

UC Merced

Journal of California and Great Basin Anthropology

Title

Survivals of the Stone Age

Permalink

<https://escholarship.org/uc/item/5wp9x7bm>

Journal

Journal of California and Great Basin Anthropology, 30(1)

ISSN

0191-3557

Publication Date

2010

Peer reviewed

LOST AND FOUND

In 1897, David R. Leeper initiated a discussion on the survival of lithic technology in California in the short-lived journal The Antiquarian and its successor the American Archaeologist, and started a debate that ran for several issues and to which a number of pioneering figures contributed. Their recollections of early days in the state and their encounters with native peoples often reflect some of the cultural biases of the day, but they also contain interesting observations and valuable data available nowhere else. The more significant of these are reprinted here, with a few figures, some lengthy quotes from published sources, and extraneous materials deleted. The deletions are indicated by points of ellipsis; the interested reader will find the complete, original texts readily available online through Google Book Search.

[D.R. Leeper, “Survivals of the Stone Age,” *The Antiquarian*, Aug. 1897, pp. 197–202]

“Traversing tracts of space,” says Lecky, “is almost like traversing tracts of time, for it brings us in contact with nearly every phase of past civilization.” Lubbock puts the fact still stronger, affirming that there may be found today within the British Empire “races in every stage of civilization yet attained by man. The Fuegians, Andamaners, etc., are even now only in the Stone Age.”

There are many persons yet living that could bear similar testimony of our own country. To a certain extent I believe that I am one such. Having crossed the plains to California in 1849, and spent some time in the more remote and isolated parts of that state, I became fully impressed with the notion that I had thus been privileged to witness a section of the “stone age” when it was a living, practical reality.

Imagine my surprise, then, upon hearing it remarked, as I did about a year ago, and this by a college graduate, who had given such matters much attention, and who had accumulated a large archaeological collection, that “the manufacture of stone implements was a lost art.” Nor would he be convinced otherwise. I was thus spurred into making some examination into the subject, that I might, if possible, find evidence to verify my long cherished recollections. The outcome was all that I could have desired.

Among the first authorities I consulted... [Leeper has lengthy quotes, deleted here, from Revere’s *Tour of Duty in California*, Hittell’s *History of California*, and papers by Otis Mason].

Finally, Prof. Dumont Lotz, of the South Bend High School faculty, in a letter to me under date of April 28, 1897, has enabled me to present the following additional information in point:

During a recent conversation with you the question arose as to the origin of the obsidian arrow heads which are found in large numbers in Washington, Oregon and California. At that time I stated that they were of quite recent origin and had been made and used by Indians who are yet living. I wish to offer some evidence in support of that statement. From 1890 to 1893 I was employed as chemist of the Oregon Agricultural Experimental Station, and in that capacity made frequent trips across the Cascades, often being on some of the Indian reservations in eastern Oregon. During one of these trips I stopped over night at the Klamath reservation. Permit me to quote a few lines from my diary written at that time.

“Oct. 23, 1892. Have met today an old Indian who was at one time chief of the Suohe Indians. He says he is ninety years of age, and surely his looks do not belie his words. He was loath to enter into conversation, but upon my presenting him with a ‘bran’ new ‘Missouri meerschaum,’ and a package of ‘Seal of North Caroline Plug Cut,’ he became more talkative. I showed him a few small arrow heads I had picked up en route and asked him if he knew who had used such things and how they were made. He said that when he was young and before the white man had come, the Indians all used them. He took a piece of almost transparent obsidian which is found in abundance here, chipped off several pieces with another rock until he had one suited to his purpose, went into his hut and returned with the bone of a deer’s foreleg that had a notch in it, and began breaking away the edge of the obsidian very much as a glazier would straighten the edge of a piece of glass which had not broken along the line made by the diamond. In fifteen minutes he had fashioned a very symmetrical arrow head which he gave to me and which I prize very much.”

Now, as this man would not see a half dozen strangers in a year, and probably none of them would have any interest in such things, I do not think he had learned this art in recent years for the purpose of entertaining tourists or of making money.

Near the western shore of Goose Lake, in the northern part of Modoc County, California, there is a deposit of obsidian known as ‘Glass Mountain.’ I asked

the stage driver what had caused the great amount of loose 'chips' which are strewn all about and he told me the Modocs and other tribes had in former times come there and obtained material for their arrow heads. The great number of broken pieces would certainly remove all doubt as to the truth of his statement. I am satisfied that the Indians of two generations ago used large numbers of these implements.

I went into the Trinity country, in northwestern California, in August, 1850. My mission there was not to study archaic life; yet, situated as I was, I could not help observing some of the phases of that life whether I would or not. The Indians about us were by no means on intimate relations with the white, generally making their presence known to us as night marauders. Still we saw enough of them to note that, like most of their race that we met in California and in what is now Nevada, they were little, if any, removed from the stage of utter savagery.

The males were generally innocent of even so much as the fig-leaf, except where one here and there had donned some castaway garment or fragment of a garment of the whites, perhaps no more than a hat, a vest, or a knit undershirt. The women usually wore only a sort of skirt or cincture made of dressed skin, reaching from the waist to the knees. The dog, a hungry, ravenous, wolf-like nuisance, was the only domestic animal seen. Fire-arms were yet to be introduced. The horse was prized only to butcher for food, for securing which foraging from the whites was the sole reliance. The meager stock of mechanical contrivances was wholly of native construction, and rarely, if at all, was metal utilized for any purpose.

I had an opportunity while in this section also to observe something of the native mode of warfare, my experience being still attested by a well-defined scar from an arrow shot. In the summer of 1851, I was with a small party of prospectors on the Hay Fork, a branch of the Trinity, where we were set upon by a band of savages outnumbering us, perhaps ten to one, the brush lasting most of a day. We were finally driven to fortify ourselves as best we could. Except in one instance where a stone was hurled with a sling, the Indians used only the bow and arrow. So far as we were able to distinguish, all the arrows used on this occasion—and we saw many of them—were tipped with stone, when tipped with anything. Two of our party received wounds, in the one case a leg being impaled, and in the other the point entering just below an inside ankle and lodging among the delicate muscles

at the bottom of the foot. In both these instances the points were made of material that we took to be junk-bottle glass, but which doubtlessly was obsidian. The next day a party of our friends, who had come to our rescue, in scouring the section roundabout, found a basketful of arrow heads in charge of a superannuated squaw at an otherwise deserted rancheria, the points being wholly of stone. These arrow heads could hardly have been the survivals of a 'lost art;' they were, rather, we may readily believe, the productions of workmanship then and there active and alive.

In the fall of this [that?] year, I crossed over to Humboldt Bay, a distance of 100 miles, by the extremely rugged bridle-trail. The two races here lived together on much more amicable terms than they had on the Trinity. There was a small rancheria in the heart of the town of Eureka, and we saw more or less of our red friends every day. Many of their words became incorporated in our familiar speech. I shall take occasion in another article to speak of some of the aboriginal peculiarities that I observed here, as well as on the Trinity. It is only necessary to say in this connection that the Indians of Humboldt Bay were scarcely in advance of their mountain brethren, except in so far as a year's intermingling with the whites may have slightly modified their methods and ideas. They were still practically savages in all their belongings.

In 1884, I revisited this section, taking the Northern Pacific route and stopping off at a number of points. I was quite anxious to procure some bows and arrows of the type peculiar to the Pacific coast, and make diligent inquiry for these articles all along the western part of the journey. I obtained from the Klamath reservation...a bow and some reed arrows, with a raccoon skin quiver.... At Humboldt Bay I was more fortunate.... In Eureka...I secured two bows and a number of arrows, all of the specimens being of the primitive, artistic type, except that one of the arrows is tipped with copper, and several of the others with iron or steel. Yet the most of them have the original stone arrow heads.... One of the bows..., with some arrows, was presented me by George Graham, a Eureka pioneer of high standing, who, with particular emphasis assured me that the articles had been picked up on the Lava Beds near the spot where Gen. Canby was treacherously murdered, and at about the time of that lamentable tragedy. The other bow...is of the Hupa make, with the ornamental designs peculiar to

that tribe. One of the arrows...is pointed with flint, and the other...with copper. The flint point measures from the extreme angles five-eighths of an inch in width and an inch and a quarter in length. It will be noticed that the shaft of the latter is in two parts, the purpose of this device being that when the barbed point enters its victim it will remain within while the main section of the shaft will be released. These two arrow shafts are two and a half feet in length, but the most of those in my possession within an inch or two of three feet. The bows are of yew, a wood indigenous to California and the best wood known for the purpose. The backs of the bows are "covered with a lining of sinew so carefully put on as to mimic the bark of wood, its thickness exactly fitted to the exigencies of the work to be done." The light-shaded triangles in Fig. 4 [deleted] are red and the dark-shaded blue, while the zigzag band separating these colors is brownish yellow.¹

Some of the arrow heads were missing, and I learned through an old-time friend, W.S. Robinson, that in his neighborhood, near Bridgeville, about 50 miles inland, an Indian known as Pitt could re-point the shafts. I was not long in finding my way to Bridgeville, where I secured the Indian's services, some flint points picked up in the vicinity being used for the purpose. The fastening was done with sinews in the true Indian style.

Pitt, in examining my supply of points, was careful to select those that were slender and sharply tapering as the more suitable to the dignity of the war-path, disdainfully rejecting those that were thick and bumpy, with the ejaculation, "coyote." When handling these darts, he took occasion to have me know that he understood the art of making them. This information was communicated mostly by signs imitating the chipping or flaking processes; these processes being precisely the same as those of the Hupas as described by Prof. Mason: "The work is held in the palm of the hand, which is protected by a buckskin pad, and the chips are flaked off by pressing on the edge of the flint with the tool held in the right hand, the ball of the handle resting in the palm." The "pressing," I may add, is downward. Another brave, blind and much older than Pitt, somehow catching the inspiration, began also to edify me by mimicking the operations in question. The glue used in lining the backs of the bows, I was informed, was made of salmon skins by the Indians. I may explain that Bridgeville and the Hupa reservation are both in Humboldt County, perhaps 50 to 60 miles apart....

When about a year ago I began my researches as to the survival of primitive aboriginal art, my thoughts, of course, recurred to Mr. Robinson and his aboriginal neighbor, Pitt; and I wrote at once to the former requesting such information in point as he might be able to furnish me.²

I had not long to await an answer, and with the answer came a very pretty mounted flint arrow head, fresh from Pitt's workshop. I am indebted to Miss Annie E. Robinson, my friend's daughter, for the following valuable information respecting my inquiries:

Father dislikes so much to write, that I have undertaken to do so for him. It was much of a surprise for us to hear that societies that make research in this field a specialty should think that the making of stone implements is "a lost art" with the Indians today. Many Indians can still do such work; and we mail you with this a flint arrow made by Pitt, the Indian that re-pointed the arrow-shafts for you. He smiled when father asked him whether he could do such work, and said he wished he could sell all he could make. Mr. Benjamin Blockburger, whom I think you have met, also told us that the Indians about Blocksburg could be engaged to make such articles of any size and in any quantity. I taught school on the Klamath, where a great many Indians lived. These people made arrow-heads and pieces of black, red, and white flint in solid colors, ranging in length from three to twelve inches or more. These pieces represented money among the natives, some of them being held as high as \$60. The owners were very slow to part with the larger specimens. Then, these were rated at such seemingly exorbitant prices that one would need be a very enthusiastic curio hunter indeed to feel like investing in them.

It would seem quite evident that in these "pieces" representing money we have an instance of the survival of aboriginal art, not only as to its manufacture, but also as to its function.

Pitt is now probably not far from 70 years of age; is very conservative; speaks English little, if any; and still sticks to the bow and arrow for small game. I purchased from him a bow of his make, with which it was said he had killed a deer. Chipping stone and making such implements is not a late acquirement with him.³ On the contrary he has followed such work more or less ever since his early boyhood, having plied this vocation when his productions were sought not as curios, but as necessities in the everyday life about him. In other words, we may believe him to be an artisan of the genuine aboriginal type—a "living representative" of the

“stone age”—an actual instance of the lapping of the prehistoric over the historic, of savagery over civilization.

Indeed, we may reasonably conclude from the evidence, coming as it does from various credible sources, that the aboriginal method or methods of chipping certain stone implements, so far from being a “lost art,” is still known and practiced by aboriginal hands; even though the productions of such handicrafts have at this day passed well-nigh wholly from the realm of the useful into that of the aesthetical.

¹These bows have wonderful propulsive force. The points, according to Fremont, “could be driven to a depth of six inches into a pine tree.” Capt. Bourke saw two of them (used by the Apaches) “piercing pine trees to a depth of at least six inches.” The distance we were from the Indians when shot on the Hay Fork was stepped the next day and found to be 250 paces, though the arrows had been elevated and discharged from a position considerably above us.

²Mr. Robinson went into that northwestern section of California only a year later than myself and had resided thereabouts ever since. He was one of the party that came to our relief when besieged by the Indians on Hay Fork. His father-in-law, J.P. Albee, was murdered on Redwood Creek by the Indians in 1862, his body being pierced by two bullets and an arrow.

³On the right bank of the Van Duzen, not far from Pitt’s hut, there was a large heap of stone chips, evidently the remains of an old-time Indian work-shop. No doubt Pitt contributed his share to this memorial, having lived in this locality all his life except a year to two when he was at the Hupa reservation.

* * *

[J.F. Snyder, “The Method of Making Stone Arrow-Points,” *The Antiquarian*, Sept. 1897: pp. 231–234]

My first opportunity for observing the survival of the “Stone Age” on this continent was early in the summer of 1850, when, a grown boy, I was in the great caravan of emigrants en route to California. At the headwaters of the Humboldt river, some men of the party I then happened to be traveling with started out one morning about daylight in search of horses stolen by Indians during the night. Following the trail to the hills, one of the men left the others and entered a narrow ravine to which he thought the tracks led; but had hardly gone out of sight when his companions heard him call for help. Hastening to his assistance, they found him lying

on the rocks, dangerously wounded in the breast by an arrow. Improvising a stretcher, they placed him on it and brought him back to camp; when, on examination, it was seen that he had been shot with an arrow having an obsidian point, that had pierced the left edge of the sternum a little below the attachment of the clavicle. This ready weapon of volcanic glass penetrated the chest and broke, leaving the glistening fragment, two inches in length and nearly an inch in width, imbedded in the bone. A surgeon in the company extracted it with much difficulty, but not with the success that crowned Cabeza de Vaca’s similar operation on the Pueblo Indian in 1536; for our man died of internal hemorrhage.

One day in the following September, when camped at the head of Dark Canyon, several miles east of Georgetown, El Dorado County, California, I had gone hunting, and lured by the novel fauna and flora and grand scenery of that wild region, I wandered some distance into the depth of the great mountain forest, when thirst impelled me to go down one of the numerous ravines for water. While sitting there resting the impressive solitude was suddenly disturbed by a jackrabbit swiftly passing by me and soon disappearing up the opposite slope.

As the graceful little animal leaped across the rivulet a few feet above me an arrow whizzed by, but falling short of its intended victim, struck the ground with the force of a bullet. Looking around, I was startled at seeing an Indian coming down the hill, with bow in hand, entirely naked, and repulsive in appearance as a wild beast. I grasped my gun to repel an attack, but saw at a glance that he was, like myself, a hunter and not a warrior. Slung over his shoulder was a fine quiver, made of the entire skin of a mountain, or civet, cat (*Bassariscus astutus*), with the animal’s head intact at the lower end, and its tail hanging from the top. In the quiver were two beautiful feathered arrows which, I afterward saw, had glistening stone points. Without even a grunt of salutation or apology for his airy dishabille, he stopped at the water’s edge and, lying flat on the rocks, drank freely. Arising refreshed, he proceeded to look for the arrow that had missed its aim and which he soon found, after I had pointed out to him the place where it fell. He then searched in the running waters for something that he soon picked out, proving to be a fragment of vitreous quartz. Seating himself on a boulder near me, his next move was to unfasten and unwrap the sinew thread from the end of the arrow-shaft and detach

and remove the piece of stone arrow-head remaining in it, for it had broken when it struck the rocky ground. He placed the thread of sinew in his mouth to soften it and render it pliable. Then holding the quartz splinter on its edge with his left hand, on a smooth boulder as an anvil, with a small trap pebble as a hammer, he gently tapped the stone, first on one edge, then the other, striking off a tiny chip at each stroke until he soon had it reduced approximately to the dimensions he required. He had before seating himself removed his quiver from his shoulder, and at this stage untied from its strap a buckskin string that suspended the point of a deer's horn, seven or eight inches in length, notched or grooved at its small end in a peculiar manner that I had not before noticed. The savage saw that I was intensely interested in his work, and executed every movement deliberately and plainly in my view, as though he felt pride in his knowledge of the stone art. Now spreading the broad tail flap of this quiver in the palm of his left hand, with its inner or dressed side up, he placed upon it the quartz splinter he had blocked out, and held it firmly in place with the two smaller fingers of the hand clasped over it. With the point of his horn punch he then, by firm and careful pressure, broke from the edges flake after flake from the point of the embryo arrow-head along to its base. Stopping a moment to inspect the stone, he would reverse it and repeat the cautious pressing on the other edge until directly its outline was that of the ordinary leaf-shaped, flint implement. He now reversed his deer-horn punch, when I noticed it was ground, at its upper or large end, to an obtuse or diamond point at one side, somewhat like that of a wood-carver's burin. Applying this stout point, by the same mode of pressure as before, to each side of the broad end of the stone alternately, the stone now resting for solid support on the heavy muscles at the base of the thumb, he soon chipped out the indented, lateral notches, defining the shank of the arrow-head, which was now finished as completely, and perfectly proportioned, as any I ever saw. Fitting it in the cleft of the arrow-shaft, he took the slender thong from his mouth and soon had the new weapon securely fastened, his horn punch tied to its place again, and, gathering up his quiver and bow, quickly vanished from view.

The whole process, from his selection of the stone adapted for his purpose to the last tuck of the sinew strand in adjusting the finished implement to its shaft, did not exceed twenty-five minutes of time.

The band of Indians to which this one belonged was known as the Nemshoos, a branch of the Pah-Utes... They soon began to visit our camps as persistent beggars, and frequently made arrow-points in our presence, by the method I have described, for the reward of food or cast-off clothing. In this industry—if it can be so called—they were indifferent about the material employed so long as it possessed the cleavage or flaking property required; and from pieces of broken junk bottles, or other thick glass, soon chipped out as neatly formed and delicate arrow-points as from obsidian or glassy quartz.

So far as my observations extended, these Indians practiced only the one method of making arrow-points of stone....

* * *

[H.N. Rust, "Survivals of the Stone Age and Evolution of Certain Stone Implements," *The Antiquarian*, Nov. 1897:284–287]

I have read with much interest the able papers on the Survivals of the Stone Age recently appearing in the pages of *The Antiquarian*, including different accounts of the manufacturing of stone implements by the American aborigines. I notice that the published accounts of how the flaking and chipping of stone is done vary very much, for the reason, I judge, that different operators used different tools and methods to accomplish the same results. I am satisfied, from observation and experience (having made some very good arrow points myself), that the same results are obtained by a blow as by pressure; and that a well directed blow will produce a fine flake which could not be produced by simple pressure. Also that the large flakes cannot be detached by pressure in the hand, but may be by use of a lever, placing the stone on a firm base on the ground, and the short end of the lever under a root as a fulcrum; in this way, by percussive pressure, the same results can be obtained as by a heavy direct blow.

In chipping stone I obtained the best results by using the bone handle of a tooth brush which I ground at one end to a blunt edge. With this I cut through a pane of glass, making the cut but little wider than the bone tool, reversing the glass after removal of each successive flake by pressure in this way. By gentle and careful pressure

I was enabled to secure very uniformly the sharp edge necessary for starting the next flake.

Having learned that an old Washoe Indian, known as "Tom," living in the central part of this state, still made fine arrow points, I sent him a piece of obsidian, by a friend who lives in that vicinity, with the request to make for me a few of them. I sent also, for the same purpose, a block of compact milky quartz. In a short time I received in return a dozen perfect arrow points from one to three inches in length beautifully made. Old Tom said the obsidian was not good material, having been burnt; but the quartz, he said, was perfect. The principal implement he uses in this work is a bone from the leg of a deer, ground down to about the fourth of an inch in diameter at the end used, and tapering at the other end to a flat surface a quarter of an inch thick. This is firmly lashed to a small stick thirteen inches long, the round end of the bone protruding half an inch beyond the end of the stick. This end of the bone is worn by use to a blunt point. The process followed by this old Indian in the manufacture of these weapons is, first, to break from the obsidian block, by peculiarly directed sharp blows, a number of flakes, from which he selected such as approximated in form and size the object he had in his mind. Then folding a piece of cloth, or buckskin, he laid this on the inner thick part of his hand, and on this laid one of the obsidian flakes which he held in place by the third and fourth fingers of that hand. Placing the point of the bone implement under the edge of the fragment of obsidian, he gave the bone punch a rolling motion over and against the sharp edge of the stone. In this manner he glided the bone tool back and forth along the line to be worked down, with each movement chipping off fine flakes. When he wished to remove large flakes he placed the point of the bone against the sharp edge he wished to detach and pressed the punch firmly endways against it until it yielded and split off. He occasionally whetted his bone implement on a granite boulder to keep it in proper form. To make the notches forming the tang of the arrow point, he used the point of a butcher knife, first, by an upward pressure throwing off a flake, then, reversing the motion and throwing off a flake in the opposite direction, exactly as I had done in my experiments in cutting through glass with a pointed bone. This description of arrow-making by the old Washoe Indian was written to me by the friend I

mentioned, who watched every movement closely, is, I think, correct and one of the best accounts I have seen.

With the arrow points made by old Tom, he sent me a specimen of mesquite gum, very strong and adhesive, used by the Indians to confine the stone points in the clefts of the arrow shafts before wrapping them with deer sinew.

The California bows, covered with sinew, are much the best Indian bows I have ever seen. I have found them yet in use along the Klamath and Trinity rivers, where I obtained the most delicately pointed and finely finished obsidian arrow points, still in use there, that were ever made. I also secured from the Indians on the Klamath river, in upper California, several of their chipped blades of obsidian, measuring from eight to thirteen inches in length, and from one and a half to two inches in width, and very thin, tapering to a point at each end. I saw one of them of red obsidian eighteen inches long and three wide; but could not induce the owner to part with it. These blades I consider among the finest chipped implements of the stone art now in use. The first specimen of them I ever saw was in the city of Mexico....

Among the upper California Indians I saw many of these splendid blades, that I could not buy; but I made every effort possible to ascertain their use. One Indian told me that their purpose was to indicate official positions in the tribe—insignia of authority. Another said they had peculiar significance in certain ceremonies and dances. Still another informed me that they marked a certain standard of wealth, or importance, in their tribal organization. Said he, "I no sell him. Now I am rich Indian; if I sell him I am poor devil." He was persuaded to sell it however on my promise to tell no one. I was assured that they were not weapons and never used as such. I was also informed that in some instances they were the common property of the tribe; and that in other cases, they were hereditary property of certain families.

I saw two of them that had strips of cloth firmly fastened around them, terminating in loops to go around the wrist, to guard against their falling and probably breaking, which indicated their employment in the wild gesticulations of their dances. They were always kept carefully secreted by the Indians who owned or had the custody of them; and this fact may account for their occasional recovery by the plow in isolated places, where

they were buried and lost by the sudden death of the only persons who knew their hiding places. I was told of one two feet in length that had been lost in this way, and the closest search of the whole tribe for some years failed to discover it.

An Indian was pointed out to me as the possessor of one of these beautiful obsidian blades; but on asking him to allow me to see it, he denied having anything of the kind. I persevered in my request and helped it along with a few presents, when finally he pulled up a board from the floor of his hut and brought up a splendid specimen rolled and tied up in the soft inner bark of the cedar tree. Another Indian who had one, after long coaxing, consented that I might see it, but not until the next morning, having to get it from its hiding place in the woods during the night. Still another Indian, who had abandoned Indian customs, and had two of these curious objects, which I tried hard to secure; but he said "No." To show that he had become converted and adopted the white man's methods, I relate what followed. Said he, "These I have were my father's; he was big Indian chief; I no sell 'em. My wife's father was a big Indian, too; she got two he had; I sell you them." So, I obtained the two fine specimens through his improved civilization....

Another instance of the survival of stone implements is found in the continued use of stone axes and hammers by some of the Arizona Indians as well as by some of the Sioux. In 1889 I found still another instance in the use of the stone adze handle by the Hoopa Valley and Klamath Indians. To this stone handle was fastened, at a right angle, a cutting bit with sharp edge made of bone; sometimes of steel; but before they learned the use of steel, they firmly lashed to this stone handle an edged bone or stone, and found it an efficient implement for cutting out the charred wood in canoe making. It is now also in common use by the Chinook Indians of our northwestern coast....

In conclusion I will mention one or more class of stone carving that I have seen in recent use; namely, stone rings four or five inches in diameter; or, more properly speaking, perforated stones, circular, of that diameter, with central perforations one or two inches across.... I cut thirteen of them from a fish net made and used by a Klamath Indian who sold them to me; but I could not persuade him to sell me the net made of woven wild hemp, an excellent drop net fashioned very

much like those in use by the Swede fishermen about the piers of Chicago who weigh theirs with lead sinkers instead of stone.

* * *

[J. Yapple, "Survivals of the Stone Age: Use of the Stone Axe," *The Antiquarian*, Dec. 1897:323–324.

...There are no doubt many persons still living who have seen Indians who used the bow and stone-pointed arrows as their only weapons for war and for securing subsistence; and there are yet a few who have seen Indians manufacture stone arrow and spear-points. But I have never yet heard of a white man who has seen an Indian make a stone axe; and very few white persons still among us have ever seen stone axes in practical use by the aborigines.

Drifting about the gold diggings with varying fortunes, sometimes in luck, but oftener out, myself and mining companions in the summer of 1850—I think it was—pitched our camp on the bank of the San Joaquin river, near old Fort John, about a hundred and fifty miles southeast of Stockton. We had been there but a short time when we discovered the fact that we had neighbors of a sort that we had not previously been accustomed to. They were Indians known then as Root Diggers. There were, at a rough estimate, fully two thousand of them, and all seemed to be under the control of a chief who went by the name of Tom Keet. As we were camped for nearly a year within three or four miles of them we had many opportunities for observing their manner of life and the methods they employed in manufacturing their canoes and other articles necessary in their domestic and commercial pursuits.

In this communication I will only describe their canoe making, having witnessed the process of construction from beginning to launching of the dugouts. In this industry we saw them fell pine trees over three feet in diameter with stone axes. I cannot now say whether the axes were with or without grooves, or of what sort of stone they were made; for at that time I was much more interested in the golden age than in that of stone. The axes they used, however, were of stone, and provided with long, springy, willow handles; the small end of the willow being securely withed around the stone and then

wrapped around the handle and reinforced by strips of raw hide braided in, and the whole made firm with a coating of some kind of gum or glue. In cutting down a tree they used the pole of the axe as a hammer and by hard, quickly-repeated blows, soon battered loose a cortical layer of the wood just as we, when boys, loosened the bark of pawpaw sticks by beating them, for making whistles. When the woody fibers were in this way broken or battered loose they were pried up by inserting under them a greasewood stick, chisel-shaped at the end, and hardened by burning; or armed with a chisel-shaped stone fastened to it with deer sinew and gum. To aid this lever in breaking away the loosened layer the axe was reversed and with its edge the wood was cut or hacked until free and then removed.

The kerf made by this primitive mode of chopping was necessarily very broad, as each layer of bruised wood cleared away was shorter than the one preceding it. In this labor, although the canoe to be made was individual property, all, or as many of the men as chose to help, joined in it; but in a very leisurely way. Three or four would hammer away at the same time; but as soon as one got tired—which usually required but a short time—he would throw down his axe and saunter off. But another was ready to take up the implement and renew the battering. And when one would ply the axe until he separated a layer of wood from the tree, another was by with the wedge-pointed stick to pry it up and hold it steady for the axe edge to hack it off above and below. By this cooperation of labor—learned, perhaps, from the beaver’s mechanical instinct—they felled the tree in comparatively a short space of time. With General Bidwell, and other pioneer Californians, I now regret very much that I was not at the time sufficiently interested in aboriginal arts to pay more attention and closer study to the practice and ways of our dirty neighbors....

After the tree had fallen the community of labor seemed to end, and the future proprietor of the prospective craft and his squaws finished the job. The trunk of the prostrate tree was burned off at the proper length and the bark all pounded off with rough or rudely-edged stones. Then the top of the log was cut down to a level, flat surface, partly by the hammering process but largely by burning. In the same manner the curved shape was given to the prow. Then commenced the excavation or hollowing out of the log by fire, aided by

picking down and scraping out the charred wood with stone implements. To limit the action of the fire wet mud was placed on such portions as were not intended to be further reduced; and to aid the needed disintegration of the green wood by the fire it was fed with dry pine knots and pitch. The finishing and smoothing was exclusively the work of the squaws. With broad, sharp-edged, flat stones they scraped and rubbed both the interior and exterior until the dug-out was of regulation form, with walls of uniform thickness or thinness and the entire surface in and out perfectly true and even.

* * *

[D.R. Leeper, “The California Indians Prior to 1850,” *American Archaeologist*, Aug. 1898:197–200]

In preparing my article on “Survivals of the Stone Age,” ...I wrote to General Bidwell for such data on the subject as he, from his long residence in California, might be able to furnish me, to which I received the following reply, embodying much valuable information in point. The letter, however, did not reach me in time to use in the article in question, and I intended to avail myself of its contents in another connection, but now submit it alone as in itself an interesting contribution to the ethnological literature of the day.

In my quest for information pertaining to the Indians of California in their primitive condition, I wrote, among others, to Major Elias Howard, of Eureka, California, whom I knew there in the early days, and whose statements I could regard as trustworthy. Major Howard was at the head of a party that reached the Humboldt Bay country from the seaward via the port of Trinidad, in April, 1850, and the vessel upon which they came was the first to enter that land-locked harbor, of which any trustworthy record is known. In an article in the “History of Humboldt County” he gives a lengthy account of their observations and discoveries. They came upon swarms of natives, upon whom the crash of firearms and the pranks of the magnetic needle in a surveyor’s compass, as a “medicine” device, had a most wholesome effect as to any sinister designs the savages may have harbored.

I append Mayor Howard’s letter in answer to my inquiries, as additional testimony on the subject now under consideration.

Chico, Cal., June 30, 1897.

My Dear Sir: ...When I arrived in California in 1841 the wild Indians—that is, those who had not been compelled to live and work at the Spanish missions or on the ranches—had no guns, tools or implements, except in rare cases, when runaways from the missions might carry with them a butcher knife or some iron utensil. Some exception might be made of the Indians in the great San Joaquin and Sacramento valleys, which, for many years, had been trapped for furs by the Hudson Bay Company, and of the Indians along the route travelled by the trappers from Oregon to California, who might occasionally come into possession of a knife or something made of iron. In regard to stone implements, I have never seen any except arrow heads, spear heads and stone mortars and pestles for pulverizing seeds, acorns, etc. Arrow heads were not made of flint, because flint is unknown in California. Nor did I ever see them of iron or other metal, obsidian being mostly used, though some kinds of quartz or stone answered the purpose. The Indians in the depths of our great mountain chains—I allude specially to the Sierra Nevada and the Coast Range Mountains of northern California—were in the early forties as far from civilized as when Columbus discovered America. In fact, as late as 1844 I found Indians in the Coast Range who, till then, had never seen a white man. And there I saw the stumps of cottonwood trees, six or eight inches in diameter, which had been newly felled (as I supposed) with stone axes; for they had evidently been severed with a dull implement which gave the stumps the semblance of a coarse wooden broom, or about as a stump might look if a white man were to fell such a tree with the head—not the edge—of his axe. But on inquiry the oldest Indians now living here say that the horns of the elk were the only thing hard enough to sever the woody fiber of the trees when they required long poles for the roofs of their large sweat and dance houses. The bow and arrow was the weapon in war and to kill game. My acquaintance has been mostly with valley mission and ranch Indians. When I arrived, in 1841, even those in the great valleys had no such thing as a fish-hook and seldom a knife and scarcely ever an axe or hatchet, but they soon learned to have them. I think it probable that as late as 1850 there might have been found, in the fastnesses of the mountains more remote from the settlements and mines, Indians in conditions absolutely primitive. I should have said that all Indians, from the wildest to those nearer white habitations, were most skillful in the making and use of nets and seines to catch fish, making the twine and cords of a kind of milkweed. The Indians of the valleys never made their own bows, and seldom their arrows, but bought them of the mountain Indians. Cannot possibly write anything on the subject of ethnology, much less the faintest resemblance to such a “contribution.” One thing, however, I would like to mention: Indians have

sometimes been called “Diggers,” or “Digger Indians.” When I crossed the plains (1841) that name was not known—at least I never heard it. We met trappers in the Rocky mountains, and old mountaineers there, and some in California—no one even mentioned the name Digger till years later. About 1845, and on, the most degraded of men—from the Rocky Mountains—began to ask when they reached California if the Indians here were “Diggers,” or belonged to the “Digger tribe”? In fact, such men got to calling all Indians “Diggers,” and when they killed one—which some thought no more of than of killing a coyote—they would say, “Oh, he is only a d—n Digger,” as a term of reproach and degradation. As there is not, and never has been, a “Digger tribe” of Indians anywhere in America, I submit that the term is a base misnomer and should not be perpetrated. Many of the Indians of California are quite civilized—many even Christianized—should they be insulted by this ignominious appellation? People sometimes talk of Indian tribes in California, whereas no tribes existed; that is, they had no tribal chiefs or tribal names. Considerable tracts of country, but always limited, spoke the same or similar, dialect, and may be called tribes in a certain sense. But each Indian village had a name and a head man, or captain. But pardon me for so long a letter. It is very difficult for me to write at all, except with coarse pencil, on account of my tremulous hand, and then it happens very often to get (like this one), badly typewritten. Shall be glad to answer any questions you may ask.

JOHN BIDWELL

Eureka, Cal., August 1897

Dear Sir: ...In many of their devices the Indians showed considerable ingenuity, yet in constructive skill their knowledge was at zero. They were not artificers in metals. Some rudely-made knives were found in use among them, evidently formed of hoop-iron from casks that had been thrown ashore by the sea. Even the manufacture of pottery seems to have been unknown to them. Utensils for domestic use, for reducing seeds and acorns to flour for their food, such as the mortar and pestle were of stone obtained from the interior tribes in barter for kinnikinnic and abalone shells, which abound on the coast. Their weapons of warfare, the spear and the arrow, were equipped with heads of flint and obsidian, which also were the product of the more ingenious and skillful tribes of the mountain country. They were supplied to them through the same medium of exchange. Bone and elk horn wrought into implements shaped like the awl, and cuneiform, were of common utility among them.

Whether I ever saw them splitting out any of those redwood puncheons? and if so how they did it? I will answer that I never saw the work while being actually done, but I think it may be answered as satisfactorily, to

my own mind at least, as if I had actually seen the work performed. The Indian was never known to cut down or to fell a forest tree. Stock of the "raw material" for puncheons, canoes, etc., was always in supply for their wants, found on the shore of the bay or ocean. Canoes of several tons' capacity and easily carrying twenty-five or thirty grown persons, were made from the huge redwood trunks by aid of their rude tools of elk horn, wedges and fire, which last they well knew how to make serviceable for this purpose.

I have seen many remains of the trunks from which they got their puncheons. As has been usually thought, the stem, or body, of the trees was not made into logs by cross-sectional cuts. Having selected the tree lying on the shore above the level of usual tide water, the first work was to strip off from the upper side enough to make a face surface to begin upon. At a distance apart, according to the required length of the boards or

puncheons, transverse grooves were cut to the depths of several inches and of sufficient width to give space for the use of their wedges at each end. These wedges were thickly set and gradually driven in. If the wood proved refractory or irregular in grain, a row of wedges was entered longitudinally along the desired line of cleavage and (favored by the remarkably free splitting quality of that timber) a large number of these slabs from three to six inches thick and from four to six feet wide might easily have been taken from one trunk. If these were thicker than were convenient or necessary for use, they were again split and reduced to the proper dimensions. A number of abandoned jobs, where the tree turned out to be too tough and refused to yield to the methods applied, have come under my notice, and also some that had been successfully worked out with the slabs still lying near by.

E. H. Howard

