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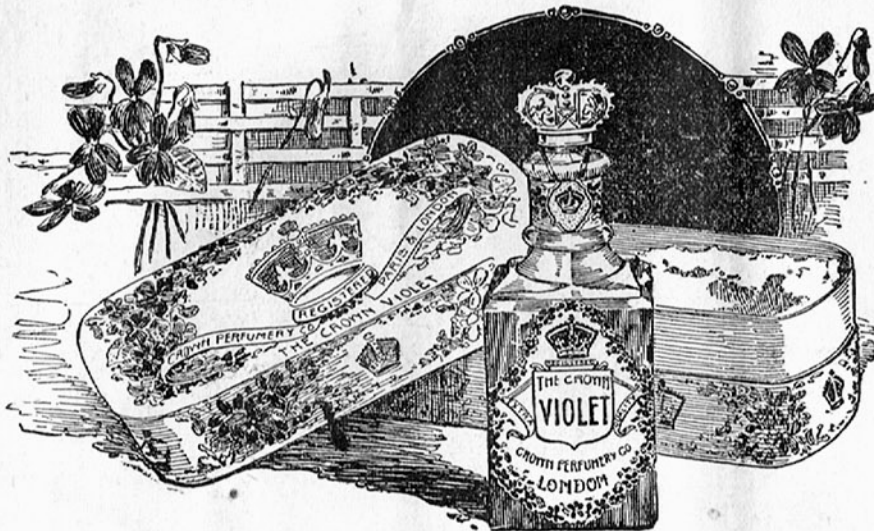
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ABORIGINAL WEAPONS OF CALIFORNIA.¹



MAKING the theory of the natural evolution of man from the lower animals, or the theory of special creation, in either case we see that man, having no natural weapons of defense, would naturally use such rude weapons as sticks and stones. Sharp flakes of rock formed by natural causes he used as knives, axes, and so on, and as he advanced he would learn to imitate and improve upon the forms best suited to his needs.

In the excavations made beneath the ruins of Ancient Thebes, in Egypt, the oldest city of which we have any known history, these flakes have been found; similar relics are found in all parts of Europe and Mexico.

As time went on, these rough stone implements were made more efficient by affixing them to handles of wood or bone, thus forming spears, javelins, harpoons, knives, and the like, and after the evolution of the bow, the arrow eventually became the favorite weapon.

Spears and arrows were first made of wood, sharpened by fire, or by rubbing with some hard substance, and later by inserting the flakes of stone into clefts in the ends of wooden shafts; then vegetable fiber, such as grasses, the inner bark of shrubs and trees, and still later, sinews and thongs made from the hides of animals were used to attach the flakes to handles.

This commencement of the Stone Age, which in some parts of the world—in Europe, for instance—continued, as it is

¹This subject is treated more at length in a work ready for publication entitled "Aboriginal Weapons of Califor-

variously estimated, from one to sixteen thousand years previous to the Christian era, was the Paleolithic Period, or rude Stone Age, and was followed by the Neolithic or Later Stone Age, and both were gradually superseded by the Age of Bronze, when copper in the pure state or alloyed with tin took the place of stone as material for the manufacture of weapons, which gave way in turn to iron and steel. Although the material changed, the general forms of the implements were retained, and in the swords, axes, and spears of today we recognize the aboriginal forms of similar implements.

In California our studies are restricted to the Stone Age, in which the aborigines were living at the time of the advent of the white man, and beyond which they have not advanced.

There appear to be two separate and distinct periods to be considered: the first was probably anterior to the Stone Age of Europe, and the regions east of the Rocky Mountains.

The absence of history or tradition, and the lack of reliable data as to the periods of time, in years or centuries, necessary to bring about the changes which have occurred during the later geological ages, the migration of races and tribes, and the substitution or extinction of races or peoples from climatic and other causes, leave us in a state of uncertainty when we attempt to classify or distinguish the comparative age of the work of aboriginal man on this Coast. Especially is this true when we take into consideration the great changes in climate and surface
nia," to be illustrated by three hundred figures of characteristic weapons.

geography, which have resulted from volcanic eruptions, glacial action, earthquakes, floods, and fires. Aside from these considerations, we find that various tribes in different localities were more or less advanced in the mechanical skill necessary for the manufacture of weapons and implements; and it is probable that advancement and retrogression alternated with many of them as circumstances were favorable or unfavorable to the various communities. Heredity and constitutional differences in families or widely separated tribes would result in the development of different degrees of skill; thus, the Stone Age of one people might extend over a different era from that of others.

The importance of the study of our aboriginal relics, as illustrating the early history of California, may be understood by the interest manifested in the subject in other States and countries.

Various writers have called attention to the importance of the discovery in California of human remains and the works of man in the gravel under beds of volcanic material, where they were associated with the remains of extinct animals; and to the necessity of looking to this early race for much that is otherwise unaccountable.

It is also claimed that California has been the meeting ground of several distinct branches of the widely spread Mongoloid stock.

Figures Two and Three represent unique weapons of polished stone, found with several other implements under two hundred feet of lava in the bed of an old river channel, down which the lava had flowed at a time when, it is claimed, a large portion of our continent was covered with ice.

These weapons, found under Table Mountain, Tuolumne County, indicate that man at the time of the great volcanic

outburst had reached a more advanced stage of development than his successors had when discovered by Europeans; but whether the difference was due to a general extinction of the race or people, or to a retrogression of some of them who may have escaped the great devastation and afterward re-peopled the region, is a question, which, with the evidence available, it is impossible to determine.

It is evident from the immense erosion in California subsequent to the lava flows, that the gravel of the old river beds was deposited at a very early period in man's history, and California may safely claim the oldest relics of man's occupancy of America.

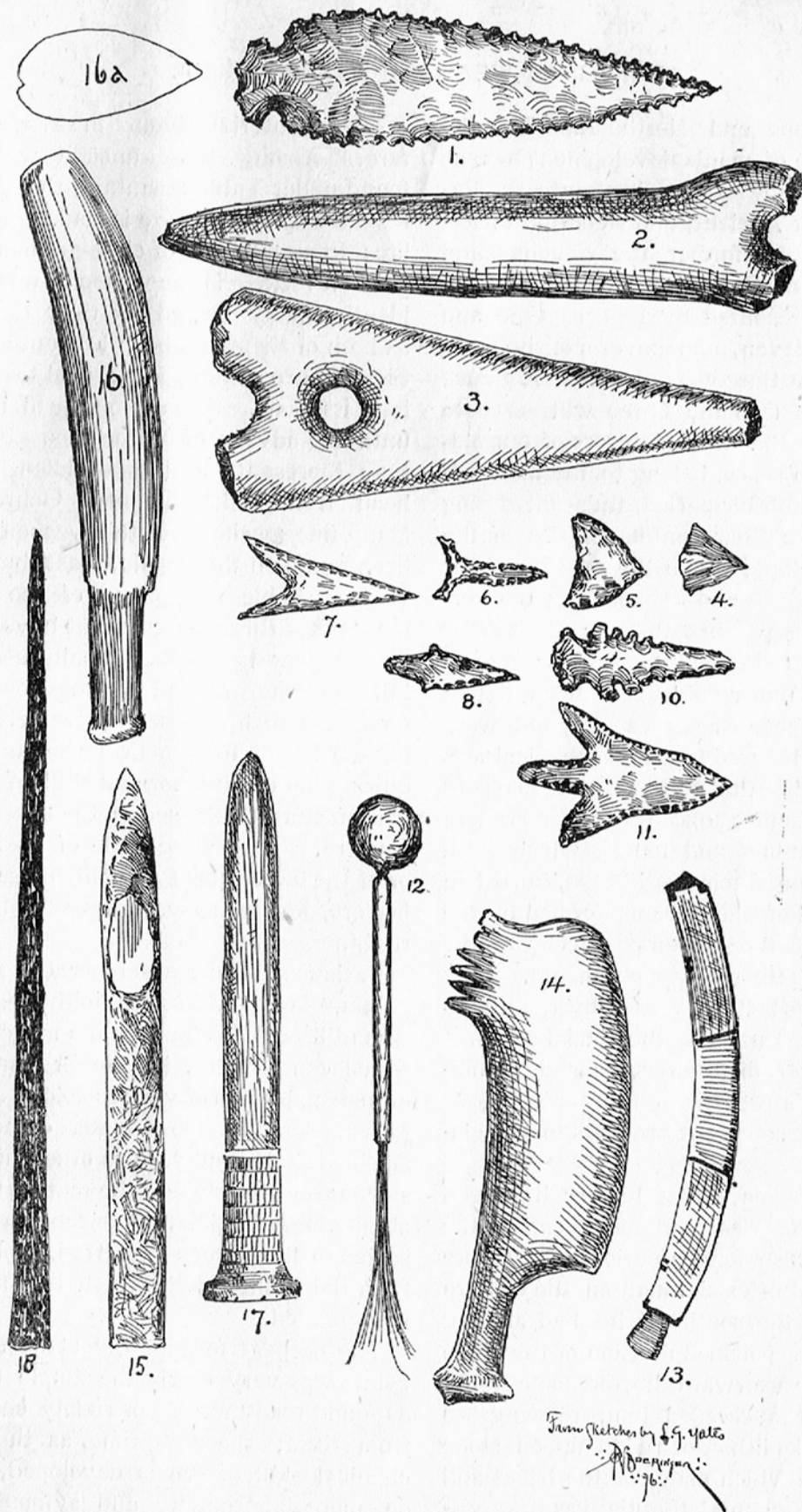
The entire topography of the region has been changed since those relics were deposited in the old river channel under Table Mountain. Where the rivers then ran, we now find mountains formed by the molten lava that filled their beds, while the former mountains that confined the ancient streams have been eroded, and their places are now occupied by deep gorges, cañons, and valleys, through which the rivers of the present find their way to the sea.

All animal and vegetable organisms of the region were destroyed by the volcanic outburst, and a long period of time must have elapsed before the country was again fitted for man's occupancy.

The people that occupied the region after the volcanic eruption used weapons and implements entirely different in form and character from those of their remote predecessors, and the implements of the older period, when found by the later inhabitants, were looked upon as being endowed with supernatural powers, and used as fetishes or in their ceremonial observances, and as "charm stones" by the medicine men.¹

¹ See illustrated article on "Charm Stones" in Smithsonian Report, 1886, and Bulletin of the Santa Barbara Society of Natural History, No. 2, 1890.

16a



ABORIGINAL WEAPONS.

1, Obsidian spear-head, Lake County. 2, Polished Argylite spear-head, from Table Mountain, Tuolumne County. 4, Polished trap rock spear-head, from the same place. 4 to 11, Arrow points, unpolished, of obsidian and other silicious rocks. 12, Apache war club, rawhide shrunk on a round stone. 13, Boomerang used by Southern California Indians. 14, Bone tomahawk, from Santa Rosa Island. 15, Copper knife blade, found near Santa Barbara. 16, Stone sword, from one of the Santa Barbara Channel Islands. 17, Wooden sword, with handle inlaid with abalone shell. 18, Spanish rapier, found in an Indian grave, Santa Barbara.

In Europe and North America the Stone Age of man's development has, as before stated, been divided into the Paleolithic or Ancient, and Neolithic or Recent. In the former the weapons and implements were chipped or flaked, as in those represented by Figures One and Four to Eleven, and never polished; in the Recent they were polished. A glance at Figures Two and Three will serve to show that the manufacturers of our oldest known relics, belong to the more advanced Neolithic period, thus antedating in progress their contemporaries of the Atlantic Slope, who if the theories of our best geologists and ethnologists are correct, were passing through the earlier stages of the Paleolithic, and living under such unfavorable conditions that a bare existence was precarious, and were so little advanced in the mechanical arts of savage life that nothing is left to record their presence, except a few rudely chipped stones and flakes, which with the refuse of their workshops, buried in the gravel of the streams formed by the melting of the immense glaciers of the period, are their only monuments,—their movements being governed by the extension or diminution of the glacial areas.

The later discoveries seemed to indicate man's presence on the eastern portion of our continent previous to the glacial epoch.

In California, either history has been reversed, or else man has occupied the region for so long a period, that before the advent of glacial man on the eastern shores of the continent he had already reached the polished division of the Stone Age, and afterward he, or some other race that succeeded him, retrogressed to the Paleolithic, or rude chipped stone period, in which many of the tribes still remained when California was first visited by the European.

On our continent the spear was in a great measure replaced by the bow and

arrow, a material advance in savage warfare. Among those ancient weapons found under Table Mountain, that represented by Figure Two is made of argyllite; Figure Three, of close-grained hard trapean rock. These weapons were evidently highly valued by their owners, as both of them had been broken, and in Figure Three a new hole drilled to attach it to its shaft. Spears continued in use until the advent of Europeans. Figure One represents a fine obsidian spear head from Lake County, California. Many fine specimens of this weapon have been found on the Pacific Coast, but it is very probable that many of the finer weapons of this character that have been called spear heads were really used as knives or daggers, and the finest of them for ceremonial purposes exclusively, being too fragile for practical use, and requiring too much labor and skill in their manufacture to be used in the chase and warfare. They were made of obsidian, or of the better quality and highly colored jaspers, and other varieties of silicious rocks.

Various substances were used for arrow points,—any rock suited to the purpose was utilized. We find points made from translucent, milky, and other varieties of quartz, jaspers of various colors, chert, (so-called flint), moss-agate, carnelian, silicified shale, and various other mineral substances; but where the material was obtainable, obsidian (volcanic glass) seems to have been preferred, probably from the facility with which it could be manipulated.

The earliest form of the stone arrow points was very nearly the simple flake, as found ready for use or rudely chipped from rock; these in time, as the mechanical skill of tribes developed, took on more appropriate and symmetrical forms, as illustrated by Figures Four to Eleven.

The arrow shafts were made of willow

or the young shoots of various other trees and shrubs. In Lower California the wood of *Tecoma stans* (a beautiful flowering shrub now grown in our gardens) was used, and in Northern California the buckeye (*Aesculus Californicus*) was largely used for the purpose.

A good bow was, and still is, highly valued by the Indians, as they are made only by certain members of the tribe, who are experts. They were made of yew saplings, also of young growth of Sequoia (redwood) backed with deer sinew. The sinew for the backing and bowstring was taken from the back and hind legs of the deer at the time of killing, and dried for future use, afterward soaked until pliable, stripped into fine shreds, and laid on while the wood was green, with glue made of boiling the gland of the lower jaw and nose of the sturgeon, the whole held in place until dry by wrapping. The Sioux Indians made their bows from the horns of the mountain sheep (*Ovis montanus*), the horns were heated in hot ashes and drawn out, the pieces were then spliced together with bands of deer sinew.

Sharp flakes of stone, or stone knives, were used by some of our aborigines to slash the bodies of their enemies in hand to hand conflicts. Obsidian was the favorite material for the manufacture of knives and other weapons.¹

In the northern part of our continent

¹In the deposits of the stone periods of the Hill of Hisarlik in Asia Minor, the late Doctor Schliemann found numerous flint knives, and at a depth of twenty-three feet found double-edged knives of obsidian "sharp as razors."

In the Admiralty Islands, of the Papuan group, we find obsidian used for making knives, razors, and spearheads.

The New Caledonians used a flat, oval serpentine knife for carving the human body. It was about seven inches long with holes drilled in it for fastening to a wooden handle. The Fijian knife used for the same purpose, was a sharp sliver of bamboo; the Hawaiian Islanders used a wooden implement armed with sharks' teeth in war and for sacrificial purposes. Some of the tribes on the Amazon use a bamboo knife in decapitating their enemies, whose heads are prepared as trophies.

bone is largely used as a material for weapons, as are also walrus tusks.

Although the sword and dagger shaped weapons were not in general use, there is sufficient evidence to show that their uses were not unknown. Figure Fifteen represents a copper weapon belonging to Mr. G. H. Gould of Santa Barbara, recently found in an Indian grave. The peculiar spot near the point represents a fragment of some material in which it was wrapped; the lower end indicates that the weapon had been inserted in a handle. It is the first copper weapon found in the graves of the California Indians, so far as I know. Figure Sixteen represents a stone sword found on one of the Channel Islands. Figure Sixteen *a* is a section, nearly full size. Figure seventeen is a wooden sword, the handle inlaid with pieces of abalone (*Haliotis*) shell. Figure Eighteen, Spanish rapier found in the grave of an Indian chief, in Santa Barbara County.

War clubs were used to some extent. Some perforated stone disks have been found on San Nicolas Island and elsewhere, which were probably used as heads for war clubs, by inserting a stick in the drilled opening. Figure Twelve represents a war club used by the Apaches, made by shrinking rawhide upon a round stone.

Tomahawks do not appear to have been used by the Indians of California. Figure Fourteen represents a unique weapon of bone found on Santa Rosa Island; its shape and material rendered it a most formidable weapon at close quarters.

Slings, by which hardened balls of clay and pebbles of suitable shape were projected, were and are still used by the Indians of the northern part of California. The Indians about Clear Lake were very skillful in their use in capturing game.

INTROSPECTION.

In Central California a weapon resembling the *bolas* of South America was effectively used in hunting; it was made by attaching two grooved rounded stones to the extremities of a cord. This was thrown among game to entangle their feet, rendering their capture certain.

Poisoned arrows were used by some of the tribes. The Southern California Indians also used a weapon resembling the boomerang of the Australians,—see Figure Thirteen. It was used principally for killing rabbits and other small game. It is difficult to determine whether these last named weapons, such as the bolas and boomerang, or throwing stick, were used by the ancient inhabitants, for the reason that the material of which they are necessarily composed is not very

durable, and has prevented their preservation.

Arrows played an important part in Indian pictograph or picture language, and weapons made of exceptionally fine or handsome material upon which much skill and labor had been expended were accredited with peculiar powers, and handed down as heirlooms from generation to generation. But such things as are left of the handiwork of a fast disappearing race of people are rapidly being scattered, and unless some steps are taken to preserve our antiquities for the benefit of those who come after us, our students will be obliged to visit the museums of the Eastern States and Europe in order to study the abundant material that we have so carelessly allowed to be taken from our State.

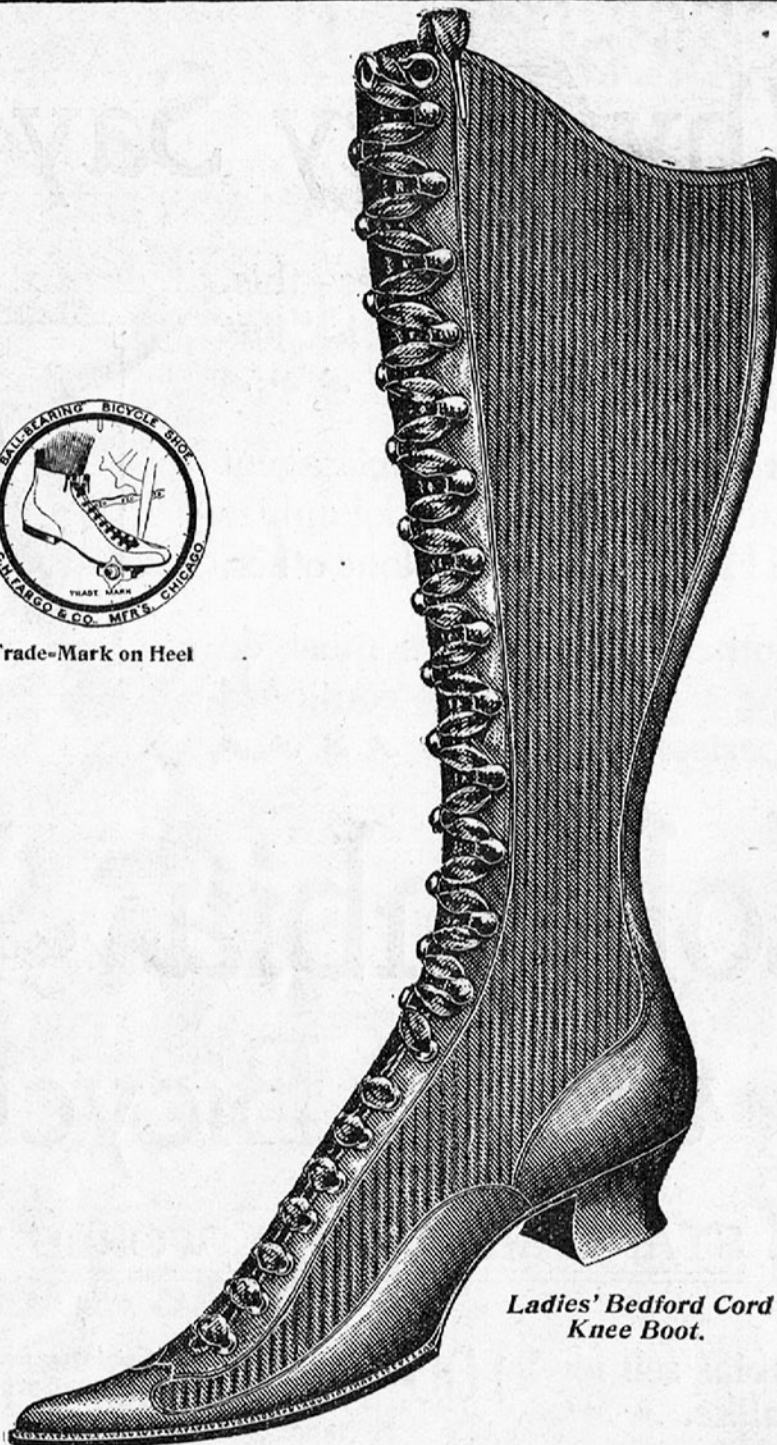
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end of article



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