

The History of Quarrying in California from the California Indians up to Present Time



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Stone Quarries and Beyond Website



California Indians Prior to the Missions





FIG. 2. Quarrying and working steatite at the Santa Catalina Island quarry. (After life group in the U. S. National Museum.)

Quarrying and Working Steatite at the Santa Catalina Island Quarry

(“Mines and Quarries of the Indians of California,” 1944)

Raymond Granite Dimension Stone Quarry, Madera County



Introduction

For this presentation, Tomas Lipps asked me to cover history of quarrying in California beginning with the California Indians up through present day quarrying.

As you may be aware, my husband Pat and I maintain a web site on stone quarries and related subjects. Our web site focuses mainly on the quarries beginning in the mid-1800s up through the early 1900s and includes some present-day quarries as well. So, looking back at the California Indians' quarrying and the present-day industry were both relatively new time periods for me – and that turned out to be very interesting and many times interconnected.

I have no formal geological training, so my perspective is usually from a historical viewpoint.

Mines and Quarries of the Indians of California

I found that the main source for very early California Indian quarries is the book, *Mines and Quarries of the Indians of California*,¹ by Robert F. Heizer and Adan E. Treganza originally published in 1944. According to this book, the California Indians gathered and quarried rocks and minerals for both industrial and ornamental purposes. About 142 aboriginal mine or quarry sites are shown on Map 6 from the above-cited book.

For some areas of California, such as the Santa Catalina Islands in Los Angeles County, there is a great deal of information about the Indian quarries and mines that are available both in texts and on the Internet.

The materials used by the California Indians were mainly stone, wood, bone, pottery, and skin. They never developed the use of metals such as gold. If the Californian Indians had valued gold, the history of California would have turned out very differently than it did because when the Mexicans and Spaniards came to California, they might have discovered the gold mines that were later discovered first in infamous 1848 gold rush.⁴

The most important function of the quarries “was to supply materials for the implements and tools to be used to secure subsistence (stone points for war or hunting weapons, mortars or metates² for grinding seeds, sling stones, chipped knives for meat cutting), or maintain life’s necessities (house-building, skin-dressing, clothing) or as luxuries (decorative or ceremonial objects).”³

The Indians on the Coastal Ranges of California are known to have used stone the earliest when they quarried obsidian, soapstone, red ochre, and chert in Sonoma County and Red ochre and schist in Contra Costa County.⁵

While the California Indians foraged for food, firewood, and materials to construct their tools, they discovered the stone resources located within the tribe’s territory. Over time and use, they learned how to utilize the raw stone resources within their boundaries. Generally, stone was quarried locally; but the California Indians traded with neighboring and distant Indian tribes for important sources for stone materials not available in their own area.

The California Indian tribes tended to live within known boundaries, and neighboring tribes tended to recognize each tribe’s boundaries. Individual tribes would barter for stone resources located in another tribe’s area. Sometimes articles such as bows, arrows, baskets, food, tanned skins, or shell ornaments were bartered for raw stone materials such as obsidian, soapstone, chert, hematite.

Many of the tribes devised accounts, traditions, and myths about how the rocks, minerals, and their surroundings were created and about what caused natural phenomena such as earthquakes in their search to understand their world. One example is quartz crystal which was considered valuable and lucky. Many California tribes searched for and quarried the stone.⁶

Mines and Quarries of the Indians of California

Sources



1. “Mines and Quarries of the Indians of California,” by Robert F. Heizer (former research Associate in Anthropology, University of California) and Adan E. Treganza (Former preparatory, Museum of Anthropology, University of California), California Division of Mines, Vol. 40, No. 3, July 1944, pp. 291-359.
2. “Matate: “A metate (or mealing stone) is a mortar, a ground stone tool used for processing grain and seeds, Wikipedia. <http://en.wikipedia.org/wiki/Metate>
3. *Mines and Quarries of the Indians of California*, pp. 298.
4. Ibid., pp. 306.
5. *Geologic Guidebook of the San Francisco Bay Counties*, California Dept. of Mines Bulletin 154, San Francisco, December 1951, pp. 238.
6. *Mines and Quarries of the Indians of California*, pp. 297.

California Indian Quarry Sites

(Quarry sites shown on this map are for the following materials: Magnesite, turquoise, chrysocolla, Chrysoprase, tourmaline, galena, granite, porphyry, pumice, sandstone, schist, slate, chalk, and salt.)



(Map 6, "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, California Division of Mines, Vol. 40, No. 3, July 1944, pp. 322)

Rocks, Minerals, and Decorative Stones Used by the Early California Indians

(Some of the rocks that are still quarried today included in this list are: Calcite, dolomite, granite, obsidian, onyx, porphyry, quartz crystals, sandstone, schist, steatite, serpentine, and turquoise.)

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[Chap. 3

ROCKS, MINERALS, AND DECORATIVE STONES USED BY CALIFORNIA INDIANS†

Material	Tribe or region	Use
Agate	Southern California	Arrowpoints
Agatized wood	San Diego and Imperial County	Arrowpoints
Actinolite	San Francisco Bay region	Charm stones, ceremonial
Alabaster	Central California	Charm stones, ceremonial
*Amazonstone		
Amethyst	Santa Barbara Channel region	Beads
Amphibolite schist	Sacramento Valley region	Ceremonial plummets
Basaltic rocks	Universal	Metates and mortars
Biotite	Sacramento delta region	Ornaments
Calcite	San Diego, Imperial County	Beads
*Carnelian		
Chalcedony	Southern California	Arrowpoints, scrapers
*Chalcopryite		
Chert	Universal	Arrowpoints, scrapers
Cinnabar	San Jose, New Almaden mine, Death Valley	Paint pigment
Chlorite schist	San Francisco Bay region	Charm stones
Chrysocolla	San Bernardino County	Unknown
Chrysotile asbestos	Sacramento Valley region	Ceremonial
Chrysoprase	Southern San Joaquin Valley	Unknown
Dolomite	Imperial County	Mortars
*Feldspar, white		
*Feldspar, pink		
Flint	Southern California	Arrowpoints
*Fluorite		
Galena	Santa Catalina Island, Owens Valley	Ceremonial amulets, paint
Garnet	Imperial County	Unknown
Gilsonite	Santa Barbara County	Ceremonial (?)
Gypsum	Southern California	Ornaments
Granite	Universal	Mortars and pestles
Graphite	Southern California desert	Body paint
Halite	Universal	Food
Hematite	Universal	Paint pigment
Jasper	Southern and central California	Arrowpoints, scrapers
Limonite	Universal	Paint pigment
Magnesian mica	Santa Barbara, Sacramento Valley regions	
Magnetite	Pomo tribe of Lake County	Bowls and jars
Malachite	Sacramento Valley region	Money and decoration
Manganese	Imperial County, San Diego County and Mono Lake	Paint pigment
Moss agate		
Muscovite	San Francisco and Drakes Bay areas	Ornaments
Obsidian	Universal	Arrowpoints and chipped tools
*Onyx		
Opal	Southern California	Arrowpoints
Porphyry	Southern California	Spearpoints
Pumice	Universal	Abrasive
*Pyrite		
Quartz crystals	Central and southern California	Ceremonial, arrowpoints
Quartz, rose	San Diego and Imperial County	Arrowpoints
*Quartz, smoky		

† After Ball, 1941; supplemented by the present authors.

* Listed by Ball, 1941; as used by Indians.

CALIFORNIA INDIAN MINES AND QUARRIES

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ROCKS, MINERALS, AND DECORATIVE STONES USED BY CALIFORNIA INDIANS—Continued

Material	Tribe or region	Use
Sandstone	Universal	Metates, mortars, abrasive
Schist (micaceous)	Southern California	Arrow straighteners
Steatite	Universal	Vessels, pipes, ornament
		arrow straighteners
Serpentine	San Francisco Bay region	Charm stones
Tourmaline	Mesa Grande, San Diego County	Ornaments
Turquoise	San Bernardino, Inyo Counties	Ornaments
Zincblende (sphalerite)	Sacramento Valley region	Ceremonial

("Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, California Division of Mines, Vol. 40, No. 3, July 1944, pp. 342 and 343)

California Indians Quarrying and Chipping Obsidian



FIG. 1. California Indians quarrying and chipping obsidian. (After life group in U. S. National Museum.)

(Fig. 1. "California Indians quarrying and chipping obsidian. (Afterlife group in U.S. National Museum). "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 323)

California Indian Quarry Ownership & Intertribal Trade

Researchers have concluded that there was no private, individual ownership of the California Indian quarry sites. The stone resources belonged to the group; and as such, belonged to all tribal members.

Some tribal members developed abilities “to produce finished or manufactured articles from a particular stone material.” Because of this, the manufacture of finished articles from the quarried stone was more advantageous than owning a quarry site.

If there was a surplus, the stone was traded with other tribes using the barter system. The intertribal bartering caused stone to be found sometimes far from the local where it was quarried. While Indians preferred to use the resources found within their own tribal boundaries, they could transport needed stone and other needs by back-packing.

One example of this trade is of the Masut group of the Pomo tribe who traveled farther than 100 to 150 miles to obtain raw magnesite and obsidian from quarries owned by other Pomo groups.

Because the Sacramento and San Joaquin delta region is a flood plain and lacks in stone resources, any stone found in that area would have had to be imported from other tribes and locations.

Mines and Quarries of the Indians of California, pp. 299.

Map Showing Location of Tribes of California Referred to in this Paper

Below is a list of the California Indian tribes shown on Map 8:

Lassik	Wintu
Kato	Patwin
Yurok	Maidu
Wiyot	Lake Miwok
Yuki	Plains Miwok
Modoc	Northern Miwok
Shasta	Central Miwok
Achomawi	Southern Miwok
Atsugewi	Costanoan
Yana	Northern Yokus
Karok	Southern Yokus
Chimariko	Eastern Mono
Pomo	Northern Paiute
Chumash	Western Mono
Diegueño	Panamint
Kamia	Gabrielino
Yuma	Lui-seño
Mojave	Cahuilla

Location of Tribes of California



(Map 8, "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, California Division of Mines, Vol. 40, No. 3, July 1944, pp. 322)

Quarrying & Mining Methods & Tools of the Early California Indians

The California Indians did not generally quarry on a large-scale, continuous basis, although below are examples of some sites that were quarried for varied lengths of time:

- The soapstone quarries on Santa Catalina Island
- The Cinnabar paint mine of New Almaden in Santa Clara County
- The Glass Mountain obsidian quarries in Modoc County, and
- The Stonyford salt seepage, one-half miles north of the town of Stonyford in Colusa County

Interestingly, the researchers did not find any evidence that any California tribe included a special class of miners in their group except for those who specialized in the production of finished stone articles.

One example of this specialization was found in the Santa Catalina Gabrieleño Indians where evidence was found that some individuals specialized in making finished soapstone pots.

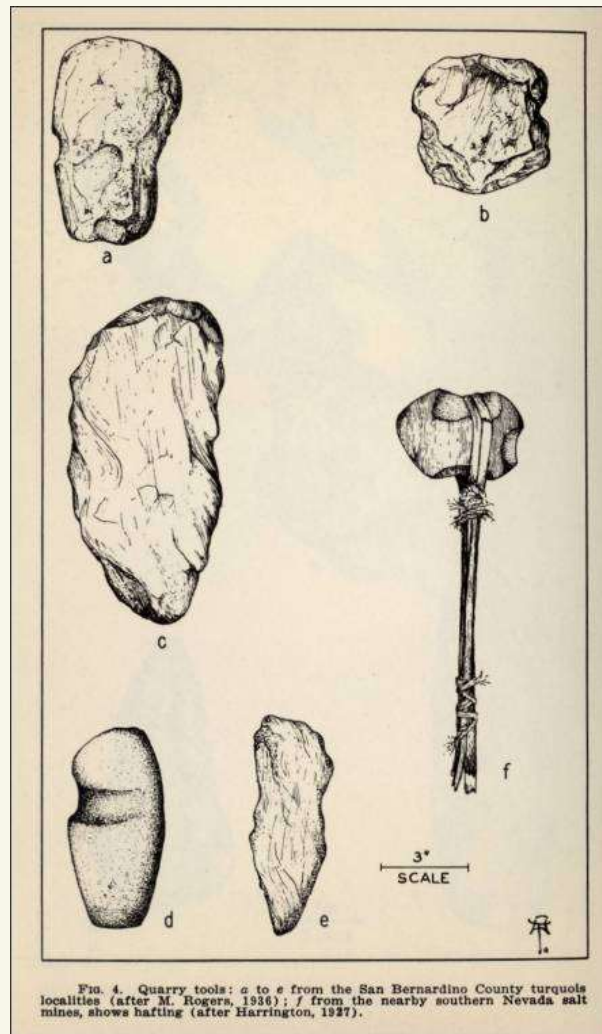
Indian Soapstone Quarry



INDIAN SOAPSTONE QUARRY
(See Page 25 for Description)

“History of Santa Catalina Island,” by Mrs. M. Burton Williamson, in *Annual Publication of the Historical Society of Southern California and the Pioneers of Los Angeles*, Part 1, Vol. 1, 1904, between pp. 24 and 25.

Examples of Quarry Tools Used by California Indians



(Fig. 4. **Quarry Tools:** a to e from San Bernardino County turquoise localities; f from nearby southern Nevada Salt Mines, showing hafting,” “Mines and Quarries of the Indians of California,” by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 326)

Examples of Quarrying Methods & Tools Used by California Indians (Contd.)

Use of Stone Implements – Chisels, Hammers, Scrapers

To work their quarries, the California Indians used such tools as hafted stone hammers, stone hand picks, chisels, wedges, mauls which were held or used with a hafted wood handle, and quartzite scrapers.¹

¹ Mines and Quarries of the Indians of California, pp. 344-345.

Examples of Quarry Tools Used by California Indians (Contd.)

Quarry Tools (Fig. 3)

In *Mines and Quarries of the Indians of California*, the authors state that some of the Indian workings were 15 feet in diameter by 5 feet deep at Pots Valley on Santa Catalina Island.¹

Schumacher, in his 1878 article, “Ancient Olla Manufactory on Santa Catalina Island, California,” wrote that at the southeastern end of Santa Catalina Island is an area of about 2 square miles he counted not less than 300 quarry pits.”²

In this next slide you can see examples of quarry picks used on Santa Catalina Island:

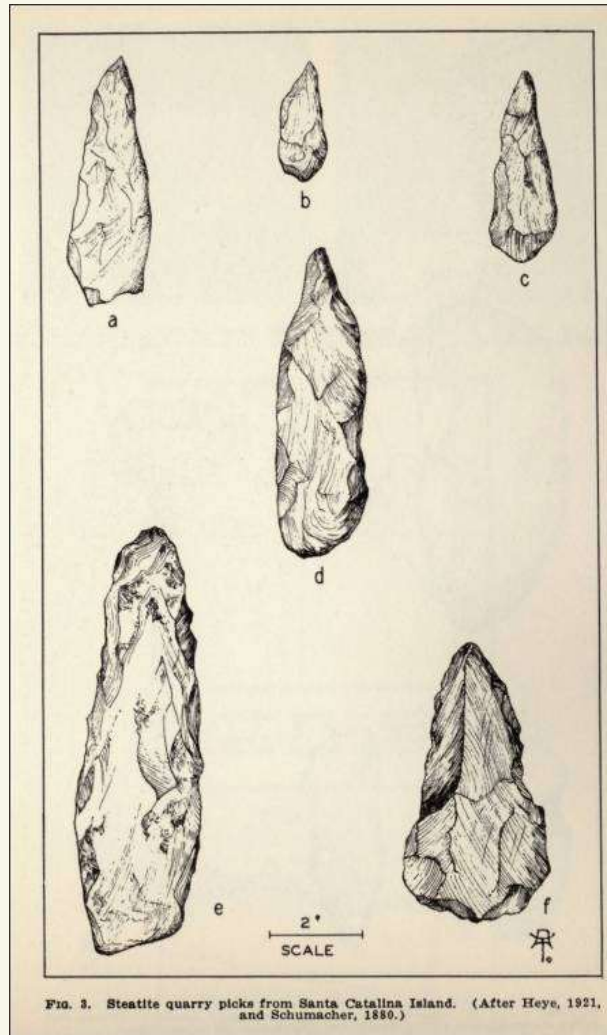
Fig 3-e is a sketch of a hard slate chisel, and

Fig. 3 a, b, c, and d, are examples of stone picks that were used to quarry the Santa Catalina Island soapstone (steatite).

¹ *Mines and Quarries of the Indians of California*, pp. 301.

² “Ancient Olla Manufactory on Santa Catalina Island, California,” P. Schumacher, *American Naturalist*, Vol. 12, 1878, pp. 629.

Quarry Tools – Steatite Quarry Picks from Santa Catalina Island



(Fig. 3. "Steatite Quarry Picks from Santa Catalina Island," "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 325)

Examples of Quarrying Methods & Tools Used by California Indians (Contd.)

Sketch of Tools Being Used at the Santa Catalina Island Quarry by California Indians



(“Fig. 2. “Mines and Quarries of the Indians of California,” by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 324)

Examples of Quarrying Methods & Tools Used by California Indians (Contd.)

Open Pit mining of the Turquoise Mines of San Bernardino County

According to *Mines and Quarries of the Indians of California*:

“...Exposed turquoise veins were followed to depth (12 feet in some cases) in open pits by breaking and crushing the waste mass with hafted stone axes and hammers...and throwing the muck out with a hand scoop made from a tortoise carapace or an animal shoulder blade shovel. Heavy stone pointed picks (fig. 3) weighing up to eight pounds were employed to break out the stone, and there is some indirect evidence that wedges were also used. No signs of the fire-and-water method of breaking rock was found, but there is evidence of its use in the Arizona-New Mexico region from whence the miners journeyed....”¹

Use of Fire in Quarrying by California Indians

Using fire to split stone has been found to have been used by the Egyptians and Romans and in Great Britain and the New England states of America.²

In California, the only reference on record of the use of fire for quarrying refers to the northern Sacramento Valley Wintu who split off blocks of obsidian at Glass Mountain...by building a fire against the rock....” In *Mines and Quarries of the Indians of California*, the authors speculated that California Indians probably learned the method from North Americans Indians who were widely known to use fire-splitting.

1. *Mines and Quarries of the Indians of California*, pp. 301-302.
2. *The Art of Splitting Stone: Early Rock Quarrying Methods in Pre-industrial New England, 1630-1825*, by Mary Elain Gage and J. E. Gage, Powwow River Books, 2005. http://www.stonestructures.org/html/quarry_book.html

Examples of Quarrying Methods & Tools Used by California Indians (Contd.)

Subsurface & Use of Float Material & Gravel Deposits to Collect Rocks

Many times the California Indians used surface, unweathered material which they obtained by digging shallow pits.

They were also known to widely use float material and gravel deposits.

One example of this occurred in the Mojave Desert, between Barstow and Crucero where chert and jasper boulders were found. According to the authors of *Mines and Quarries of the Indians of California*, the exposed gravel strata showed evidence of picking over by the Indians, presumably over a long period of time.¹

Large-Scale Earth Removal Capability in Southern California

The Indians in southern California were known to excavate deep water wells, and these wells demonstrated their capability to excavate mines and quarries. They were also capable of large-scale earth removal if needed. These techniques could have been applied to mining operations.

The chief well excavators of southern California were the Kamia of Imperial Valley and Cahuilla of Coachella Valley.¹

1. *Mines and Quarries of the Indians of California*, pp. 301-302.
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1. *Mines and Quarries of the Indians of California*, pp. 303.

Some Uses of Stone by the California Indians

Steatite	(Soapstone, etc.) – Used for smoking pipes, grooved steatite arrow shaft straighteners, bowls, pots, drip-pans for grease, frying pans, weights for digging sticks, for ‘chalk’ to mark stones, and ornaments. Powdered steatite was used as talcum on babies to prevent chafing.
Granite	mortars and pestles, used as crushed grit to temper, such as granite, to the , clay by southern California Indian potters.
Porphyry	Pieces from large float boulders were used for large flaked blades and scrapers
Sandstone and allied	Used for flat grinding slabs (metates) and mortars; Float sandstone in flat slab
Sedimentary Rocks	form for flat metates for grinding seeds
Slate	Used for quarry picks and chisels
Alabaster	Translucent, banded alabaster was used for “charmstones”

Steatite Quarrying by California Indians

Steatite (Map 2 - next slide)

Of all the Indian quarries, the most documented appears to be the Steatite quarries.

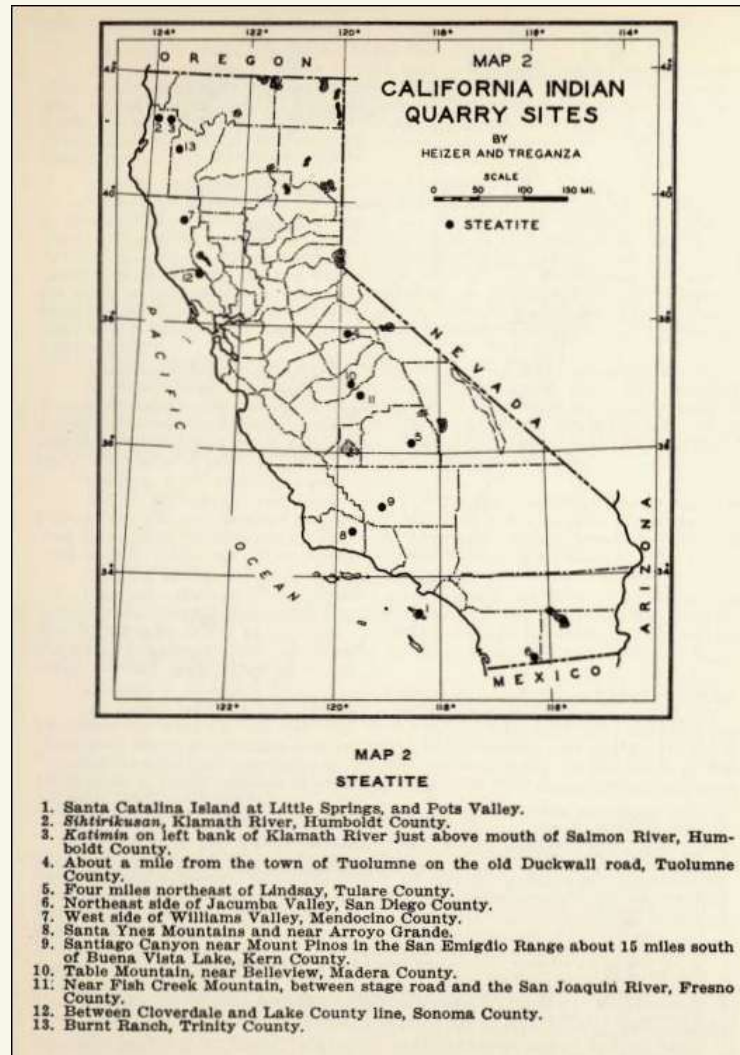
The term “steatite” was used to include different but closely allied minerals such as soapstone, magnesian mica, and talc in *Mines and Quarries of the Indians of California*.

Steatite was used by the California Indians because it was a soft, easily worked stone that had heat-tolerant qualities.

Tubular steatite pipes have been found throughout California, and flat drip-pans of steatite have been found to have been made by the Klamath river tribes. Pans similar to the flat drip-pans were produced by the Chumash tribe of the Santa Barbara Channel region and used to roast wild seed cakes.¹

1. *Mines and Quarries of the Indians of California*, pp. 306.

Map of Steatite Quarrying by California Indians



(Map 2, "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 315)

Steatite Quarrying by California Indians (Contd.) – Uses of Steatite

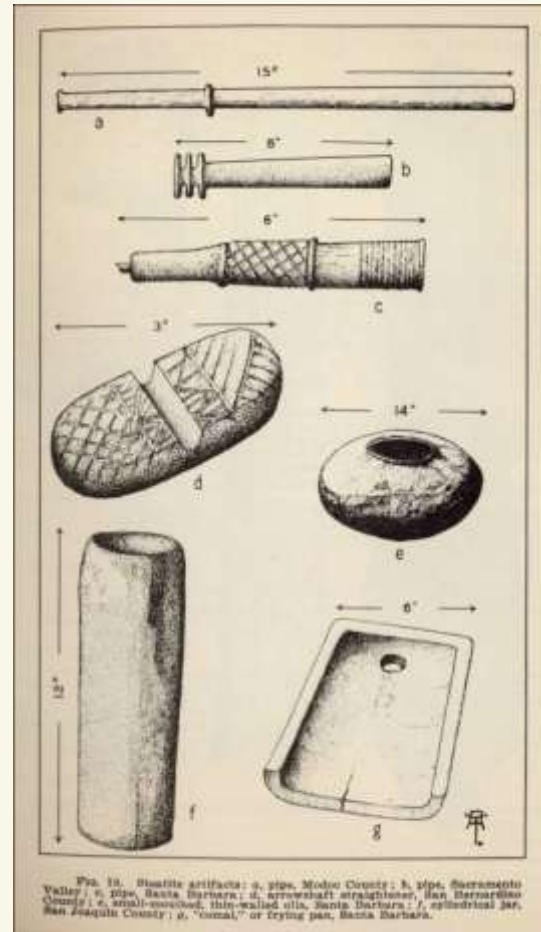
Heated steatite lumps were used by the Maidu Indians of Auburn, Placer County, to drop into liquid in tightly woven baskets, using a process known as “stone boiling,” to cook food. Southern California tribes were known to make steatite bowls to cook their wild seed mush. Asphaltum was used by some California Indian tribe to cover the bottom of stone pots so that they could be set directly over a fire. The “Tall cylindrical jars of steatite were made by the ancient peoples of the Stockton-Lodi region (fig. 10f) but their use is unknown.” Steatite was also used for beads and pendants.

This next slide (Fig. 10) which presents sketches of stone artifacts made from steatite:

- a, pipe**, Modoc County;
- b, pipe**, Sacramento Valley;
- c, pipe**, Santa Barbara;
- d, arrowshaft straightener**, San Bernardino County
- e, small-mouthed, thin-walled olla**, Santa Barbara;
- f, cylindrical jar**, San Joaquin County
- g, “comal” or frying pan**, Santa Barbara

Steatite Quarrying by California Indians (Contd.) - Steatite Artifacts

a, pipe, Modoc County; **b, pipe**, Sacramento Valley; **c, pipe**, Santa Barbara; **d, arrowshaft straightener**, San Bernardino, San Joaquin County; **e, small-mouthed, thin-walled olla**, Santa Barbara; **f, cylindrical jar**, San Joaquin County



(Fig. 10., *Mines and Quarries of the Indians of California*, by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 328)

Steatite Quarrying by California Indians

Localities of Steatite/Soapstone Quarrying (Contd.)

Soapstone/steatite was quarried by many California Indian tribes. Following are some of the localities of those quarries:

Soapstone/Steatite on Santa Catalina Island:

In the Santa Barbara Channel region, soapstone was of primary importance. The major source for most of the steatite in that area was on Santa Catalina Island. The main quarries on the island were located 10 miles northeast of Avalon at Pots Valley and Little Springs.¹

According to Kroeber in 1925, the coming of the Spaniards interrupted the native Catalina steatite industry because the Indians were gathered into the mission, and the Indians were introduced to metal containers that were superior to the steatite bowls made by the Indians.¹

1. *Mines and Quarries of the Indians of California*, pp. 307.

Steatite Quarrying by California Indians

Localities of Steatite Quarrying (Contd.)



(“Fig. 112. Traces of aboriginal work in soapstone quarry, Santa Catalina Island.” *Handbook of Aboriginal American Antiquities: The Lithic Industries*, W. H. Holmes, Bureau of American Ethnology, Bulletin 30, Part 1, 1919, pp. 239)

Steatite Quarrying by California Indians

Localities of Steatite Quarrying (Contd.)

- **San Clemente Island & Santa Rosa Island** – The mainland Indians who lived in the San Rafael Mountains in Santa Barbara County, quarried soapstone on San Clemente Island (Los Angeles County) and Santa Rosa Island (Santa Barbara County).¹
- **On the Klamath River, Humboldt County** – The Karok Indians (of the Klamath River basin of northwestern California) quarried steatite and used it to make smoking pipe bowls, flat paving stones, and flat trays used to catch grease.¹
- **Near Tuolumne, Tuolumne County** – The Sierra Miwok tribe used steatite to create bowls and arrowshaft straighteners. Powdered steatite was used to relieve chafing on babies under their arms and between the legs.² This type of ancient talcum powder was also know to have been used by the Pomo tribe of Lake County, the Washo of the Lake Tahoe area, and the Yokuts of the Tulare Lake region.³
- **Northeast of Lindsay, Tulare County** – “There are signs of marks of stone implements and rejected of bowls and cooking slabs. Also at this location are signs are visible of a modern-time commercial talc quarry.”²
- **Mouth of Carrizo Gorge in the northeast portion of Jacumba Valley, San Diego County** – There is a known steatite deposit at the mouth of the Carrizzo Gorge.² “The Kamia tribe of the Imperial Valley are said to have obtained soapstone for implements in the Jacumba Valley, though whether from this deposit is not stated.”⁴
- **West side of Williams Valley, Mendocino County** – “Ancient village sites in Williams Valley area produce many worked pieces of this steatite.”⁵
- **Santa Ynez Mountains, and near Arroyo Grande.**²

1. *Mines and Quarries of the Indians of California*, pp. 307.

2. *Ibid.*, pp. 308.

3. *Miwok Material Culture*, by S. A. Barrett and E. W. Gifford, Public Museum, City of Milwaukee Bulletin, Vol. 2, No. 4, 1933, pp. 211.

4. *The Kamia of Imperial Valley*, E. W. Gifford, Bureau of American Ethnology, Bulletin 97, 1931, pp. 29.

5. *Archeological Survey of Round Valley and Adjacent Drainage*, (unpublished manuscript, M.S., no date), by A. E. Treganza, C. E. Smith, and W. D. Weymouth, & *Mines and Quarries of the Indians of California*, pp. 308.

Steatite Quarrying by California Indians

Localities of Steatite Quarrying (Contd.)

- **Santiago Canyon, near Mount Pinos in the San Emigdio Range about 25 miles south of Buena Vista Lake.**¹
- **Table Mountain, near Belleview in Madera County** – “The Chukehausi subtribe of the Yokuts get steatite at this locality....”²
- **Fish Creek Mountain in Fresno County** – “Quarry situated along a small creek between the stage road and San Joaquin River, to the right of the road to Auberry.”³
- **Northeast of Cloverdale, between Cloverdale and Lake County line on old Indian trail** - “Steatite was used by the Pomo for pipe bowls, for ‘chalk’ to mark stones, and in powdered form as talcum for babies...”⁴
- **Near Burnt Ranch on North Fork of Trinity River just above mouth of New River, Trinity County** - “The Chimariko Indians gathered steatite from a ledge here and made eating vessels and water containers of it. (Driver, 1939, p. 388).”⁵

(NOTE: Detailed information about the steatite quarries that were quarried by the Indians listed above is available in *Mines and Quarries of the Indians of California*, pp. 307-308.)

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1. *Archeological Investigations at Buena Vista Lake, Kern County, California*, W. R. Wedel, Bureau of American Ethnology, Bulletin 130, 1941, pp. 53 & *Mines and Quarries of the Indians of California*, pp. 308.
 2. *Clear Lake Pomo Society*, E. W. Gifford, University of California Publications, *Archeology and Ethnology*, Vol. 18, No. 2, 1926, pp. 25, & *Mines and Quarries of the Indians of California*, pp. 308.
 3. *Clear Lake Pomo Society*, E. W. Gifford, University of California Publications, *Archeology and Ethnology*, Vol. 18, No. 2, 1926, pp. 25, & *Mines and Quarries of the Indians of California*, pp. 308.
 4. “Culture Element Distributions,” E. W. Gifford and A. L. Kroeber, IV, Pomo, University of California Publications, *American Archeology and Ethnology*, Vol. 37, No. 4, 1937, notes 252, 253, & *Mines and Quarries of the Indians of California*, pp. 308.
 5. *Mines and Quarries of the Indians of California*, pp. 308.

Steatite Quarrying by California Indians (Contd.)

Quarrying Steatite at Pots Valley, Santa Catalina Island

At Pots Valley on Santa Catalina Island, steatite was quarried in a considerable quantity. Steatite was used mostly for globular vessels which the Indians "...worked out the exterior form while the base of the vessel was still attached to the bedrock. The mass was broken off at the base and was then ready for excavation of the interior and smoothing of the sides..."¹

Another description of the process that the Indians used is that the steatite bowls were usually formed "by pecking out the bowl form in solid rock and then breaking it off by undercutting at the base." This method was known to have been used at Santa Catalina Island and on the Klamath River.²

A portion of this 1878 article, "Indian Quarries for Vessels of Soapstone,"³ describes the discovery of the soapstone quarry on Santa Catalina Island by Paul Schumacher:

"Of the one at Santa Catalina, its discoverer, Paul Schumaker,³ thus writes in the *American Naturalist*:

'During my explorations along the Pacific coast, I paid much attention to the discovery of the workshops of one of the most beautiful articles of true aboriginal workmanship. It is the *olla*, a cooking vessel made of a species of steatite, the pot-stone, or *lapis ollaris* of old, of which Theophrastus and Pliny speak as a material used for the manufacture of vessels among the ancient Eastern nations...The pits and quarries revealed the busy band of the aborigines, among the *debris*, and in the partly-covered pits where cooking vessels were found in all stages of finish, from the boulder but partly worked from the rock and still firmly attached to it, the globular form roughly moulded, the boulder in which the excavation has already been commenced, and so on to the smoothly finished pot.' The implements used were stone of a harder kind, usually flint, and were found in numbers at the pits. Besides pots, 'flat dishes, cups, pipes, stone-rings which were used as weights for digging-sticks, and all kinds of trinkets,' were made. These quarries and pits occupied a space about two miles square, and numbered not less than three hundred."

If you interested in reading more about the Santa Catalina stone quarries, there are many articles and book sections available on the subject. You will find a few of these articles and books listed in the References and Resources section of my presentation, including "Indian Quarries for Vessels of Soapstone," by James E. Rhoads, 1878-1879.

1. *Mines and Quarries of the Indians of California*, pp. 301.

2. *Ibid.*, pp. 344-345.

3. The correct spelling of "Schumaker" is "Schumacher."

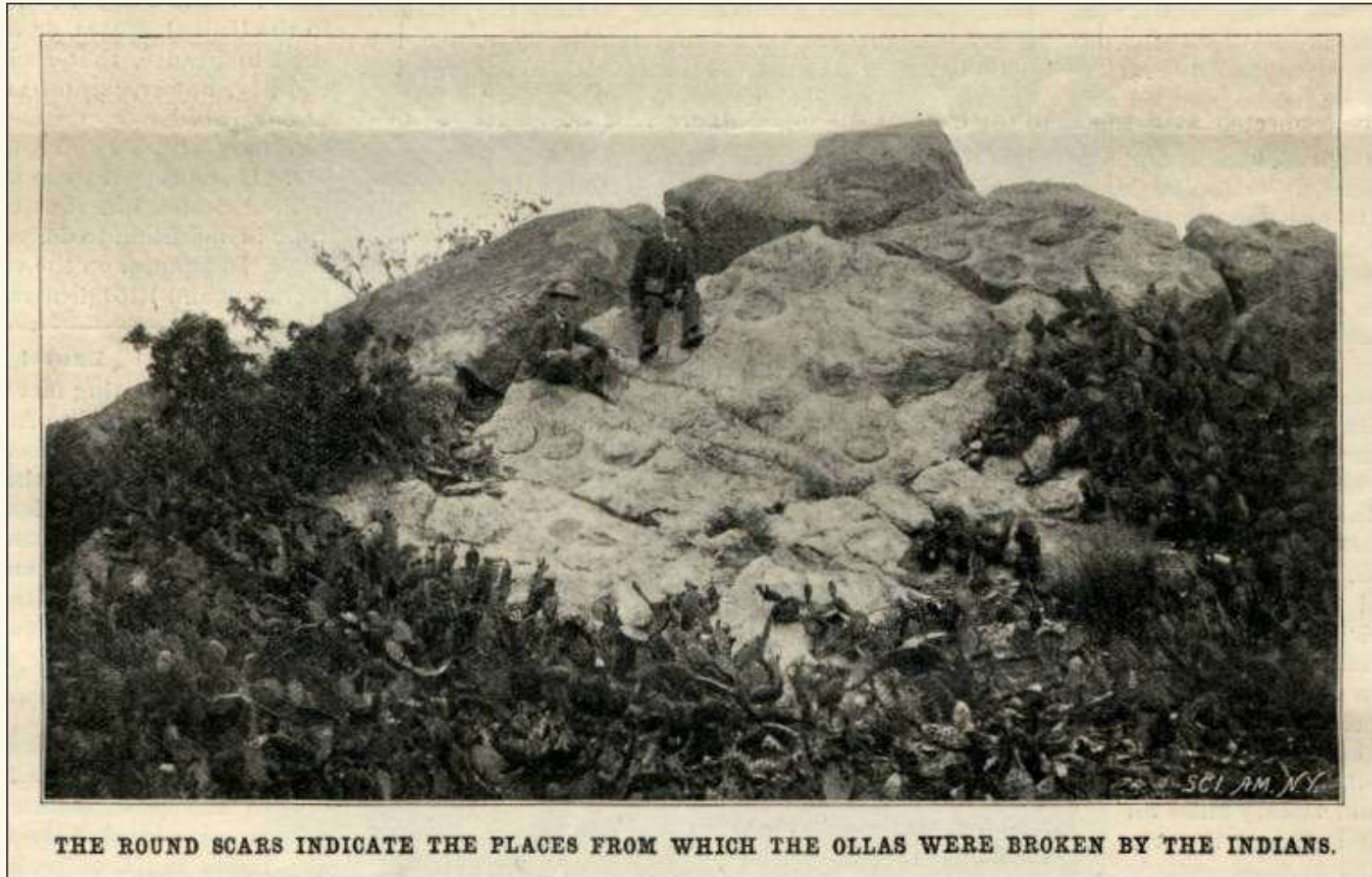
Quarrying and Working Steatite at the Santa Catalina Island Quarry by California Indians



FIG. 2. Quarrying and working steatite at the Santa Catalina Island quarry. (After life group in the U. S. National Museum.)

(“Fig. 2. “Mines and Quarries of the Indians of California,” by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 325)

Quarry Site on Santa Catalina Island that local Indians used to form ollas to make globular vessels



("A California Verde Antique Quarry," *Scientific American*, Vol. LXXXI, No. 25, December 16, 1899, pp. 393-394, presented on our web site.) http://quarriesandbeyond.org/states/ca/pdf_files/ca-santa_catalina_island_quarry_olla_site_1899.pdf

Steatite Quarrying by California Indians

Aboriginal Steatite Workings at Santa Catalina Island Quarry

(Circles represent spots where globular masses were undercut at the base)

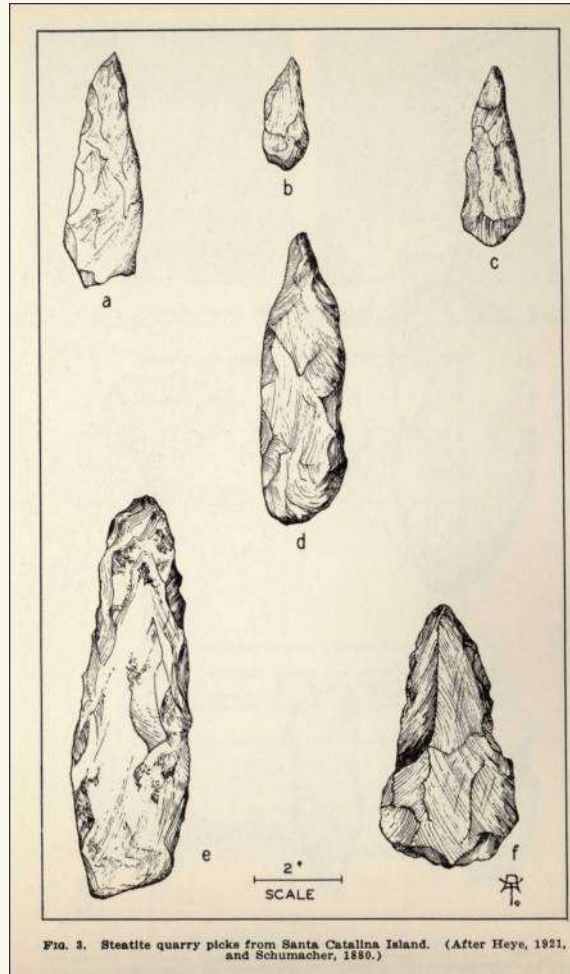


FIG. 8A-8B. Aboriginal steatite workings at Santa Catalina Island quarry (after Holmes, 1902). Circles represent spots where globular masses were undercut at the base.

(“Fig. 8A-8B. Aboriginal steatite workings at Santa Catalina Island quarry. Circles represent spots where globular masses were undercut at the base.” “Mines and Quarries of the Indians of California,” by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 328)

Steatite Quarrying by California Indians (Contd.)

Steatite Quarry Picks from Santa Catalina Island



(Fig. 3. "Steatite Quarry Picks from Santa Catalina Island," "Mines and Quarries of the Indians of California," by Robert F. Heizer and Adan E. Treganza, Vol. 40, No. 3, July 1944, pp. 325)

Santa Catalina Island Road and Trail Map

Map courtesy of the Santa Catalina Island Conservancy



Quarrying by California Indians

Cinnabar Mined at New Almaden, Santa Clara County

At New Almaden in Santa Clara County, there lies a cinnabar deposit that the Indians mined which had a fairly long tunnel in which one man could work at a time. The mine was being worked in 1800, although it was probably known for centuries before this date. According to *Mines and Quarries of the Indians of California*: “...Rounded stream pebbles, which probably served as hammers, are mentioned as the mining tools, but there were undoubtedly other types used as well, such as picks and mauls. Torches, too, were probably used, since a small, long tunnel would be too dark inside to see work.” The Indians used the cinnabar for red paint.¹

1. *Mines and Quarries of the Indians of California*, pp. 302.

Granite Quarrying by California Indians

According to *Mines and Quarries of the Indians of California*, California Indians primarily obtained granite from boulders and gravel sources. Only one locality is known from which granite was worked – the Jacumba Valley in San Diego County.

Sometimes the Indians used flat exposures of granite in the Sierras where indentations for mortar holes can be found today. Granite mortars and pestles can be found in many California museums indicating how extensively the granite was used for these purposes.

Jacumba, San Diego County: “The Kamia tribe which formerly occupied the Imperial Valley secured granite here for mortars and pestles (Gifford, 1931, p. 41).”

Stone Mortars & Pestles at the Raymond Museum, Madera County



On left are 2 granite mortar & pestles made by local Indians, according to Lynn Northrop, Raymond Museum.

“This Indian artifact found in 1915 by Vernon Morris’ mother, Estelle, as she walked behind his father's plow in the Knowles area at the Wilson Dairy.”



Locations of Known California Indian Porphyry Source

Jacumba Valley, San Diego County – “Indians chipped off pieces of porphyry from large float boulders that occur in the Jacumba Valley. They used these pieces for large flaked blades and scrapers. (A. E. Treganza, personal observation)”¹

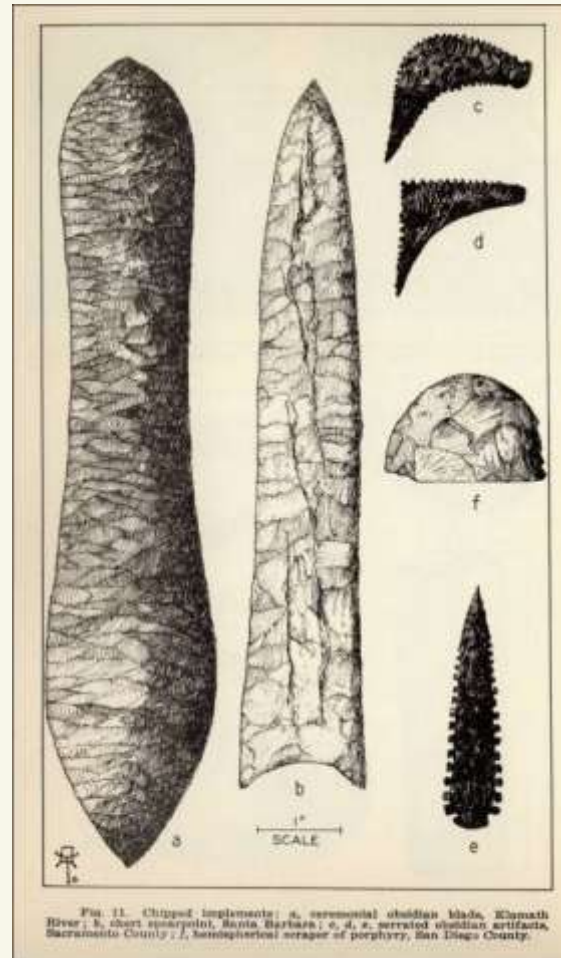


FIG. 11. Chipped implements: a, ceremonial obsidian blade, Klamath River; b, chert spearpoint, Santa Barbara; c, d, e, serrated obsidian artifacts, Sacramento County; f, hemispherical scraper of porphyry, San Diego County.

1. *Mines and Quarries of the Indians of California*, pp. 337.
2. “Fig. 11. Chipped implements: a, ceremonial obsidian blade, Klamath River; b, chert spearpoint, Santa Barbara; c, d, e, serrated obsidian artifacts, Sacramento Count; f, hemispherical scraper of Porphyry, San Diego County.” Ibid., pp. 330.

Locations of Known California Indian Sandstone & Allied Sedimentary Rocks

According to *Mines and Quarries of the Indians of California*, California Indians used sandstone and allied sedimentary rocks for flat grinding slabs (metates) and mortars. Some of the mortars made by the Chumash Indians of Santa Barbara were large ceremonial mortars, some weighing several hundred pounds.

Flat sandstone slabs were known to be used by the Pomo Indians during the process of manufacturing disk beads.¹

1. *Mines and Quarries of the Indians of California*, pp. 337.

Serpentine Quarrying on Santa Catalina Island

Serpentine was also quarried on Santa Catalina Island. *(If you're interested in reading more about the history of the island's serpentine quarries, you can read more about the old quarries in the 1899 article, "A California Verde Antique Quarry," by Prof. Charles F. Holder, that's available on our web site in the Los Angeles quarry section and also listed in the References and Resources section of this presentation.)*

“Before passing from the occupation of Santa Catalina by the aborigines, to its usurpation by the white man, some notice must be taken of history written by their own hands as they shaped their implements of bone and stone and carved their ‘ollas’ from the serpentine quarries....”¹

“The soapstone specimens are made from the soapstone¹ quarries of Empire Landing, or Potts Valley. Mexican Joe says there is one big rock from which as many as 64 pots have been cut.

1. “History of Santa Catalina Island,” by Mrs. M. Burton Williamson, in *Annual Publication of the Historical Society of Southern California and the Pioneers of Los Angeles*, Part 1, Vol. 1, 1904, pp. 22-23. (This book is available on Google Books – Full View Books.)
http://books.google.com/books?id=qcE1AAAAIAAJ&dq=the+history+of+santa+catalina+island&source=gbs_navlinks_s

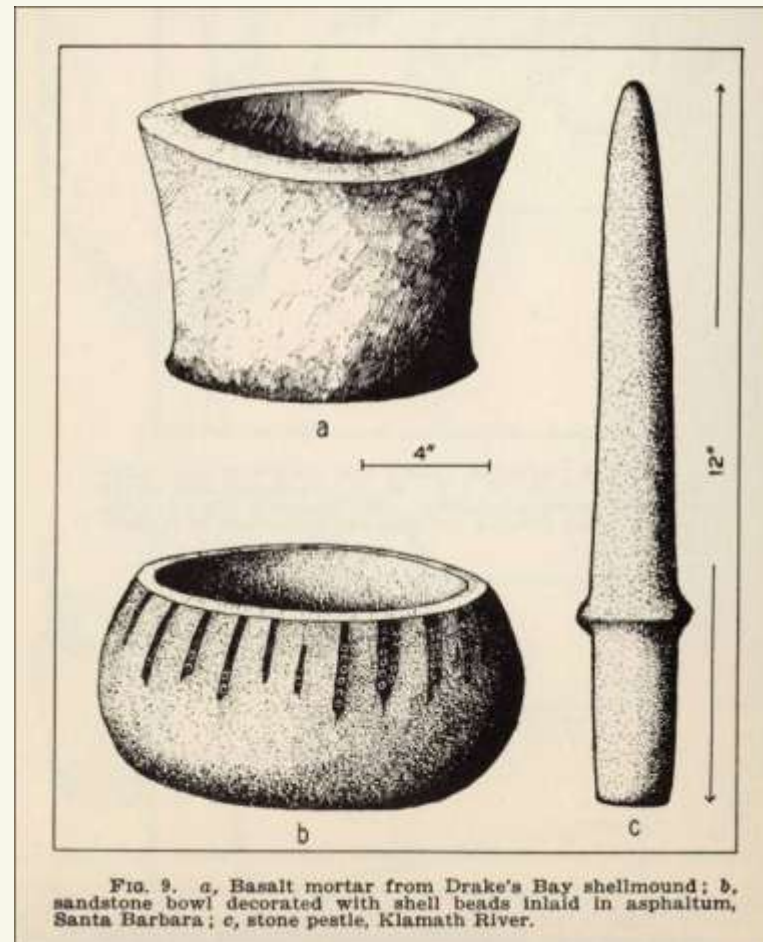
Serpentine Quarry & Mill, Santa Catalina Island (circa 1899)



SERPENTINE QUARRY AND MILL, SANTA CATALINA ISLAND, CAL.

("A California Verde Antique Quarry," *Scientific American*, Vol. LXXXI, No. 25, December 16, 1899, pp. 393-394, presented on our web site.) [ca-scientific_amer_1899_cat_is_quarry_photo](http://quarriesandbeyond.org/states/ca/pdf_files/ca-santa_catalina_island_quarry_olla_site_1899.pdf)
http://quarriesandbeyond.org/states/ca/pdf_files/ca-santa_catalina_island_quarry_olla_site_1899.pdf

Stone Artifacts Made by California Indians



“Fig. 9G. **a. Basalt mortar** from Drake’s Bay shellmound; **b. sandstone bowl** decorated with shell beads inlaid in asphaltum, Santa Barbara; **c, stone pestle**, Klamath River.” *Mines and Quarries of the Indians of California*, by Robert F. Heizer and Adan E. Treganza, pp. 328.

Location of known California Indian Sandstone Source

Foothills of Sierra de Juarez Mountains, Imperial County - “Float sandstone in flat slab form is abundant in this region. The Indians selected suitable detached slabs and used them for flat metates for grinding seeds. (Holmes, 1902, p. 185; A. E. Treganza, personal observation.)”¹

Location of Known California Indian Slate Source

According to *Mines and Quarries of the Indians of California*, California Indians extensively used slate. “A hard, close-grained variety was employed by the ancient peoples of the Sacramento-San Joaquin delta region.”¹

Santa Catalina Island, near the pass above Pots Valley: “An extensive exposure where tools were made for quarrying the nearby Catalina soapstone is described by Schumacher. The slate was first roughly broken out of the outcrop, then pieces suitable for quarry picks and chisels were selected and trimmed down into completed form. One of these implements is shown on figure 3 (Schumacher, 1880)”²

Location of known California Indian Alabaster Source

Lower Mokelumne-Cosumnes River Region - “Certain ‘Early Sacramento’ period archeological sites in the lower Mokelumne-Cosumnes River region have produced ‘charmstones’ of translucent, banded alabaster. The source of this material is probably the limestone caves of the Sierra Nevada directly to the east, though thermal spring deposits in Solano County might have been used (Waring, 1915, p. 162). . . .”²

1. *Mines and Quarries of the Indians of California*, pp. 338.

2. *Ibid.*, pp. 339.