two years old, with its ear and scalp tore from the side of its little head. Here a father frantic with grief over the bloody corpses of his four little children and wife; there, a brother and sister bitterly weeping, and trying to soothe with cold water the pallid face of a dying relative. Here, an aged female still living and sitting up, though covered with ghastly wounds, and dyed in her own blood; there, a living infant by its dead mother, desirous of drawing some nourishment from a source that had ceased to flow.

The wounded, dead and dying were found all around, and in every lodge the skulls and frames of women and children cleft with axes and hatchets, and stabbed with knives, and the brains of an infant oozing from its broken head to the ground. But five men were killed on Indian [Gunther] Island, and but few elsewhere. . . . So, where is the good to come from these murders of 55 on Indian Island, 58 on South Beach, 40 on South Fork of Eel river previously, and 35 subsequently on Eagle Prairie—188 lives of human beings in all?

If not a great mistake current, Capt. Wright's Company of Volunteers have been acting not only without State authority, but in defiance thereof, and the perpetration of the sanguinary deeds were done by a few, the many thereof looking upon such deeds with horror. The civil authorities here are paralyzed or divided. Our Sheriff says, "Served them right!" and the tone of a newspaper called *Humboldt Times*, advocates such principles.

Nobody ever knew with any exactness the precise number killed on the island. All the survivors living to the north quickly placed their dead and dying in canoes and started for home before the visitors from Eureka arrived. The first visitors counted thirty-six dead bodies,²⁴⁸ mostly women and children, in and near the several houses, while a number of others died within a few days. One or two, though so badly cut up with hatchets as to be horribly disfigured for life, recovered. One assertion is that the total number killed on the island was sixty or seventy, of whom fifty or sixty were women and children.

Some accounts say that of about thirty from the mouth of Mad river sleeping on the island, all but a few were killed. The inhabitants of site 7 escaped, as previously stated, owing to the fact that because of an unsettled quarrel with Captain Jim they did not attend the

²⁴⁷ *San Francisco Bulletin*, Mar. 13, 1860, correspondent signing as "Eye-Witness."

²⁴⁸ These figures are from a witness, the editor of the *Northern Californian*, published at Arcata, copied by *San Francisco Bulletin*, March 13, 1860.

dance. Jim Brock said that about fifty from Blue Lake attended the dance of whom many were killed. Some of the Indians living near the bend of Mad river came to Arcata by way of Daniels slough and were carried home by the whites in wagons. Accounts say that these numbered about forty dead, mostly women and children, and ten or fifteen living, of whom several died later.

Hatteway's squaw said that the number of white men engaged in the crime was only six or seven. It was never publicly known who they were, since none were brought to trial. A considerable number were suspected of being none too good to commit the deed, but as they were shielded by persons of position and authority, no one dared openly to accuse them. The most that was ever done to promote justice was the writing of numerous anonymous²⁴⁹ letters to the San Francisco newspapers. From these letters it appears that some of the murderers at least were from the Eel river region and were members of Seaman Wright's Company of Volunteers, though it would be unwarranted to say that the company as such had any previous knowledge of the affair. The assertion has been made that the leader of this murderous band was a man by the name of "L——," a man who had a cattle ranch on Larrabee creek, and whose character has been described on page 322.

On the night of the attack it appears that men rode through from Eel river to the south end of the bay, hitched their horses, took possession of Captain Buhne's boat anchored near Humboldt Point, crossed to site 112, killed most of the Indians there, and then proceeded up the bay to Gunther island. The day after the massacre, the leader of the band is said to have boasted that he himself during the night had killed thirty women and children with his hatchet.

Some of the more extravagant assertions are to the effect that Indians were killed the same night at other places on Humboldt bay besides those mentioned as well as on Eel river, and throughout the county; that the total number killed was two hundred and fifty or more; and that about forty whites were engaged at the different places. These accounts appear to the writer as unworthy of credence. The facts as they have been presented are bad enough, without attempting to make them appear worse.

²⁴⁹ From one to half a dozen letters were written to the San Francisco Bulletin by each of the persons making the following signatures: J. A. Lord, J. R. D., Chas. Rossiter, Sheriff Van Ness, Eye-Witness, Anti-Thug, Citizen, Justice, S. V. Conner, Exodus, and Maj. G. J. Rains. These letters appeared in the following issues: Feb. 28; Mar. 2, 13, 28, 30; Apr. 11, 23; May 11, 24; June 1, 18, 1860. Additional information was obtained by the writer from living pioneers and from Indians.

As to the massacre at site 112, Dandy Bill gave a list of the number killed at each of the eleven houses, as well as a list of those escaping. Of those killed there were: 1 old man, 7 middle-aged men, 3 old women (one of whom was blind), 11 middle-aged women, 6 boys, 3 girls, 4 younger children, and 1 baby, making a total of at least 36. For some of the families Dandy Bill was not certain of the number of the younger children, so that the total might be a little more than 36. Only 11 or 12 men and 4 women escaped, and of these 1 man and 3 women lived in a house which stood apart from the others and in consequence was not attacked at all. One of those escaping fled across the bay to give warning to the village at the mouth of Elk river, but was overtaken by the whites and killed. However, it seems either that the village got warning or that the whites became alarmed. At any rate, they hazarded no attack, so some accounts say, while others say this village was also attacked.

As to the cause of all this slaughter, the local papers attempted to say something at first as an excuse for the outrage. However everything that was said was quickly disproved to the satisfaction of nearly everyone. About a week before the massacre an Indian supposed to be Sherman George of site 112 was said to have been shot at and wounded in the back while committing thefts on the Bald Hills. Hank Larrabee, a most vicious white man having a cattle ranch on Larrabee creek, came to the bay to claim his victim. The Indian was found at the place of a white man living on Elk river, and by taking off his clothing he proved that he was not the guilty one, as he had never been wounded. About this time several bad characters from among the whites living on the hills are said to have met at a house just east of Red Bluff, it was presumed for the purpose of making plans.

One of the extravagant assertions made after the massacre was that of 7000 to 8000 cattle on the Bald Hills one-eighth had been killed during the preceding year. Indians were said to have been seen daily going back and forth from the bay to the hills conveying large quantities of beef to their homes near the white settlements. These Indians sometimes constituted parties of from ten to twenty, it was said, and dried beef was reported as found in their rancherias on Gunther island, at site 112, and on Eel river. However, this dried meat was later found to be dried seal meat, and it was declared that so far as the Indians on Gunther island were concerned: "neither man, woman nor child would touch beef. It is well known to families in Eureka

that they have a superstitious antipathy to eating that kind of food, and are known to have thrown away meat given to them.''

Another charge was that the coast Indians furnished arms and ammunition to the mountain tribes and gave them an asylum when they were hard pressed by the volunteers. This supposition has been answered by the established fact that there never were friendly relations between these two groups of Indians. Besides, it was finally ascertained that the depredations were committed by Indians having only bows and arrows, as the last cow shot with a gun was killed seven months before the massacre. Thus the Wiyot have been completely exonerated in every way. One of the strongest testimonials in their favor is a letter of Major G. J. Rains, commander at Fort Humboldt. This letter published in the *San Francisco Bulletin*, May 24, 1860, is as follows:

I can find no excuse whatever for the horrid massacres on this Bay and the removal of Indians thereof from the county, whom I have considered as safeguards to the citizens of this vicinity and their property, by acting as spies upon the mountain tribes, to destroy small numbers and betray larger ones who might come for spoilation or murder.

An example of how the Wiyot acted as spies on the mountain tribes is shown when Arcata got an alarm²⁵⁰ on the night of October 3, 1858. The Mad river Wiyot thought that they heard sounds of a hostile band in the brush, and reported that the Redwood Indians were coming to burn the town and kill everybody. The American women and children were taken to a fireproof building for safety, while the men followed the Indian guides out to Mad river, where they thought that they had heard the noise. It all proved a false alarm, as there was no depredating band of mountain Indians; yet it shows the alertness of the Wiyot in sensing danger and reporting it to the whites.

TREATMENT BY THE WHITES SINCE 1860

Immediately after the massacre, all of the surviving Indians who had lived on the bay sought an asylum at Fort Humboldt near Bucksport, and in April were taken to Klamath reservation along with their fellow tribesmen from Mad and Eel rivers. We have this account of the removal:²⁵¹

The last act in the tragic drama of murder and oppression, which began on Humboldt Bay on the 26th of February last, has just been performed. The

²⁵⁰ *San Francisco Bulletin*, Oct. 12, 1858.

²⁵¹ *Ibid.*, May 11, 1860.

friendly aborigines, in number 450, have been removed from Humboldt county. Those on Mad river, about 120 in number, were first forcibly expelled from their residences, herded like cattle, and all, under the fear of death, had to leave their homes, as dear to them as ours are to us. These Indians... are measurably civilized. Some of them speak our language, they have mingled with the whites, and were accustomed to aid in their domestic concerns... It would have moved a heart of stone, to have seen these poor creatures grieving, burning up their boats and houses, and then driven from their homes—their “sacred hearths”—from the graves of their murdered relatives, from the land of their forefathers—a land still their own, for it has never been purchased, nor have they received one iota as *quid pro quo* for all this country.

It becomes us now to correct false impressions which have gone abroad (mainly propagated by a mendacious print here—probably pandering for votes,) by giving a statement easily verified by any disinterested person, proving that the objections to this population were without foundation. In many cases these Indians were useful. They were divers and hands at the fisheries; they were harvesters, aiding the whites in getting in their grain, and bringing them berries, fish and clams; they were packers and guides to mountain trains; while their wives were of much service to the ladies of Eureka on their wash days and in other household duties... They killed nobody—neither women, children nor cattle; they troubled nobody, and nobody’s property; they never were drunk nor drank liquor, and really were the most inoffensive and harmless Indians, perhaps, the world ever saw....

At Klamath reservation the Wiyot found an uncongenial home and in three or four months larger or smaller parties began to drift back to their old homes,²⁵² where they found on the one hand a few sympathetic whites desirous of protecting them, and on the other hand a considerable number equally desirous of embracing every opportunity to murder them. One party found safety for a time by camping in Bucksport near the house of a white man of doubtful friendliness. This man, though pretending friendship, planned to kill them all, or at least deliver them into the hands of others to be killed, but his wife learned of the plans and revealed them to the Indians, who escaped by sleeping at night in the bushes. One of this party of Wiyot, Ned by name, was later killed when, driven by hunger, he sought to gather a few clams. His murderer boasted that when five shots failed to kill the Indian, he knocked him on the head.

Another Indian, Ben by name, was working for a white man living on the North Spit, and was dealt with treacherously, it would appear, by being sent on an errand to Gunther island, where two men met and killed him. Frequently other Indians, becoming suspicious, were impelled to seek safety in hiding. From time to time these refugees were gathered up and taken to some reservation, first to Klamath reservation, then to Smith river, and finally to Hoopa.

²⁵² *Ibid.*, Aug. 4, 27, Oct. 26, 1860; Jan. 17, 1861.

In the early part of January, 1862, every acre of arable land on Klamath reservation was swept by a flood such as "the oldest inhabitant among the Indians had never before witnessed." Every Indian village, thirty government buildings (all buildings except one barn), all the harvested crops and stores, all fencing, farming tools, hogs, fowls, and part of the cattle, were swept into the river. This necessitated the removal of the Indians to a new location, Smith river. The following quotations taken from several reports of the Superintendent of Indian Affairs, Northern District of California, hint at the miserable condition of the Wiyot, as well as the neighboring mountain tribes, on the various reservations. The dates given are the dates on which the reports were forwarded to the Commissioner of Indian Affairs.

February 14, 1862.²⁵³ After having accomplished the negotiation [for the purchase of Smith river farms] I at once removed one of the tribes, numbering between four and five hundred, and called the Humboldt [bay] Indians, from Klamath. These were so anxious to be removed that they actually travelled through snow, rain, and mud barefooted, over a distance of forty miles, to where they expected to find something to eat. On the journey two of the squaws brought forth an heir, travelling on the next morning, with the new-comers on their backs, as though nothing of the kind had happened.

August 18, 1862.²⁵⁴ I am now about to remove some 600 or 700 Indians from Fort Humboldt to said valley [Smith river]. These have been mostly collected by troops under Colonel Leppit from the mountains, in Humboldt county, on the Eel and Mad rivers, and are akin to many of those now at Smith River valley; more will be collected and removed accordingly. How I am to provide shelter, food, and clothing for so many Indians... I cannot divine, except it be by a miracle. The poor creatures must suffer the ensuing winter, for the credit of the government is so impaired I will not be able to procure further supplies... The Indians now to be removed are destitute of clothing entirely... and we are nearly twenty thousand dollars in debt, and not one dollar yet received for 1862.

October 10, 1862.²⁵⁵ Having very recently removed 840 additional Indians from Fort Humboldt to said valley, there are now over 2,000 in the aggregate already upon this proposed reservation, and several hundred more collecting at Fort Humboldt, who must also be removed to the same locality at an early day.

July 18, 1863.²⁵⁶ The unsettled condition of three-fourths or more of the Indians, who have been compelled to lie on the cold, damp ground ever since their removal from Klamath and Humboldt counties, has caused disease, and death in many instances, ... I have ascertained that only 130 out of 840 Indians which were removed to Smith River reservation from Humboldt bay last September ever returned, and that little band, [Lassik tribe of Larrabee creek region] with their chief, Las-ac, left the first night after they landed in the valley. Las-ac, I hear, has since been killed.

²⁵³ 37 Cong. 3 sess., serial no. 1157, doc. 1, pp. 460, 461.

²⁵⁴ *Ibid.*, p. 465.

²⁵⁵ *Ibid.*, p. 453.

²⁵⁶ 38 Cong. 1 sess., serial no. 1182, doc. 1, p. 212.

I am now constructing a hospital at Smith River valley, and as soon as it is finished, will make an effort, by the close attention of the physician, to banish the most loathsome of diseases from among the Indians; but while the more degraded men of the white race are permitted to live in reach of, and come in contact with them, I almost despair of success. The Indians on all the reservations continue to labor faithfully. . . . They are very destitute of clothing, only an occasional Indian wearing a whole garment, and not a whole blanket could be found among 100 Indians; and their constant inquiry was: "When *Captain Lincoln*, *big chief*, send Indians plenty blankets?"

September 1, 1864.²⁵⁷ This section of the country [Klamath and Humboldt counties] had been cursed for years with a destructive Indian war, that had well-nigh ruined its business interests, and promised to end only in the extermination of the Indians. A vigorous campaign, accompanied by great loss of life, had been waged during the past year, and the Indians, though severely dealt with, were still unsubdued, but, through the efforts of the district commander, had ceased hostilities and come into Hoopa valley, the home of most of the warriors, where with their arms still in their possession, they were waiting some action on the part of the government toward establishing a treaty. . . . I at once proceeded to Hoopa valley to treat with the Indians. . . . resulting in the establishment of a reservation in Hoopa valley, and the surrender of their arms by the Indians.

After being repeatedly taken to the several reservations and subjected to such uncongenial conditions as too generally prevailed on reservations, the diminishing survivors of the Wiyot nation were finally permitted to live within the limits of their original territory, where they are all to be found at the present time.

ARCHAEOLOGY OF SITE 67

ENVIRONMENT OF THE MOUND

The part of the bay north of Eureka, that is, all the part which is shown on the map, plate 2, contains, as nearly as could be ascertained by a careful measurement of the hydrographic map published in 1912 by the U. S. Coast and Geodetic Survey, about 14.7 square miles of water at high tide, over half of which, or about 7.8 square miles, is mud flats at the mean of the lower low waters. Gunther island, something over a mile in length, situated just opposite Eureka, is favorably located for reaching any part of the northern end of the bay in a canoe, no shore being more than five miles distant.

The whole island, with the exception of two mounds, was formerly, before being diked in, covered with marsh plants and flooded at the time of extremely high tides. Three lumber mills were built on the southern part of the island and operated at different times between

²⁵⁷ 38 Cong. 2 sess., serial no. 1220, doc. 1, pp. 260, 261.

1866 and 1896; and in consequence ten artesian wells were bored, besides one on each of the mounds, or twelve in all. These ranged in depth from 85 to 248 feet. Robert Gunther, not being able to lay his hands upon papers in his possession, gave certain statements regarding the depths of these wells from memory. These statements are doubtless substantially correct, since he had special facilities for observation while serving as engineer in the mills. Following is his description.

Every one of the wells furnished water tasting differently or acting differently in the boilers. No. 1 was 85 feet deep and physicked everybody who drank from it. No. 3 was 248 feet deep, had an abundance of water, but in time too fast pumping sucked sand to the top, so that it had to be abandoned. No. 4 was 165 feet deep. The water contained carbonic acid and flowed eight feet higher than the marsh level. No. 5 was 220 feet deep, nos. 6 and 7, 168 feet. No. 11, situated on site 68, was 171 feet deep. The marsh material here had a depth of two feet, beneath which there were twenty or thirty feet of mixed sand and clay, followed by quicksand. The water rises in this well to a point four feet above marsh level. No. 12 at site 67 was bored to a depth of 168 feet when some obstacle stopped farther progress of the drill. At a depth of 100 feet a streak of exceptionally tough blue clay was encountered. The water in this well does not overflow, but has to be raised with a force pump.

For the purpose of locating the perimeter of the mound which constitutes site 67, as well as to ascertain the character of the substratum, the writer dug eleven holes, some of them to a depth of four feet below the marsh level. For a depth of two to three feet beneath the surface of the marsh there was a dark colored sand containing small black peat-like streaks, the remains of decayed marsh vegetation. Beneath this layer there was a stratum, six to twelve inches thick, composed of a very sticky bluish clay mixed with a little sand. As soon as this layer had been penetrated, water bubbled up which was perfectly fresh to the taste. In the holes farthest from the shore, the water rose to within eighteen to twenty-four inches from the marsh surface. Beneath the stratum of clay there was a light colored sand, a sort of quicksand in one case, into which the shovel could be punched to a depth of a foot and a half. The investigations indicate that there has been no marked change in the land level within the most recent geological period.

The inhabitants of the mound could have obtained all the water needed for cooking and drinking, by digging a hole into the marsh until the stratum of clay had been penetrated. If their well were flooded at high tide, it was only necessary to bail out the salt water, and then from beneath would come up fresh water.

SIZE AND SHAPE OF THE MOUND

Site 67 is an irregularly pear-shaped mound 600 feet long, 400 feet wide, and 14 feet high (see plan, pl. 11), situated on the marsh at the northeast extremity of Gunther island. There is no evidence that any part of the mound reaches below the present level of the marsh except along the beach on the eastern and northeastern sides. Here the shell has been washed down by the tides to a level lower than that of the marsh surface. Storms from the northeast occurring at the time of high tides have formed several shell bars, as indicated on the plan. Robert Gunther reports that a considerable strip on the east side of the mound has been washed away by storms since 1860. One of the bars has formed since the dike was built, but the volume of shell in this is rather trifling. The larger of the projections from the mound is $3\frac{1}{2}$ feet in depth at its center, is composed largely of shell with scarcely any surface soil, and may have originated as a separate deposit, the two becoming connected as they grew in size. This belief is strengthened by the fact that there is near-by a deposit fifty or more feet in diameter wholly unconnected with the larger mound. The smaller deposit is shown in the foreground in plate 9, figure 1, while the larger mound appears in the distance.

The major portion of the mound is owned by Robert Gunther, but a small parcel in other hands is fenced in as a chicken ranch. One corner of this latter parcel is taken as the zero point or point of intersection for the base lines A-B and C-D as marked upon the accompanying plan. Every position is located with reference to these base lines. Thus the trench which was dug lies between 95 and 100 feet northwest of line C-D and between 100 and 215 feet northeast of line A-B. In the plan of the mound the perimeter is drawn from measurement, but the five and ten foot contours are only approximate.

COMPOSITION OF THE MOUND

Layers of Stratification

Plate 12, figure 1, shows the vertical cross-section of the mound in the line E-F, while figure 2 shows on a larger scale the vertical cross-section in that part of line E-F which forms the southeastern wall of the trench. Stratification was observed to some extent during excavation, but no effort was made to keep the artifacts of each layer

separate. In fact, the layers were so indistinct that it would have been impossible. However, after the excavation had been completed, the lines of stratification were easily seen on the wall of the trench. In places a depth of $8\frac{2}{3}$ feet was reached, but there were never over five layers in any one vertical section, while for the whole length of the trench eighteen layers were noted.

Samples of mound material from some of the different layers were brought to the museum and analyzed to determine the percentage of each constituent. The analysis was made by passing the material through a series of sieves and then separating the charcoal from all except the very finest sifting by running water. The several grades of siftings were dried over a fire until they had less weight than before they were placed in the water, and then picked over by hand to separate the shell, bird bones, fish remains, and other constituents.

In the analyzing of nine samples with a total weight of 9490 grams (20.92 pounds), three sieves, having respectively 8, 16, and 25 meshes to the inch, were used. These sieves separated the mound material into four grades according to the size of the constituents. The grades have been designated in table 2 as coarse, medium, fine, and finest. The coarse grade, that is the material caught on a sieve having eight meshes to the inch, amounts to 1791.57 grams or 18.88% of the total material comprising the nine samples. This grade consisted chiefly of very coarse shell with a small amount of bird bones and an occasional pebble or fish vertebra.

The medium sized grade, that is the material passing through a sieve of eight meshes but caught on one of sixteen meshes to the inch, amounted to 205.12 grams or 2.16% of the whole and was about three-quarters shell, the remainder being mainly fish bones and charcoal.

The fine grade, that is the material passing through a sieve of sixteen meshes but caught on one of twenty-five meshes to the inch, amounted to 118.34 grams or 1.25% of the whole, and was three-quarters shell, the remainder being mainly charcoal. As sorting such fine material by hand proved too tedious in the case of layer III and layer VII, only a part was sorted, and with this as a basis for calculation the proportion of each constituent was estimated in the remainder. Even though there should be some error in this estimate of proportions, the general result would be but slightly affected.

The fourth and finest grade, that passing through a sieve of twenty-five meshes to the inch, amounted to 7374.97 grams or 77.71%

of the whole, and was mostly sand with a small but indeterminate amount of ash²⁵⁸ and charcoal.

In table 2 it will be observed that the nine samples analyzed have an average of 16.20% for the coarse grade, 1.79% of the medium grade, 1.25% for the fine grade, and 8.76% for the finest grade. These figures, which are the average for all the layers, would be more nearly the average for the whole mound than the figures given above, where a single sample, and that from a pocket not at all typical, constitutes over one-third of the total weight of the nine samples analyzed. Below will be given a description of the several layers of stratification noted in the excavation (see plate 12), together with the results of the analysis of the various samples taken from these layers. Table 3 also shows in condensed form the results obtained by the analysis of the various samples.

I. The surface layer, with a depth varying from six inches on the knolls to 2½ feet in the old house pits, has a tendency to smooth out the irregularities of the former surface of the mound. It also attains a considerable thickness on the sloping sides of the mound. This is by far the most sharply defined of all the layers, being of a black sandy nature. The unusually dark color is doubtless due either to microscopic particles of charcoal or to decayed organic matter such as acorn shells. A sample of 308 grams of mound material obtained from this layer at a depth of one foot gave an analysis of 7.88% mollusk shell, .20% fish remains, .23% bird bones, .54% charcoal, .23% rock or gravel, and 90.91% residue passing through the finest sieve. This residue, as was also the case in all the succeeding layers, was mainly sand with a small amount of ash and finer charcoal.

II. Alternate streaks of coarsely broken shell and light colored sand several inches in thickness. One picked sample of nearly pure sand of a gray color obtained at a depth of two feet and weighing 1216 grams was found to consist of .12% crab shell, .41% mollusk shell, .06% fish remains, .03% bird bones, .07% charcoal, .07% rock, .2% clay, and 99.03% sand, etc.

III. Coarsely broken shell was most noticeable, but there was considerable sand. A small pocket at the depth of two feet, not at all typical of the layer as a whole, contained an unusually large amount of bird bones. An analysis of 3304 grams showed .03% crab shell, .01% barnacle, 16.06% other shell, .58% fish remains, 9.75% bird bones, .26% charcoal, .55% rock, .07% clay, and 72.68% sand, etc.

IV. Light colored sand.

²⁵⁸ E. W. Gifford of the museum staff has also made an analysis of seven samples from the Gunther island mound, site 67, the results of which are incorporated in a paper entitled *Composition of California Shellmounds*, present series, XII, 1-29, 1916. The difference in results between his analysis and that of the present writer lies mainly in the fact that he selected small samples having a weight of only 100 grams (3.53 ounces) each. All material passing through a sieve having twelve meshes to the inch was submitted to a chemist, who found an average of 3.93% ash in three samples obtained at depths of 6, 6.5, and 8 feet. It seems somewhat doubtful to the present writer whether larger samples could be found which would maintain so high a percentage. Three of the samples analyzed by Mr. Gifford showed no ash at all (see table 7).

V. Light brown sand. A sample from a depth of three feet weighing 366 grams showed an analysis of .054% mollusk shell, .9% charcoal, .172% rock, .16% clay, and 98.71% sand, etc.

Streaks of nearly pure sand a few inches in thickness were likely to be found in almost any layer, but because this sand layer was of considerable depth, it seemed worth investigating how nearly pure it was. A quantity of material from this stratum, probably weighing nearly 5000 grams, was therefore sifted at the spot on a screen of fourteen meshes to the inch. The material held by the screen, 62.5 grams in weight, was subsequently taken to the museum and subjected to further examination. The result is that the writer is able to compute what he thinks a detailed analysis of a 5000-gram sample would show. This computation differs to a slight extent from the analysis of the 366 gram sample given above. It is as follows: .047% shell, .005% fish remains, .002% bird bones, .67% charcoal, .39% rock, .18% clay, and a residue, assumed to be, as in the 366 gram sample, 98.71% of sand, etc., fine enough to pass through a sieve with twenty-five meshes to the inch.

VI. A layer marked on the diagram, though the characteristics were not noted.

VII. Coarsely broken shell was conspicuous. At a depth of 3½ feet, which would be either at the very bottom of this layer or at the top of layer X, there was a small pocket of fish bones in close proximity to a whale vertebra. An analysis of a sample weighing 990 grams showed .56% crab shell, 31.22% mollusk shell, 4.86% fish remains, 1.72% bird bones, .58% charcoal, .1% rock, .92% clay, and 60.02% sand, etc.

VIII. Broken shell.

IX. Light colored sand.

X. Light colored sand and broken shell.

XI. Of all layers this had the highest percentage of shell and the lowest percentage of sand. It appears to have been an old beach exposed to the action of the waves. An analysis of a sample obtained at a depth of four feet and weighing 635 grams showed .015% crab shell, 43.79% mollusk shell, .077% fish remains, .03% charcoal, .39% rock, and 55.70% sand, etc.

XII. Alternate streaks of sand and shell.

XIII. Chiefly unbroken shells of several species.

XIV. Dark colored sand with but little shell.

XV. Largely composed of sand of a darker color perhaps than any other layer except layer I. The dark color is doubtless due to the presence of fine particles of charcoal, of which there are also many lumps about the size of grains of wheat. An analysis of a sample obtained at a depth of six feet and weighing 345 grams showed 3.65% shell, .026% fish remains, .026% bird bones, .32% charcoal, .09% rock, and 95.89% sand, etc.

XVI. This layer was composed largely of sand of a somewhat lighter color than that in the preceding layer. The numerous lumps of charcoal were about the size of peas and beans. Two samples were analyzed. The first, obtained at a depth of 6½ feet and weighing 302 grams, showed 23.84% mollusk shell, .1% fish remains, 1.92% charcoal, .66% rock, and 73.48% sand, etc. The second sample, obtained at a depth of eight feet (or eight inches above the base of the mound), and weighing 2024 grams, showed the following analysis: 17.64% mollusk shell, .028% fish remains, .015% bird bones, .015% cetacean bones, 1.8% charcoal, .07% rock, .022% clay, and 80.40% sand, etc. This sample was the only one analyzed which showed unmistakably the presence of any vertebrate remains other than fish and bird.

XVII. Light brown sand mixed with fine charcoal.

XVIII. Sand of a lighter color than that in the layer just above.

When the samples of mound material were selected to be brought to the University, the writer did not have in mind any such exact analysis as has been given above. In the first place, the samples were selected not so much to represent the mound as a whole, as particular layers, which in some cases were only a few inches in thickness. In the second place, many of the samples were so small that too much reliance should not be placed in the figures obtained on analysis. As an example of possible error: if a pint of sand weighing about one thousand grams contains a chert pebble half an inch in diameter, the one pebble alone constitutes about one-third of one per cent of the weight of the whole sample. The question then arises, should a pebble of the given size be included or rejected in the selection of a typical thousand gram sample from a sand streak? Still greater errors are liable to occur in analyzing small samples of coarsely broken shell, since the weight of a single valve runs up to at least ten grams for *Macoma nasuta*; one hundred for *Cardium corbis*; two hundred and fifty for *Schizothaerus nuttallii*; and three hundred for *Saxidomus nuttallii*, to judge from weighed specimens of the leading species. It will be seen that a trustworthy analysis of mound material from Humboldt bay requires a larger sample than from San Francisco bay mounds because the smallest species common in the northern region proves to be the largest species commonly found in the more southerly district.

Average Composition

The average composition of the mound as a whole can be approximated by a combination of the samples analyzed. In the case of the sample from layer III and the sample from the bottom of layer VII, we have two pockets abnormally high in the percentage of both fish and bird bones. Consequently these samples should be rejected in averaging. The seven other samples yield an average of 13.89% mollusk shell, .019% crab shell, .07% fish bones, .044% bird bones, .002% cetacean bones, .798% charcoal, .239% rock and gravel, .055% clay, and 84.87% sand and finer material passing through a sieve having twenty-five meshes to the inch.

By a somewhat different method of procedure another analysis of the mound composition was obtained for the upper six feet. While in the field, the writer was impressed by the unusual amount of sand in the mound as compared with the mounds at San Francisco bay.²⁵⁹

²⁵⁹ E. W. Gifford, *op. cit.*, table '1, shows the average composition of the San Francisco bay shellmounds to be 55.59% shell, .04% fish remains, .064% other vertebrate remains, .198% charcoal, 14.72% ash, 9.6% rock, and 19.8% residue.

In order to estimate the composition of the Gunther island mound in a rough way, five gallons of material, estimated to be from twenty to twenty-five thousand grams, were taken at the southwest end of the trench at all depths down to six feet, and sifted on two screens, one having four and the other fourteen meshes to the inch. The coarser material was estimated to be from 20% to 23% of the whole according to bulk and subsequently at the University was estimated to have been from 13.4% to 16% of the whole by weight. This was practically all shell, though there is much regret that it was not examined more closely before being thrown away, in order to have ascertained the amount of pebbles and vertebrate remains.

The medium sized siftings, which were caught on the screen having fourteen meshes to the inch and which were about 4% of the whole in bulk (estimated at the University to be from 2.4% to 2.7% by weight), proved a surprise. They revealed a proportion of fish bones that had not been suspected. All of these siftings were taken to the University, where an analysis of 467 grams showed 81.15% shell, 8.76% fish remains, 1.29% bird bones, 4.92% charcoal, 2.53% rock, and 1.34% clay.

The material passing through the screen having fourteen meshes to the inch was estimated to have a bulk of from 73% to 76% of the whole (or 81.3% to 84.1% by weight). A small sample of this finer material taken to the University indicated that from .8% to .82% of the whole five gallons of material was fine enough to pass through a sieve having fourteen meshes to the inch but too coarse to pass through a sieve having twenty-five meshes to the inch.

Combining the figures obtained by a rough measurement of bulk while in the field with the figures obtained by a more exact analysis at the University, we have a final estimate of the average composition of the mound for the upper six feet. It is as follows: 15.95% to 18.87% shell, .22% to .25% fish bones at the very least, .03% to .035% bird bones at the very least, .24% to .27% charcoal, .09% to .1% rock at the very least, .03% to .036% clay, and 80.43% to 83.44% sand fine enough to go through a sieve having twenty-five meshes to the inch. As an unknown amount of bird bones and pebbles and an occasional fish vertebra were thrown away with the coarser siftings, the percentage of these would be somewhat greater than the figures given, though what the limits would be, the writer does not venture to say.

Throughout the whole length of the trench, after a depth of about five feet had been reached, there was noted a marked increase in the proportion of sand.

Vertebrate Remains

Under the heading Fauna have been listed the species of vertebrate, as well as invertebrate, remains found in the mound. Every fragment of bone or horn noted during excavation, with the exception of bird bones, was saved. Bird bones were entirely too numerous to be saved without exception. Every piece was saved, however, which was thought to be either of sufficient size to aid in the identification of species, or to determine the relative abundance of each species if such a study should ever be attempted. The bird bones brought to the University weighed about nine pounds. Even if the full quantity of coarser bird bones was two or three times as great, they would not have aggregated one ten-thousandth by weight of the mound material. But though the coarser bird bones were not numerous enough to form an appreciable percentage, the finely broken fragments were sufficient in amount to be dealt with in the analysis of some of the layers, as has been shown. This result appears also in table 3, although some question may be raised as to what part chance played in the selection of the samples for analysis.

It was but rarely that a fish bone was found of sufficient size to be noticed, during excavation, though the presence of smaller fish bones was revealed by sifting. Unlike the bird bones, chance in the selection of samples for analysis can therefore not have affected the determined proportion of fish bones very materially.

The principal facts regarding the amount and distribution of mammal remains at different depths of the mound can be seen in table 4. About seven hundred and fifty fragments of bone and horn from mammals, weighing somewhat over thirty-six pounds, were obtained. A single whale vertebra, with several other large cetacean bones, constitutes fully a third of this weight. As the seven hundred and fifty bone and horn fragments were derived from an estimated 3500 cubic feet of mound material, one bone or horn fragment would come on the average from about each five cubic feet. Hence it is, that we can say the same of mammal remains as of bird bones, namely, that, at the very best, they can scarcely amount to one ten-thousandth by weight of the mound material. Probably the proportion is much less, and, unlike bird bones, no small fragments are revealed by sifting.

The impression was gained during the excavation that there were fewer mammal but more bird bones at Humboldt bay than in the San

Francisco bay mounds. Data for comparison with the San Francisco bay mounds is not readily accessible except in the case of a mound situated near Castro in Santa Clara county, and this mound is hardly typical of those in the San Francisco bay region, since it is situated about three miles inland from the open waters of the bay and is composed more largely of earth than of shell.²⁶⁰ In about 12,500 cubic feet of this Castro mound, 887 fragments of mammal remains were found. These weighed 46 pounds. These figures show results quite contrary to those expected, since there are about twice as many mammal remains at Gunther island as at Castro per cubic feet of material handled. As for bird bones, Castro mound had 53 ounces for the entire excavation. Consequently the amount of bird bones saved from the Gunther island mound would be ten times as great per cubic foot as at Castro.

Floors and Fireplaces

Besides the layers of stratification already described, one or two other features in the composition of the mound were noted. At the southwest end of the trench, at a depth of 2½ feet, there was a hard packed floor having a length of at least fourteen feet. It was made of sandy clay, three to five inches thick, which had been burnt to such a degree of hardness that a pick was required to break it up.

At a depth of two feet, just beneath human remains nos. 2 and 3, was a small floor of baked clay two feet in diameter and from 3½ to 4½ inches in thickness. It was really a double floor, for it had been made at different times. First, about two inches of clay having a saucer-like depression in the top had been baked to a good degree of hardness and used as a fireplace until the surface had been covered with a film of charcoal. Then another two inch thickness of clay was put on top of the previous floor and used as a fireplace until it, too, had acquired a smooth film of charcoal on its surface.

No other sign of either floor or fireplace was noted anywhere in the trench. There were neither streaks of ashes nor heaps of burnt stones such as indicate the frequent fireplaces in the mounds about San Francisco bay. Such pebbles and stones as occurred were scattered about singly, and will be mentioned more particularly in the pages to follow under the heading Chert Refuse, Cooking Stones, etc.

²⁶⁰ E. W. Gifford, *op. cit.*, table 2, gives Castro mound as 64% inorganic matter, while seven other large and more typical mounds at San Francisco bay average but 22% inorganic matter.

AGE OF THE MOUND

It is perhaps too generally considered proper for the archaeologist to discover stratification in every archaeological site, and then to make all that is possible out of such stratification, counting each distinct layer as a distinct age in the life and development of the former inhabitants. The writer has excavated in half a dozen mounds about San Francisco bay and has not encountered any stratification there except at Glen Cove, near Vallejo, where layers of calcined shells alternate with uncalcined. Uhle has also described similar conditions at Emeryville.²⁶¹ In these mounds the stratification is mainly due to the agency of fire and probably results from the practice of cremation of the dead. In all other mounds of that region, excavated either by the writer or by previous University investigators, some suggestions but no very definite evidences of cremation have been found. At Humboldt bay there is no calcined shell except in rather negligible quantities, and the various layers differ only in being composed of varying proportions of shell and sand, while the sand takes on different shades according to the amount of finely pulverized charcoal in it.

In the mounds mentioned on the shores of San Francisco bay the stratification is considered to be of no age significance. Neither is it at Humboldt bay except in the case of layer I, which was the only layer extending the entire length of the trench. Of all the layers it had the most sharply defined limits. It is believed that this layer represents an age culturally distinct in at least one respect from the age preceding—the Indians of the more recent age burying their dead while the more ancient Indians practiced cremation.

Although no special significance can be attached to any of the other layers which have been described, yet it appears to the writer that three periods of development should be recognized: first, a camping period; second, a period of permanent residence when the dead were disposed of by cremation; and third, the period when the dead were buried. Though we thus indicate three periods, there appears to be no evidence of any change in material culture as revealed by the artifacts.

Before any mound existed at site 67, and when there was nothing but a marsh at that place, the Indians about the bay doubtless made use of the extensive tide flats to the northeast of Gunther island for gathering clams. Instead of taking the clams to their permanent

²⁶¹ Uhle also mentions a similar layer of calcined shell in a mound in west Berkeley and in another at Sausalito. Max Uhle, present series, VII, 8, 19, 22, 1907.

village, say at site 68, 23, 61, or elsewhere, it would be more convenient to roast them on the marsh at site 67. In order that their camping place might not be disturbed by high tides, especially the larger high tides occurring near the time of new moon or full moon, the Indians seem to have brought to the site large quantities of sand. This supposition, that the mound was begun simply as a camp for clam roasting, is in accord with the practice of the modern Indians, who used site 14 near the harbor entrance for just such a purpose.

After the mound had grown to a sufficient height, permanent houses were built, only to be destroyed occasionally by storms at times of exceptionally high tide. There may well be some foundation to the tradition that "there was a flood three times that drowned all the people" (see page 282). Even if there had been no tradition of a previous flood to act as an incentive to the continual bringing on of more sand along with the clams, the annual demonstrations of what storms could do in tearing away the sides of the mound would be sufficient. The result was that the Indians continued to bring on large quantities of sand even after any real necessity ceased to exist, although the proportions of sand in the upper five feet of the mound appear to be somewhat smaller than below that depth.

Another theory accounting for the rapid accumulation of sand is that the sand was needed in playing games, especially gambling games with clay balls. The remarkable uniformity in size of a certain type of clay ball found to be very numerous at depths varying from 1 to 5½ feet would furnish some basis for a belief that strata of these depths were all laid down within one generation, otherwise there would be a greater variation.

The objection may be raised that it is contrary to the general characteristics of Indians outside of the southeastern and central portions of the United States to deliberately construct mounds.²⁶² To this the writer would agree, yet we have the fact that the mound as a whole is composed of over 80% of sand and certain streaks as high as 99%. Every particle of this sand was brought to the mound by the agency of man. In proof of this it can be said that the mound

²⁶² H. H. Bancroft, *Works*, iv, 736-41, 1883, mentions the findings and speculations of an enthusiastic, though inexperienced, local investigator in Vancouver island and British Columbia. This investigator found shellmounds fourteen feet deep covering three acres; burial mounds of sand, gravel, or stones containing skeletons or partially cremated remains with suggestions of human sacrifice at the death of important personages; mounds "built of sea sand and black mould mixed with some shells"; mounds fifty feet high; and earth-works surrounded by ditches similar to those of eastern states. Obviously additional investigation will be required before all of these assertions can be fully accepted.

is situated on an island separated from the mainland by deep channels; the whole island has been a marsh covered with vegetation for thousands of years as evidenced by peaty streaks to a depth of two feet; and an examination of the mound itself shows that there is not a single six-inch thickness, possibly not even a three-inch thickness, of stratification that does not contain artifacts, cooking stones, pebbles, stone refuse, charcoal, fish bones, bird bones, or shell. A glance at table 3 shows that a 1216 gram sample of 99% pure sand contains an appreciable percentage of things that one would not naturally expect to find in sand deposited by natural agencies. On the North Spit there are mounds with alternate streaks of shell and sand. These unquestionably indicate a period of human occupation followed by a period of natural deposition. On the contrary, as regards site 67 the writer wishes to say that though he considers it, sand and all, as a deposition by human agency, he also considers it as a gradual accumulation extending over centuries.

Paul Schumacher,²⁶³ in excavating a mound at Hustenate, ten miles south of Pistol river, which is one hundred miles north of Humboldt bay, found conditions as described below:

Decayed shells and bones, mixed with sand brought up from the beach, a mass of vegetable mould and rubbish, and all sizes of beach-stone, constitute the compost of the surface-layer to a depth of two to five feet, below which dark humus is found, over a soft slaty formation of a grayish color, which is coal-bearing. The house-sites are, as usual, irregularly located over a space of a hundred yards in length and something less in width. Considering the condition of the ground upon which we find the aboriginal settlements on the Oregon coast visited by our expedition, the opinion I have expressed in my previous report of such settlements on the southern coast of California holds good for this locality also: that all such stations had been established either on sandy ground, or that the nature of the ground had been artificially changed by layers of sand carried thither when it was rocky or hard. Sandy soil was necessary... for the erection of houses, which were partially dug in the ground, and surrounded by embankments. It was also a requirement for cleanliness, and healthful through its absorption of moisture in rainy seasons.

To express an opinion as to the age of the mound, with no more excavation than has been done, can hardly be anything but premature. Excavation was made only in one side of the mound at a considerable distance from the center. The deepest point reached was only $8\frac{2}{3}$ feet, while the depth of the mound in the center is at least 14 feet, even if it does not go below the present level of the marsh. Other

²⁶³ Paul Schumacher, *Researches in the Kjökkenmöddings and Graves of a Former Population of the Coast of Oregon*, Bull. U. S. Geol. Geog. Surv. Terr. (F. V. Hayden, geologist in charge), III, 27-35, 1877.

mounds of the vicinity, about as large if not larger than this mound, have not been touched at all. Yet any kind of an opinion may be better than none at all. At least it may satisfy for the time being, until farther excavations can be made.

All the artifacts found in layer I, also those with human remains no. 7, may be very recent, but all others are doubtless several hundred years old even though some of them come from a depth of less than a foot. The reason for this opinion is that in 1860 the whole mound was covered with bushes except at one side where the modern village was located. There was also a pine tree two feet in diameter near the center of the mound. This would indicate that the central portion of the mound had undergone little, if any, change and perhaps been uninhabited for several hundred years. The burials at one end of the trench may be of people from the modern village, since they are sufficiently distant from the village and yet not far from the beach running around the mound.

The whole mound might possibly have been raised within 1500 years. If it were very much older, one would expect it to have been covered with timber instead of bearing one lone pine. Site 68, less than a mile distant, was covered with spruce and is a place around which have gathered several myths. This suggests that it is an older mound. Even before it had attained half of its present size, being on the center of the island, it would not be subject to so much devastation by high tide storms as site 67. There can thus really be but little question that site 68 is older than site 67, but it is itself situated on a marsh and must also have been a camping place for a longer or shorter period of time before it could have been a place of permanent residence. For this reason we should expect the oldest mounds of the region to be upon the mainland, say at sites 61 or 23.

HUMAN REMAINS

The remains of twenty-two individuals were found. Six of these were burials. The others lay in beds of charcoal where they had been cremated. Plate 12, figure 2, shows such of the charcoal beds as were cut by the vertical plane forming the southeast wall of the trench. The depth of other charcoal beds which were not cut by this vertical plane are indicated by crosses with arabic numerals which are the field numbers given to the human remains.

Table 5 shows the depth at which each of the human remains was found; whether buried or burned; whether of infant, child, or adult; and the number of artifacts with each. As some of the bodies were

more completely incinerated than others, the weight of the unconsumed fragments is also given. In two cases there was complete incineration, but the presence of artifacts indicated that a body had been cremated. There were several charcoal beds without either human bone fragments or artifacts. Some of these may have been places where the dead were cremated, but no account was taken of them unless they showed positive indications in this direction.

Burial

The buried remains of four adults and two infants were found at the northeast end of the trench and are, it is presumed, comparatively recent, although prehistoric. They were buried near the beach rather than toward the center of the mound, where there were more bushes. There is perhaps no part of California that did not practice cremation at some period,²⁶⁴ but in many areas, whenever they did bury, the position of the dead was usually in a more or less bent position, frequently with the knees drawn up to within six inches or so of the chin. The modern Indians about Humboldt bay seem to have always buried their dead in a straight position, and the very earliest pioneers report seeing a great many graves marked by headboards and footboards. Robert Gunther described in somewhat the following language the manner of burial at the modern village on site 67.

Six months after the massacre of February 26, 1860, an ox broke through into one of the graves, and afforded an opportunity for examination. The Indians had chosen what was already a low spot and had scooped it out so as to make the bottom of the grave about four feet deep. They had put redwood planks on the bottom and sides, then laid in old rags, on which seven of the dead were placed side by side together with their belongings. The grave was covered with other planks on top of which dirt was placed.

This seems to have been the usual manner of burial at Humboldt bay²⁶⁵ previous to the coming of the whites, the chief peculiarities in the present instance being the lack of headboards and the unusual size of the grave made necessary by the large number of dead.

²⁶⁴ There is no record of the Eskimo or the Indians of the Columbia river and its tributaries ever burning their dead, but it would appear that most other tribes of the Pacific coast have at times cremated. For cremation among the following see Bancroft's Works: Kenai, I, 134; Copper river, I, 135; Mackenzie river, I, 132; Nehannes, Tacullies, Chimmesyans, and Carriers, I, 125; Nootka, I, 205; Vancouver island, IV, 738-39; Coos bay, I, 248.

²⁶⁵ Stephen Powers (*op. cit.*, p. 99) was told by a pioneer that he had seen hundreds of graves at some burial grounds, each marked with a redwood slab, which, being a very durable wood, made it probable that some of the graves were seventy-five or a hundred years old. These statements agree with the findings of the writer after making due allowance for exaggeration.

Paul Schumacher, while investigating for the Smithsonian Institution the shellmounds of the southern Oregon coast, found a variety of ways for the disposal of the dead even within the historic period—the period in which glass beads and objects of metal were used. In some instances he found conditions approaching those of cremation. Possibly a reëxamination of the Oregon coast shellmounds might show that some of the human bones were slightly calcined, indicating that fire was used to consume the flesh even though it was extinguished before it greatly affected the bones. At Hustenate, ninety miles north of Humboldt bay, Schumacher²⁶⁶ found cases of burial as described below:

On digging, the graves were found to be very shallow, the skeletons being interred but one and a half to two feet below the surface. The sides of the excavation were lined with split redwood boards, about four feet in length and a foot in width, placed edgewise, and reaching to the floor of the grave, which was covered with beach-sand to the thickness of about one inch; the width was not over two feet, and both ends of the excavation were open, that is to say without lining. The corpses were found doubled up in the usual manner. . . . Immediately above the body was placed a board resting on the lining, to which it was secured by cobble stones of various sizes, some weighing as much as fifty pounds. The graves were then filled up with earth. . . . With babies' skeletons, and a young woman's corpse, we found some much decayed money-shells. . . . A few glass beads were also found with skeletons of grown females.

Although the main facts regarding each of the burials at Gunther island are shown on table 5, a few additional notes seem worth while.

No. 8. Complete skeleton of a person of middle age or older. Eight of the teeth had been lost during life and there were six ulceration cavities²⁶⁷ in the jaws. The bones were not very large, indicating that the skeleton was probably that of a woman. The skeleton lay supine, stretched out to a length of 4 feet 10½ inches.

No. 5. A large sized tibia and the bones of the feet.

No. 6. Skeleton of an adult, probably of a man, as the bones are very stout and the skull has a strong supra-orbital ridge. The skeleton was within a foot of the surface and in consequence the ribs and both jaws were missing. Complete

²⁶⁶ Paul Schumacher, *op. cit.*, p. 34.

²⁶⁷ The great number of ulceration cavities in the two complete skulls found in this mound is without parallel in the skulls from any other region known to the writer. Because of this fact the query is raised as to whether mouth diseases were not unusually prevalent at Humboldt bay, in addition to the scrofulous complaints previously mentioned. See page 301. Another complete skull from Gunther island, probably from site 68, illustrated and described by Aleš Hrdlička, present series, IV, 49-64, 1906, also has apparently four ulceration cavities and possibly six. In connection with Dr. Hrdlička's paper and the confusion between two skulls referred to in the footnote on page 52, it might be said that skull no. 12-81 described as being from "Sandspit, Humboldt Bay," is undoubtedly identified correctly. Human bones exposed at site 14 are in a very short time bleached and scoured by drifting sands until they have exactly the appearance presented by the skull in question.

field notes and sketches showing the exact position of this skeleton are lacking. On the diagram, plate 12, figure 3, the position of the head is correctly given, but for the direction of the feet a somewhat hazy memory is relied upon. However it can be asserted that the body was buried supine, stretched at full length.

No. 7. Complete skeleton of a person of middle age or older, as five teeth had been lost during life and half a dozen ulceration cavities filled the jaws. The bones were not extra large. The skeleton was found in a supine position stretched out to a length of $4\frac{1}{2}$ feet. It was a little over two feet below the bottom of layer I. As graves were usually dug to a depth of about $2\frac{1}{2}$ feet, it is considered that this skeleton is merely an intrusion into the older strata of the mound. This is the only case of a burial with which there were any artifacts. Over each clavicle, there was a rectangular piece of abalone (pl. 21, fig. 10), both of almost exactly the same size, $1\frac{3}{4}$ by 4 inches. On the breast was a red obsidian knife (pl. 13, fig. 6).

No. 21. Femur of a baby a few months old.

No. 22. Tibia and frontal of an infant just born.

Cremation

How long it has been since the Indians at Humboldt bay changed from the practice of cremation to that of burial, has not been determined, nor the reason for such a change. The Spaniards who discovered Trinidad bay in 1775 said of the Indians there that "they observed some strange ceremony, for when a certain Indian died, they cried out for him, burning him in the palace of the captain, into which they permitted none of our men to go during the ceremony, but having succeeded in doing this, those who got in found nothing in particular."²⁶⁸ Palace, as translated from the word *casa*, is doubtless the sweat-house, where ceremonies of various kinds were observed. The Spaniards may have been mistaken about the body being cremated. People living at Eureka at the time of the massacre in 1860 and seeing fires on Gunther island and at Bucksport, mistakenly reported to newspapers²⁶⁹ that the dead were cremated. In the same way the Spaniards seeing smoke issuing from the sweat-house, and hearing all the sounds of mourning, might have taken for granted that the dead were being cremated. Powers²⁷⁰ stated that the Yurok buried their dead in a recumbent posture, but kept a fire burning several nights in the vicinity of the grave.

As for other peoples to the south and east of the Wiyot, Powers stated that the Mattole²⁷¹ cremated, and was informed that the Whil-

²⁶⁸ Don Antonio Maurelle, *op. cit.* (footnote 27), Madrid edition, 1865.

²⁶⁹ San Francisco Bulletin, Mar. 2, 1860; Northern Californian, Feb. 29, 1860.

²⁷⁰ Stephen Powers, *op. cit.*, p. 58.

²⁷¹ *Ibid.*, p. 110.

kut²⁷² cremated also but believed that their custom was somewhat varied. A Whilkut burial custom has already been described on page 254.

The manner of cremation at Humboldt bay seems to have differed in some respects from that at San Francisco bay and other parts of the state. It is hoped that the special points of difference may be described in some future paper. The cremated remains at Humboldt bay were found as a rule in saucer shaped beds of finely pulverized charcoal having a diameter of four or five feet and generally a thickness of four or five inches though sometimes as much as ten inches. A few lumps of charcoal, which seemed in every case to be of redwood, were two to four inches in length. It would appear that the dead were burned on a platform above a round hole which had been scooped out for a grave and into which the charcoal, unconsumed bones, and artifacts fell. In general, nearly all of the bone fragments are over an inch in length. Skull fragments are two to four inches square. Vertebrae are often nearly whole except for their projections. Sections of femurs, especially the proximal ends, are found four to six inches in length. These bone fragments are generally calcined only on one side and are found in one linear series extending for a length of about three feet, the bones below the knee usually being wholly consumed.

In the case of remains nos. 16 and 17 the beds of charcoal were not circular but rectangular, two feet wide by five feet long. This means that rectangular graves were dug, above which the dead were burned. These two beds of charcoal were the only ones where there were human bones without artifacts in association. An examination of table 5 and plate 12 will show that 4½ feet is the greatest depth at which circular charcoal beds were found. Of the two rectangular beds, one was three inches higher than this level, the other a foot lower. Hence it is possible that remains nos. 16 and 17 represent an earlier period of time when cremation was practiced but the custom differed somewhat from that of a later time. The absence of artifacts in the rectangular charcoal beds and scarcity of artifacts below the 4½ foot level makes it impossible to say whether or not the earlier period was culturally distinct in other respects.

Paul Schumacher, while excavating in a mound near the mouth of Pistol river one hundred miles north of Humboldt bay, describes the disposal of the dead as follows:²⁷³

²⁷² *Ibid.*, p. 88.

²⁷³ Paul Schumacher, *op. cit.*, p. 32.

Doubled up, the skeletons were resting near the wall of the excavation [wall of the house-pit], and faced the fire-place. . . . In one instance, two skeletons were found buried in one house . . . the earth covering the skeletons was strongly mixed with charcoal, pieces of charred wood, fragments of animal bones, and shells blackened and partially consumed by fire. On the floor on which the skeletons rested was found a layer of ashes several inches in thickness. But the fire had not affected the skeletons, as in no instance was any such damage observed, and even the remains of matting, furs, and other similar perishable material were not injured by it. It seems, therefore, evident that the hut was demolished by fire, after the owner had expired, and was buried in the ruins, covered with rubbish and earth surrounding his house. Except some glass beads found with a female skull and three roughly cast copper buttons with that of a male, nothing was unearthed that had apparently been deposited with the dead.

In addition to the main facts given in table 5, the following notes regarding each of the cremated human remains are presented. The order of arrangement is the order in which the remains were located in the trench from the northeast to the southwest end.

No. 4. About half of the bone fragments were not calcined. The heads of the femurs were in their sockets in the pelvis. Many of the vertebrae were in line. A scapula was found, but not a single fragment of the skull. A fine black obsidian knife, 13½ inches in length, broken into eight pieces, was at the left side. Arrow points and other artifacts were near the pelvic bones.

No. 3. The charcoal bed with these remains, overlapped charcoal beds nos. 4 and 2, but there was no difficulty in keeping the artifacts and bone fragments from these beds apart. The remains consist of the proximal ends of the femurs, pelvic bones, a number of vertebrae, and one tooth but no sign of any fragment of the skull. Near the pelvis was a large pestle and eleven sinkers.

No. 2. Eight or ten vertebrae, a few small limb fragments, and one tooth belonging to a child, found with a remarkable assemblage of artifacts consisting of a stone pipe over nine inches long, fourteen arrow points, a girdled stone, and a black obsidian knife 10½ inches long. This child was sent on his way certainly well equipped. Such articles are not often found with the remains of children, but are usually considered as the possession of a shaman or man of wealth.

Lying partly beneath remains no. 2 and partly beneath no. 3 was an unusual bed of baked clay which has been described on page 346. It did not necessarily have any relationship to the human remains.

No. 1. Fragments of skull, humerus, ulna, femurs, etc., only partially calcined, along with a stone adze handle, two white flint ceremonial blades, and other artifacts. The charcoal bed containing these articles is not cut by the vertical plane shown in plate 12, figure 2, but two other charcoal beds close by at somewhat greater depths are cut by the vertical plane and are shown on the diagram. The two latter beds showed no signs of human remains.

No. 12: The bones, but partially calcined, indicated an adult of large size. There were half a dozen bone fragments of an elk in the same charcoal bed. With the possible exception of remains no. 8, near which were some elk bones, this was the only indication that food was offered to the dead, and even in these cases the evidence was not positive. The artifacts, ceremonial blades, and clay balls found with no. 12, indicate a man of wealth.

No. 14. A few fragments of a femur, vertebrae, and skull. The artifacts found with these remains make a total of 112 objects, or nearly as many as were

found with all the other human remains combined. Among the most notable objects were a great many clay balls of almost uniform size, and a ceremonial war-club or "slave-killer." No artifacts were found elsewhere at a greater depth in association with human remains. The charcoal bed had a thickness of ten inches.

No. 15. In this case there was a bed of charcoal slightly overlapping remains no. 14. There was not a single trace of any human bone, but there were four artifacts.

No. 16. Fragments of a femur $6\frac{1}{2}$ inches in length, besides a few small fragments of the skull, pelvic bones, etc., scarcely at all calcined, found in a rectangular bed of charcoal containing no artifacts.

No. 10. A fairly large adult, as judged by a seven-inch fragment of a femur. The remainder of the bones were broken into somewhat smaller fragments which were scarcely at all calcined. There were no artifacts in immediate association with the bones for there were two charcoal beds, one directly above the other, separated by three or four inches of sand. In the lower bed of charcoal there were no human bones but a great many olive shell beads and a couple of other objects.

No. 18. Partially calcined, eight-inch fragment of the femur of a young person, along with an obsidian knife, a clay ball, and a pair of abalone pendants.

No. 9. A few bone fragments, including a piece of a fairly large femur. In a limited area around the pelvic bones were found several beautiful obsidian blades, dentalium shells, olive shell beads, carbonized pine nut beads, *Viburnum*-seed beads, and other things. A little to one side were a heap of carbonized basketry, slag, a knife, and so forth.

No. 19. After the trench had been dug as deep as time allowed, the perpendicular walls were undermined and, at a distance of about three feet from the pelvis of remains no. 9, the pelvic bones of another individual were found, along with a nine-inch piece of a medium sized femur, many skull fragments, vertebrae, etc., in fact, a large part of a skeleton but partially calcined. Some of the finest artifacts of the whole excavation were found with these remains. These artifacts include a beautifully shaped "slave-killer," several obsidian ceremonial blades (one of which, a red one, is estimated to have had an original length of nearly sixteen inches), a steatite pipe, a clay pipe, two pestles, two mauls, dentalium shell, olive shell beads, carbonized pine nut beads, carbonized *Viburnum*-seed beads, and so on. The objects with remains nos. 9 and 19, though separated from each other enough to prevent much chance of mixing, were surrounded by a single charcoal bed over seven feet in diameter.

No. 11. The human remains consisted of only one tooth of a child. The accompanying artifacts were two shell ornaments and four carbonized pine nut beads.

No. 13. There was here a complete incineration of a human skeleton, leaving nothing but a half dozen artifacts.

No. 17. A very few fragments of limb bones, etc., nearly all calcined, found in a rectangular bed of charcoal containing no artifacts.

No. 20. A very few small calcined bone fragments, presumably human, found with two pestles, two mauls, and a number of bone artifacts among a small amount of ashes and charcoal upon a hard baked clay floor previously described on page 346.

MATERIAL CULTURE

Chipped Implements

A total of eighty-eight chipped objects of obsidian, chert, and other stone were found in association with twelve of the human remains. These can be classified into a dozen types of implements as shown on table 7. In addition to the chipped implements in association with human remains, there were five specimens not in such association. These were a fragment of a red obsidian blade found at a depth of one foot, a fragment of a black obsidian blade at a depth of nine inches, two small greenish chert knives at depths of six inches, and a scraper at a depth of nine inches.

Obsidian Ceremonial Blades.—Under this heading will be mentioned objects variously known as ceremonial blades, knives, or swords, chipped from black or red obsidian and having a length of 17 centimeters or more. The use of these on the Klamath river and elsewhere in the White Deerskin dance and in the Woodpecker or Jumping dance is quite fully described by H. N. Rust and A. L. Kroeber in the *American Anthropologist* for 1905. As nothing was learned by the writer regarding the use of these implements at Humboldt bay, and as nothing is known of the dance ceremonies practiced by the Wiyot, the reader is referred to this article for further information.²⁷⁴ No doubt the Wiyot or their predecessors accounted these knives as objects indicative of the wealth and rank of their possessors much like the modern Indians on the Klamath and Trinity. The detailed description of six specimens made from black obsidian follows, a typical example being illustrated on plate 13, figure 1.

Five specimens of black obsidian blades were found, which were complete or nearly complete. The length of these (after adding a little in two cases for broken tips) is 272 mm., 280 mm., 342 mm., 347 mm., and 410 mm. They were found in association with cremated human remains nos. 2, 4, 9, 12, and 14, the shortest one being at the greatest depth, 4.8 feet, and the longest one nearest the surface, 1.3 feet deep. The extreme variation in width of the specimens is 11 mm., the average being 53 mm. All are double pointed and the edges are in general nearly parallel throughout most of their length, but sometimes the blade is very

²⁷⁴ For description and illustration of similar knives from the Santa Barbara region, southern California, see C. C. Abbott in G. W. Wheeler, Report on U. S. Geog. Surv. West of the Hundredth Meridian, vii, 49–69, 1879. The longest and finest specimen of this type known is illustrated by W. K. Moorehead in *Stone Age in North America*, 1910, i, 97. The legend written on the specimen and shown in the photographic reproduction is "Somesbar, Salmon River, Siskiyou County, California, 5" x 30", 101 oz." A second specimen, also illustrated, from the same locality is 22 inches long and weighs 68 ounces. The longest specimen obtained by the present writer at Gunther island (pl. 13, fig. 1), is nearly 16 inches long and weighs about 13 ounces.

slightly constricted in the center. The variation in thickness is not great, the average being 14 mm. In addition to the more complete specimens one small fragment was found.

Eight specimens of the red obsidian blade, or rather variegated red and black, were found. One of these (pl. 13, fig. 6), is of quite different type from the others, differing mainly in being narrower and having more pointed ends. It is 211 mm. long, 30 mm. wide, and from 8 mm. to 12 mm. in thickness. It was found with a skeleton, no. 7, at a depth of three feet. This was the only case in which uncremated human remains had any artifacts in association with them, and a different custom of disposing of the dead may account for the difference in the type of artifact.

Six other specimens of red obsidian blades belong to the same type as the black ones previously mentioned. Besides these, a small fragment scarcely an inch long, found with remains no. 4, is considered as being unquestionably of the same type. Following is a detailed description of the six larger specimens. Plate 13, figure 2, illustrates one of these.

Three complete specimens having lengths of 171 mm., 190 mm., and 282 mm., were found in association with human remains nos. 14, 9, and 19 at depths of from 1.3 to 4.8 feet. One fragment 160 mm. long with remains no. 9 is judged to have had an original length of 215 mm. A second fragment 305 mm. long with remains no. 19 is judged to have had an original length of 380 to 400 mm. A third fragment four inches long was not associated with any human remains. The extreme variation in width of these six specimens is only 12 mm., the average width being 47 mm. The average thickness is 16 mm.

The red obsidian blades like the black ones are double pointed and their edges are nearly parallel, except for the largest specimen which has a very slight constriction in the center, from which fact we are able to make an estimate of its original length before being broken. None of the specimens, either red or black, show a constriction any more pronounced than in the specimens illustrated in the article of Rust and Kroeber previously mentioned. A remarkable uniformity is seen in the width of both the red and the black blades, but owing to the difficulties of chipping, it would be hard to maintain a uniform thickness even though it were desired. However, the extreme variation in thickness is only 7 mm.

Blades and Knives of White Flint.—The type of implement designated as ceremonial blades of white flint is a species of knife remarkable for its width in proportion to its length. Complete specimens of this type are two or more inches wide and four or more inches long. Exactly what position this white flint should occupy in mineralogy has not been ascertained, but from the shape of various specimens from the Klamath river region it would appear that it is of such a nature that it is easily worked into very broad, thin implements. At

the same time the same, or a similar mineral, by a different method of chipping, can be made into drills²⁷⁵ having a triangular cross-section. The three most complete specimens of blades made from white flint are illustrated on plate 13, figures 3 and 4, and on plate 14, figure 1. The description follows:

Museum no. 1-18061 (pl. 13, fig. 3), found in association with human remains no. 1. Dimensions: 206 mm. long, 85 mm. wide, and 9 mm. thick in the center. Museum no. 1-18070 (pl. 13, fig. 4), found in association with human remains no. 12. Dimensions: 125 mm. long, 55 mm. wide, and 7 mm. thick in the center.

Museum no. 1-18217 (pl. 14, fig. 1), found in association with human remains no. 9, is an implement of considerably different type from the other two specimens, but, owing to its fragmentary condition, we are unable to determine its original shape. It has a width of 50 mm. and a thickness of 10 mm.

Besides the above described specimens there were three other fragmentary specimens, apparently of the broad type, found in association with human remains nos. 1, 13, and 15. In table 7, seven specimens of white flint are listed under the heading "knives." Most of these were poorly worked or quite fragmentary, and apparently of no great width.

Single Pointed Knives.—Of eight specimens three were of black obsidian, the others of chert. Those best preserved are described as follows:

Two obsidian knives, Mus. no. 1-18234 (pl. 13, fig. 7) and no. 1-18235, were in association with human remains no. 19. Both are of nearly the same dimensions, being 52 mm. wide, 10 mm. thick, and having an original length estimated to have been 140 mm. before the specimens were broken. They differ from the larger ceremonial blades in being thinner, in having perfectly straight bases, and when looked at edgewise are seen to be slightly crooked.

Museum no. 1-18212 (pl. 13, fig. 8), found with human remains no. 18, is made from obsidian, is rounded at one end, and very bluntly pointed at the other. Dimensions: 111 mm. long, 53 mm. wide, and 15 mm. thick near the pointed end. The object has the appearance of having been worked from a fragment broken from a ceremonial blade. The central portion of the sides is tarnished from exposure, while the edges and both ends show signs of fresh chipping. There even seem to be faint signs of a third retouching. The point seems too blunt, too thick, and too coarsely chipped, to serve any very useful purpose, but all the other edges are sharp.

Museum no. 1-18216 (pl. 13, fig. 9), found with human remains no. 9, is a handsome specimen of grayish and horn colored chert. It has a rounded base and is 131 mm. long, 48 mm. wide, and 11 mm. thick.

Museum no. 1-18071, made of a variegated greenish and brown chert, was found with human remains no. 12. Dimensions: 113 mm. long, 35 mm. wide, and 9 mm. thick.

²⁷⁵ The mineral may possibly be what is known as argillite or porcellanite, a form of clay slate or clay schist. A Yana Indian seeing a specimen of porcellanite in a museum show case said that it was the material from which drills were made.

Museum no. 1-18308 (pl. 13, fig. 5) is a greenish chert knife 50 mm. in length, a small portion of the base being broken off. A similar knife 59 mm. in length, was also found, both being at a depth of only six inches.

Scrapers.—Two specimens were found which are considered scrapers, one made from red obsidian, and the other from brown chert. Their description is as follows:

One fragment of a red obsidian scraper (Mus. no. 1-18010) was found in association with remains no. 4. So large a portion has been broken off that the attempted restoration of its outline as shown in text figure 2 should not be taken too implicitly. The object has a length of 57 mm. and a thickness of 9 mm.

Museum no. 1-18310 (pl. 15, fig. 5) is a chocolate colored chert scraper found at a depth of nine inches. It has a length of 36 mm. Its comparatively great thickness, 6 mm. towards the base, would indicate that it is not an unfinished arrow point.

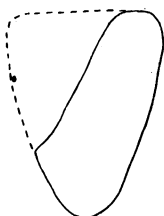


FIG. 2. Scraper. No. 1-18010. One-half natural size.

Spear Points.—Nothing was found which could with any certainty be considered as a spear point. Two specimens, figures 8 and 9 of plate 14, are long enough for spear points, but are considered to be drills. An obsidian fragment 45 mm. long, found with human remains no. 3, has a somewhat closer resemblance to a spear point.

Drills.—Eight objects were found which are considered to be drills. All of them are illustrated on plate 14. Five of them, figures 8 to 12, are made of a variety of white flint which is a favorite for drill making in various regions of the west. One, figure 14, is of brown colored chert, and two, figures 13 and 15, are made of black obsidian. Five of the specimens were found in association with human remains no. 14, the others with remains nos. 4 and 13. A more detailed description of each drill follows:

Figure 8 (Mus. no. 1-18261) is long enough for a spear point, but it lacks a good cutting edge and near the point it is 9 mm. thick or nearly as thick as it is wide.

Figure 9 (Mus. no. 1-18111) has a better cutting edge than the last but it is 8 mm. thick, which makes it rather too heavy for an arrow.

Figure 10 (Mus. no. 1-18014) has a rather thin delicate point for a drill but can hardly be referred to any other class of implement, unless it is an unfinished specimen.

Figure 11 (Mus. no. 1-18114) and figure 15 (Mus. no. 1-18106) are triangular in cross-section, while figure 12 (Mus. no. 1-18105), figure 13 (Mus. no. 1-18104), and figure 14 (Mus. no. 1-18012) are lenticular in cross-section, having a thickness half or two-thirds as great as the width.

Arrow Points.—Twenty-five specimens of black obsidian arrow points were found in association with several human remains as shown in table 7. They varied in length from 12 mm. to 46 mm. The shorter ones have a form similar to that shown in plate 15, figure 7, while the larger ones are shaped more like that shown in plate 14, figure 5. Two obsidian arrow points are illustrated on plate 14, figure 4, showing the more typical form and size, while figure 7 is an object of rather unique form found in association with human remains no. 14.

Fourteen arrow points made of white flint were obtained. Most of these are of medium size and are more or less fragmentary. One specimen, Mus. no. 1-18112 (pl. 14, fig. 6), found with human remains no. 14, has a single notch in the center of the base. With this exception all of the complete specimens have a rather wide stem, with a notch at each side, and medium sized barbs. Museum no. 1-18109 (pl. 14, fig. 5) is an unusually lengthened form.

Of chert arrow points, five specimens were found. Two are illustrated on plate 14, figures 2 and 3. Museum no. 1-18107 (pl. 14, fig. 2), found with human remains no. 14, is the only one of a particular type found in the excavation. The type is common at sites 10 and 34. The specimen is very thin, having a thickness of only 3 mm., and has very long barbs. These characteristics are considered as the essential features of an Oregonian type of arrow point which will be mentioned again when the artifacts from various other sites are dealt with.

Objects Made of Sandstone

Under this heading will be described 110 specimens, mainly sinkers, mauls, and pestles with a few other objects. Slightly over one-quarter of these specimens were in association with human remains, the others being scattered at various depths down to six feet. In reality eight of the sinkers listed in the tables under the heading "sandstone" were made of chert, granite, or porphyry, but as they do not differ in form from the sandstone sinkers, they are not separated from this type of artifact.

Pestles.—The fifteen specimens found are all in a broken or fragmentary condition, but it was possible to cement the pieces together

so as to make two complete specimens and one nearly complete. They can be described as belonging to two slightly different types, namely, flanged, and not flanged. Three specimens belong to the first type, one to the second type, while the other eleven are too fragmentary to be definitely placed with either type.

The flanged pestle, whose distinguishing feature is the flange or ring near the bottom, is particularly described as follows:

Museum no. 1-18022 (pl. 16, fig. 1) was found in association with human remains no. 3. It has been broken by the heat of the fire into thirty pieces, but when cemented together was 447 mm. in length and weighed six pounds. It has a gently tapering top ending in a blunt point. A little above the base it has a flange or ring. Here the pestle has a diameter of 72 mm. or 4 mm. greater than the diameter just below the flange. The pestle is symmetrically made from a very hard, close grained, dark gray sandstone, and is well polished.

A second nearly complete specimen was found with human remains no. 19, while a third fragment found at a depth of five feet would indicate that this type is not confined to the more recent strata of the mound.

As a usual thing pestles of this type are pointed at the top, though sometimes the top appears to have been broken off and then smoothed over. Nearly all of them, as well as the mauls, sinkers, and adze handles found in Wiyot territory, are composed of a very hard, close grained sandstone. Several fine recent specimens from the Klamath and Trinity rivers are in the museum. These are remarkable not alone on account of the ring and great length, but also on account of their symmetry and exquisite black polish. Two of them are shown in outline on page 389 in text figures 11 and 12 and are here described for sake of comparison.

Figure 11, mus. no. 1-11676, obtained at Weitchpec on the Klamath, is 663 mm. long, and the longest in the collection. Weight: 11½ pounds. Diameter at the flange, 87 mm. Greatest diameter below the flange, 72 mm.

Figure 12, mus. no. 1-816, obtained in Hupa valley. Length, 471 mm. Diameter at the flange, 90 mm., which is 30 mm. greater than the diameter below the flange.

This type of pestle occurs from a little to the south of Cape Mendocino northward throughout the Wiyot, Yurok, and Hupa territory. Memorial Museum, Golden Gate Park, San Francisco, has several flanged pestles from Curry county, Oregon, essentially of the same type, only not so well polished. The northern limit of the type is unknown.

The pestles from the Pomo culture area to the south are pointed at the top, but have bulbous bases without rings. In the shellmounds at San Francisco bay and on the Santa Barbara islands and adjacent mainland, pestles with flanges have been found, but these are of an-

other type entirely, being generally only three to six inches long and having the flange at the top rather than at the bottom of the pestle.

The pestle found in the excavation at Gunther island which had no flange is described as follows:

Museum no. 1-18251 was found in association with human remains no. 19. Length 365 mm. Diameter 74 mm. Weight 5 pounds 10 ounces. It has a tapering top, is very symmetrical, but is not smoothly polished, the marks made by pecking showing over its surface like the marks of smallpox. It has been broken by the heat of the fire at the time of cremation into fifteen pieces. There is really but little difference between this pestle and the type already described except that it lacks the flange.

Mauls.—An implement well represented in the mound is the maul used with elkhorn wedges in splitting out house planks and in driving stakes for fish traps. There were three complete specimens and eighteen fragments found. Nearly all came from the upper three feet in the excavation, but several were from lower depths, one being found at a depth of 5¼ feet. Three specimens are illustrated on plate 16. These are particularly described as follows:

Museum no. 1-18269 (pl. 16, fig. 3), found in association with human remains no. 20, is 172 mm. long and 90 mm. in diameter, and weighs 3¼ pounds. It is very symmetrical and has a neat expansion at the top. Three of the fragmentary specimens showed a like expansion at the handle end.

Museum no. 1-18254 (pl. 16, fig. 4), found in association with human remains no. 19, is 271 mm. long, 115 mm. in diameter, and weighs 7 pounds. The handle is well rounded and polished but less care was bestowed upon the bulbous part, it being somewhat triangular in cross-section. It was broken by heat into a dozen fragments. There was another complete specimen and seven fragments which lacked the expansion at the top.

Museum no. 1-18504 (pl. 16, fig. 5) is a boulder partly fashioned into a maul when it accidentally split longitudinally. It is of interest as showing a stage in the process of manufacture.

The museum has a considerable collection of mauls from the Klamath river varying much in form and size, the heaviest weighing 7⅛ pounds. They are made of various kinds of stone, such as sandstone, steatite, porphyry, and granite, while all of those from Wiyot territory are of sandstone, except one fragment of granite found near the surface. Some of these mauls resemble in shape the poi pounders of the Hawaiian islands. Similar implements occur in Oregon, Washington, and British Columbia,²⁷⁶ though sometimes described as pestles.

²⁷⁶ H. J. Spinden, *The Nez Percé Indians*, Mem. Am. Anthr. Assoc., II, 185, 1908; H. I. Smith, *Archaeology of the Yakima Valley*, Anthr. Papers Am. Mus. Nat. Hist., VI, 40-44, 1910; *Archaeology of the Thompson River Region*, Mem. Am. Mus. Nat. Hist., II, 413, 1900; *Shell-heaps of the Lower Frazer River*, *ibid.*, IV, 156, 1903.

Adze Handles.—Six specimens of the stone adze handle were found, all but the two shown on plate 16 being fragmentary. They were at depths varying from a few inches to $2\frac{3}{4}$ feet, only one being in association with human remains. This implement, characteristic of northwestern California, is made serviceable by binding to it a cutting blade made from bone, horn, flint, or shell, which was replaced by metal after the coming of the early voyagers. Though numerous chisels and gouges made of bone and horn were found throughout the trench, none were in association with handles. The manner of attaching the blade to the handle is illustrated in volume 1 of the present series, plate 3, to which the reader is referred. The adze was used in planing wood somewhat as the carpenter's plane is used, except that the implement is drawn towards the person instead of being pushed. The recurved portion serves for the handhold. Quite different types of adzes have been described by Smith²⁷⁷ from the Yakima region and by Niblack²⁷⁸ from Haida and Tsimshian territory.

Disk-shaped Sinkers.—Fifty disk-shaped sinkers, fourteen in association with human remains, were found in fairly even proportions at all depths. They were made mainly from sandstone pebbles by notching the edges, never the ends as in the case of similar sinkers from the Yakima valley, though a few had marks on the ends of such nature as to indicate that they had been put to a second use as hammer stones. Five were made from disk shaped pebbles of chert, two of granite, and one of porphyry. There is no great variation, either in size or other respect, from the one shown in plate 17, figure 7. The size varies from 50 mm. to 82 mm. in long diameter, and from 1.1 to 5.5 ounces in weight.

Girdled Stones.—Plate 17, figures 8*a* and 8*b*, illustrates one of five similar objects. Only one was in association with human remains. One was at a depth of $5\frac{3}{4}$ feet, the others at depths of one to two feet. These stones vary from 54 mm. to 63 mm. in length and from 3.1 to 4.8 ounces in weight. They are not natural pebbles, but were shaped by pecking and have a groove encircling them. There is no reason why they could not be used as sinkers, yet the writer is not inclined to regard them as such. When the disk-shaped pebble is seen to have been used so extensively as a sinker, not alone in the excavated mound, but throughout the Wiyot and Yurok territory, the presence of only

²⁷⁷ H. I. Smith, *Archaeology of the Yakima Valley*, *op. cit.*, p. 64.

²⁷⁸ A. P. Niblack, *Coast Indians of Southern Alaska and Northern British Columbia*, Report U. S. Nat. Mus. 1888, p. 279 (1890).

five of these girdled stones leads to the belief that they had some other use. The ordinary sinker found in the shellmounds of the San Francisco bay region is a natural pebble girdled, but there are a number of specimens similar to the girdled stones of Humboldt bay. Several similar objects have been obtained in Butte county in the Sacramento valley. One of these (Mus. no. 1-19586) was made of translucent quartz and polished perfectly smooth, groove and all. Because of its small size (longest diameter 42 mm., weight 2 ounces) as well as the care expended in making it, it should perhaps be regarded as a charm-stone or some ceremonial object.

Museum no. 1-18526 (pl. 17, fig. 9) is a remarkably symmetrical granite stone, apparently natural shape except for the encircling groove. It is 93 mm. in greatest diameter, and weighs 16.3 ounces. It was found on the beach opposite the recent village at site 67.

Hammer Stones.—Seven hammer stones have been listed in table 8. To this number could be added six others, already mentioned, which have been classed as disk-shaped sinkers. The notches on their edges show that they had been used as sinkers, while marks on their ends prove that they had also been put to a secondary use as hammer stones. One oblong flat hammer stone (Mus. no. 1-18575*a*) is only 48 mm. in length and weighs 1.6 ounces. Such a hammer stone could only be used in very light work, such as breaking up flint, or perhaps in fashioning implements by pecking. Two larger hammer stones (Mus. nos. 1-18515 and 1-18575*b*) are similar in shape and size to that shown in plate 17, figure 6, being 123 mm. long. The heaviest weighs 13.4 ounces.

Anvil or Mortar.—No mortars, either whole or fragmentary, were found, except one fragment of an irregular flattish stone showing a shallow mortar-like depression at least nine centimeters in diameter. This may have been either an anvil or a stone used as a mortar in connection with a basket hopper.

Problematical Stone Object.—One object was found whose use is not known, but which might be regarded as an ornamental pendant. Its description follows:

Museum no. 1-18118 (pl. 17, fig. 5), found with human remains no. 14. Length 71 mm., breadth 38 mm., thickness 20 mm. Edges show rough pecking marks, but the flat sides are well polished, which would lead to the belief that it had been used as an abrading implement or smoothing stone, such as is employed in pottery making, were it not for a mark at one end made apparently to accommodate an encircling string.

Objects of Steatite and Slate

The objects made of steatite and slate are not numerous. They include two pipes, a fragment of a steatite dish, three slave-killers, and four fragments of slave-killers.

Stone Pipes.—One clay pipe was obtained, which will be described under another heading, and two pipes made of steatite. The description of the stone pipes is as follows:

Museum no. 1-18038 (pl. 17, figs. 1a and 1b), found in association with human remains no. 2. Length 240 mm., diameter 24 mm. Museum no. 1-18239 (pl. 17, fig. 2), found with human remains no. 19. Length 108 mm., diameter 22 mm.

These pipes show great extremes in length, but are in no respect different from the majority of stone pipes found in northern California among the modern Indians. There are at least two species of tobacco indigenous to northern California, *Nicotiana bigelovii* and *Nicotiana attenuata*, both of which were used by the Indians. The Spanish discoverers of Trinidad bay said that the Indians "used tobacco, which they smoked in small wooden pipes, in form of a trumpet, and procured from little gardens where they planted it."²⁷⁹

Stone Dish.—A fragment of a steatite dish (pl. 16, fig. 6), found at a depth of 2½ feet, had at some time been subjected to so much heat that it had changed from its original condition of softness to one of extreme hardness, with the result that it was with some difficulty recognized as being made of steatite. The dish was well shaped inside and out, having a maximum thickness of 22 mm. Before being broken it must have had a diameter of some 20 or 25 centimetres. Steatite dishes, generally elliptical in form, and having a long diameter of from two inches to over two feet, are quite common in the lower Klamath river region.

Slave-killers.—Plate 18 shows several objects belonging to a class of implements variously described as batons, war-clubs, stone hatchets, battle axes, tomahawks, and slave-killers. Though there is such a great diversity of forms throughout North America, these objects should all be regarded as only modifications of one fundamental class of implement used either for killing or in ceremony. If an exhaustive study of the subject could be made, it is possible that intermediate forms could be found to connect the more eccentric types. On the Alaska coast and southward, where slavery was an established institution, certain clubs have been designated as slave-killers. Niblack

²⁷⁹ Don Antonio Maurello, *op. cit.* (see footnote 27 of present paper), Barrington edition, p. 489.

describes the killing of slaves in southern Alaska, especially in the region of the Queen Charlotte islands, in the following words:²⁸⁰

Simpson estimates that in 1841 one-third of the entire population of this region were slaves of the most helpless and abject description. . . . Slaves did all the drudgery; fished for their owner; strengthened his force in war; were not allowed to hold property or to marry; and when old and worthless were killed. The master's power was unlimited. . . . In certain ceremonies it was customary to give several slaves their freedom; but at funerals of chiefs, or in ceremonies attending the erection of a house by a person of consequence, slaves were killed. Slaves sacrificed at funerals were chosen long before the death of their master and were supposed to be peculiarly fortunate, as their bodies attained the distinction of cremation, instead of being thrown into the sea. Simpson (1841) says of Chief Shakes at Wrangel, that he was "said to be very cruel to his slaves, whom he frequently sacrificed in pure wantonness, in order to show how great a man he was. On the recent occasion of a house-warming, he exhibited, as a part of the festivities, the butchery of five slaves." . . . The practice of killing slaves in ceremonies and for reparation in quarrels was quite common. . . .

Slave-killers.—These are ceremonial implements formerly used by the chiefs in dispatching the slaves selected as victims of sacrifice on occasions of building a house, or on the death of a chief or other important personage. . . . The pointed ends were driven by a quick blow into the skull of the victim, whose body was accorded special consideration in burial. They seem in general to have been made of bone, or of wood tipped with stone. Naturally, with the advent of the whites, this custom has had to be abandoned, and these implements have, in time, become very rare.

The institution of slavery, though developed to the greatest extent in southern Alaska, existed among all the northwest coast Indians as far south as the Klamath and the head waters of the Sacramento.²⁸¹ Of slavery among the Indians of Cape Flattery on the coast of Washington we have the following account:²⁸²

In former times, it is said, the slaves were treated very harshly, and their lives were of no more value than those of dogs. On the death of a chief, his favorite slaves were killed and buried with him, but latterly, this custom seems to have been abandoned, and their present condition is a mild form of servitude. The treaty between the United States and the Makahs makes it obligatory on this tribe to free their slaves, and although this provision has not thus far been enforced, it has had the effect of securing better treatment than they formerly had.

John Dunn, for eight years connected with the Hudson's Bay Company, describing burial customs at the mouth of the Columbia, says:²⁸³

²⁸⁰ A. P. Niblack, *op. cit.*, pp. 252-253, 275, pl. 46, summarizing and quoting Sir George Simpson (governor-in-chief of the Hudson Bay Company's territories), *Narrative of a Journey Round the World During the Years 1841 and 1842* (London, 1847), I, 211-213, 242-243.

²⁸¹ H. W. Henshaw, *Bur. Am. Ethn.*, Bull. 30, part 2, p. 598, 1912.

²⁸² J. G. Swan, *The Indians of Cape Flattery*, p. 10, 1868 (Smithsonian Contributions to Knowledge, xvi, 1870).

²⁸³ John Dunn, *op. cit.* (see footnote 183 of present paper), p. 86.

On the death of one of these people, the body was formerly wrapped in skins or mats, and deposited in a small canoe... On the death of a chief or other person of wealth or importance, one or more of his slaves (much of an Indian's importance depending on the number of his slaves) was put to death... But this barbarous superstition has been abolished through the interposition of the Company.

When an important person died on Coos bay, 170 miles to the north of Humboldt bay, "formerly the body was burned, and the wife of the corpse killed and interred."²⁸⁴

Though our findings are hardly sufficient to warrant us in making any positive declaration that the institution of slavery and human sacrifice formerly existed as far south as Humboldt bay, yet we feel we owe it to the reader to state such facts as would point in that direction and then leave it to future investigation to prove or disprove the proposition. We find southern Alaska to be the center of a culture area characterized by a high development of certain arts and institutions, such as carving, canoe making, building of excellent plank houses, an aristocracy of wealth, slavery, and human sacrifice. As we proceed south from the center of this type of civilization, all of these arts and institutions gradually become less marked in their development and cease entirely when Capé Mendocino is reached. Now, the argument might be made that, as most of these arts and institutions existed to a greater or less degree among the modern Indians of the Klamath river and Humboldt bay regions, there is, at least, a possibility that they all existed in a more or less developed form in the past.

Whether slavery and human sacrifice really existed or not, there are implements found on Humboldt bay similar to those from the Columbia river and northward described as war-clubs or slave-killers. The following is a general summary of the facts published by Smith²⁸⁵ regarding this class of implement:

Forty-four specimens of clubs made from the bones of whales (practically all the specimens of which Smith was able to gain any information; illustration of one of these from Barclay sound, Vancouver island, is reproduced on plate 19,

²⁸⁴ W. V. Wells, *Wild Life in Oregon*, Harper's Magazine, 1856, p. 602, a narrative of a four months' sojourn in the vicinity of Coos bay. Formerly, from Coos bay to Alaska, slaves, or sometimes even friends or relatives of an important person, were killed upon his death. For the following tribes see Bancroft's Works: Kadiak island, I, 86; Nootka, I, 205; Chinook, I, 240, 248; Wallawalla, I, 288; Coos bay, I, 248. Of the Chinook, Bancroft says: "Many instances are known of slaves murdered by the whim of a cruel and rich master, and it was not very uncommon to kill slaves on the occasion of the death of prominent persons, but wives and friends are also known to have been sacrificed on similar occasions."

²⁸⁵ H. I. Smith, *Archaeology of the Gulf of Georgia and Puget Sound*, Mem. Am. Mus. Nat. Hist., IV, 1907; *Archaeology of the Yakima Valley*, *op. cit.*

figure 6) do not vary greatly in their size and proportions, averaging about 21 inches in length by $2\frac{3}{4}$ inches in width and having a lenticular cross-section. About two-thirds of them have the handle carved to represent the head of the eagle or thunder-bird surmounted by a bird head-dress, while the blade is decorated with line and scallop designs, dot designs, or triangular incisions which according to the interpretation of modern Indians indicate feathers. Ten specimens have their blades incised to represent a human head. The hair is usually represented as being very much disheveled, as it would be in a head-hunter's trophy. Some of these bone clubs were collected by early explorers and are now in European museums with insufficient data, but most of them seem to have come from the west coast of Vancouver island, a few from near Victoria, a few from Neah bay, Washington, and several from the mainland of British Columbia, while three which do not differ in type from those farther north came from the Columbia river.

Twenty-five stone clubs have a blade lenticular or lozenge-shaped in cross-section and are of much the same form as those made from the bones of whales, except that in general they lack the carved handle and other decoration. About forty per cent of these clubs came from Puget sound and northward as far as the vicinity of Vancouver, and about forty per cent are from the Columbia river drainage area. One came from the coast of Oregon, and two were probably from Klamath river valley.

The third type of implement of the war-club class consists of ten stone objects having somewhat the form of an animal with a head, one or two legs, and a long tail. Six of these are reproduced in outline on plate 19. Four specimens of this type which are now in the Peabody Museum of Harvard University are supposed to have come from the Klamath river region. The provenience of the others is more definitely known, one coming from Poormans Bar, Scott river, Siskiyou county, California, one from Shovel Creek Springs, on Klamath river twenty miles west of Klamath lake, two from Willamette slough, Columbia county, Oregon, one from near Tacoma, Washington, and one from near Vancouver, British Columbia.

Smith also illustrates several objects more or less pestle shaped but much elongated. Similar objects are commonly found in Pacific coast museums sometimes labelled as pestles, sometimes as phallic symbols, and sometimes as war-clubs.

As for the type of club made from the bones of whales, none are known to occur in California,²⁸⁶ but stone clubs of similar shape are found in the Humboldt bay (text figure 15) and Klamath river regions. There are three of these made of steatite at the University museum. They were obtained from the Yurok Indians. One of these (no. 1-1570) is shown on plate 18, figure 4. It is 423 mm. long, 75 mm. wide, and has a maximum thickness of 24 mm. Its weight is 940 grams (35.2 ounces). The incised zigzag lines on its sides suggest the scallop designs which have been interpreted as feathers on the bone clubs (cf. pl. 19, fig. 6). The two dots may possibly

²⁸⁶ One exception might be made in the case of a war-club which was made of a whale's jaw and which came from Santa Rosa island off the coast of southern California; but the form of this object is really quite different from those of the north. See illustration in W. K. Moorehead, *Prehistoric Implements* (Cincinnati, 1900), p. 233.

represent the eyes of a human face. This interpretation is in line with the general degeneration of art in northwestern California as compared with that farther north. Neither sculpture nor realistic designs are known to occur in northwestern California, although geometric designs are commonly incised on elk-horn purses, elk-horn spoons, bone objects, the handles of mush stirrers, and the like.

The type of stone club having the form of an animal was well represented in the excavation on Gunther island, there being three whole specimens and four fragments. Plate 18, figures 1*a*-1*c*, shows one of the specimens (no. 1-18231) found in association with human remains no. 19. It is made of steatite, is 415 mm. long, 132 mm. wide at the position indicated by the arrow, and has a maximum thickness of 24 mm. It weighs 867 grams (30.6 ounces). The object is shaped much like an animal, with a head, ears, front and hind leg, and a long tail. The legs are lenticular in cross-section and have a maximum thickness of 14 mm. A cross-section taken through any part of the head, neck, or body would be wedge shaped. The end of the tail for about half of its length is more nearly lenticular in cross-section, rounded at the lower edge but flattened at the upper. There is a groove reaching from the ears to the middle of the tail. The whole specimen has a smooth black polish except for about half of the tail. This is of a slate color and has rough scratches at various angles, the marks made in the process of manufacture not having been smoothed out by polishing. In addition to the finer marks there are many deep scratches arranged vertically. It is possible that the tail had wrappings at one time. This theory would account for the lack of polish, for the lighter color, and for the vertical marks, which would serve to keep the wrappings from slipping.

The specimen is not uniformly black, as there are several patches having somewhat the appearance of blood stains. These are poorly shown in the photographic reproduction, but the form of the patches can be seen in text figure 3. If the object had been used to kill a person and had then been immediately thrown into the flames, clots of blood might have served to protect the stone from the heat so as to cause an alteration in color in spots as they appear in the specimen. However, the alteration in color is not necessarily due to fresh blood, for if during cremation the juices of the body had come in contact with the object, the effect might have been much the same.

The close resemblance of this specimen to the one found on Scott river and to those from Willamette slough will be noticed (cf. pl. 18,

figs. 1a-1c, with pl. 19, figs. 2 and 3). All have grooves along the back. Whether the object of this type had one or two legs seems to have been immaterial, as both forms were found at Willamette slough.

The second complete specimen of slave-killer (no. 1-18093, pl. 18, figs. 2a-2b) was found in association with human remains no. 14. It has a length of 320 mm., a width of 65 mm., and a thickness of 13 mm. It weighs 402 grams. It is made of steatite, but is not so highly polished as the first specimen. The legs are very short, as in the specimen from Shovel Creek Springs; the sides are nearly parallel throughout the whole length of the specimen; and there is no groove in the back. There is a spot or two of stain on the head and neck of the specimen similar to those described in the first specimen.

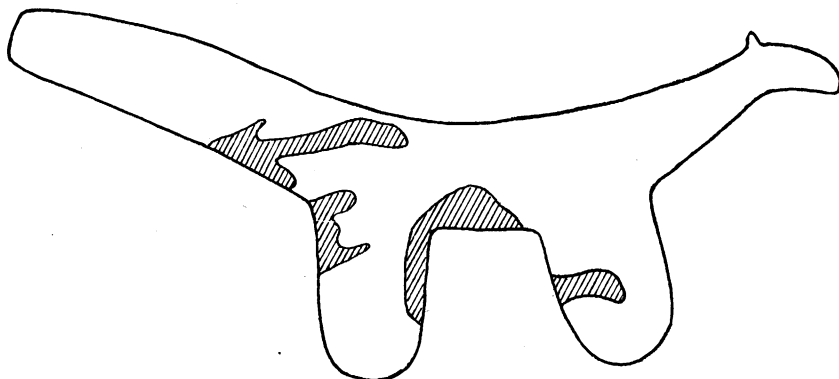


Fig. 3. Slave-killer from site 67 showing stains. No. 1-18231.
About one-quarter natural size.

The third complete specimen of slave-killer (no. 1-18018, pl. 18, figs. 3a-3b) is apparently a miniature toy weighing only 9 grams (.3 ounce). It was found with human remains no. 4. It has a length of 54 mm., a width of 20 mm., and a thickness of 7 mm. The close similarity of this object to the one from Scott river will be seen in the longitudinal groove along the back and forehead, and also the incisions at right angles to the groove. The encircling groove at one end shows that it was intended for a pendant. Two of the smaller specimens which presumably came from the Klamath river, are perforated at the handle end so that they might be suspended by a cord or thong.

One fragment of steatite about four inches in length was found at a depth of nine inches. It has a closely similar form to the handle end of the specimen first described. Three other smaller fragments

of slate found at depths of less than three feet are also probably portions of slave-killers.

When an account is taken of the objects indicative of wealth or rank found with human bones, such as ceremonial blades of red obsidian, black obsidian, and white flint, steatite pipes, slave-killers, and dentalium shell, it would appear that the persons of most importance would be, in order: nos. 19, 9, 14, 4, 12, 1, 2. Hence, the slave-killers are seen to be associated with the most wealthy. Now, a reference to plate 12, figure 3, and to the notes on the various human remains, will show that skeletons nos. 19 and 9 were surrounded by a single continuous charcoal bed. The same can be said of nos. 4, 3, and 2. But if in these cases of two or more persons appearing to have been cremated at the same time, one is the sacrificed slave, it is impossible to say which is the slave and which the master, because the artifacts with the one are about as important as those with the other.

Inasmuch as the Pacific coast forms of war-clubs or slave-killers are but little known and but partially described, it might be well to take up the subject where Smith left it and add to the present knowledge by mentioning a few other specimens, which should perhaps be regarded as belonging to the war-club class of implements.

A specimen (no. 1-15141) in the University museum from Santa Catalina island, southern California, has at least a superficial resemblance to a miniature slave-killer, as appears in the outline drawing, text figure 5. This object has a length of 91 mm., a width of 51 mm., and a thickness of 18 mm. Its small size should not necessarily prevent it from being called a slave-killer, since there are several miniature representatives of this ceremonial implement from the north, but at the present stage of our knowledge it would be much safer to consider it merely as a crude figure of an animal with only an accidental semblance to a slave-killer. This hypothesis is strengthened by the fact that several well made figurines of the fin-back whale and other animals have been found on the Santa Barbara islands, while specific resemblances to the culture of northwestern California are lacking or at least very scanty.

The Memorial Museum of San Francisco has a specimen, shown in outline in text figure 4, which appears to be related to the type found on Gunther island. It is 211 mm. long, 105 mm. in greatest width, and 33 mm. in greatest thickness. It was unearthed from a depth of 18 (?) feet at the Doggett mine on the banks of the Klamath river near Walker, Siskiyou county, some ten or fifteen miles above the

mouth of Scott river. The specimen gained some notoriety from a newspaper article,²⁸⁷ which is in substance as follows:

In a pocket of sand and gravel which was believed to be an ancient channel of the Klamath river, and which was fully 200 feet from the present bed of the river, at a depth of 18 feet below the surface of the ground, were found three large teeth belonging to one of the great "lizard," or "dinosaur," or "mastodonic species." There was also a tusk, 7½ feet long and 14 inches in diameter at the butt, which was so badly decayed that it fell to pieces when touched. Above the specimens were oaks five to six feet in diameter, and on bedrock 12 feet below the specimens were trees turned to coal or partly petrified. "Close to the teeth was found an ancient stone hatchet, which is believed to belong to a period co-existent with that in which the animal to which the teeth belonged is believed to have lived. . . . Was there a fight and the stone ax, being indigestible, all that is left of the man?"



Fig. 4. Slave-killer from the Klamath, 10 to 15 miles above the mouth of Scott river. Memorial Museum, San Francisco, no. 38899 One-quarter natural size.

Fig. 5. Stone object from Santa Catalina island. No. 1-15141. One-half natural size.

The teeth are in the Memorial Museum with the stone ax, and are identified as belonging to the mastodon, *Mastodon americanus*. Owing to the obviously emotional and unscientific character of the accompanying information, little significance can be attached to the reported association of the club with the fossil bones. It is to be regretted that when such discoveries are made there is too often no careful archaeologist present to take measurements of depths and make full notes of the circumstances.

Schumacher²⁸⁸ found with a skeleton at Chetko, Oregon, eighty-five miles north of Humboldt bay, an implement of bone broken to fragments but apparently shaped much like another implement "made of dark stone and nicely polished, which was found at Happy Camp [on the Klamath twenty-five miles below the mouth of Scott river] at a depth of 40 feet below the surface." Schumacher's drawing of this latter specimen reveals a form closely similar to the one from Gunther island shown in place 18, figure 2a.

²⁸⁷ San Francisco Chronicle, June 7, 1911.

²⁸⁸ Paul Schumacher, Remarks on the Kjökken-möddings on the Northwest Coast of America, Ann. Rep. Smithson. Inst. 1873, pp. 354-362 (1874).

W. K. Moorehead, in his *Prehistoric Implements* (p. 292), gives a figure of a slave-killer from Siskiyou county, California, which until the fire of 1906 was in the possession of the California Academy of Sciences at San Francisco. It is described as being made of hard black stone having the dimensions of two by sixteen inches, though the proportions of the figure do not correspond to these dimensions. Persons who remember seeing the specimen say that the figure must have been made from a very inaccurate free hand drawing. The same author in his second volume of the *Stone Age in North America* (p. 105), gives illustrations of two slave-killers in the possession of a resident of Albany, Oregon. Both of these specimens, which are shaped much like text figure 4, apparently came from "not far above the mouth of the Columbia river."

Several specimens of slave-killers are described by G. G. MacCurdy.²⁸⁹ Two of these in the possession of Yale University Museum are from the John Day river drainage area, probably Grant county, Oregon. A third specimen in the Yale University Museum is probably from Gilliam county, Oregon, about fifty miles above the mouth of John Day river. The National Museum has a cast of a fourth specimen found near St. Helens, mouth of Willamette river, Columbia county, Oregon. The fifth specimen, also in the possession of the National Museum, is most interesting as being from Wintun territory near Weaverville, Trinity county, California, over sixty miles due east from Humboldt bay.

Robert Gunther has found on site 68 one or more specimens of slave-killers, which have, however, been disposed of without his remembering just where they went. This completes the list of all known specimens of this type, at least twenty-eight in all, which can be said to range from Humboldt bay to as far north as Vancouver, British Columbia. Some of the specimens from Gunther island resemble so closely specimens from the Columbia river that they can be said to be practically identical; yet the form is so frequent both in California and in Oregon that it would be unwarranted to infer that the pieces were made in a northern locality and carried to California in trade, or vice versa. We must assume that so far as these implements are concerned one set of customs covered the region from Humboldt bay to Puget sound and perhaps took in the drainage areas of the Klamath, Trinity, John Day, and Des Chutes rivers, and part of the Columbia valley.

²⁸⁹ G. G. MacCurdy, *The Cult of the Ax*, in *W. H. Holmes Anniversary Volume*, pp. 301-315, 1916.

On plate 19, figure 8, there is shown an implement of the war-club class from Chilkat, Alaska,²⁹⁰ about 850 miles to the north of Vancouver. Though this was perhaps put to the same use as those objects which we have described as slave-killers, it should be considered as being the product of an independent development, so far as its form is concerned, and perhaps no more related to the typical slave-killer than are the monolithic hatchets from the eastern states, one of which from central Alabama, is shown for comparison on plate 19, figure 9.

There are on the Pacific coast quite a variety of flat, sword-shaped ceremonial implements,²⁹¹ as well as a few peculiarly shaped cylindrical implements, sometimes called pestles but more often phallic symbols²⁹² or war-clubs. These would undoubtedly make a very interesting study could the different types be brought together and compared and their significance ascertained. One form of stone club from site 9 and another from Scotia will be described below.

Chert Refuse, Cooking Stones, etc.

Chert.—There were a great many pebbles of chert from the size of a bean to the size of a fist found throughout the mound. These were thrown into a heap as they were unearthed and a few samples taken to the museum. They were probably used as cooking stones, as hammer stones, and as material for the making of implements.

Chert Fragments.—About seven pounds of small chert fragments, appearing to be the refuse from implement making, were brought to the museum. These fragments are of all colors, as described on page 279. If these fragments are really the refuse from implement making, it might very properly be asked where the finished implements are. Only one scraper (pl. 15, fig. 5), one drill (pl. 14, fig. 14), four knives (pl. 13, fig. 5), and five arrow-points (pl. 14, figs. 2 and 3), made of typical chert, were found at site 67, though thirty-four

²⁹⁰ H. I. Smith, *Archaeology of the Gulf of Georgia and Puget Sound*, *op. cit.*, pp. 418-420.

²⁹¹ See W. K. Moorehead, *Prehistoric Implements*, pp. 233, 292-293, for illustration of specimens from Siskiyou county and elsewhere.

²⁹² H. H. Bancroft, *Works*, III, 508, 1883, quotes D. G. Brinton, *in* *Schoolcraft*, *Arch.* v, 416-417, as saying: "The pretended phallic worship . . . rests on no good authority, and . . . is . . . nothing but an unrestrained and boundless profligacy which it were an absurdity to call a religion. . . . There is a decided indecency in the remains of ancient American art . . . but the proof is altogether wanting to bind these with the recognition of fecundating principle throughout nature, or, indeed, to suppose for them any other origin than the promptings of an impure fancy." Bancroft does not agree with the conclusions of Brinton, but makes no attempt to establish the existence of phallic worship anywhere in America except in Central America and southern Mexico. See also W. K. Moorehead, *Prehistoric Implements*, p. 288.

chert implements were obtained on site 10 and some from other sites. A few flakes of chert were found at site 67 in apparent association with six different human remains, but as the fragments were so common the association may have been accidental. There is no reason why some of the rough flakes of chert would not have served as scrapers or knives just as effectively, at least for some uses, as the most perfectly chipped implements. Why, then, should the inhabitants have expended unnecessary labor in making the perfect implement for daily purposes, especially when there was the chance of breaking it in use? Many just such chert fragments occur in the mounds at San Francisco bay and are described and illustrated by Uhle.²⁹³

White Flint.—Twenty fragments of white flint were found in association with human remains no. 1, and half a dozen fragments in other situations.

Obsidian.—Not a single fragment of obsidian refuse was found here or anywhere in the whole Wiyot area although the great majority of chipped implements were made of obsidian.

Quartz.—About a dozen pebbles of quartz from the size of small bird's eggs to that of apples, and about forty fragments, were brought to the museum. No use is known for these, other than as cooking stones and hammer stones.

Agates.—Four agates, an inch or an inch and a half in diameter, were found in one place at a depth of two feet.

Sandstone.—Skeleton no. 1 had in association with it an irregularly shaped sandstone boulder a foot in length, while with no. 19 were several oval sandstone boulders from five to nine inches in diameter. If the latter had been a little larger, they might have been considered material brought to the mound for making mauls or other implements. During the field work no particular attention was paid to the exact number of cooking stones, pebbles, and fragments of sandstone. Only a dozen were brought to the museum, but it is not probable that many were left behind.

Steatite.—Less than a dozen small stones and stone fragments are doubtfully considered to be steatite. Positive identification by scratching with a knife is difficult because the stone becomes so hardened by fire that it loses its original characteristics. About half of the stones identified as steatite were in association with human remains. Probably no example of this material escaped the notice of the writer while in the field.

²⁹³ Max Uhle, present series, VII, 61, pl. 6, 1907.

Objects of Clay

The objects made of clay include part of a clay pipe and 137 elliptical balls. Their distribution in the mound can be determined by referring to tables 5 and 6.

Clay Pipe.—In association with human remains no. 19, there was a fragment of a clay pipe (pl. 20, fig. 4), 48 mm. in length and 31 mm. in diameter. The bowl has been baked to a good degree of hardness, is symmetrical, and has a maximum inside diameter of 15 mm. and a depth of 25 mm. The inside of the bowl is blackened, while the outside is blackened and polished in places as if it had seen use; yet the fractured end is crumbly, and adjacent to the fracture was an irregular mass of clay scarcely baked at all. One side of the unbaked clay was adhering to a rib. The nearest locality where even the crudest of pottery is known to have been made is in the vicinity of Fresno, nearly 400 miles to the south-southeast of Humboldt bay.²⁹⁴

Elliptical Clay Balls.—Four different forms of elliptical clay balls are illustrated in plate 20. There were a total of 137 of these, counting a few in more or less fragmentary condition: 92 in association with human remains, and 45 scattered throughout the trench at depths ranging between 1 and 5½ feet.

Plate 20, figure 2, shows the type which is most common. The most remarkable thing about this type is that there are so many specimens having nearly the same size and shape, with just enough individuality to prove that they were not pressed in a mold. As already mentioned on page 348, these clay balls furnish some possible evidence as to the age of the mound. Hence, they will be described in considerable detail.

In association with human remains no. 14 there were 56 specimens, which have an average length of 45 mm. while the variation in length is only 3 mm. (43–46). To this number could be added 9 fragmentary specimens, also found with remains no. 14, which probably had a similar length before being broken. Of these specimens, 50 complete ones showed a difference in weight, between the largest and smallest, of only 4.4 grams, the average weight being 34.4 grams.

With human remains no. 12 were 12 balls whose average length is 45 mm. and whose extreme variation is only 2 mm. However, though the length of these specimens averages the same as the preceding, their weight was somewhat less, averaging 29.5 grams.

There was a like specimen with remains no. 19 and another with no. 15.

The balls found with human remains are with but few exceptions of a black color, very hard, and in perfect condition. Those scattered through the trench

²⁹⁴ Paul Schumacher, *Ann. Rep. Smithsonian. Inst.* 1873, p. 354 (1874) found a fragment of a clay pipe at Chetko, Oregon, eighty-five miles north of Humboldt bay.

are seldom black, but usually reddish or yellowish, are less perfectly baked, and are more frequently in a fragmentary condition. However, there seem to be 16 of the scattered specimens which should be considered as being of the same size and form as the one shown in figure 2. This makes a total of 95 specimens having the same form and nearly the same size, found at depths ranging from 1 to 5½ feet. All of these are such close duplicates that one could not be distinguished from another except by color and by the closest inspection and measurement with calipers.

One other elliptical clay ball, from a depth of 3¼ feet, is of the same form as figure 2, but is just enough larger than those described—49 mm. in length and 42.2 grams in weight—to give it a distinct individuality in appearance.

Figure 3 shows a second type of clay ball, differing from the form just described in having pointed instead of rounded ends. There are only three or four specimens of this type. These were found at depths of 3½ to 5¼ feet. The one illustrated is the most perfect specimen and is 54 mm. in length.

Figure 1 shows a clay ball much smaller in size than the types already described. There are fifteen specimens comparable in size with the one illustrated. Four of these were in association with human remains no. 14, one with no. 10, and one with no. 12. These fifteen varied somewhat in form, some having pointed ends, and some blunt ends. There is also a considerable variation in length, the range being from 29 mm. to 38 mm.

Figure 5 shows the smallest specimen of clay ball, which is 23 mm. long and has a more oval form than the types previously described. There are two other specimens similar in size and shape, all found at the depth of about three feet.

Robert Gunther has obtained elliptical clay balls at site 68. He stated that he had heard an Indian describe a game which was played with them, but he had forgotten the account.²⁹⁵

The writer has obtained two globular clay balls, 34 mm. in diameter, and one elliptical clay ball, 44 mm. in length, shaped much like figure 1, from a cave near Humboldt lake in Nevada. According to a member of the Winnemucca band of Indians a game with clay balls was formerly played, one party burying them in sand while the opposing party guessed their position. A similar game at Humboldt bay might account for some of the streaks of sand found in the mound.

²⁹⁵ The Indians of Smith river and Rogue river region have a guessing game "played with small clay balls." Ida Pfeiffer, *A Lady's Second Journey Round the World* (New York, Harper, 1856), p. 318.

In the Trask collection from San Nicolas island, southern California, there are about thirty objects of sandstone, 35 mm. to 75 mm. in length. There is much variety of form, but two or three specimens quite closely approach in shape and size some of the clay balls from Humboldt bay. There are also sling shots from Guam, made of coral limestone, which resemble the clay balls from Humboldt bay. However, in both these cases the resemblance is in appearance only.

At the University museum there is an outfit consisting of a sling made of tule (*Scirpus* sp.) and twenty-four partially baked globular mud balls (Mus. no. 1-10604) such as were formerly used by the Pomo Indians of Lake county in killing ducks and mud hens. The set is a model made to order by an Indian living on Lower lake. A dozen of these specimens are quite uniform in size, with a variation of only 4 mm. in diameter, the average being 41 mm. The remaining balls are much more variable in size and though fairly symmetrical are not perfectly globular. There is a range in the weight of the twenty-four specimens of from 55 to 75 grams. Not only was there much less skill used in fashioning them than those found at Humboldt bay, but to all appearances they were so slightly baked that they would disintegrate if placed in water. The collector, S. A. Barrett, states in the museum catalogue that these balls are made of a whitish earth slightly baked near, not in, the fire, and that they were made in only a few places in Pomo territory. He also states that toys of various shapes modelled from clay or adobe and dried in the sun were much used by Pomo children in aboriginal times. On the whole, it can be said that there is no evidence that the Pomo ever made anything that even approached pottery, nor do the clay balls of the Pomo Indians in any way resemble those at Humboldt bay.

The museum, furthermore, has over two hundred clay objects from an earth mound near Stockton, California. These are mostly roughly globular, averaging about two inches in diameter. They are made of very poor sandy clay and imperfectly baked. A minority are dotted or incised with crude, simple patterns. What their use could have been can hardly be determined. If they were only a little firmer in texture, they might have served to take the place of stones in cooking, but to all appearances they would have disintegrated more or less if placed in water. There are no stones on the San Joaquin delta, but one would think that enough for cooking purposes could have been brought from a distance. Professor W. H. Holmes has mentioned these articles from the Stockton mounds, saying that "there are many

objects of baked clay, globular, discoid, dumb-bell shaped, etc., some of which may have served for use in slings.²⁹⁶ To this we would say that most of them seem to be too heavy.

Clarence B. Moore has also illustrated and described clay balls from Louisiana and southern Utah. Those from Utah were called gambling cones by the collector.²⁹⁷

Ferruginous Clays and Paint.—The beds of half baked clay of poor quality, found beneath human remains nos. 3 and 20, have already been mentioned on page 346. Some streaks in these beds, of a less sandy character than others, were baked to an orange red color, and could be pounded and used as paint. An ounce or two of ochre found at a depth of $5\frac{1}{4}$ feet was in part of a cream color and in part baked to an orange red color. A flat, disk shaped lump, 12 mm. in diameter, of an orange red color, found at the depth of two feet, might have been paint. As no paint was found in association with human remains, all these cases may be considered as doubtful indications of its use. Probably the paint-like material was obtained together with the coarse clay as a mere accident. These baked clays are always of an orange color, never the bright red characteristic of the ochre (ferrous oxide, Fe_2O_3) which is so commonly found with human remains at San Francisco bay.

From the shape of some pieces of clay, it would appear that this material was sometimes used to batten the cracks between house planks.

Objects of Horn

The objects made of horn include thirty wedges and five harpoon heads. None of these were in association with human remains.

Wedges.—Wedges were found scattered throughout the trench at all depths to $5\frac{1}{4}$ feet. There are two main types. The first type, represented by eighteen specimens, has the horn split and then smoothed off on the inner side so as to form a bevel. Most examples are rather short. Plate 21, figure 6, shows one of the smallest specimens, while figure 4 shows the longest piece of this type. All of these are quite certainly wedges, because the fibers of horn at the butt end of the wedges have been broken and bent to one side by repeated blows.

²⁹⁶ W. H. Holmes, Ann. Rep. Smithson. Inst. 1900, p. 177, pls. 26-28.

²⁹⁷ C. B. Moore, Some Aboriginal Sites in Louisiana and in Alabama, Jour. Acad. Nat. Sci., Phila., xvi, 16, 43, 72, 73, pl. 2, 1913.

The second type is represented by ten specimens. The tip of the horn is used, being as a rule bevelled only on one side, the other side not needing any artificial bevelling because of the natural curvature of the horn. In two cases small sized wedges are equally bevelled on both sides. There is a variation in length of from 77 mm. to 230 mm.

Most of the horn from which wedges are made is probably elk antler, but some of the smaller specimens may be deer horn. The elk-horn wedge of the second type described above was quite common among the modern Indians of northwestern California. It was used in splitting out house planks. Essentially similar wedges from Emeryville shellmound are illustrated on plate 8, figures 1 to 3, in volume 7 of the present series.

Harpoon Heads.—There are two types of harpoon heads. The first type is represented by three specimens, two found at depths of about three feet and the third obtained somewhere in the upper two feet when the sides of the trench were undercut. Two of the three are somewhat incomplete, but appear to be of the same form as the one shown on plate 21, figure 3, although slightly smaller. The object illustrated has a maximum thickness of 16 mm. and a length of 163 mm. to which should be added 8 or 10 mm. for the broken point. Whether the Indians at Humboldt bay, either ancient or modern, engaged to any great extent in seal hunting is not known. A more likely use to which these harpoon heads were put was in spearing what are popularly termed sharks, a kind of dog-fish. During the early years of the white settlement these fish were so numerous that twenty to thirty boats, two men per boat, found it a profitable business to spear them for their oil.²⁹⁸

A second type of harpoon (pl. 21, figs. 12*a*, 12*b*) is represented by two barbs of horn found at depths of 1 and 3¼ feet. This kind of harpoon head was used for spearing salmon by the modern Indians of the Klamath and Trinity rivers.²⁹⁹ In the modern harpoon the point is made of bone three or four inches long, at the upper end of which are adjusted two barbs made of bone identical in every respect to those found at Humboldt bay. The barbs and bone point are wrapped with twine made of iris fiber and covered with pitch. The barb illustrated has a length of 72 mm.

²⁹⁸ San Francisco Bulletin, July 3, 1857; April 28, 1858.

²⁹⁹ P. E. Goddard, present series, I, 25, pl. 13, fig. 4, 1903.

Objects of Bone

There were eighty-three objects of bone obtained, nineteen in association with human remains, and sixty-four scattered throughout the trench. Nearly half of the objects are gouges or skin dressers. Other specimens include adze blades, awls, whistles, beads, head scratchers, a harpoon head, and miscellaneous or fragmentary objects. Table 9 shows the number and distribution of each of these classes of objects.

Bone Gouges.—Scattered through the trench at all depths to eight feet, were thirty-one bone objects, all more or less fragmentary, which we designate as gouges. In addition to these there were eight in association with human remains. Every one of these, so far as the fragmentary condition warrants an opinion, was made by splitting the proximal end of the cannon bone of the elk. One specimen is shown in plate 21, figure 1. There were only seven specimens which showed the original length of the implement. The length of these varied from 112 mm. to 160 mm.

A narrow type of gouge represented by four specimens, one with human remains no. 20, the other at depths of $\frac{3}{4}$, $2\frac{1}{2}$, and $3\frac{1}{4}$ feet, is also made from the proximal end of the cannon bone. Two specimens are shown on plate 21, figures 2 and 7.

Adze Blades.—There were only five objects, made from the larger limb bones of what is probably the elk, which are somewhat doubtfully classed as adze blades. These were found at depths down to $3\frac{3}{4}$ feet. Plate 21, figures 14 and 15, show two specimens. All of the pieces are more or less broken or dulled from constant use near the cutting edge. The upper end in every case has been cut off square. The length varies from 65 mm. to 90 mm. The Yurok Indians generally used the large mussel shell for adze blades.

Awls.—Two of the eight awls found were made by splitting the proximal end of the cannon bone. These were originally probably very long, but they are now too fragmentary to be illustrated. One awl was made from the humerus of a bird (pl. 21, fig. 8). The bones from which the others were made could not be identified. None of the awls were of excellent workmanship, except the one shown on plate 21, figure 9.

Three sting-ray barbs were found at depths of four and five feet. Whether or not these had been used as implements can not be stated. They have been found in San Francisco bay shellmounds in association with human remains.

Whistles.—The four whistles found in association with human remains had been calcined and are more or less fragmentary. Two specimens with human remains no. 9, as also the two shown on plate 20, figures 10 and 11, were made from the ulnae of large birds like the pelican or crane. Both of the latter had marks of incision made for decorative purposes. Figure 11 shows a design quite commonly made on bone objects from the Klamath river (cf. figs. 15, 16, and 17 of the same plate).

Bird Bone Beads.—Plate 20, figure 6, shows a bead 29 mm. long with some slight decorative incisions. It was found at a depth of only six inches. A second bead, made from the limb bone of a bird, was found at a depth of $1\frac{3}{4}$ feet and has a length of 65 mm.

Head Scratchers.—There are at the museum half a dozen thin, flat, bone objects from the Klamath river region catalogued as head scratchers and louse killers. Plate 20, figures 15 and 17, shows two of these objects obtained from the Yurok Indians. They have a thickness of 4 mm. and bear a decorative design characteristic of the region. Another specimen is described and illustrated by Goddard,³⁰⁰ who states that girls at the age of puberty are placed under restrictions for a period of ten days in regard to food, drink, and conduct. In order to avoid touching her face or hair with her hands during this period, a girl is given a piece of bone, which she wears suspended from her neck. Five objects which bear some resemblance to these head scratchers were obtained in the excavation on Gunther island. One is only a very small fragment. The others are shown on plate 20, figures 7, 12, 13, and 14. All are very thin, being only 3 mm. in thickness at most, and all except the one shown in figure 14 are flat on one side.

Figure 14 may be a hair pin (compare with figure 16 from the Klamath river), although it differs in form from the specimens previously obtained from this region, all of them being double pointed and varying in length from 80 mm. to 112 mm. The piece shown in figure 14 is single pointed and has a length of 73 mm. Some of the hair pins from the Klamath river are perforated in the center.

Harpoon Heads.—One bone harpoon head in a fragmentary condition was obtained at a depth of $2\frac{1}{4}$ feet (pl. 21, fig. 13). It seems not to be essentially different from the seal or shark harpoons made of horn, except that it is much smaller. A second fragmentary specimen, with the same form as shown in the upper portion of figure 3, is also considered to be part of a harpoon head.

³⁰⁰ *Ibid.*, I, 53, pl. 10, fig. 4, 1903.

Various Bone Objects.—In the table of bone artifacts (no. 9) other miscellaneous objects are listed. These include five specimens of cannon bones, probably from the elk, and six specimens of the limb bones of birds. Each of these has had one end cut off as the first stage in the manufacture of some article. Among the remaining miscellaneous objects was a knife-like fragment of bone with human remains no. 3, and two objects shown on plate 20. Figure 9 has some resemblance to a bead, but as it is solid, it could not be strung. Figures 8*a* and 8*b* give two views of a unique perforated bone object found at a depth of 4½ feet. The fragment has a length of 55 mm., a width of 26 mm., and a thickness of 11 mm. Its use is wholly problematical.

Objects of Shell

In table 10 every occurrence of the rarer species of shells is given, whether in an artifact or not, so long as there is reason to believe that the specimen was intentionally left with the dead. Thus one pecten shell, *Hinnites giganteus*, with skeleton no. 19, and another with no. 14, are not artifacts, yet they were in undoubted association with the interments. This was one of the rarest species found in the mound, occurring only thrice. The third example was found on the surface.

Dentalium.—*Dentalium preciosum* is a species of univalve living in the waters of Puget sound and northward, but so difficult to obtain that it was used as money by the Pacific Coast Indians from California northward. From the modern Yurok of the Klamath, its native name, allicochock, has been introduced into the English language of the region to about the same extent that in other parts of America the Algonkin name, wampum, has come to be understood as denoting shell beads. The small number of dentalia obtained in excavation on Gunther island may perhaps indicate that, in prehistoric times, trade relations with the north were not so extensive as within the past century. With skeleton no. 1 there were half a dozen small fragments, insufficient to make two complete shells. With remains no. 9 two small fragments were found. With no. 19 there were four complete shells and eighteen fragments. The complete shells have lengths of only 32, 33, 37, and 42 mm., and hence are not to be considered as having had great value, this being gauged according to length. Some of the specimens showed incisions, the designs of which are shown in text figure 6. Four of the shells are shown as they would appear if split

lengthwise on one side and then flattened out. Three specimens showed a design like that in figure 6a, and two specimens like that in figure 6d. Most of the dentalium shells among the Yurok of the Klamath river are decorated with pitch, snake skin, sinew, and feathers, while but few bear any marks of incision. However, one specimen at the museum has a design like that in figure 6a.

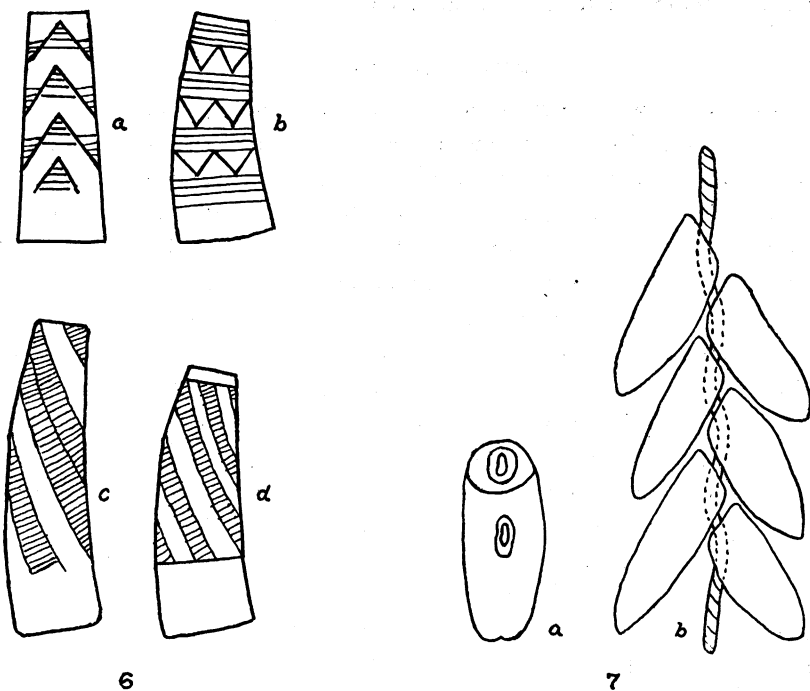


Fig. 6. Incised designs on dentalium shells found with human remains no. 19. Mus. no. 1-18243. Natural size.

Fig. 7a. Drawing showing perforations made in pine nuts for stringing. These beads were found in a carbonized condition with cremated human remains.

Fig. 7b. Drawing of a strand from a modern skirt from the Klamath river region, showing the same species of pine nut with identical perforations. Mus. no. 1-2333. Natural size.

Abalone.—With human remains no. 7 there were two rectangular pendants of abalone shell, almost identical in size, 103 mm. by 45 mm. (pl. 21, fig. 10). They were resting upon the clavicles. Body no. 18 had two pendants, one of which is shown on plate 21, figure 11. Remains no. 11 also had an abalone pendant. There was an ounce or two of abalone fragments with bodies nos. 9, 19, and 13. With the exception of one piece of abalone on the surface of the mound and the pieces just enumerated, no further traces of abalone were found.

Olive Shell Beads.—With interment no. 10 there was half a pint of medium sized beads of *Olivella biplicata*. Bodies no. 1 and 19 had a smaller quantity of small beads, while nos. 9 and 11 had only one or two beads. All of the beads consisted of the whole shell with a perforation at one end. Apart from the human remains five olive shells were found at various depths down to six feet. Of these, three had been perforated so as to make beads.

Carbonized Articles

Pine Nut Beads.—With each of the bodies, nos. 18 and 13, there were over two pints of carbonized pine nut beads. Smaller amounts of the same bead were found with six other human remains. The shell of each nut has a perforation in the larger end and another in the side through which a string could pass (see text fig. 7a). Nut beads of the same species, *Pinus sabiniana*,³⁰¹ are found on the skirts of Hupa and Yurok women, and are illustrated in volume 1, present series, plate 8, figure 2. In this illustration, however, the nuts are perforated at both ends. In another skirt from the Klamath river region (Mus. no. 1-2333), strands of string are covered with nuts bored like those from Gunther island. The manner in which the nuts are arranged upon the string is shown in text figure 7b. Though these skirts are a part of the female attire, it is not necessary to consider all the interments with pine nut beads as being the remains of females. A reference to table 5 and table 10 would show that about seventy-three per cent of all artifacts were with the bodies which also had pine nut beads.

Virburnum Seed Beads.—Skirts or aprons from the Klamath river region are often decorated with a small black nutlet, *Virburnum ellipticum*. These are illustrated by Goddard (present series, I, pl. 8, fig. 1). The same kind of beads were found in a carbonized condition at Gunther island with bodies 1, 9, and 19.

Basketry.—Some small fragments of twined basketry were found carbonized in association with human remains no. 9. A considerable quantity of light, porous slag along with the basketry may indicate that food had been burnt with the dead.

³⁰¹ The nuts upon Hupa and Yurok skirts as well as the nuts from Gunther island are large, being sometimes a full inch in length, and in consequence can not belong to *Pinus attenuata* (synonymous with *P. tuberculata*), as stated by P. E. Goddard (present series, I, 20), as this species produces very small nuts and is limited in its range, so far as the Klamath river region is concerned, to the tops of the highest mountains east of Trinity river—a distance of nearly fifty miles from Humboldt bay. On the other hand, *P. sabiniana* ranges westward as far as the redwood belt.

OBJECTS FROM VARIOUS SITES

Nearly one hundred artifacts were obtained from the surface of the ground at the surf-fishing camps, sites 10, 11, 12, and 13, while thirty objects were obtained as gifts from the owners of the land on which various other sites are located. These objects show some differences from those obtained at site 67.

SURF-FISHING CAMPS

Mention has already been made on page 279 of the large quantities of chert refuse found at the surf-fishing camps. Thirty-seven more or less fragmentary chipped implements were found on site 10 in this refuse. Thirty-four of these were made of reddish brown or greenish chert. Over half are very small fragments or incompletely worked specimens. While chipped implements were found only on the patches of ground designated as site 10, other objects of sandstone were found at all of the surf-fishing camps.

Scrapers.—There were five scrapers similar in shape to that shown on plate 15, figure 3. A second form of scraper, represented by one specimen of chert and one of white flint, is shown on the same plate in figure 1. Figure 2 shows a specimen made of black obsidian streaked with red. It was the only specimen of obsidian found at the surf-fishing camps, there being nowhere even a fragment of obsidian refuse. This specimen can be considered as either a scraper or a knife. Its edges are worn quite smooth by long use.

Drill.—A drill made of greenish chert and having an exceedingly attenuated point is shown on plate 15, figure 14.

Arrow Points.—Three arrow points of chert are shown on plate 15, figures 4, 7, and 8. Another specimen had a single notch in the base as shown in the piece from Gunther island, illustrated on plate 14, figure 6. Plate 15, figure 6, shows an arrow point made of white translucent chalcedony, while figure 8 shows one made of a mottled brown and gray chert. The latter is of a form having extra long barbs and serrated edges, such as are more commonly found at site 34.

Sinkers.—Forty-two elliptical or disk-shaped sinkers were found at the surf-fishing camps. All but one or two were made of sandstone, and were in general of about the same size as those already described from Gunther island (pl. 17, fig. 7). One of a larger size, 112 mm. in longest diameter, weighed 7.5 ounces.

Hammer Stones.—There were a dozen oblong pebbles of sandstone, varying from 65 mm. to 127 mm. in length and from 5.7 to 16.5 ounces in weight, which had marks upon their ends showing that they had been used as hammer stones. One of these is shown on plate 17, figure 6.

Problematical Stone Object.—Text figure 8 shows an object found at the surf-fishing camps by Dandy Bill and still in his possession. The object is about three inches long, and is shaped much like a maul. When questioned, Dandy Bill put on an air of mystery and stated that he knew what the object was, though he declined to tell.

MISCELLANEOUS SITES

Stone Club from Site 9.—When Mr. Clark purchased his farm at the bend of Mad river some twenty years ago, there was a club-like stone object at the farm buildings which presumably came from site 9, or at least from some of the sites of that vicinity. This object, which is shown in outline in text figure 9, has a length of $23\frac{1}{2}$ inches and a diameter at the base of $2\frac{1}{2}$ inches. It gradually tapers to within an inch of the top, where it has a diameter of $1\frac{3}{4}$ inches just below the head, which is 2 inches in diameter, and which has a small mortar-like depression in the top. It is not to be considered a pestle because of its slinness, which would cause it to be easily broken. Besides, the base seems too round to serve to advantage for such a purpose.

There is at the museum a similar stone object, no. 1-14607, shown in outline in text figure 10. It is $28\frac{1}{4}$ inches long and $2\frac{1}{8}$ inches in greatest diameter. The upper part is somewhat elliptical in cross-section, having diameters of $1\frac{9}{16}$ and $1\frac{3}{8}$ inches just below the head. There is no sign on the base of its ever having been used as a pestle. Unfortunately, the only data we have regarding this rather unique specimen is that it is Californian, and forms part of a collection obtained from such widely separated regions as San Nicolas island of the Santa Barbara group and northwestern California. As it is so nearly like the object from Mad river, not only in shape but in the texture of the sandstone material from which it is made, there is a fair presumption that it may also have come from northwestern California, and that both are another form of the ceremonial war-club or slave-killer. Text figure 12 shows the outline of a medium sized pestle, while text figure 11 shows the longest pestle in the museum's collections from northwestern California, drawn to the same scale as the two stone clubs. These pestles are $18\frac{9}{16}$ and $26\frac{1}{8}$ inches in length

(see description, p. 362). Moorehead³⁰² gives an illustration of a Pomo pestle about 35 inches long; hence it would not be impossible on the score of length that these two club-like objects are pestles.

Pipe from Site 27.—Plate 17, figure 3a, shows the bowl of a pipe which is made of steatite and which was found by the family of Mr. W. J. Imme at site 27. It is similar to many modern pipes of the

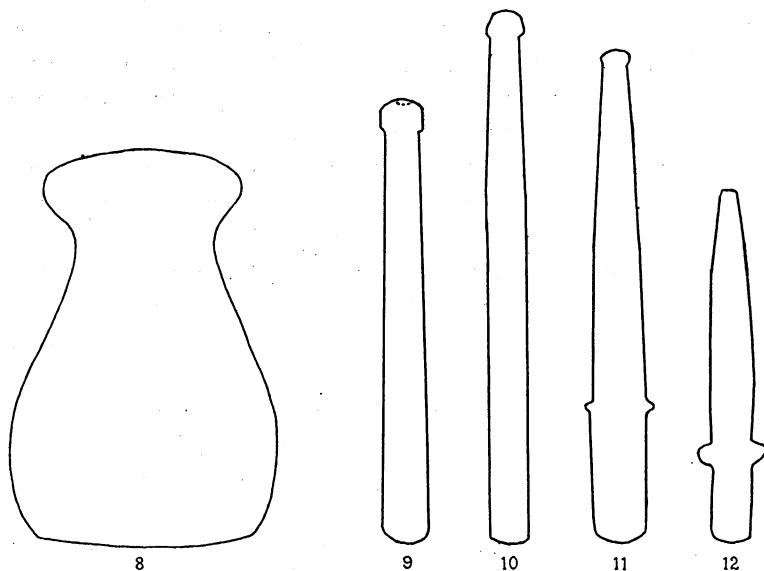


Fig. 8. Maul shaped object of unknown use found by Dandy Bill on site 10, 11, or 12. Two-thirds natural size.

Fig. 9. Stone club from site 9 (?). One-tenth natural size.

Fig. 10. Stone club from California, exact provenience unknown. No. 1-14607. One-tenth natural size.

Fig. 11. Pestle from Weitchpec on the Klamath. No. 1-11676. One-tenth natural size.

Fig. 12. Pestle from Hupa valley. No. 1-816. One-tenth natural size.

Klamath River region, which have a bowl of steatite and a wooden stem. Several of these are illustrated in volume 1, plate 17, of the present series.

Objects from Site 34.—Mr. C. S. Ellis, who has lived upon the land occupied by site 34 for twenty-five years, has in his possession a series of articles obtained from this site. They include several abalone pendants, seventy large red spherical glass beads each 21 mm. in diameter, and over thirty arrow points made of chert of varying colors, green, brown, red, drab, gray, and black. Some, especially the

³⁰² W. K. Moorehead, *Prehistoric Implements*, p. 290.

green ones, are transparent. Others are variegated in color, or speckled with gray and black. Text figures 13*a*, *b*, and *c* give the outlines of several of Mr. Ellis' arrow points, which are of unusually thin, delicate, beautiful workmanship, and have extraordinary long barbs.³⁰³ Some pieces of this type also have serrated edges. Text figure 13*d* shows another type, comprising half a dozen specimens, which have a cruder finish and but one notch in the base.

Objects from Site 43.—Mr. W. R. Lindsey has found quite a number of chert arrow points, scrapers, and the like at site 43. One of these arrow points is shown on plate 15, figure 10. It reveals a manner of hafting not very common in the region.

Pestle from Site 54.—Plate 16, figure 2, shows a crude pestle, 220 mm. in length, obtained from site 54. It was made from a stone having a triangular cross-section, being roughly pecked at the angles.

Objects from Site 68.—Robert Gunther has obtained a considerable number of specimens from the shellmound at the center of the island on which he has his residence, as well as from the mound (site 67) at the northeast end of the island. Some of these pieces are now on exhibit in the Eureka Public Library. Among specimens which were disposed of in other ways, and whose whereabouts are now unknown, were one or two slave-killers from site 68. A dozen chipped implements of chert from site 68 were presented to the University of California. Of these, five are scrapers having the same form as is shown in plate 15, figure 5; five others are drills, of which two are shown on the same plate, figures 13 and 15. Other objects found on site 68 include clay balls, as already mentioned, also a mastodon tooth which the Indians had doubtless brought from some of the fossil beds of the region.

Clay Object from Site 80.—Plate 17, figure 4, shows an object of clay found by the writer on site 80. One end is broken off, but the portion that remains has the following dimensions: length 115 mm., width 44 mm., thickness 21 mm. It has much the shape of a scythe whetstone, both sides being flat and the edges rounding. The clay from which it was made contained a considerable amount of iron, which makes the object very heavy. There is also a sufficient amount of sand to give it roughness, so that it is presumed to have been an abrading implement.

³⁰³ W. K. Moorehead, among the numerous illustrations in his *Stone Age in North America*, 1910, shows thirty or forty similar specimens from Oregon. As the present writer does not recollect seeing a like form elsewhere, he is inclined to regard it as an Oregonian type. If this hypothesis is correct the occurrence at Humboldt bay is only another case of cultural relationship with the north.

Objects from Site 99.—This site, half a mile from Hooktown slough and at an elevation of about 200 feet above sea level, furnishes arrow points at every plowing. Text figure 14 shows the outline of an adze handle which is in the Golden Gate Park Memorial Museum, San Francisco (no. 4619.L.), and which from the data with the specimen undoubtedly came from site 99 or its near vicinity. The handle has an extraordinary curve, and is made of finely polished sandstone. Altogether, this is the finest specimen of its kind the writer has seen.

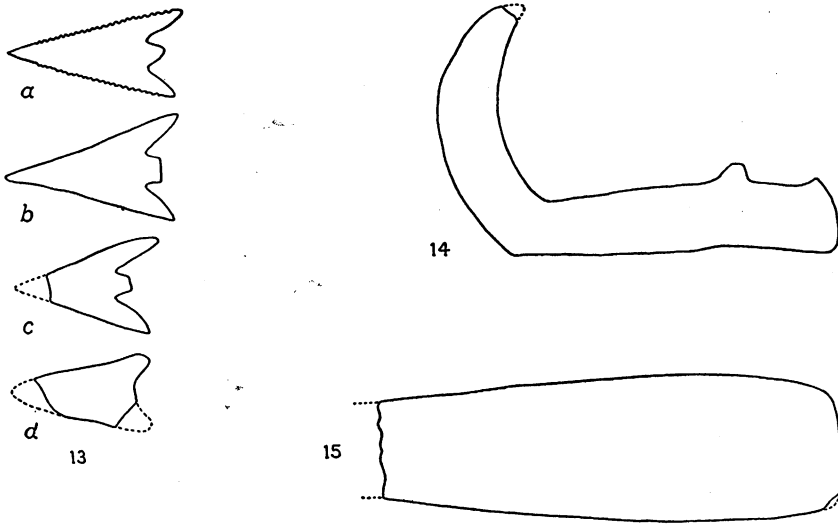


Fig. 13. Arrow points from site 34. Collection of Mr. C. S. Ellis. One-half natural size.

Fig. 14. Adze handle from site 99 (?). Memorial Museum, San Francisco, no. 4619.L. One-quarter natural size.

Fig. 15. Stone club from Scotia. Memorial Museum, San Francisco, no. 4622.L. One-quarter natural size.

Objects from Site 106.—Mr. William Phelan has plowed out a considerable number of chipped implements from site 106. Two specimens of red chert are long enough to be spear points. One, having an original length of about 105 mm. before being broken, is shown on plate 15, figure 9. A smaller object of brown chert, 48 mm. in length, which might be either a spear point or an arrow point, is shown on the same plate, figure 11. This is the only location in Wiyot territory where spear points are known to have been found.

War-club from Scotia.—Text figure 15 shows the outline of an implement of sandstone from Scotia, probably from the Sinkyone Indian village site given in the list of geographical names as tokēnē-

wolok. The object is in the possession of the Memorial Museum, San Francisco (no. 4622.L). Part has been broken off, but the remaining portion has the following dimensions: length 245 mm., width 79 mm., greatest thickness 24 mm. It is not essentially different from the implements from the Klamath river region usually designated as war-clubs.

Ceremonial Stone Object.—One spear point (pl. 15, fig. 12), whose original length was probably about 58 mm., made of green chert, was presented to the writer by Dandy Bill, who did not remember where he got it. He said that his father used to make chipped implements but none of this kind, which is called *swutsuk* and is never made by Indians. The ground has pains, *siluk*, as people have them, and then the *swutsuk* come up out of the earth.³⁰⁴

SUMMARY AND CONCLUSION

The people speaking the Wiyot language, probably numbering about 1000 souls in 1850, occupied in historic times about 465 square miles of territory about the shores of Humboldt bay and the lower courses of Mad and Eel rivers. Of this former population there were left at the time of the 1910 census 58 full blood Wiyot, 13 persons partly Wiyot and partly of other Indian blood, and 81 individuals partly Wiyot and partly of white blood,³⁰⁵ making a total of 152. As there are only 11 persons of full Wiyot blood under the age of twenty, it is quite evident that the group will shortly be absorbed into the white population. At the present time all members of the tribe are held in quite general respect and esteem, being, to say the least, of fully average morality, industry, and intelligence. In fact, there are but two persons of Wiyot blood between the ages of ten and forty who are illiterate.³⁰⁶

Because of the dense forest environment, the principal food in the past was neither vegetable nor game, but fish and mollusks. As the

³⁰⁴ A. L. Kroeber in *Religion of the Indians of California*, present series, iv, 333, 1907, speaks of "pains" as being small, material, supernatural objects entering human bodies and causing disease. The disease is said to be cured by the shaman sucking the "pain" from the body, the "pain" then being exhibited to the patient as an assurance that he will recover.

³⁰⁵ *Indian Population in the United States and Alaska, 1910*, U. S. Bureau of the Census, p. 150 (1915). A member of the museum staff, returning from a trip to northern California just previous to the time of this paper going to press, says that five of the older Wiyot, including Dandy Bill and Tom Brown, our informants, have died during the past two years.

³⁰⁶ *Ibid.*, pp. 210, 224.

physical environment was the same in former as in recent times, the area occupied by the Wiyot people forms a convenient unit for both archaeological and ethnographical study. Within the limits selected, 172 village sites, both prehistoric and historic, were located.

Excavation in one of the principal ancient sites revealed the fact that in more recent times the inhabitants of the region buried the dead in a straight position upon the back, while previously cremation had been the rule. In material culture the former inhabitants resembled in the main the modern Indians of the Klamath River region. We would venture to place the center of the culture area on the Klamath river, perhaps near the mouth of the Trinity. To the south of Cape Mendocino none but the most meager of cultural resemblances are to be found, while in the opposite direction some resemblances occur even as far north as Puget sound.

We are best able to trace specific cultural relationship with the northern Indians through the implements called slave-killers, though whether or not these implements were really used to kill slaves at Humboldt bay must be left for future investigation to reveal. If we recognize a culture area based on the distribution of the slave-killer alone, we should find the area to take in Humboldt bay, Klamath river, Trinity river, John Day river, probably the Des Chutes river, the lower Columbia river valley, and Puget sound northward to Vancouver. The 28 specimens of this implement hitherto found in this area are distributed as follows: 8 from Gunther island, 9 supposedly from the portion of Klamath river occupied by the Karok and Shasta Indians, 1 from Trinity county in Wintun territory, 3 from John Day river in Shahaptian territory, 5 from Willamette slough and the lower Columbia river in Chinook territory, and 2 from Puget sound in Salishan territory. So far, then, as the present known number of specimens are concerned, the center would be on the middle Klamath.

From what little is known in other respects of the material culture of the Oregon Indians, principally those of the Columbia valley, we are able to see occasionally a hint of cultural relationship and it is expected that further researches will reveal other resemblances to the Wiyot.

TABLES

TABLE 1

FOREST TREES OF THE WIYOT TERRITORY

	Common size		Extreme size	
	Height	Diameter	Height	Diameter
PINE FAMILY				
Yellow pine, <i>Pinus ponderosa</i>	60-200	2- 9	300 ^k	15 ^a
Digger pine, <i>Pinus sabiniana</i>	40- 50	1- 4	80 ^a	....
Sugar pine, <i>Pinus lambertiana</i>	80-250	2- 8	.....	18 ^a
Beach pine, <i>Pinus contorta</i>	10- 40	5-15 [*]	200 ^k	....
Coast hemlock, <i>Tsuga heterophylla</i>	100-200	1- 4	.....	10 ^a
Tideland spruce, <i>Picea sitchensis</i>	80-200	3-20	300 ^o	30 ^o
Douglas spruce, <i>Pseudotsuga taxifolia</i>	100-250	4- 8	380 ^b	15 ^b
Lowland fir, <i>Abies grandis</i>	80-160	1- 3	300 ^o	6 ^o
Coast redwood, <i>Sequoia sempervirens</i>	100-300	5-15	380 ^b	33 ^b
Red cedar, <i>Tsuga plicata</i>	50- 80	1- 3	250 ^b	33 ^b
Port Orford cedar, <i>Chamaecyparis lawsoniana</i>	80-175	2- 4	200	12
YEW FAMILY				
Western yew, <i>Taxus brevifolia</i>	15- 40	1- 2	75 ^k	3 ^k
WILLOW FAMILY				
Nuttall willow, <i>Salix flavescens</i>	5- 25	9-18 [*]	70	30 ^{**}
Velvet willow, <i>Salix sitchensis</i>	5- 25	3-10 [*]	12 ^{**}
Black cottonwood, <i>Populus trichocarpa</i>	30-100	1- 3	200	8
BIRCH FAMILY				
Red alder, <i>Alnus rubra</i>	40- 90	1- 2	100 ^o	4 ^o
OAK FAMILY				
Oregon oak, <i>Quercus garryana</i>	25- 50	2- 5	80	7 ^k
Black oak, <i>Quercus kelloggii</i>	30- 85	1- 4	100 ^k	8 ^k
Tan oak, <i>Pasania densiflora</i>	40-100	1- 4	150	6 ^k
California chestnut, <i>Castanea chryso-phylla</i>	50-100	2- 6	150 ^k	9 ^k
LAUREL FAMILY				
Pepperwood, <i>Umbellularia californica</i>	40-100	1- 6	150 ^k	9
ROSE FAMILY				
Oregon crab-apple, <i>Pyrus rivularis</i>	15- 30	1 ^a	40 ^a	18 ^{**}
MAPLE FAMILY				
Big-leaf maple, <i>Acer macrophyllum</i>	20- 60	1- 3	100	5
DOGWOOD FAMILY				
Dogwood, <i>Cornus nuttallii</i>	10- 50	1- 2 ^k	100 ^k	....
HEATH FAMILY				
Madroña, <i>Arbutus menziesii</i>	20-125	1- 5	130 ^k	10 ^k
ASH FAMILY				
Oregon ash, <i>Frazinus oregona</i>	30- 80	1- 3	100 ^k	4 ^a
HONEYSUCKLE FAMILY				
Blue elderberry, <i>Sambucus glauca</i>	15- 28	6-18 [*]	28	28 [*]

* Both the height and the diameter are always in feet except where indicated by an asterisk, in which case the diameter is in inches. The authority unless otherwise noted is W. L. Jepson, *Silva of California*, 1910.

^k A. Kellogg, *Forest Trees of California*, 1882.

^o E. P. Sheldon, *Forest Wealth of Oregon*, 1894.

^a C. S. Sargent, *Sylva of North America*, IV, VI, IX, XII, 1891-1902.

^b B. Brereton, *The Practical Lumberman*, ed. 2, 1911.

^h Hutchings' *California Magazine*, 1856, quoted by W. W. Elliott & Co., *History of Humboldt County, California*, p. 140, 1881.

TABLE 2

SHELLMOUND SAMPLES FROM SITE 67 GRADED ACCORDING TO SIZE OF CONSTITUENTS

Layer	Depth, ft.	Quantity grams	Coarse ^a %	Medium ^b %	Fine ^c %	Finest ^d %
I	1	308	7.86	.75	.47	90.91
II	2	1216	.52	.29	.15	99.03
III	2	3304	23.21	3.00	1.10	72.68
V	3	366	.48	.55	.25	98.71
VII	3.2	990	36.71	2.17	1.10	60.02
XI	4	635	36.25	3.88	4.17	55.70
XV	6	345	2.49	.92	.70	95.89
XVI	6.5	302	22.32	2.55	1.66	73.48
XVI	8	2024	15.93	2.02	1.63	80.40
Average of percentages			16.20	1.79	1.25	80.76

^a Caught on a sieve having 8 meshes to the inch.

^b Passing through a sieve of 8 meshes but caught on one of 16 meshes to the inch.

^c Passing through a sieve of 16 meshes but caught on one of 25 meshes to the inch.

^d Passing through a sieve of 25 meshes to the inch.

TABLE 3

ANALYSIS OF SHELLMOUND SAMPLES FROM SITE 67

Layer	Depth ft.	Quantity grams	Shell %	Fish %	Bird %	Charcoal %	Rock %	Clay %	Residue %
I	1	308	7.88	.20	.23	.54	.23	....	90.91
II	2	1216	.53	.06	.03	.07	.07	.20	99.03
V	3	366	.05	....	....	.90	.17	.16	98.71
XI	4	635	43.80	.08	....	.03	.39	....	55.70
XV	6	345	3.65	.03	.03	.32	.09	....	95.89
XVI	6.5	302	23.84	.10	....	1.92	.66	....	73.48
XVI	8	2024	17.64	.03	.01 ^a	1.80	.07	.02	80.40
Average of 7 samples			13.91	.07	.04	.80	.24	.06	84.87
III	2	3304	16.10	.58	9.75	.26	.55	.07	72.68
VII	3.2	990	31.78	4.86	1.72	.58	.10	.92	60.02
	0-6	5 gal. ^b	{ 15.95-	.22+	.03+	.24	.09+	.03	80.43
			{ 18.87-	.25+	.04+	.27	.10+	.04	83.44

^a Also about an equal amount of cetacean bones.

^b Five gallons, or some 20,000 to 25,000 grams, taken in about equal amounts from all depths down to six feet. The two sets of figures indicate the extremes of calculations based on rough estimates made in the field checked up by a more careful analysis at the University of material passing through a sieve with four meshes to the inch. Because of the unknown amounts of bone and rock caught on the sieve along with the coarser shell, an unknown, though small, percentage should be subtracted from the figures for the percentage of shell, and added to that of the fish, bird, and rock.

TABLE 4

VERTEBRATE REMAINS—SITE 67

	0-3 ft.		3-6 ft.		6-9 ft.		Total	
	No.	Grams	No.	Grams	No.	Grams	No.	Grams
ARTIFACTS								
Cervidae bone	46	902	20	464	2	47	68	1413
Cervidae horn	18	611	17	811	....	....	35	1422
Bird bone	13	48	2	7	....	....	15	55
NOT ARTIFACTS								
Cetacean ^a	3	765	21	5160	2	158	26	6083
Seals	17	226	34	890	1	17	52	1133
Sea-otter	9	58	3	59	3	16	15	133
Misc. marine	20	176	....	....	....	....	20	176
Cervidae bone	42	1145	60	1559	17	708	119	3412
Cervidae horn	34	482	13	397	....	....	47	879
Misc. mammal	144	521	187	1116	40	221	371	1858
Bird ^b .....	....	2302	....	1613	....	53	....	3968
Fish ^c	112	61	34	24	....	....	146	85
Total	458	7297	391	12100	65	1220	914	20617

^a One piece from upper levels weighed 727 grams, and a vertebra from a depth of over three feet weighed 4422 grams.

^b Approximately 2000 pieces from upper three feet, 1000 pieces from three to six feet deep, and 37 pieces from a greater depth. Figures do not include some 400 pieces over an inch in length from a pocket in layer III for which see table 3.

^c Does not include the pocket of fish bone from layer VII.

TABLE 5

HUMAN REMAINS AND NUMBER OF ASSOCIATED ARTIFACTS—SITE 67

Remains no.	Depth ft.	Burial	Cremation	Weight ounces	Adult	Immature	Flint	Sandstone	Steatite	Clay balls	Bone	Shell	Carbonized	Total artifacts
1	.8	---	×	25	×	---	2	1	---	---	---	3	2	8
6	1.	×	---	70	×	---	---	---	---	---	---	---	---	---
3	1.2	---	×	25	×	---	1	12	---	---	1	---	---	14
9	1.3	---	×	5	×	---	6	---	---	---	4	3	3	16
19	1.7	---	×	32	×	---	7	4	2 ^f	3 ¹	---	4	2	22
21	1.8	×	---	0.2	---	^a	---	---	---	---	---	---	---	---
2	2.	---	×	1.5	---	^b	15	1	1 ^g	---	2	---	1	20
4	2.	---	×	23	×	---	18	---	1 ^h	---	2	---	---	21
5	2.2	×	---	17	×	---	---	---	---	---	---	---	---	---
12	2.3	---	×	40	×	---	5	2	---	13	1	---	---	21
20	2.3	---	×	0.4	?	---	---	4	---	---	3	---	---	7
8	2.8	×	---	79	×	---	---	---	---	---	---	---	---	---
10	2.8	---	×	36	×	---	---	---	---	1	1	1	---	3
7	3.	×	---	91	×	---	1	---	---	---	---	2	---	3
22	3.	×	---	0.1	---	^a	---	---	---	---	---	---	---	---
13	3.	---	×	^c	---	---	2	---	---	1	1	1	1	6
11	3.2	---	×	^d	---	^b	---	---	---	---	---	2	1	3
18	3.5	---	×	2	---	^e	1	---	---	1	1	2	1	6
15	4.5	---	×	^c	---	---	2	1	---	1	---	---	---	4
16	4.5	---	×	7.1	×	---	---	---	---	---	---	---	---	---
14	4.8	---	×	6.3	×	---	28	5	1 ^h	73	3	1	1	112
17	5.8	---	×	10	×	---	---	---	---	---	---	---	---	---
Total		6	16	---	15	5	88	30	5	93	19	19	12	266

^a Very young infant.^b Child.^c No bone remains but cremation indicated by charcoal and artifacts.^d Human remains consisted of one tooth only.^e Adolescent.^f One pipe, one slave-killer.^g Pipe.^h Slave-killer.¹ One clay pipe.

TABLE 6
SCATTERED ARTIFACTS—SITE 67

Depth ft.	Obsidian	Chert	Sandstone	Steatite	Slate ^b	Clay balls	Bird bone	Mammal bone	Horn wedges	Horn harpoons	Olivella beads	Total
.5 ^a	1	3	10 ^a	1 ^b	2	---	1	3	2	---	---	23
1.	1	---	5	---	---	4	4	3	2	1	1	21
1.5	---	---	9	---	---	9 ^c	4	9	2	---	---	33
2.	---	---	4	---	---	7	---	6	1	---	---	18
2.5	---	---	7	1 ^d	---	8	1	8	5	1	---	31
3.	---	---	2	---	---	7	---	5	5	2	---	21
3.5	---	---	5	---	---	2	1	4	2	---	---	14
4.	---	---	5	---	---	4	---	6	2	---	---	17
4.5	---	---	5	---	---	2	---	1	5	---	---	13
5.	---	---	6	---	---	1	---	---	1	---	1	9
5.5	---	---	3	---	---	1	---	---	---	---	---	4
6.	---	---	---	---	---	---	---	1	---	---	1	2
7.	---	---	---	---	---	---	---	1	---	---	---	1
0-3	---	---	15	---	1	---	---	6	3	1	---	26
3-6	---	---	4 ^e	---	---	---	---	---	---	---	---	4
Total	2	3	80 ^f	2	3	45	11	53	30	5	3	237

^a One maul 4 in. deep, other articles 6 to 9 in. deep.

^b Fragments of slave-killers.

^c Not including seven fragments.

^d Fragment of a dish (pl. 16, fig. 6).

^e Hammer stones found at the museum among samples of stone.

^f Including 8 specimens really not sandstone.

TABLE 7
CHIPPED IMPLEMENTS—SITE 67

Remains no.	Depth ft.	Obsidian					White flint				Chert			Total
		Black blades ^a	Red blades ^a	Knives ^b	Arrow points	Various ^c	Blades ^d	Knives ^e	Drills	Arrow points	Knives ^h	Arrow points	Various	
1	.8	---	---	---	---	---	2	---	---	---	---	---	---	2
3	1.2	---	---	---	---	1	---	---	---	---	---	---	---	1
9	1.3	1	2	---	1	---	1	---	---	---	1	---	---	6
19	1.7	---	2	2	---	2 ^a	---	1	---	---	---	---	---	7
2	2.	1	---	---	12	---	---	---	1	---	1	---	---	15
4	2.	1	1	---	7	1 ^e	---	1	1	4	---	1	1 ⁱ	18
12	2.3	1	---	---	---	---	1	1	---	---	2	---	---	5
7	3.	---	1	---	---	---	---	---	---	---	---	---	---	1
13	3.	---	---	---	---	---	1 ^f	---	1	---	---	---	---	2
18	3.5	---	---	1	---	---	---	---	---	---	---	---	---	1
15	4.5	---	---	---	---	---	1 ^f	1	---	---	---	---	---	2
14	4.8	1	1	---	5	2 ^r	---	3	3	9	---	3	1	28
	6 in.	---	---	---	---	---	---	---	---	---	2	---	---	2
	9 in.	1	---	---	---	---	---	---	---	---	---	---	1 ^j	2
	1 ft.	---	1	---	---	---	---	---	---	---	---	---	---	1
Total		6	8	3	25	6	6	7	5	14	5	5	3	93

^a Long double pointed type of ceremonial knife (pl. 13, figs. 1, 2, 6).

^b Single pointed type less than five inches long (pl. 13, figs. 7, 8).

^c Mostly too fragmentary to classify.

^d Two fragmentary knives probably over four inches long, perhaps much longer.

^e Red obsidian scraper (text fig. 2).

^f Two drills (pl. 14, figs. 13, 15).

^g Ceremonial blades are over 4 inches long, 2 inches wide, and well worked (pl. 13, figs. 3, 4; pl. 14, fig. 1). Knives are smaller and often cruder. In cases of fragmentary specimens there is some doubt as to the original size.

^h All lengths from two inches to over five inches (pl. 13, figs. 5, 9).

ⁱ Drill (pl. 14, fig. 14).

^j Scraper (pl. 15, fig. 5).

TABLE 8
SANDSTONE IMPLEMENTS—SITE 67

Remains no.	Depth ft.	Pestles	Mauls	Adze handles	Sinkers ^c	Girdled stones	Hammer stones	Various ^a	Total
1	.8	---	---	1	---	---	---	---	1
3	1.2	1	---	---	11	---	---	---	12
19	1.7	2	2	---	---	---	---	---	4
2	2.	---	---	---	---	1	---	---	1
12	2.3	---	---	---	2 ^d	---	---	---	2
20	2.3	2	2	---	---	---	---	---	4
15	4.5	---	---	---	---	---	---	1	1
14	4.5	---	---	---	1	---	1	3 ^f	5
Scattering	.5	2	2 ^b	3	3 ^e	---	---	---	10
	1.	---	---	---	4 ^f	1	---	---	5
	1.5	---	---	1	5	2	---	1 ^g	9
	2.	---	2	---	2	---	---	---	4
	2.5	1	2	1	2	---	---	1	7
	3.	---	1	---	1	---	---	---	2
	3.5	1	---	---	4 ^e	---	---	---	5
	4.	---	1	---	4 ^e	---	---	---	5
	4.5	2	---	---	3	---	---	---	5
	5.	1	1	---	4 ^g	---	---	---	6
5.5 ^a	---	---	---	2	1	---	---	3	
0-3	3	8	---	2 ^e	---	2	---	15	
3-6	---	---	---	---	---	4	---	4	
Total		15	21	6	50 ^c	5	7	6	110

^a One sinker and a girdled stone at depths of 5¼ feet.

^b One maul at a depth of 4 inches.

^c Including 8 specimens not of sandstone but of sinker type.

^d One of granite.

^e One of chert.

^f One of porphyry.

^g One of granite and one of chert.

^h Mostly too fragmentary to classify.

ⁱ One problematical stone object (pl. 17, fig. 5).

^j Fragment of an anvil or mortar-slab used with a basket hopper.

TABLE 9
BONE ARTIFACTS—SITE 67

Remains no.	Depth ft.	Bird			Mammal						Total
		Whistles	Beads	Various ^a	Awls	Gouges	Scratchers	Adze blades	Cannon ^c	Various ^d	
3	1.2	---	---	---	---	---	---	---	---	1	1
9	1.3	2	---	---	---	2	---	---	---	---	4
2	2.	---	---	---	---	---	2	---	---	---	2
4	2.	1	---	---	---	1	---	---	---	---	2
12	2.3	---	---	---	---	1	---	---	---	---	1
20	2.3	---	---	---	---	1	---	---	---	2	3
10	2.8	---	---	---	---	1	---	---	---	---	1
13	3.	1	---	---	---	---	---	---	---	---	1
18	3.5	---	---	---	---	---	---	1	---	---	1
14	4.8	---	---	---	---	2	1	---	---	---	3
Scattering	.5	---	1	---	1	1	---	1	---	---	4
	1.	2	---	2	---	3	---	---	---	---	7
	1.5	---	1	3	2	5	---	1	1	---	13
	2.	---	---	---	1	2	1	---	---	2 ^e	6
	2.5	---	---	1	1	4	---	2	1	---	9
	3.	---	---	---	---	5	---	---	---	---	5
	3.5	---	---	1 ^b	1	1	1	1	---	---	5
	4.	---	---	---	---	4	---	---	---	2 ^f	6
4.5	---	---	---	---	---	---	---	1	---	1	
6-7	---	---	---	---	2 ^g	---	---	---	---	2	
0-3	---	---	---	1	4	---	---	1	---	6	
Total		6	2	7	7	39	5	5	5	7	83

^a Limb bones, one end cut off.
^b One awl.
^c End cut off and rejected in making implements.
^d Mostly too fragmentary to classify.
^e One harpoon point and possibly top of another.
^f Problematical objects (pl. 30, figs. 8 and 9).
^g One at a depth of 6 ft., the other 7 ft.

TABLE 10
SHELL OBJECTS AND CARBONIZED ARTICLES—SITE 67

Remains no.	Depth ft.	Shell objects				Pine nut beads ^a	Viburnum beads ^a	Basketry ^a	Total
		Dentalium ^a	Abalone	Olivella	Pecten ^b				
1	.8	1	...	2 ^a	...	1	1	...	5
9	1.3	1	1	1 ^a	...	1	1	1	6
19	1.7	1	1 ^b	1 ^a	1	1	1	...	6
2	2.	...	...	...	...	1	...	...	1
10	2.8	...	...	1 ^a	...	...	...	...	1
7	3.	...	2	...	...	...	...	...	2
13	3.	...	1 ^b	...	...	1	...	...	2
11	3.2	...	1	1	...	1	...	...	3
18	4.5	...	2	...	...	1	...	...	3
14	4.8	...	...	...	1	1	...	...	2
Scattering	1.	...	...	1	...	...	...	...	1
	4.5	...	...	2 ^b	...	...	...	...	2
	5.	...	...	1	...	...	...	...	1
	6.	...	...	1	...	...	...	...	1
Total		3	8 ^c	11	2 ^d	8	3	1	36

^a Figures denote number of lots of beads, etc.

^b Not an artifact, but of rare occurrence.

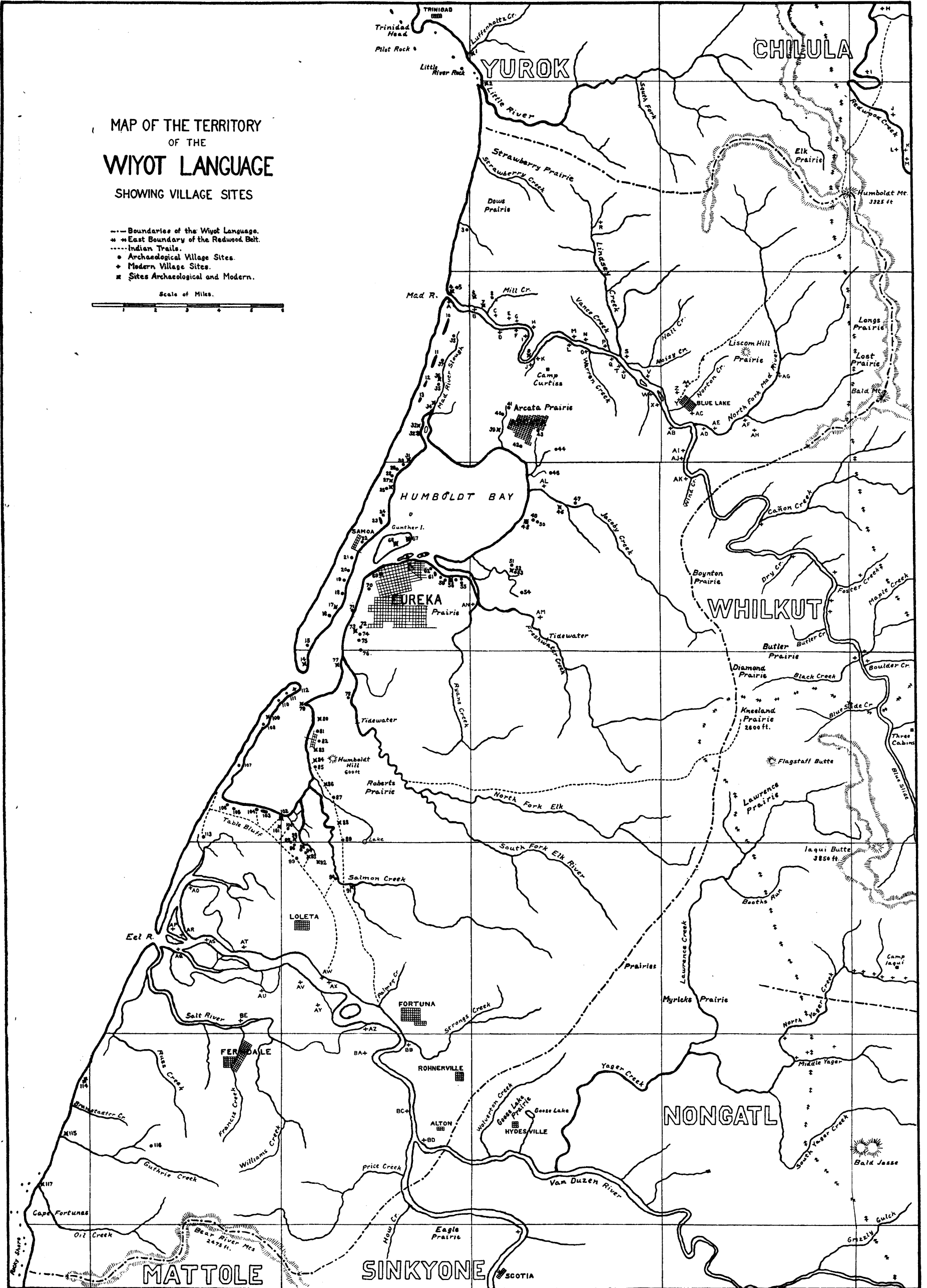
^c Not counting a piece of worked abalone found on the surface of the mound.

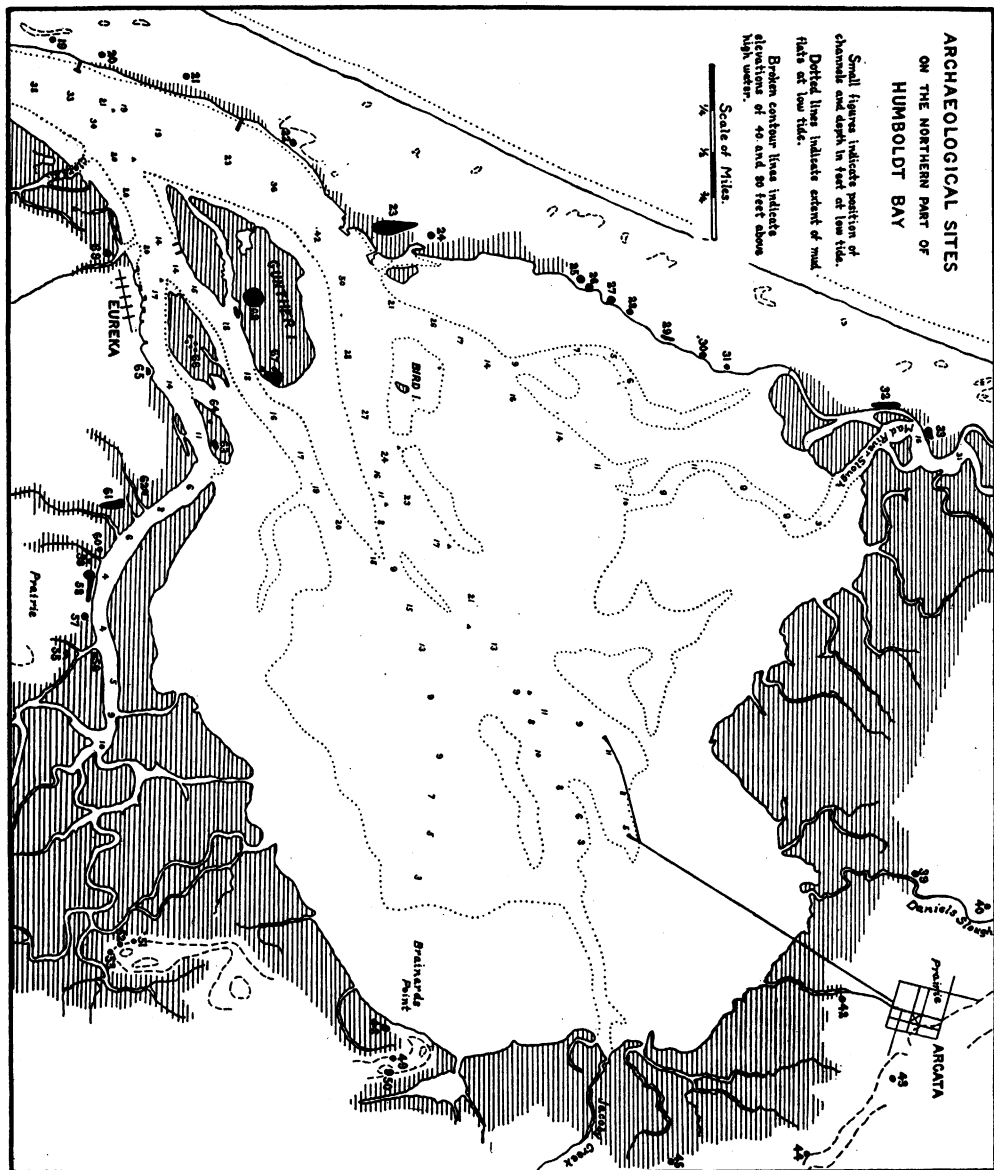
^d Not including a pecten shell found on the surface.

MAP OF THE TERRITORY OF THE WIYOT LANGUAGE SHOWING VILLAGE SITES

- Boundaries of the Wiyot Language.
- East Boundary of the Redwood Belt.
- Indian Trails.
- Archaeological Village Sites.
- Modern Village Sites.
- Sites Archaeological and Modern.

Scale of Miles.





EXPLANATION OF PLATE 3

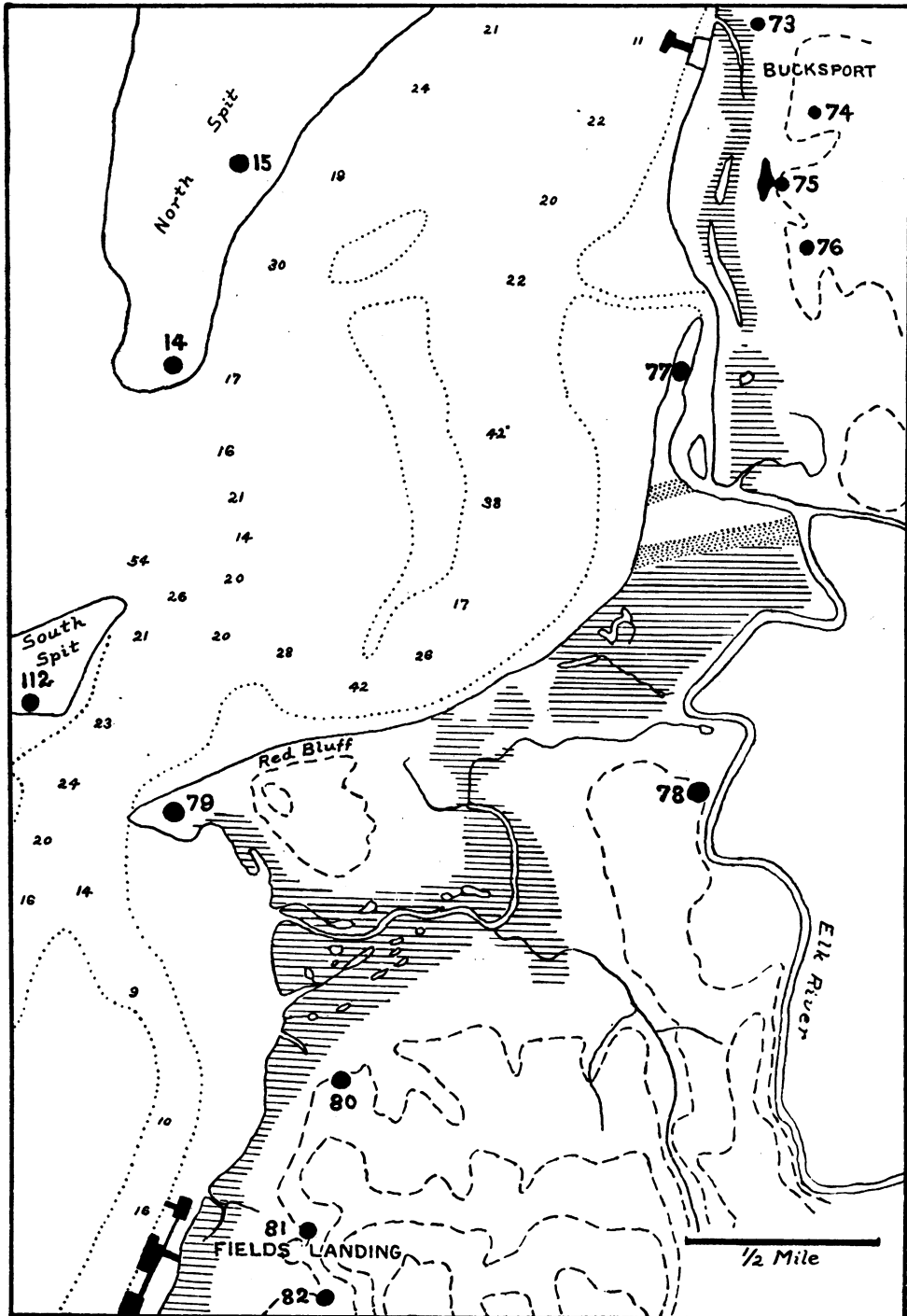
Map showing archaeological sites near the entrance to Humboldt bay. Based on the U. S. Coast and Geodetic Survey map of 1858.

Small figures indicate position of channels and depth in feet at the mean of the lower low waters.

Dotted lines indicate extent of mud flats at the mean of the lower low waters.

Broken contour lines indicate elevations of 20 feet, 100 feet, and successive differences of 100 feet above high water.

Shaded area indicates marsh, while dotted area shows old channels of Elk river.



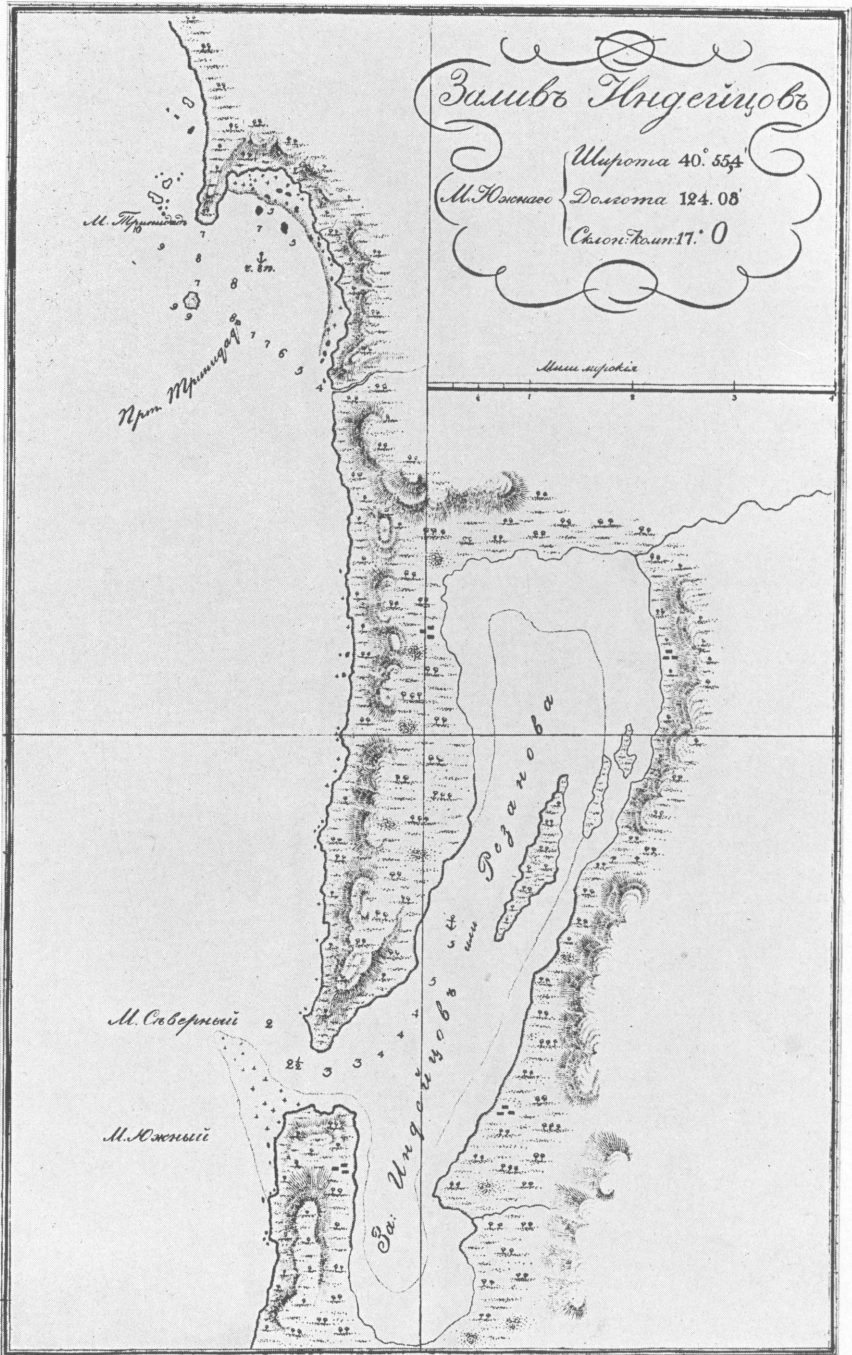
ENTRANCE TO HUMBOLDT BAY, 1858

EXPLANATION OF PLATE 4

Photographic reproduction of a map of Humboldt bay sketched in 1806 by Capt. Jonathan Winship, engaged in the fur trade for the Russian-American Company. Published as a subchart to general chart XIII in Atlas of Northwest Coast of America, Aleutian Islands, and other Places in the North Pacific; compiled in 1848 by Captain Tibenkof and printed in 1852 at St. Petersburg.

Mad river is not shown upon this map while the portion from Little river northward was probably taken from Vancouver's chart.

Locations of four Indian villages are indicated by rectangles.



WINSHIP'S MAP OF HUMBOLDT BAY, 1806

EXPLANATION OF PLATE 5

Fig. 1.—Looking northwest from the mouth of Little river; site 2, pletkosomili, “rocks-small,” just around the first point; Little River Rock, a double headed rock of 120 ft. elevation, in the center; Trinidad Head, of 380 ft. elevation, in the distance beyond Little River Rock; and Pilot Rock, 103 ft. elevation, in the distance to the left. A sand bar littered with driftwood is in the foreground to the left (text, p. 227).

Fig. 2.—View of Red Bluff and Humboldt hill, 100 and 600 ft. elevation respectively, taken from aboard ship near the entrance to the bay.



Fig. 1.



Fig. 2.

ABRUPT COASTS

EXPLANATION OF PLATE 6

Fig. 1.—Wiyot camping place on North fork of Mad river at site AF, where there is a water hole 12 ft. deep even in the dry season (text, p. 264).

Fig. 2.—The "Arrow Tree," site AH (text, p. 252).

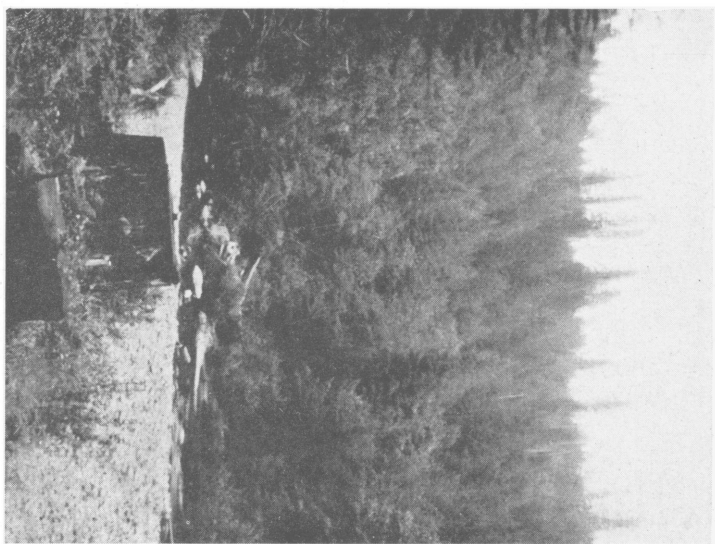


Fig. 1.

WIYOT CAMPING PLACES

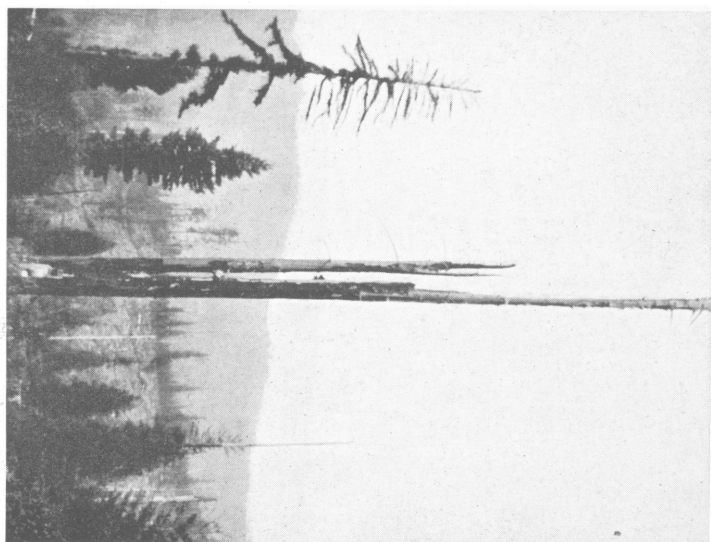


Fig. 2.

EXPLANATION OF PLATE 7

Fig. 1.—Shellmound, site 58, light colored area in the center. Eureka slough to the left (text, p. 268).

Fig. 2.—Looking northwest from Hookton slough towards Table Bluff and the modern Indian village, Indianola, situated on an old village site, site 100, yawonawoch.



Fig. 1.



Fig. 2.

EXPLANATION OF PLATE 8

Fig. 1.—Sand dunes to the north of site 37, fifty to sixty feet in elevation, burying trees three feet in diameter, and doubtless overwhelming the remains of more than one “Old Nation” (text, pp. 276, 281).

Fig. 2.—Shellmound, site 27, occupied by a modern dwelling (text, p. 276).



Fig. 1.



Fig. 2.

SAND DUNE AND VILLAGE SITE

EXPLANATION OF PLATE 9

Fig. 1.—View of site 67, *tōlōwot*, a shellmound 14 feet high and 600 feet long, extending nearly the entire length of the picture. In the foreground is seen a smaller isolated patch of shell (text, p. 339).

Fig. 2.—Site 23, *digawethatkil*, a shellmound seen over the board fence and reaching back nearly to the woods one-quarter of a mile away (text, p. 275).

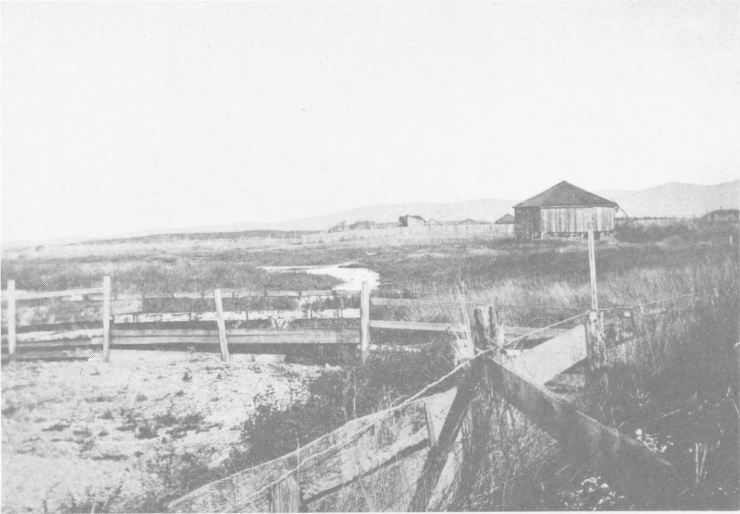


Fig. 1.

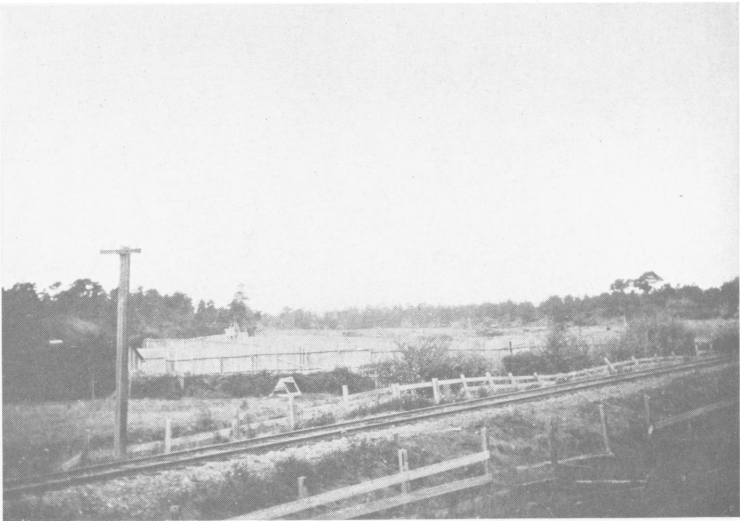


Fig. 2.

SHELLMOUNDS

EXPLANATION OF PLATE 10

Fig. 1.—Site 11. One of fifty or more patches of shell, broken chert, and burnt stones, left exposed by drifting sand, along a three-mile stretch of ocean beach (text, p. 279).

Fig. 2.—Site 11. One of twenty or more patches of small flat stones, left exposed by drifting sand along a three-mile stretch of ocean shore where the "Old Nation" used to live (text, pp. 279, 281).



Fig. 1.



Fig. 2.

WHERE THE "OLD NATION" DWELT

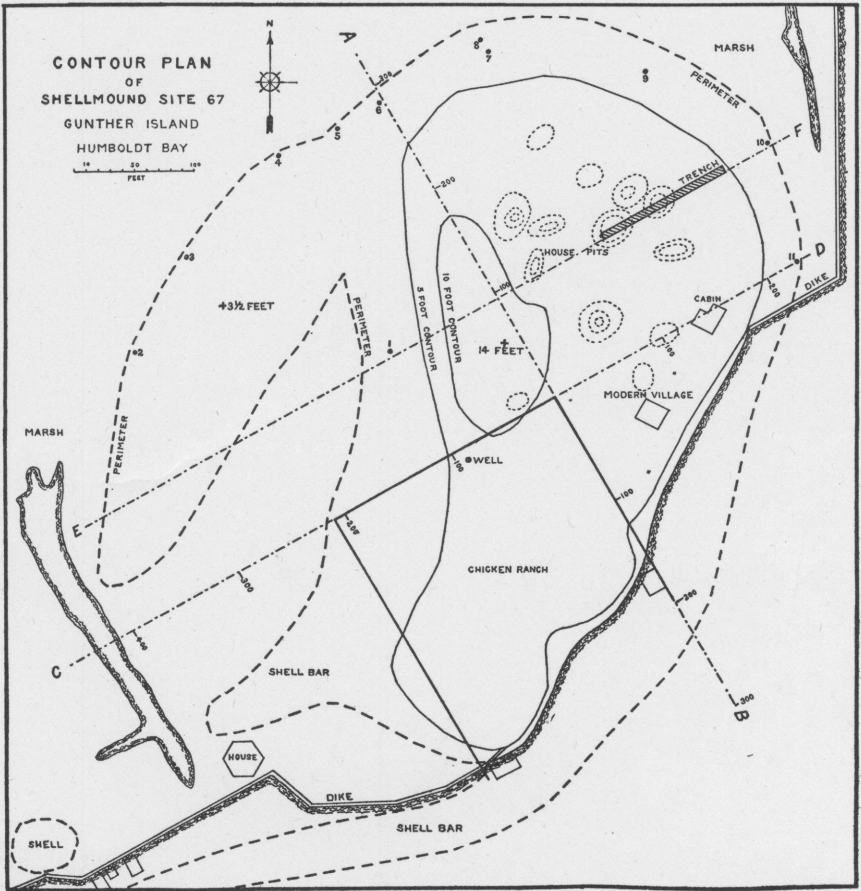




FIG. 1 SECTION IN E-F LINE

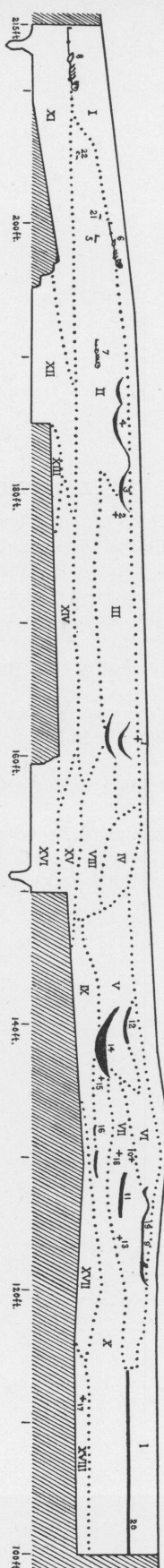


FIG. 2 SECTION WALL OF TRENCH IN E-F LINE

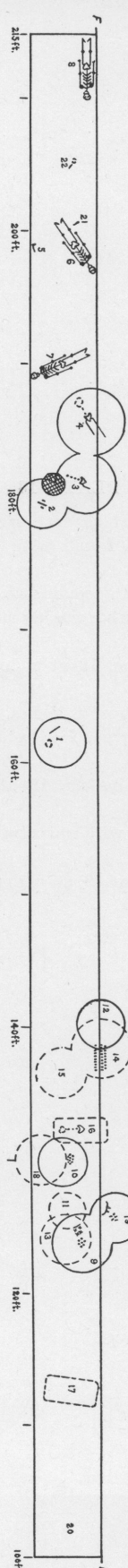


FIG. 3 DIAGRAM OF TRENCH.

VERTICAL SECTION OF SITE 67 AND SECTION AND DIAGRAM OF TRENCH.

Unexcavated.
 Layers.
 Circles and rectangles indicate charcoal beds with human remains, those in solid lines being uppermost.
 Crosses indicate charcoal beds not cut by the vertical plane E-F

(See text pages 339, 340, 350, 354.)

EXPLANATION OF PLATE 13

Stone knives from site 67. All figures .4 of natural size.

Fig. 1.—Black obsidian ceremonial knife found with human remains no. 9 at a depth of 1.3 feet. Mus. no. 1-18213.

Fig. 2.—Red obsidian ceremonial knife, with remains no. 9. Mus. no. 1-18214.

Fig. 3.—White flint ceremonial knife, with remains no. 1 at a depth of 9 inches. Mus. no. 1-18061.

Fig. 4.—White flint knife, with remains no. 12 at a depth of 2.3 feet. Mus. no. 1-18070.

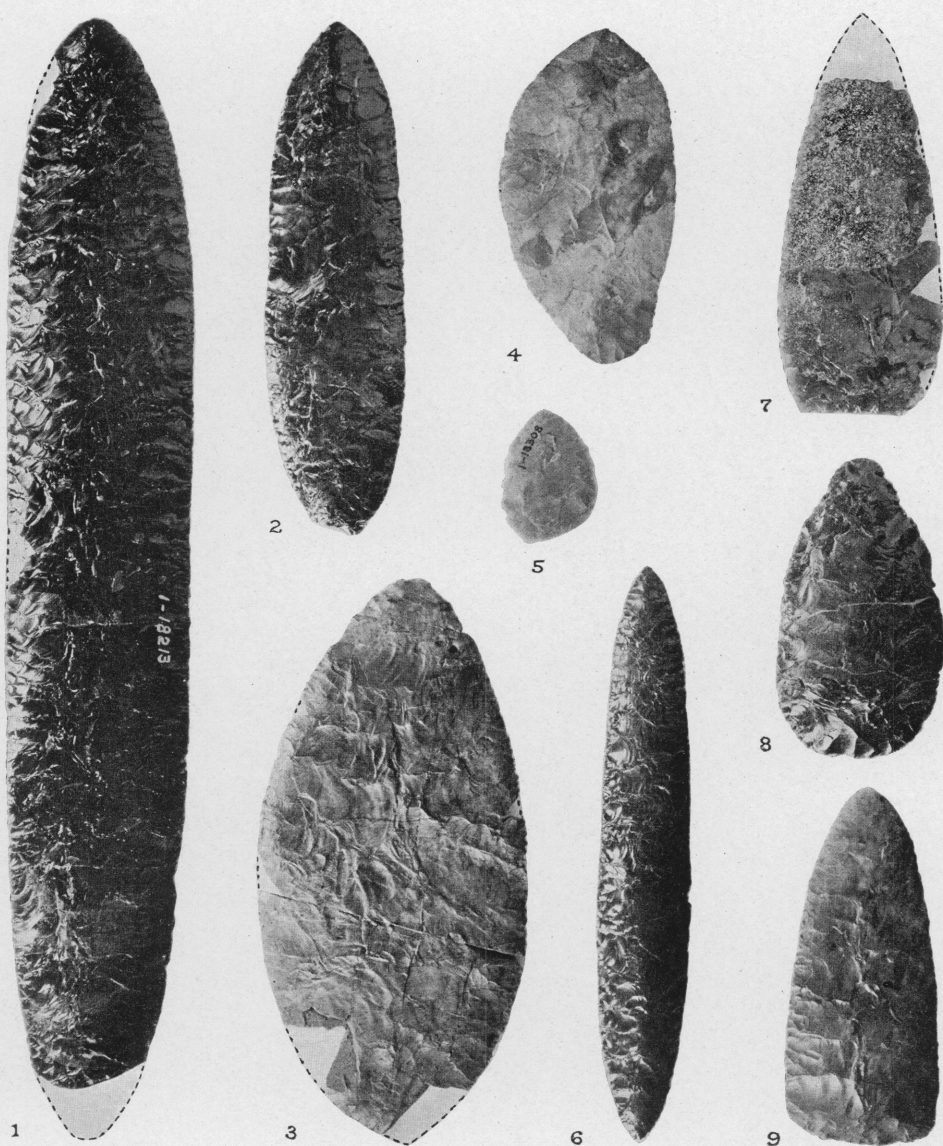
Fig. 5.—Greenish chert knife from a depth of 6 inches. Mus. no. 1-18308.

Fig. 6.—Red obsidian knife, with remains no. 7 at a depth of 3 feet. Mus. no. 1-18000.

Fig. 7.—Black obsidian knife, with remains no. 19 at a depth of 1.7 feet. Mus. no. 1-18234.

Fig. 8.—Black obsidian knife or scraper with remains no. 18 at a depth of 3.5 feet. Mus. no. 1-18212.

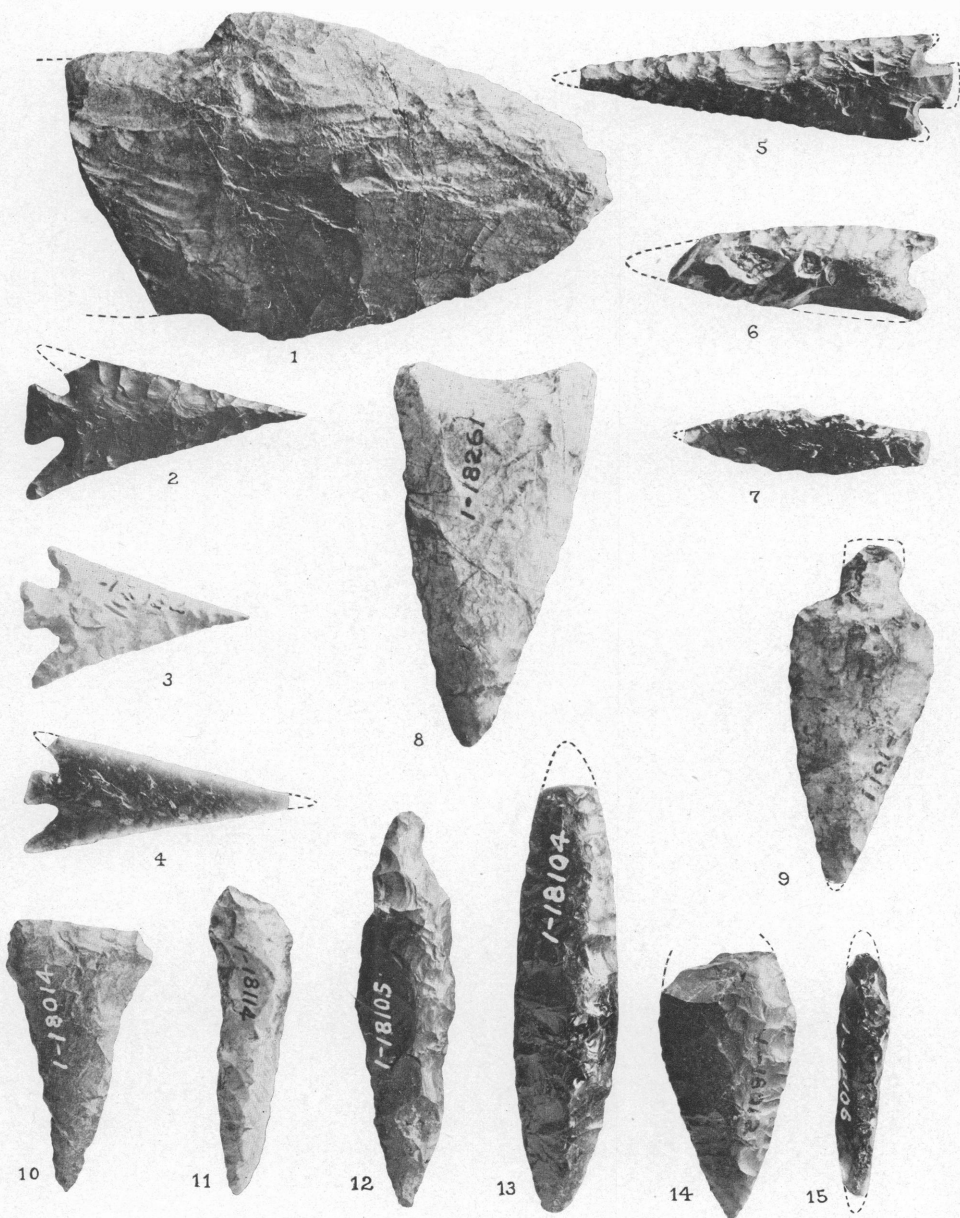
Fig. 9.—Gray chert knife, with remains no. 9 at a depth of 1.3 feet. Mus. no. 1-18216.



EXPLANATION OF PLATE 14

Chipped implements from site 67, found in association with cremated human remains. Figure 1 with remains no. 9 at a depth of 1.3 feet. Figures 2, 5, 6, 7, 9, 11, 12, 13, and 15 with remains no. 14 at a depth of 4.8 feet. Figure 3 with remains no. 2 at a depth of 2 feet. Figures 4, 10, and 14 with remains no. 4 at a depth of 2 feet. Figure 8 with remains no. 13 at a depth of 3 feet. All figures .98 natural size.

- Fig. 1.—Fragment of a white flint knife. Mus. no. 1-18217.
 Fig. 2.—Dark brown chert arrow point. Mus. no. 1-18107.
 Fig. 3.—Greenish chert arrow point. Mus. no. 1-18052.
 Fig. 4.—Black obsidian arrow point. Mus. no. 1-18003.
 Fig. 5.—White flint arrow point. Mus. no. 1-18109.
 Fig. 6.—White flint arrow point. Mus. no. 1-18112.
 Fig. 7.—Black obsidian arrow point. Mus. no. 1-18103.
 Fig. 8.—White flint spear point or drill. Mus. no. 1-18261.
 Fig. 9.—White flint arrow point or drill. Mus. no. 1-18111.
 Fig. 10.—White flint drill. Mus. no. 1-18014.
 Fig. 11.—White flint drill. Mus. no. 1-18114.
 Fig. 12.—White flint drill. Mus. no. 1-18105.
 Fig. 13.—Black obsidian drill. Mus. no. 1-18104.
 Fig. 14.—Brown chert drill. Mus. no. 1-18012.
 Fig. 15.—Black obsidian drill. Mus. no. 1-18106.



EXPLANATION OF PLATE 15

Chipped implements from various sites. All figures .87 natural size.

Fig. 1.—Red chert scraper from site 10. Mus. no. 1-17869.

Fig. 2.—Black and red obsidian scraper or knife from site 10. Mus. no. 1-17861.

Fig. 3.—Brown and greenish chert scraper from site 10. Mus. no. 1-17868.

Fig. 4.—Greenish gray arrow point from site 10. Mus. no. 1-17865.

Fig. 5.—Brown chert scraper from site 67 at a depth of 9 inches. Mus. no. 1-18310.

Fig. 6.—White translucent chalcedony arrow point from site 10. Mus. no. 1-17862.

Fig. 7.—Red chert arrow point from site 10. Mus. no. 1-17871.

Fig. 8.—Brown and gray arrow point from site 10. Mus. no. 1-17864.

Fig. 9.—Red chert spear point from site 106. Mus. no. 1-17991.

Fig. 10.—Greenish chert arrow point from site 43. Mus. no. 1-17967.

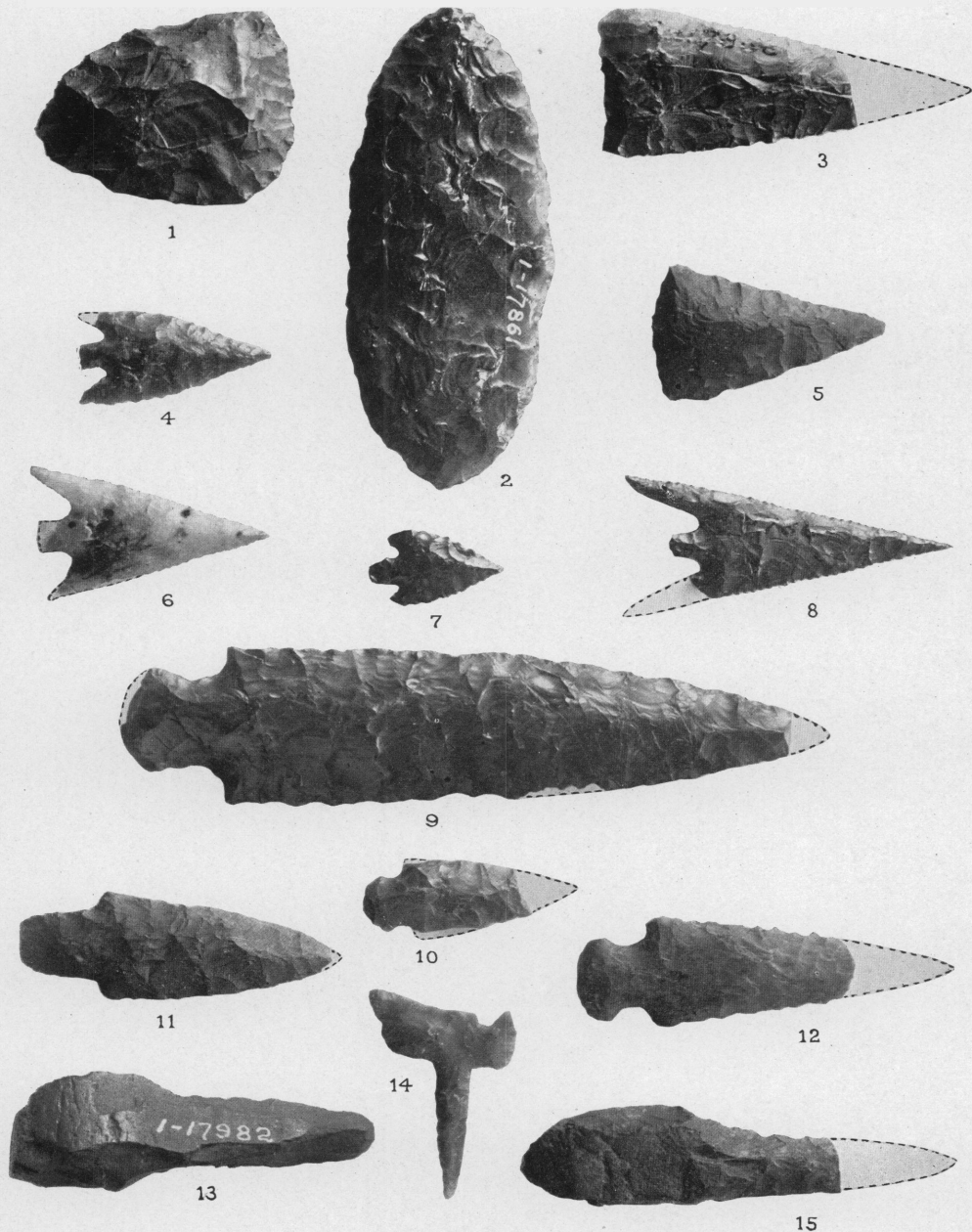
Fig. 11.—Brown chert spear or arrow point from site 106. Mus. no. 1-17993.

Fig. 12.—Greenish chert spear point of a "kind not made by Indians but thrown up by the ground when it has a pain." Gift of Dandy Bill. Mus. no. 1-17996.

Fig. 13.—Brown chert drill from site 68. Mus. no. 1-17982.

Fig. 14.—Greenish chert drill from site 10. Mus. no. 1-17866.

Fig. 15.—Red chert drill from site 68. Mus. no. 1-17983.



EXPLANATION OF PLATE 16

Stone implements. Figure 2 from site 54, the others from site 67. All figures .29 natural size.

Fig. 1.—Pestle found with human remains no. 3 at a depth of 1.3 feet. Mus. no. 1-18022.

Fig. 2.—Pestle from site 54. Mus. no. 17977.

Fig. 3.—Maul found with remains no. 20 at a depth of 2.3 feet. Mus. no. 1-18269.

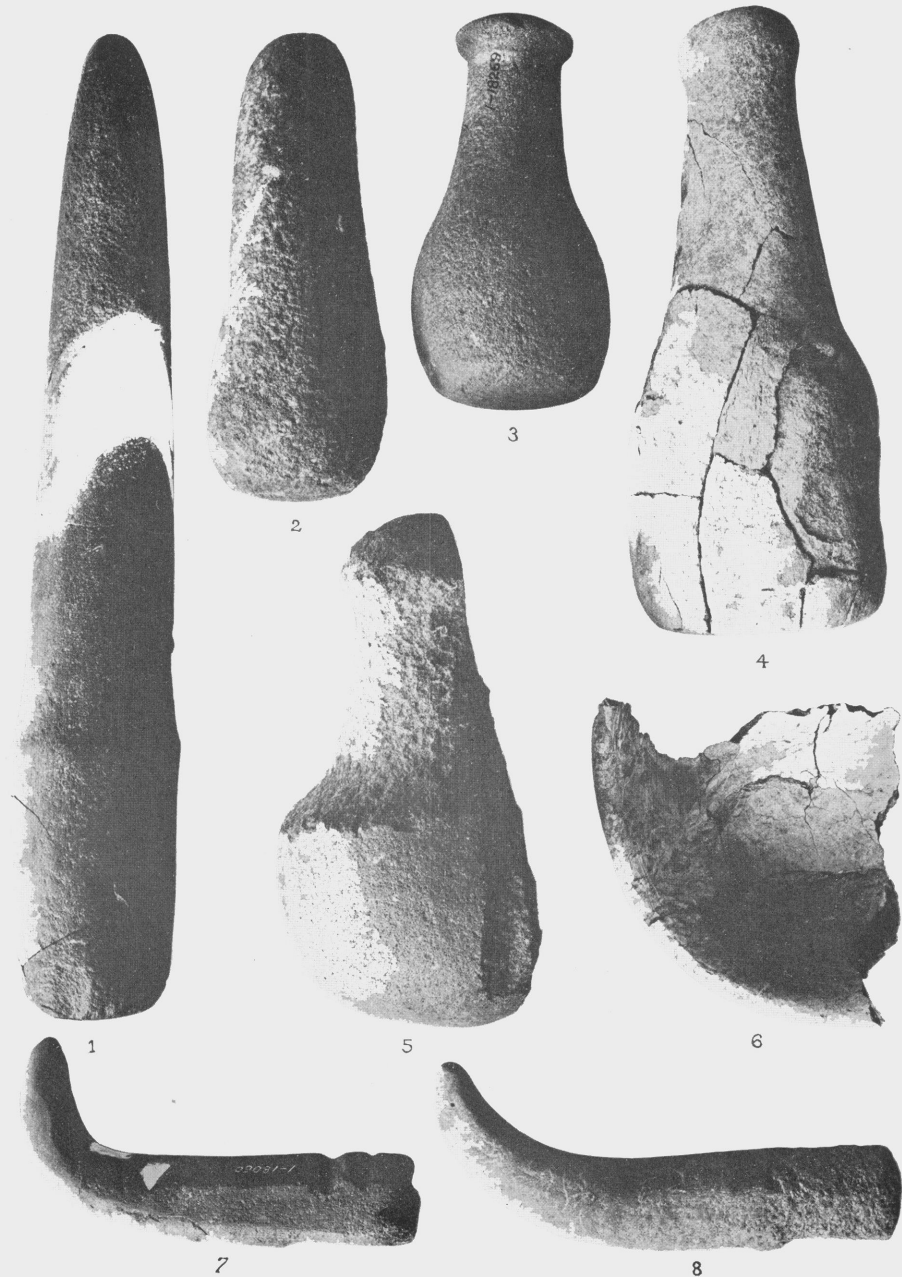
Fig. 4.—Maul found with remains no. 19 at a depth of 1.7 feet. Mus. no. 1-18254.

Fig. 5.—A stone partially shaped into a maul when it was split longitudinally. Mus. no. 1-18504.

Fig. 6.—Fragment of a steatite dish from a depth of 2.5 feet. Mus. no. 1-18301.

Fig. 7.—Adze handle found with remains no. 1 at a depth of 9 inches. Mus. no. 1-18060.

Fig. 8.—Adze handle from a depth of 1.5 feet. Mus. no. 1-18281.



EXPLANATION OF PLATE 17

Objects from various sites. All figures .5 natural size.

Fig. 1a and 1b.—Photographic reproduction and cross-section of a steatite pipe from site 67. Found with human remains no. 2 at a depth of 2 feet. Mus. no. 1-18038.

Fig. 2.—Steatite pipe from site 67. Found with remains no. 19 at a depth of 1.7 feet. Mus. no. 1-18239.

Figs. 3a and 3b.—Photographic reproduction and cross-section of a bowl of a pipe made of steatite, from site 27. Mus. no. 1-17953.

Fig. 4.—Abrading implement of clay from site 80. Mus. no. 1-17990.

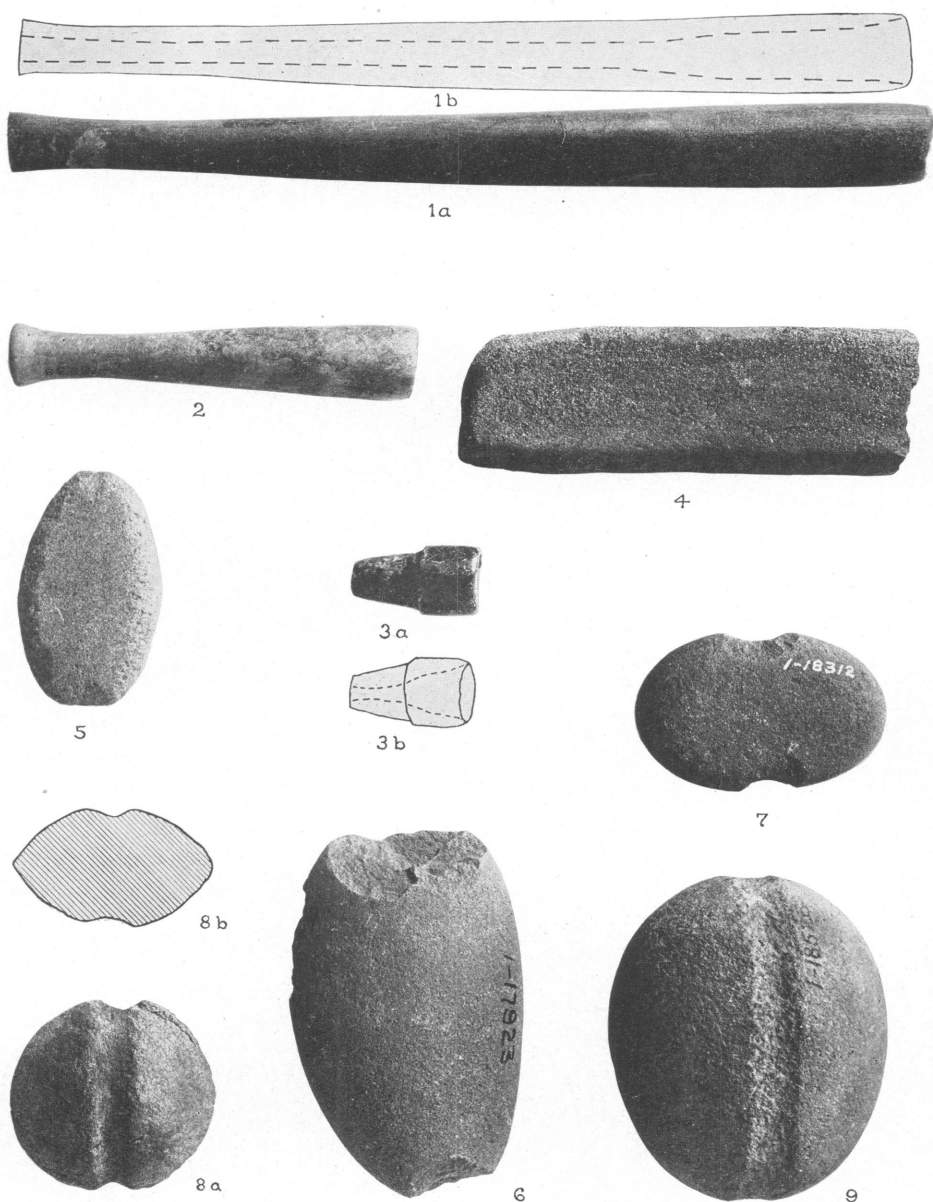
Fig. 5.—Problematical stone object from site 67. Found with remains no. 14 at a depth of 4.8 feet. Mus. no. 1-18118.

Fig. 6.—Hammer stone from sites 11, 12, or 13. Mus. no. 1-17923.

Fig. 7.—Net sinker from site 67. Mus. no. 1-18312.

Figs. 8a and 8b.—Side view and transverse cross-section of a girdled stone from site 67 at a depth of 1.3 feet. Mus. no. 1-18345.

Fig. 9.—Girdled stone from the beach at site 67. Mus. no. 1-18526.



PIPES, SINKERS, ETC.

EXPLANATION OF PLATE 18

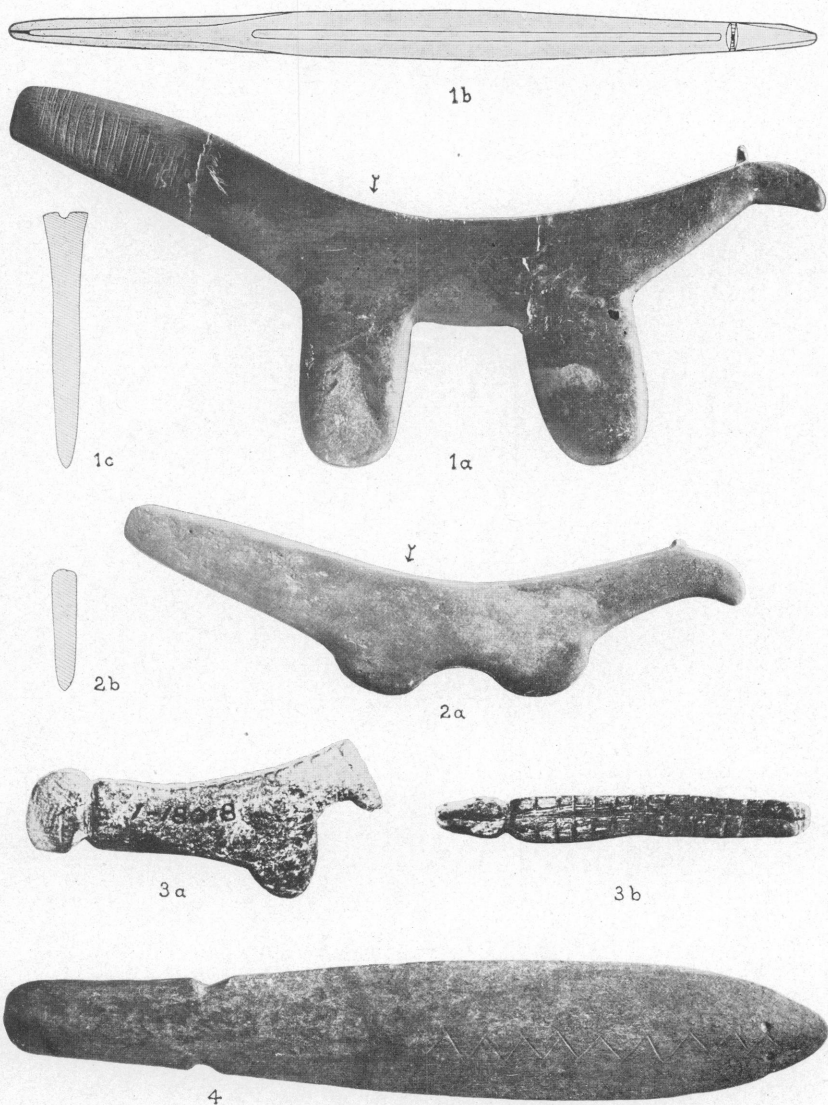
Ceremonial stone clubs or slave-killers made of steatite. Figures 1, 2, and 3 from site 67. Figure 4 obtained from the Yurok of Klamath river. Figure 3a and 3b .9 natural size, all other figures .26 natural size.

Figs. 1a and 1b.—Two views of a slave-killer, 416 mm. in length, weight 867 grams (30.6 ounces), found with human remains no. 19 at a depth of 1.7 feet. Mus. no. 1-18231. Fig. 1c.—Cross-section of the same at the position indicated by the arrow.

Fig. 2a.—Slave-killer, 322 mm. in length, weight 402 grams, found with remains no. 14 at a depth of 4.8 feet. Mus. no. 1-18093. Fig. 2b.—Cross-section of the same at the position indicated by the arrow.

Figs. 3a and 3b.—Two views of a miniature imitation of a slave-killer, 54 mm. in length, weight 9 grams (.3 ounce), found with remains no. 4 at a depth of 2 feet. Mus. no. 1-18018.

Fig. 4.—Stone club 423 mm. in length, weight 940 grams. Mus. no. 1-1570.



EXPLANATION OF PLATE 19

War-clubs and slave-killers from various parts of America. Figure 6, made from bone of a whale; all others of stone. Figure 9, taken from C. B. Moore, Certain Aboriginal Remains of the Black Warrior River, *Jour. Acad. Nat. Sci. Phila.*, XIII, 134, 1905. All other figures taken from H. I. Smith, *Archaeology of the Gulf of Georgia and Puget Sound*, *Mem. Am. Mus. Nat. Hist.*, IV, 1907. All figures .21 natural size.

Fig. 1.—Probably from Klamath river. (Peabody Museum, Cambridge, Mass.)

Fig. 2.—Found three meters deep at Poormans Bar, Scott river, Siskiyou county, California. (Collected by Dr. F. G. Hearn.)

Fig. 3.—From Willamette slough, Columbia county, Oregon. (Collected by Judge F. A. Moore.)

Fig. 4.—Probably from Klamath river. (Peabody Museum, Cambridge, Mass.)

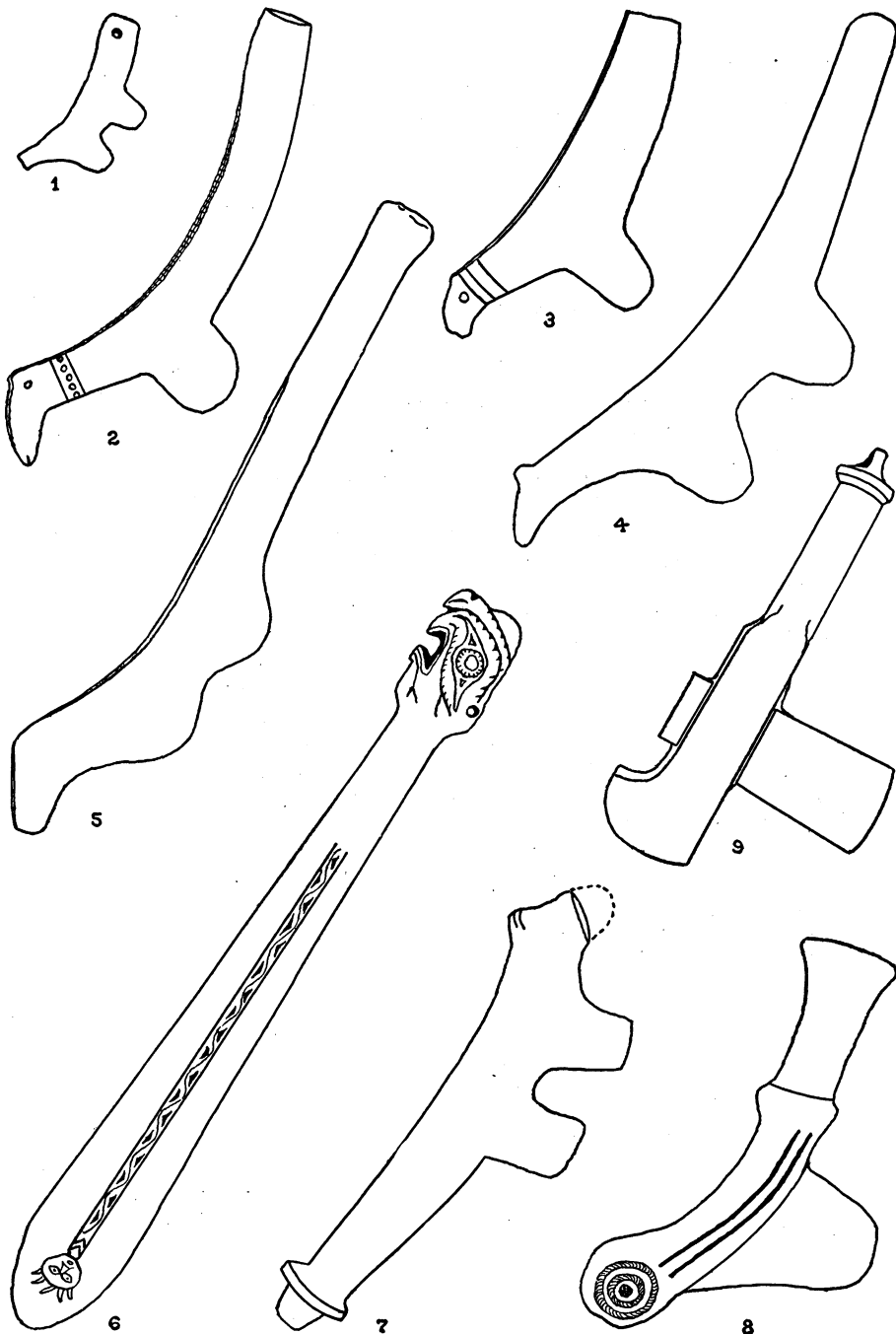
Fig. 5.—From Shovel Creek Springs, Siskiyou county, California, 20 miles west of Klamath lake. (Collected by J. W. Gotcher.)

Fig. 6.—From Barclay sound, west coast of Vancouver island. (Royal Ethnographical Museum, Berlin.)

Fig. 7.—From north arm of Burrad Inlet, near Vancouver, B. C. (Provincial Museum, Victoria, B. C.)

Fig. 8.—From Chilkat, 150 miles north of Sitka, Alaska. (Collected by Lieut. G. T. Emmons.)

Fig. 9.—Monolithic hatchet of greenstone from Moundville, west central Alabama.



EXPLANATION OF PLATE 20

Figures 1 to 5, objects of clay, and figures 6 to 14, objects of bone, from site 67. Figures 15 to 17, bone objects from Klamath river region, showing characteristic decoration of northwestern California. All figures .73 natural size.

Fig. 1.—Clay ball found with remains no. 10 at a depth of 2.8 feet. Mus. no. 1-18204.

Fig. 2.—Clay ball found with remains no. 14 at a depth of 4.8 feet. Mus. no. 1-18123.

Fig. 3.—Clay ball from a depth of 4½ feet. Mus. no. 1-18387.

Fig. 4.—Clay pipe found with remains no. 19 at a depth of 1.7 feet. Mus. no. 1-18240.

Fig. 5.—Clay ball from a depth of 3¼ feet. Mus. no. 1-18380.

Fig. 6.—Bird bone bead from a depth of 6 inches. Mus. no. 1-18402.

Fig. 7.—Head scratcher (?) from a depth of 2¼ feet. Mus. no. 1-18431.

Figs. 8a and 8b.—Two views of a problematical bone object from a depth of 4¼ feet. Mus. no. 1-18423.

Fig. 9.—Bone object from a depth of 4¼ feet. Mus. no. 1-18410.

Figs. 10 and 11.—Whistles made from the ulnae of large birds. Objects found together at a depth of one foot. Mus. nos. 1-18401 and 1-18400.

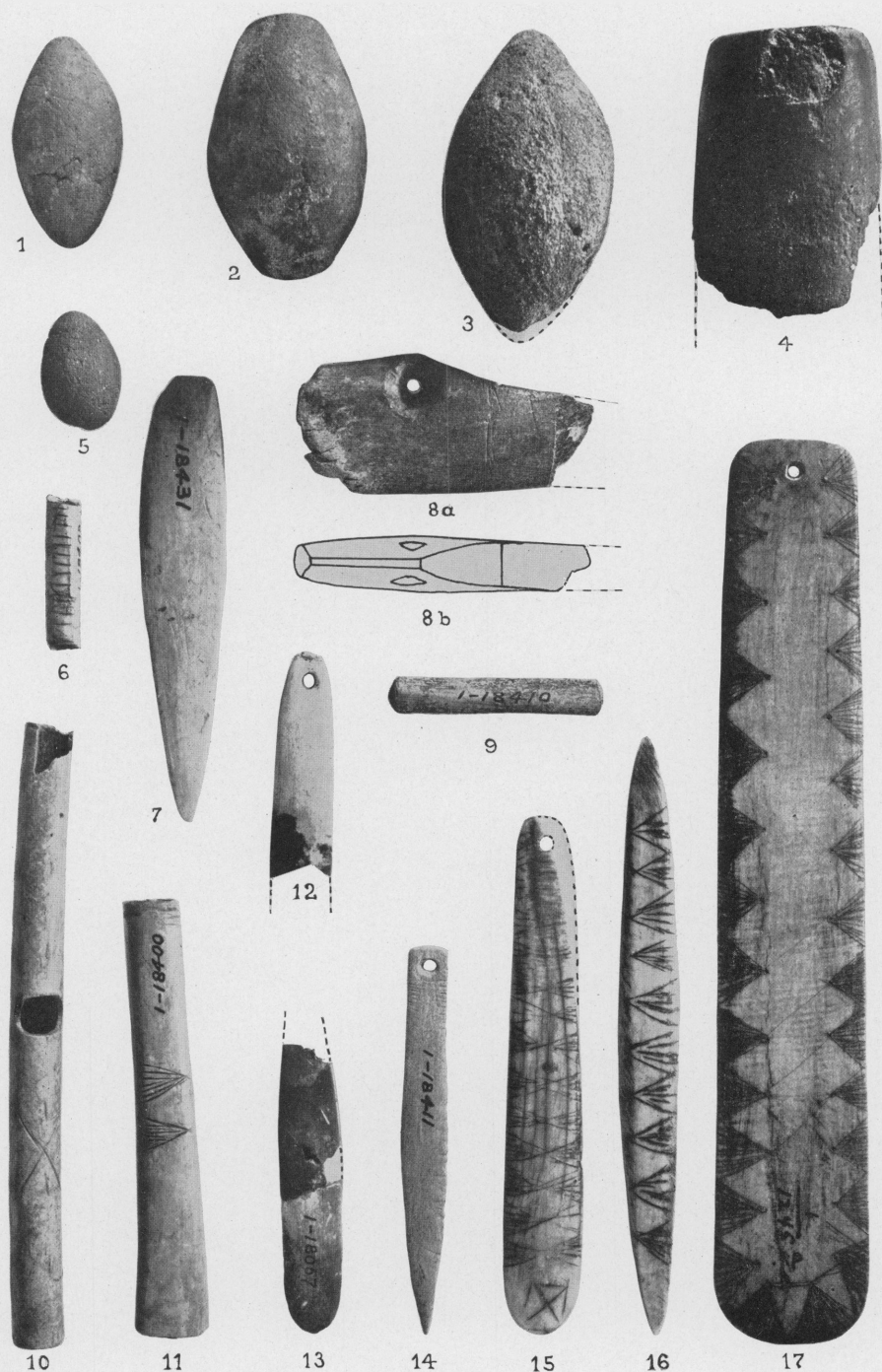
Figs. 12 and 13.—Head scratchers (?) found with remains no. 2 at a depth of two feet. Mus. nos. 1-18056 and 1-18057.

Fig. 14.—Head scratcher from a depth of 3¾ feet. Mus. no. 1-18411.

Fig. 15.—Head scratcher used by Yurok. Mus. no. 1-1161.

Fig. 16.—Hair pin used by Yurok. Mus. no. 1-2189.

Fig. 17.—Louse killer from Klamath river region. Mus. no. 1-1245a.



EXPLANATION OF PLATE 21

Objects of bone, horn, and shell from site 67. All figures .5 natural size.

Fig. 1.—Gouge made from the proximal end of a cannon bone. From a depth of 1¼ feet. Mus. no. 1-18446.

Fig. 2.—Bone gouge from a depth of 9 inches. Mus. no. 1-18444.

Fig. 3.—Horn harpoon from a depth of 3 feet. Mus. no. 1-18428.

Fig. 4.—Horn wedge from a depth of 3 feet. Mus. no. 1-18487.

Fig. 5.—Horn wedge from a depth of 4 feet. Mus. no. 1-18491.

Fig. 6.—Horn wedge from a depth of 2¾ feet. Mus. no. 1-18486.

Fig. 7.—Bone gouge from a depth of 3¼ feet. Mus. no. 1-18433.

Fig. 8.—Awl made from the humerus of a bird. From a depth of 3¾ feet. Mus. no. 1-18422.

Fig. 9.—Bone awl from a depth of 2½ feet. Mus. no. 1-18420.

Fig. 10.—Abalone pendant found with human remains no. 7 at a depth of 3 feet. Mus. no. 1-17998.

Fig. 11.—Abalone pendant found with human remains no. 18 at a depth of 3½ feet. Mus. no. 1-18209.

Figs. 12a and 12b.—Horn barb of a harpoon from a depth of 3¼ feet. Mus. no. 1-18430.

Fig. 13.—Bone harpoon from a depth of 2¼ feet. Mus. no. 1-18426.

Fig. 14.—Bone adze blade from a depth of 2½ feet. Mus. no. 1-18471.

Fig. 15.—Bone adze blade from a depth of 6 inches. Mus. no. 1-18469.

