

Gold Mining History and Geology of the Sierra Nevada Range

Orange County Mineral Society

11 Mar 22



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The Forty-Niner

Gold Mining in USA



SOME EARLY GOLD DATES

Early 1500's – Spanish legends of California golden riches. World different had Spanish exploited deposits

1753 – Ponce de Leon lands in Florida - told of Indian tribes with much gold. Indigenous Indians cry out -
“Well, there goes the neighborhood”

1799 – 28-pound gold nugget found Reed, NC

First American “gold rush” from 1799 to 1828

NC gold mining produced \$110,000 @ \$20/oz. = 345#



**Reed, North Carolina
Appalachian slate belt**

1829 – Gold discovered near Richmond, VA
By 1833 Belzoro Mine (Bel Oro) operated for many years.
Traced to pyrite+gold quartz vein in schist-gneiss



**aka Belzow Mine
Goochland Co. VA**



~1830s – Gold rushes in GA and AL results in US Mints in Charlotte, Dahlonega, and New Orleans.

1804 to 1866 – Appalachian production amounted to \$20,000,000, far exceeding earlier NC show
Eastern miners paramount in exporting means and methods to CA when gold was discovered there **1848**

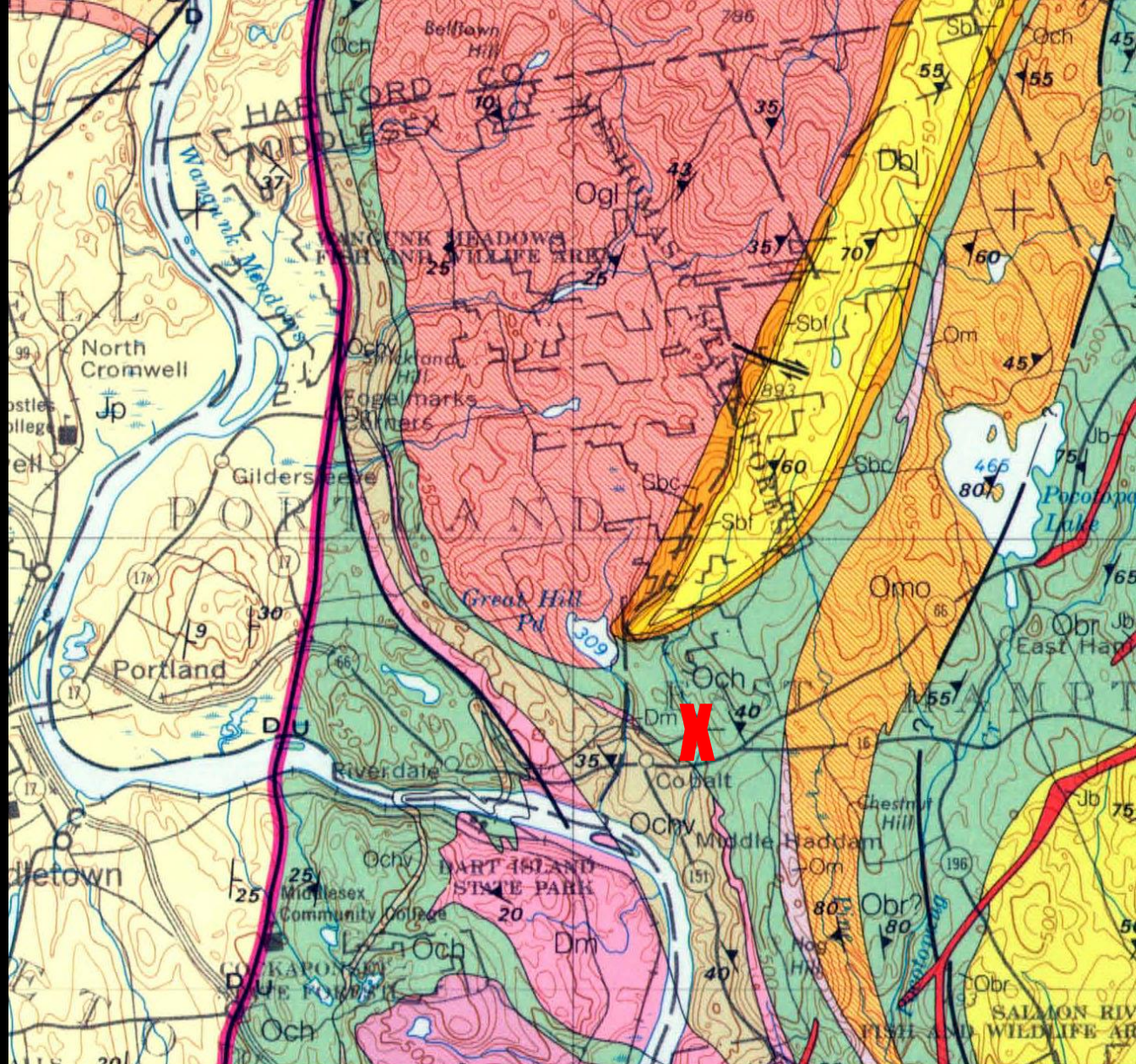
Appalachian gold in Connecticut



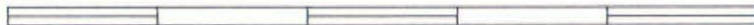
**Arsenopyrite Mine,
Cobalt, CT**

Cobalt Mine

Cobalt, CT



5



0 MILES

5

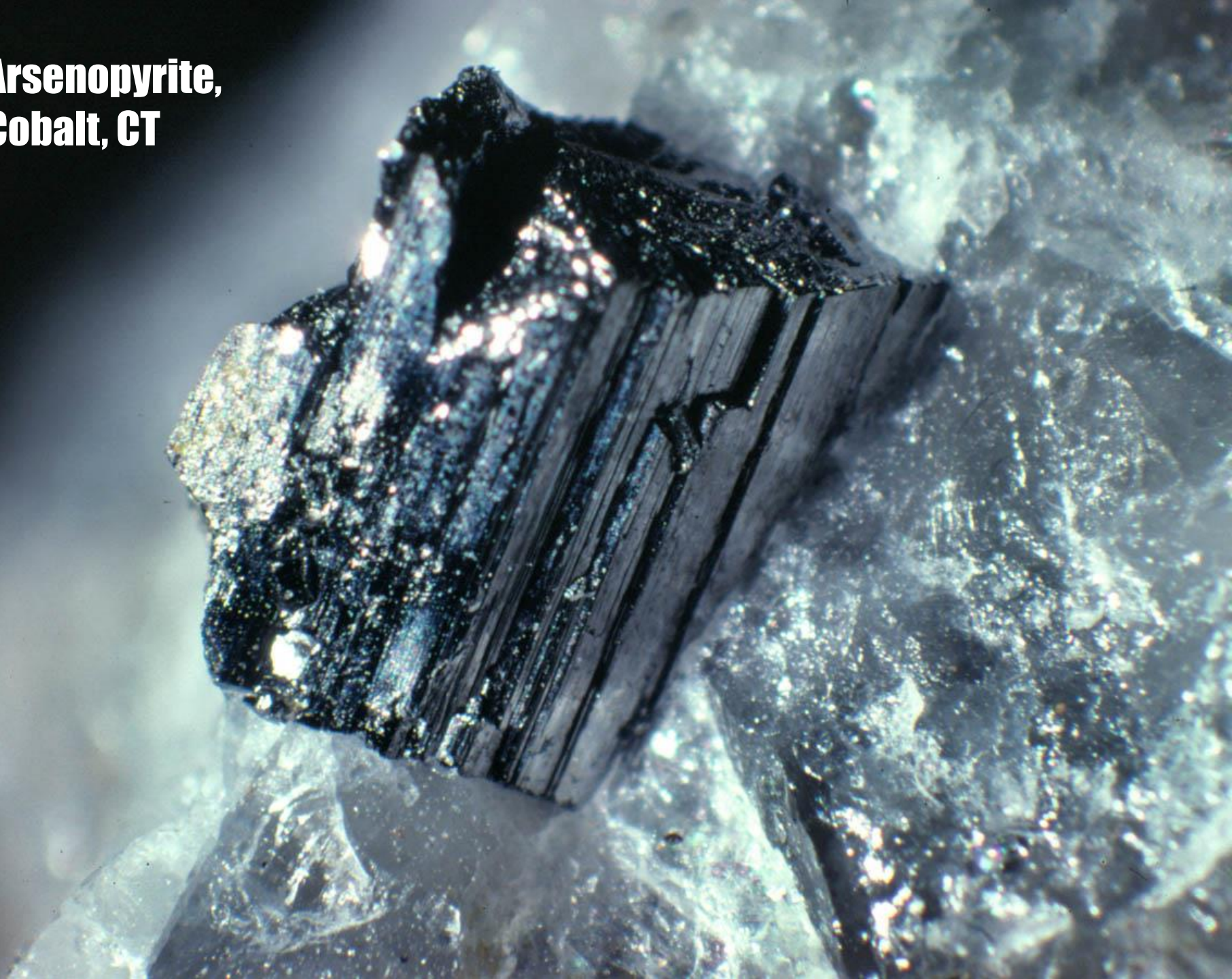


0 KILOMETERS



Robert's Lode, Arsenopyrite Mine, Cobalt, CT

**Arsenopyrite,
Cobalt, CT**





H. Moritz Image

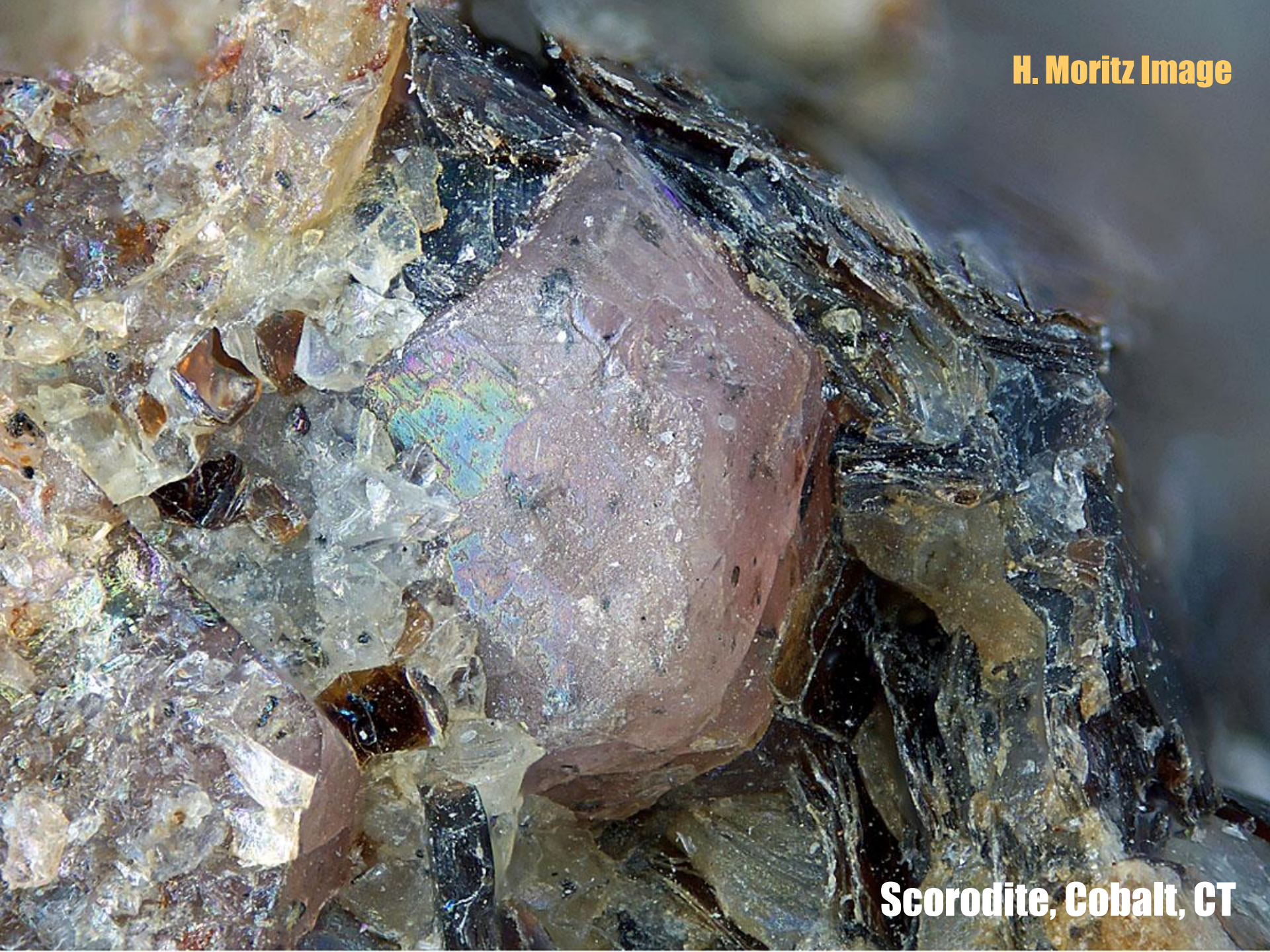
Arsenopyrite, Cobalt, CT

H. Moritz Image



Scorodite, Cobalt, CT

H. Moritz Image



Scorodite, Cobalt, CT

1825 – Jedediah Smith discovers gold near Mono Lake, CA leading a trapping party for American Fur Company. Returned with miners in 1826 but entire party killed. AFC stopped all mineral exploration as a result

1826 – Argonauts (adventurous trappers and frontiersmen) trickle of inhabitants “discovered” CA
Jedediah Smith, Joseph Walker, Sylvester Pattie, Benjamin Wilson, Peter Lassen, and Kit Carson

Arrival disturbed native Mexicans. American sovereignty was established after the Bear Flag Revolt, and the Mexican War

Establishment of the short-lived California Republic

1839 – Swiss immigrant, John Sutter, settled in northern CA and created a small empire
Purchased all Russian holdings at Fort Ross including ships, cattle, and farm implements and arsenal captured by the Russians during Napoleon's 1813 retreat from Moscow. All of these materials were moved to Sutter's Fort near Sacramento, CA



1842 – Gold placer found in San Francisquito Canyon near San Fernando Jesuit Mission. This and earlier reports of gold of Jesuit fathers largely ignored

Deposit not rich enough to last beyond a few years

Gold sent to Philadelphia Mint for coinage

American government did not publicize the discovery until change of ownership of region planned

When California admitted to the Union **09 Sep 1850** as the 31st state, discovery announced to populate area

1844 – **John Bidwell** (an employee of John A. Marshall) lost his chance at fame when a Mexican worker informed him that gold was to be found in the Sierra Nevada

Mexicans came from Sonora in Old Mexico, a region with a deep mining history

Workers asked for a “batea” in order to prove the richness of California gold but Bidwell thought exotic implement of some kind

Thus, the worker’s request for a batea (wooden bowl) was overlooked until **James W. Marshall** “discovered” gold in Coloma, CA in **1848**

~19 January 1848 – Four or five pieces of gold found in tail race of John A. Sutter's sawmill in Coloma, CA on the south fork of the American River by James W. Marshall

A few days later, a few ounces of gold were delivered to John Sutter whereupon discovery acknowledged and announced (24 January 1848)

Discovery initiates California gold rush and opens west

Minor incursion of argonauts transformed into flood of adventurers from world-wide locations

Use of Donner and Carson passes brought settlers across the high Sierra into the gold belt – the Mother Load

Sutters Mill 1850s



**Sutter's Mill
On-Site Replica
Coloma, CA**



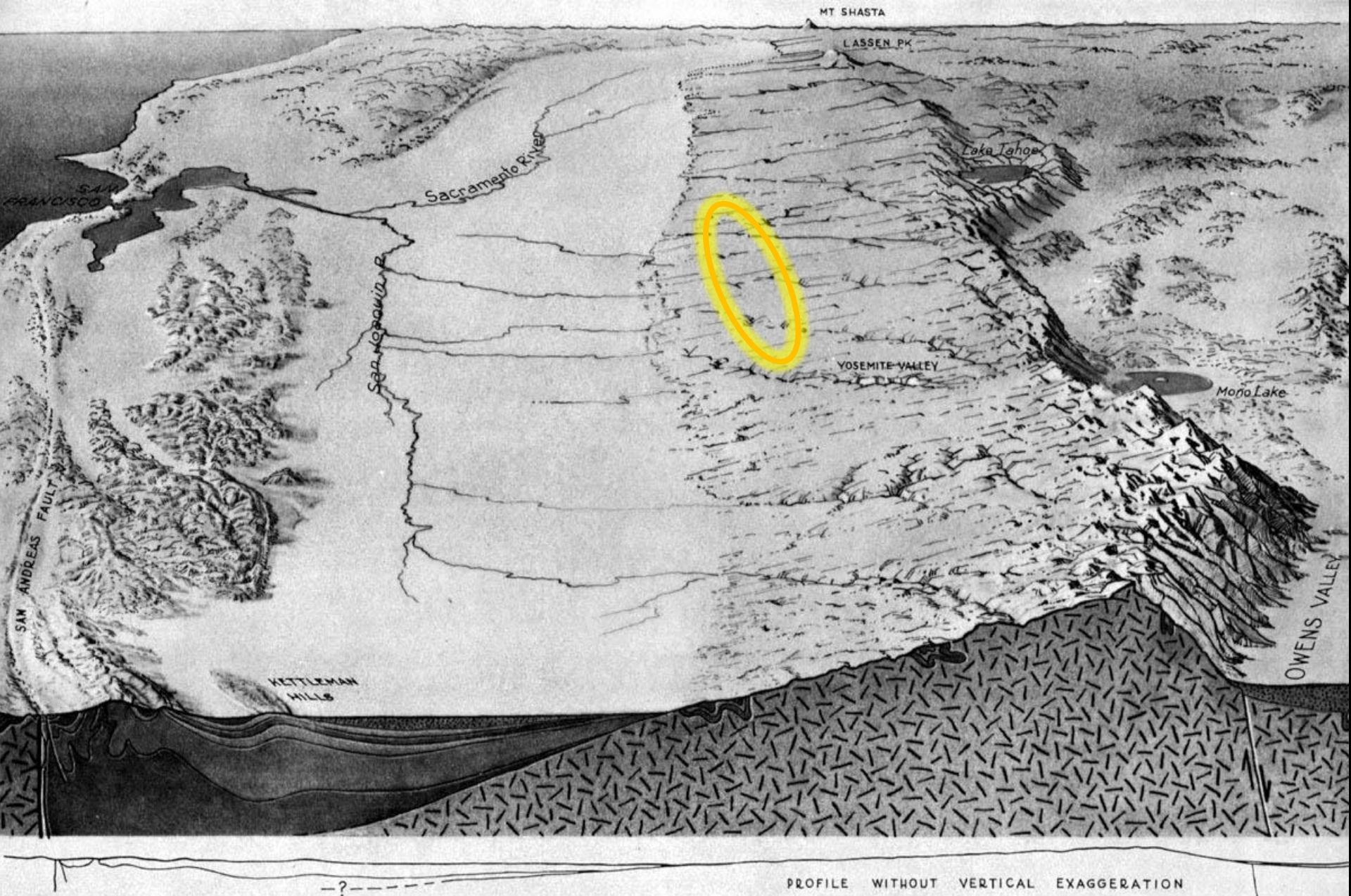
Argonauts



1850s



2004



PROFILE WITHOUT VERTICAL EXAGGERATION

Shelton, 1966

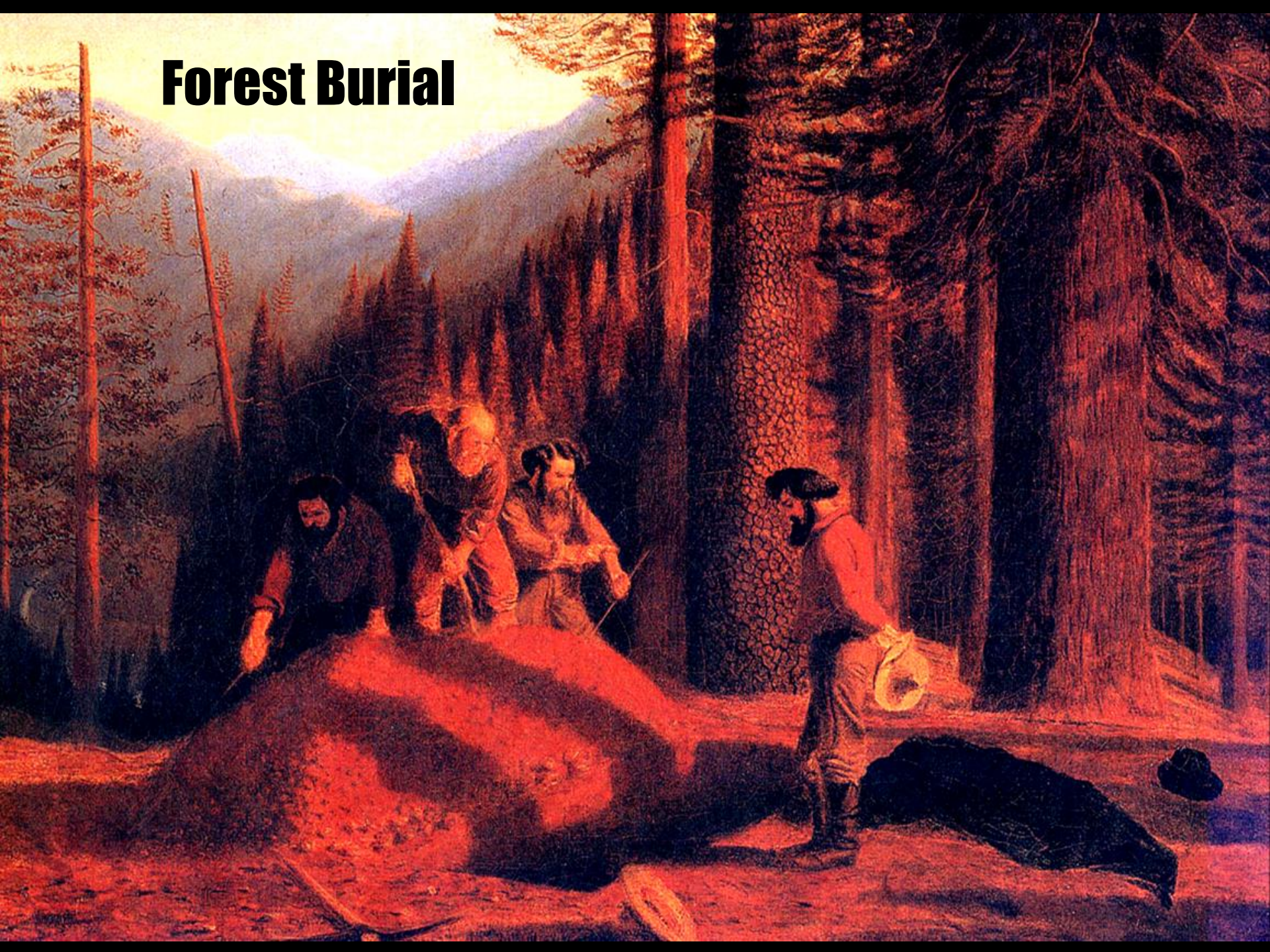


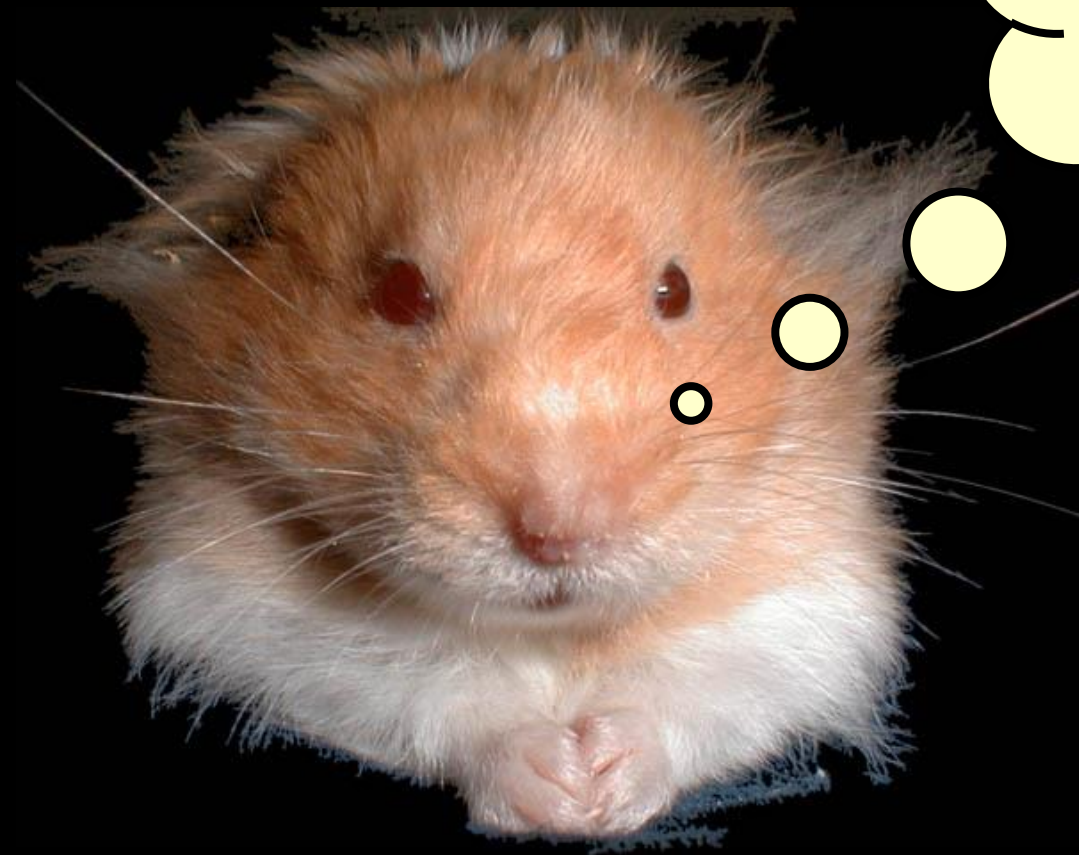
Central Mines, 1856



Charles L. Webb, 1877.

Forest Burial



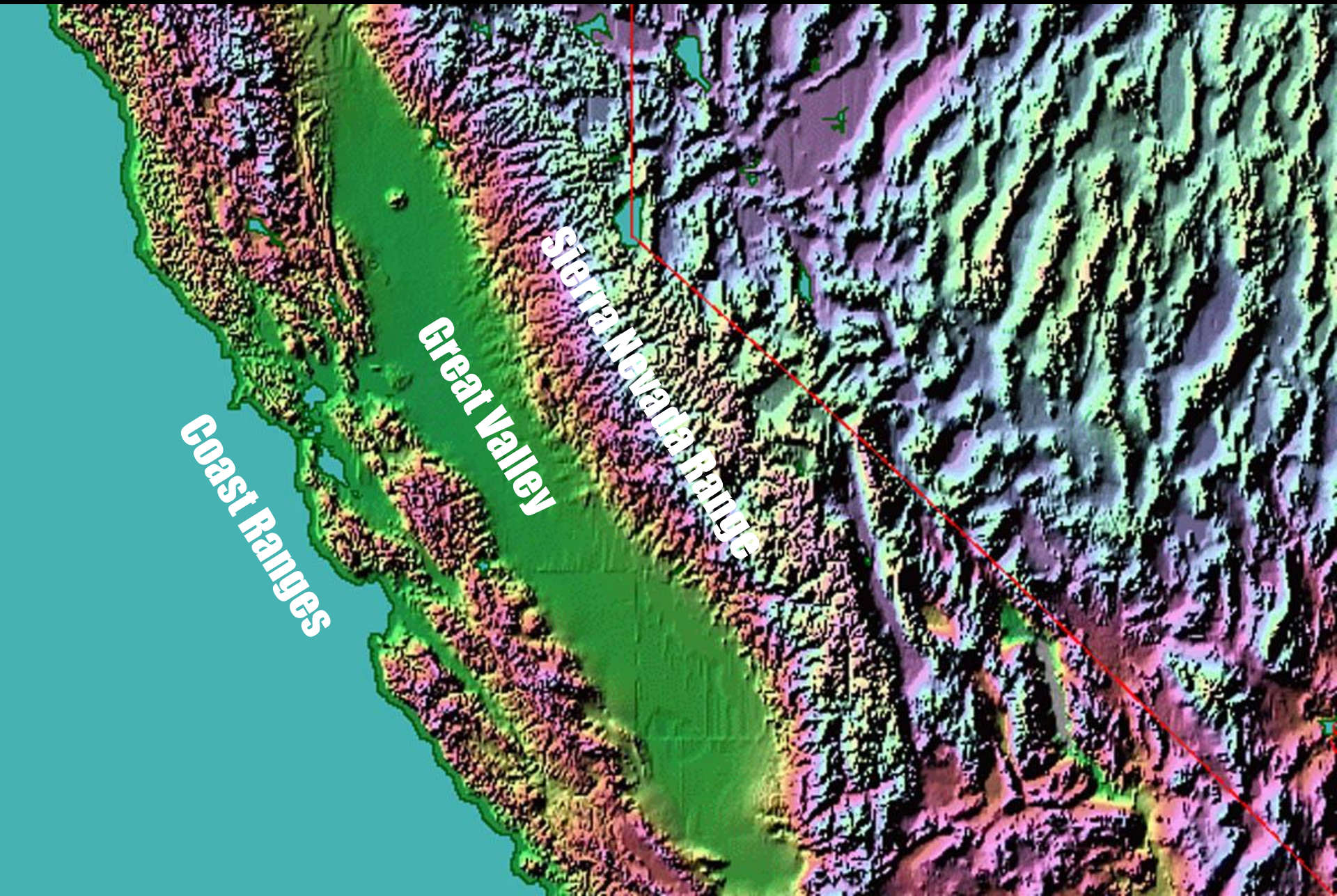


**Alla!! Finally!
Now He's Going
to Talk About CA
Rocks**

A detailed topographic map of California and its surrounding regions, including parts of Oregon, Nevada, Idaho, and the Pacific Northwest. The map uses a color gradient to represent elevation, with deep blues for the ocean floor, lighter blues for continental shelves, greens and yellows for low-lying land, and oranges and browns for higher elevations and mountain ranges. The Sierra Nevada and Cascade ranges are prominent. The map also shows major river networks and coastal features.

Tectonics of California

Californ-i-ay



Coast Ranges



Knockers

Franciscan Complex



Chert and Shale



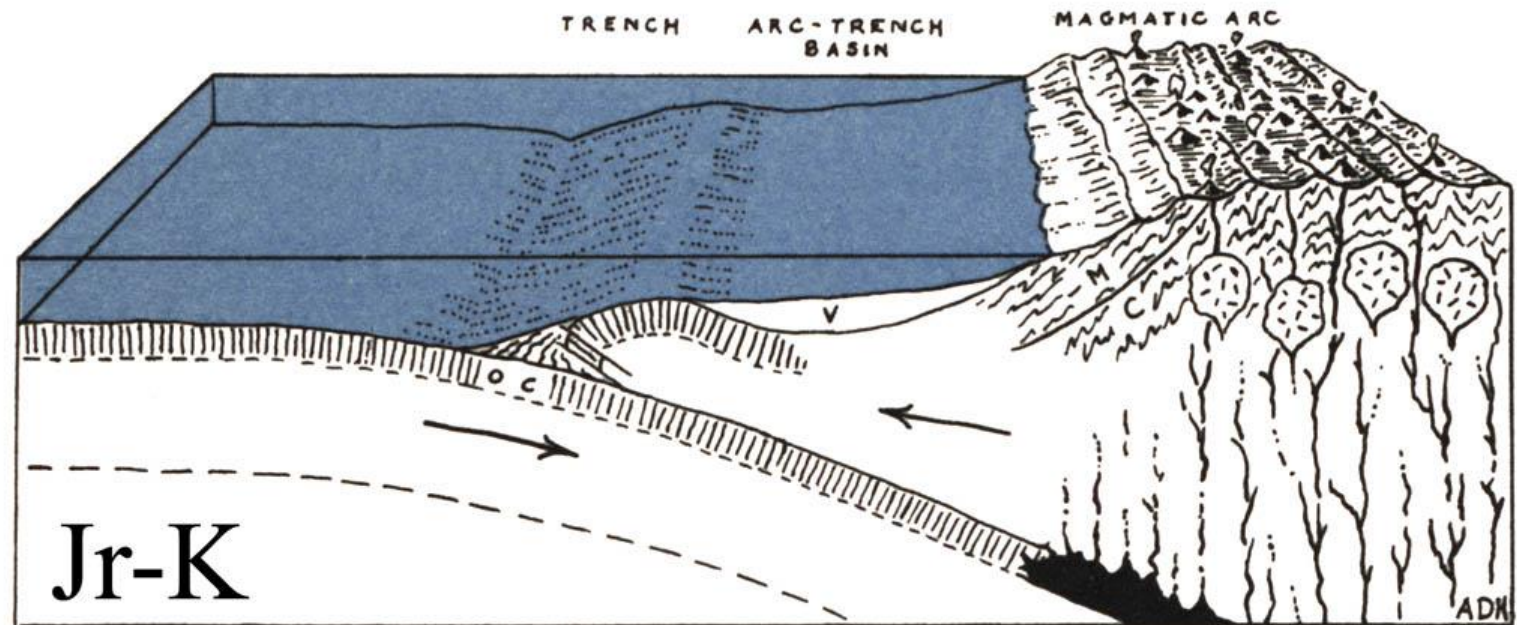
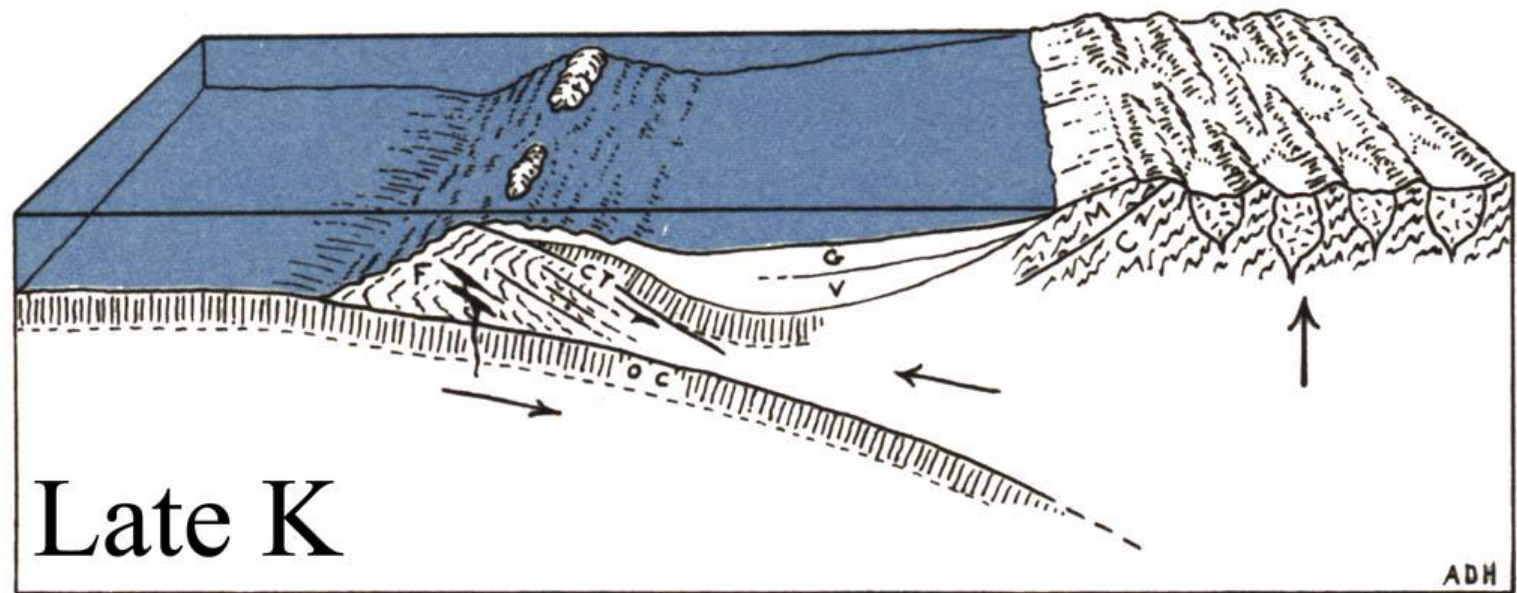
Serpentinite



24 May 2004



Serpentine



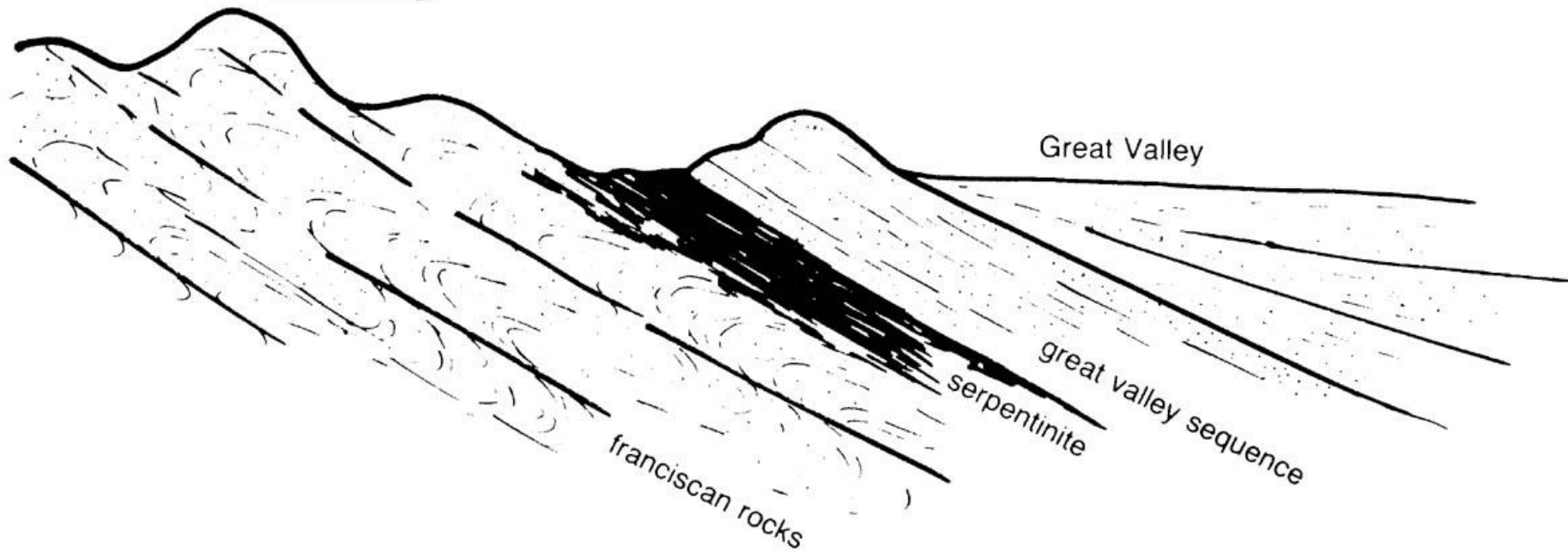
Coast Range

Great Valley

franciscan rocks

serpentinite

great valley sequence



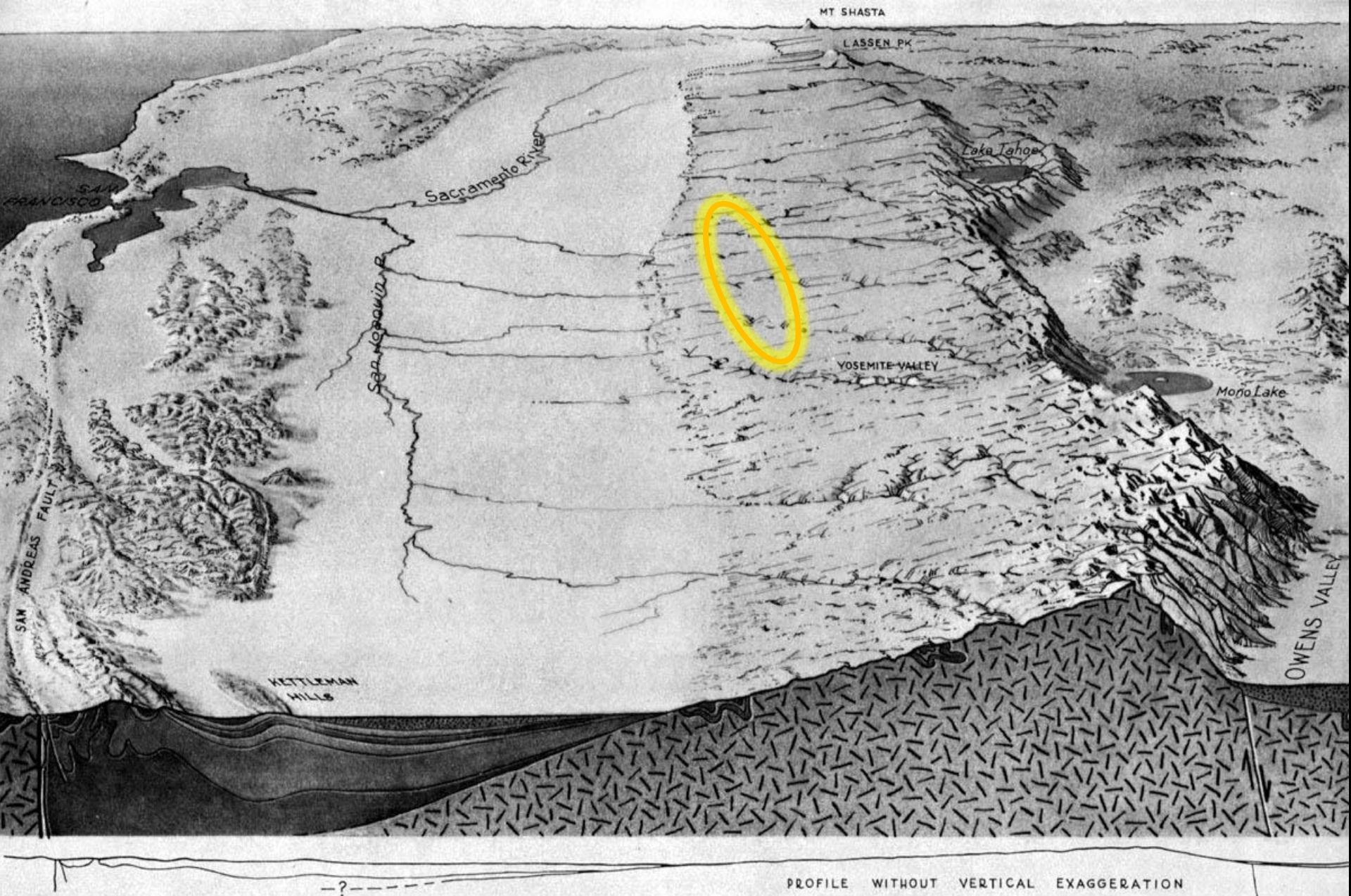
Great Valley





Mt. Shasta

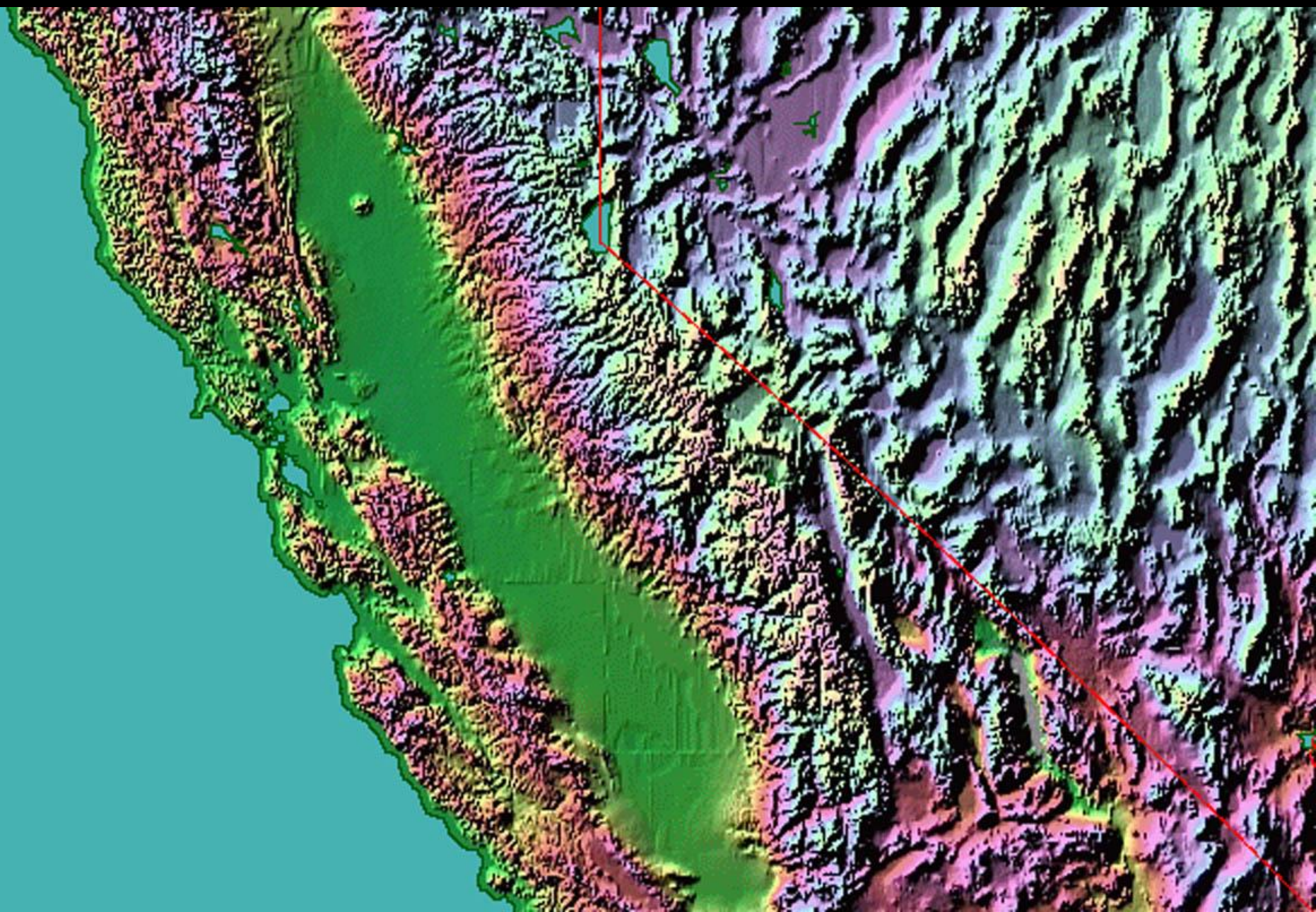
Williams, 1934





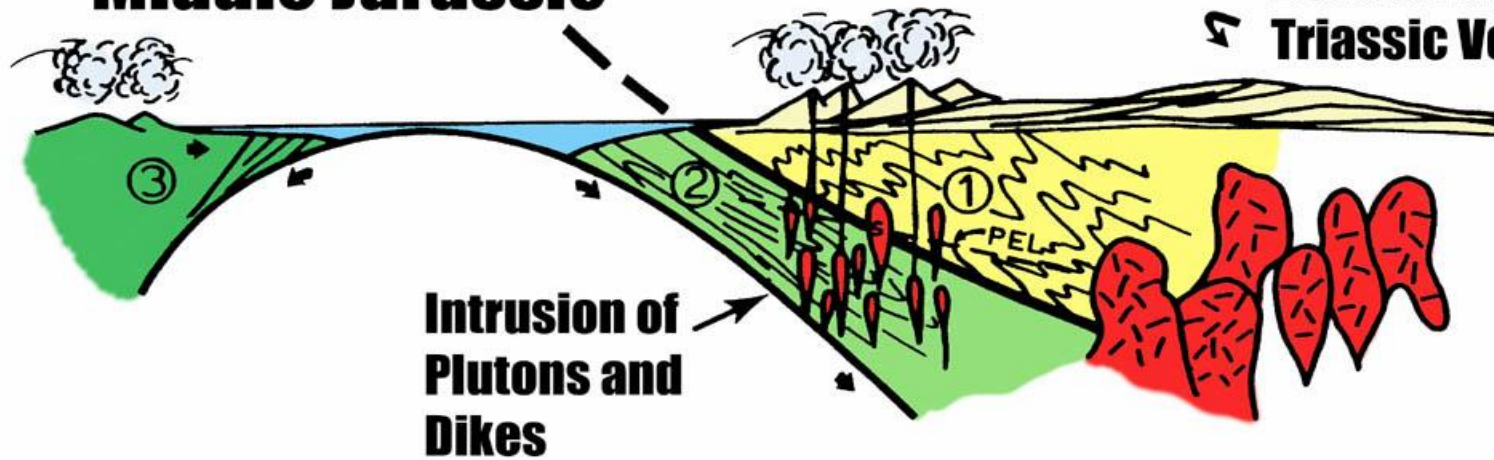
Great Valley Sequence, Lake Berryessa

Sierra Nevada Range



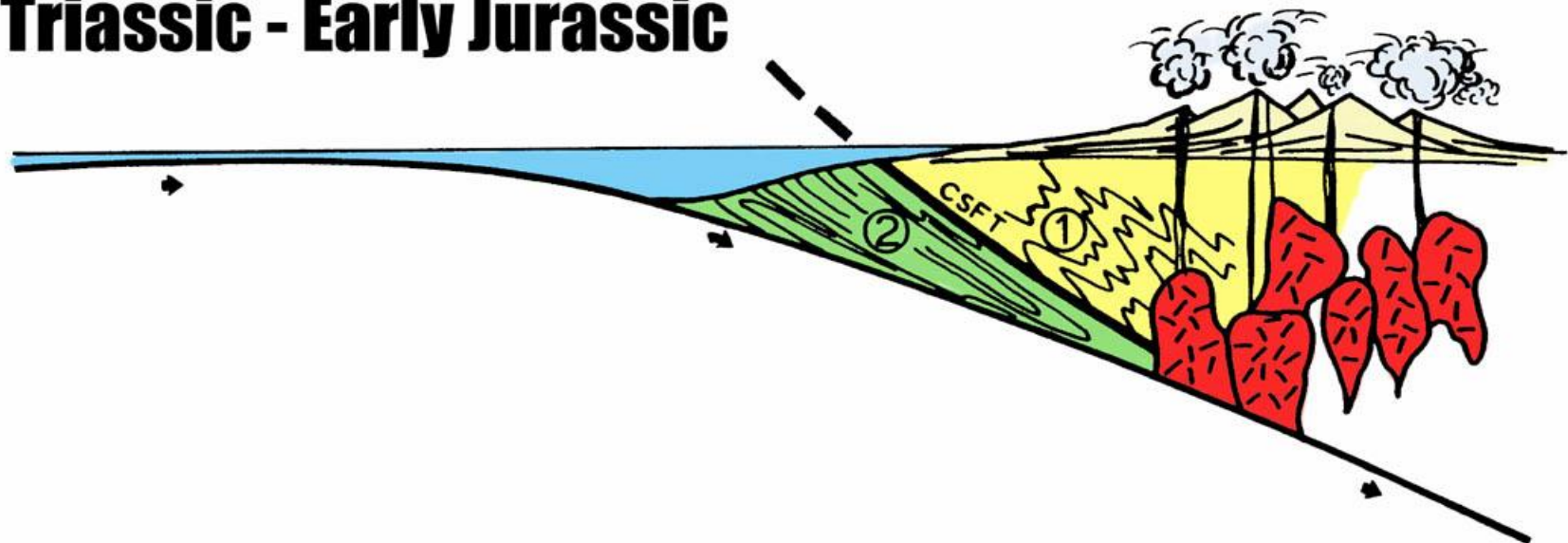
Middle Jurassic

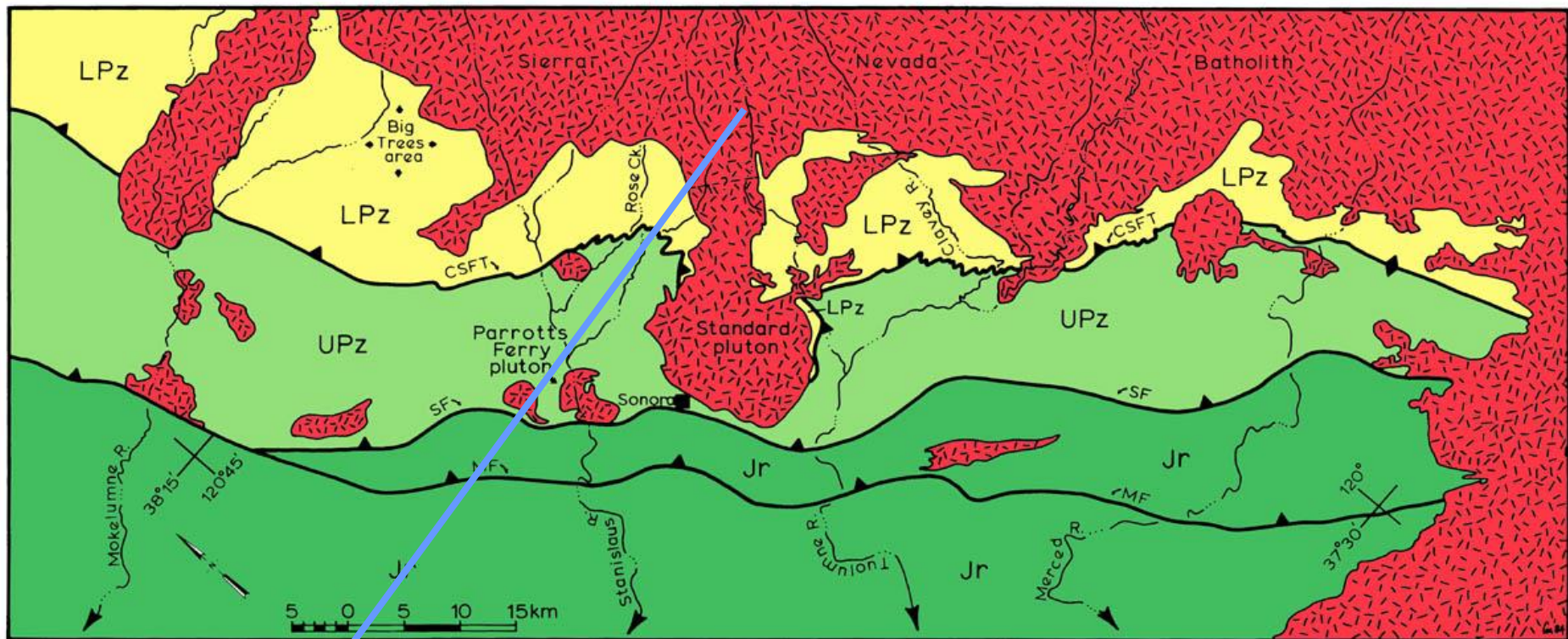
Dormant Late
Triassic Volcanos



Late Triassic - Early Jurassic

Trenchward Arc
Migration





Mesozoic plutonic and volcanic rocks



Upper Paleozoic Calaveras Complex



Juro-Triassic eugeosynclinal rocks



Lower Paleozoic Shoo Fly Complex



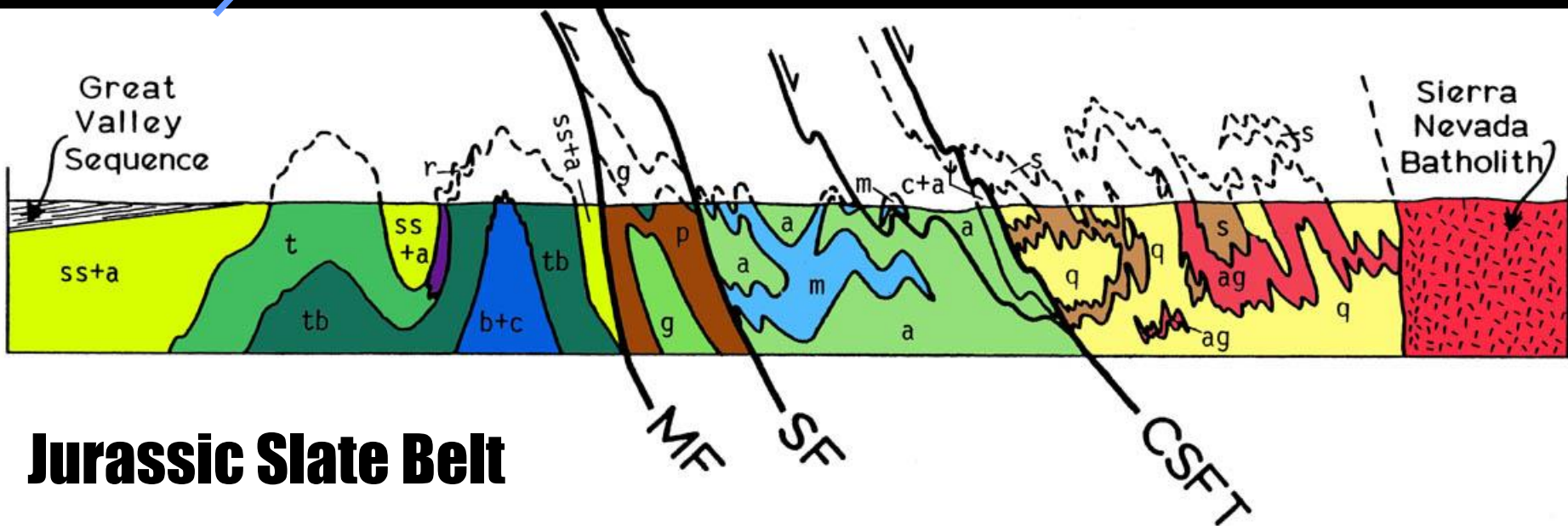
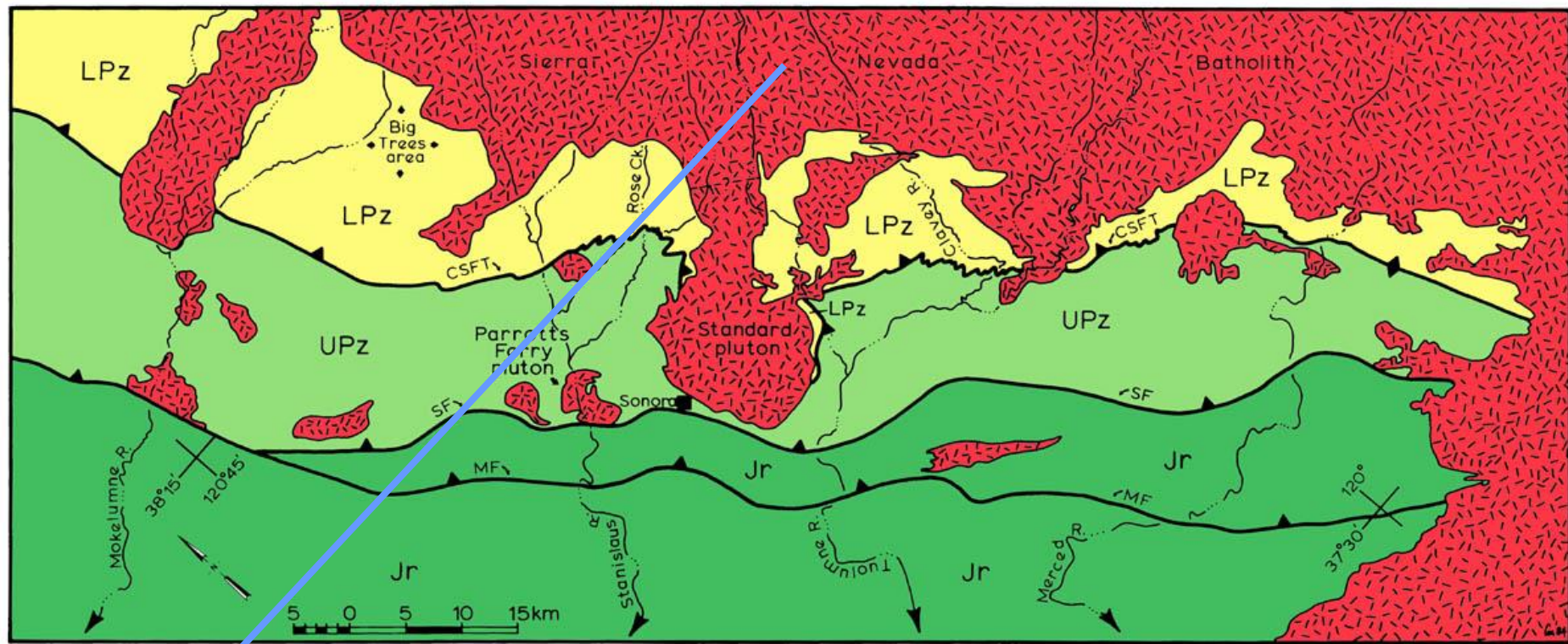
= Calaveras-Shoo Fly thrust



= Sonora fault



= Melones fault



Jurassic Slate Belt

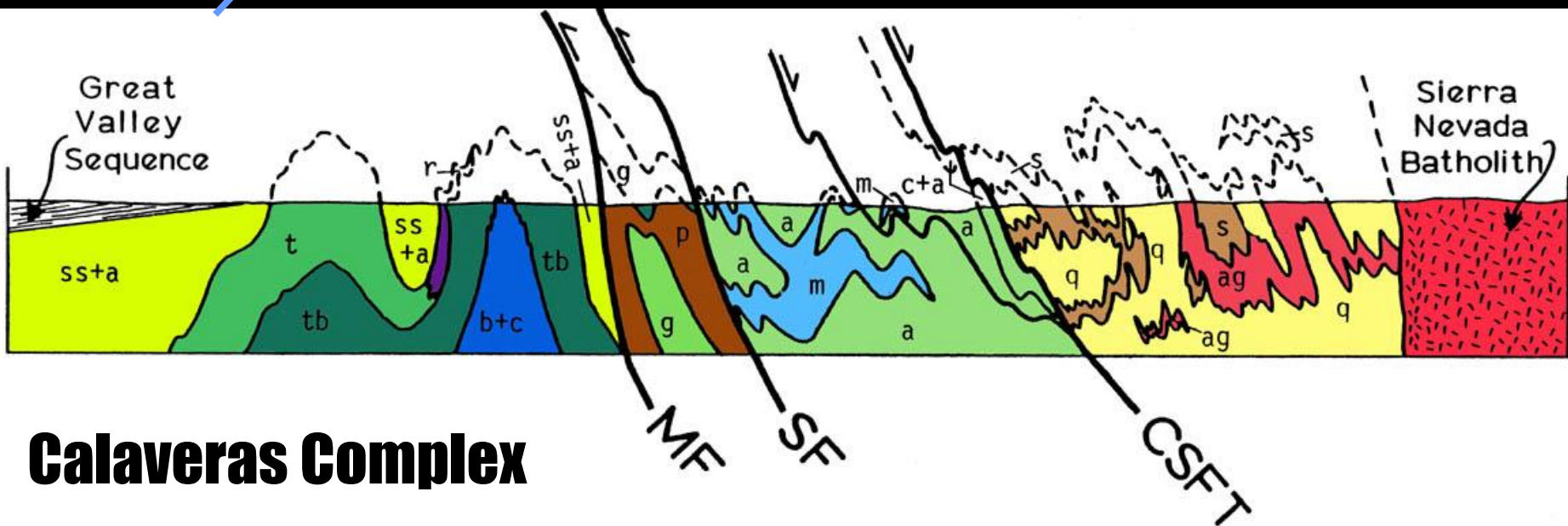
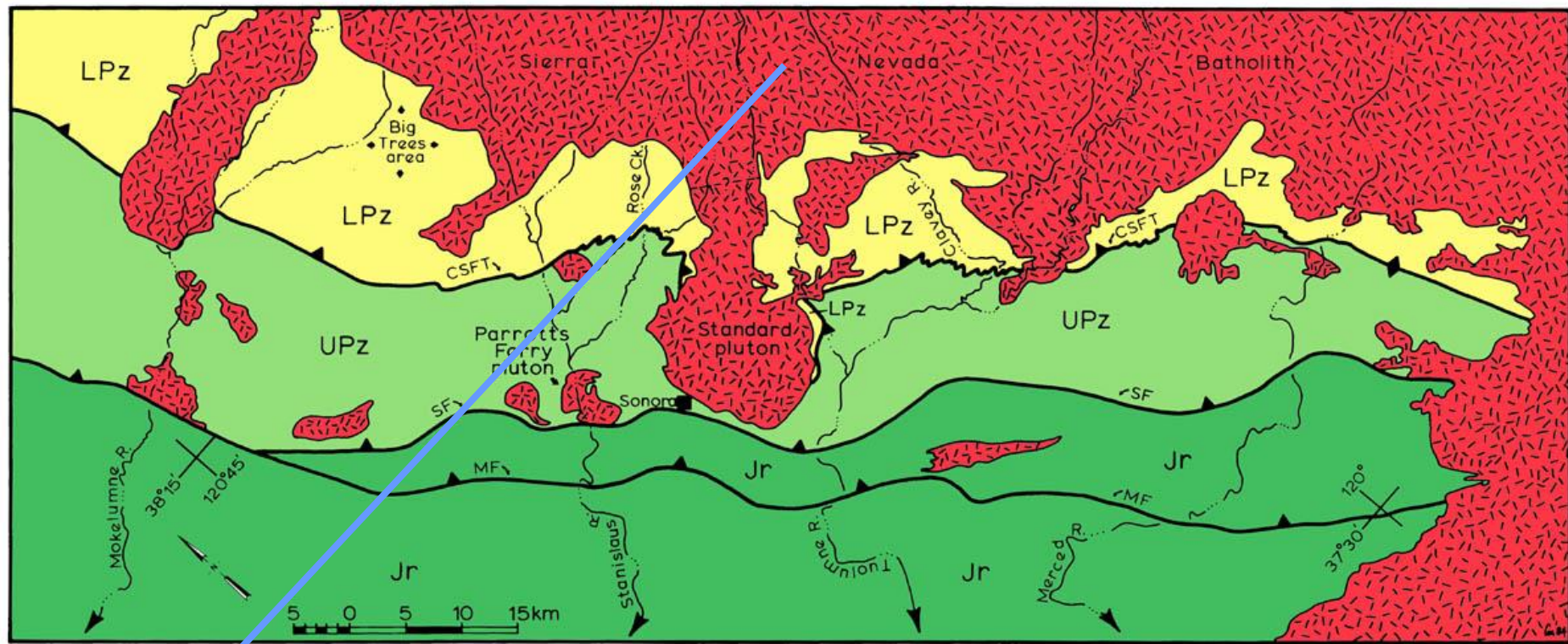


Foothills Metamorphic Belt of the Sierra Nevada Range





Foothills Serpentinite



Calaveras Complex



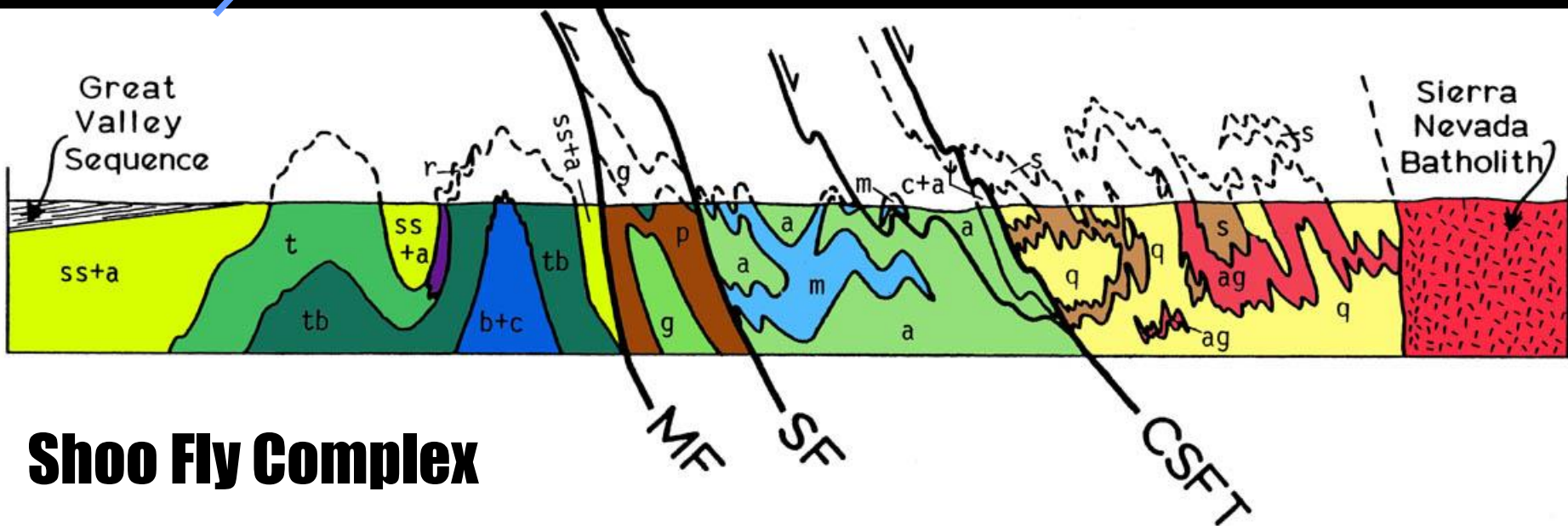
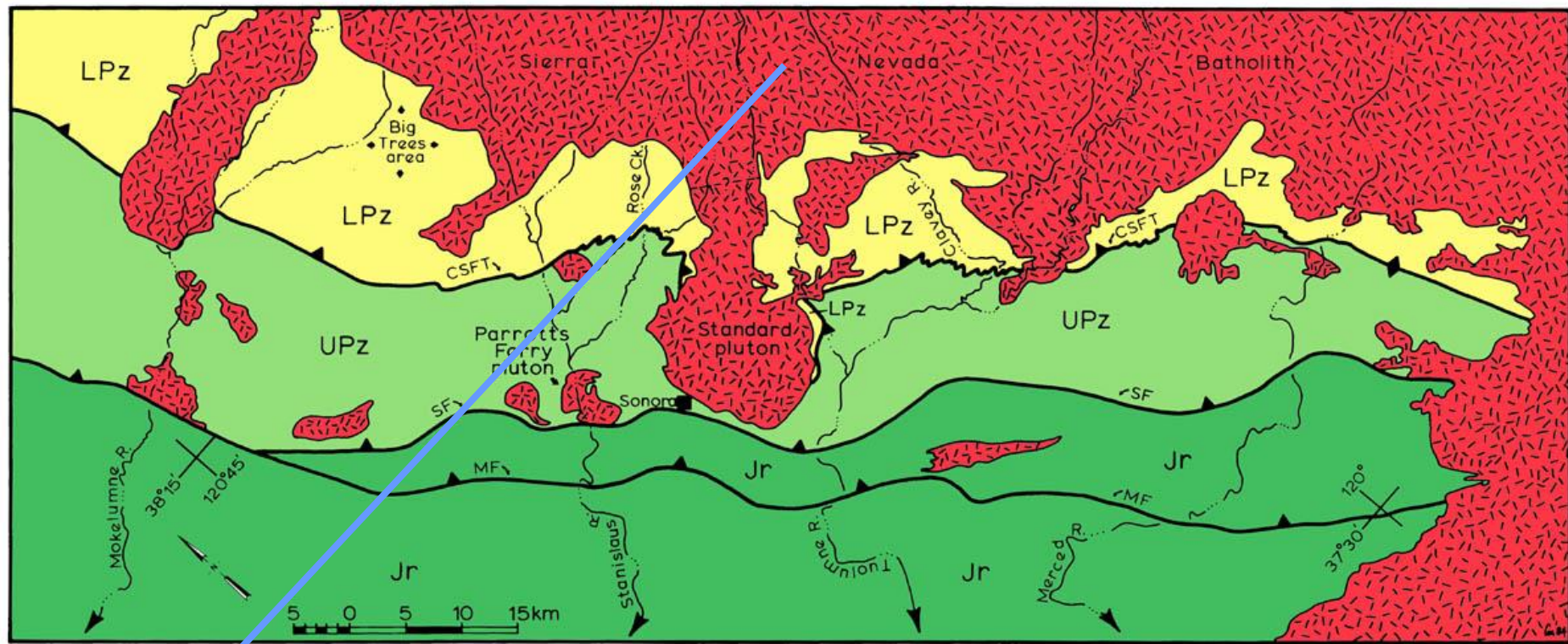
Calaveras Complex, Murphys, CA



Columbia Marble, Mid Fork Stanislaus Drainage, CA



Columbia Marble, Columbia, CA



Shoo Fly Complex

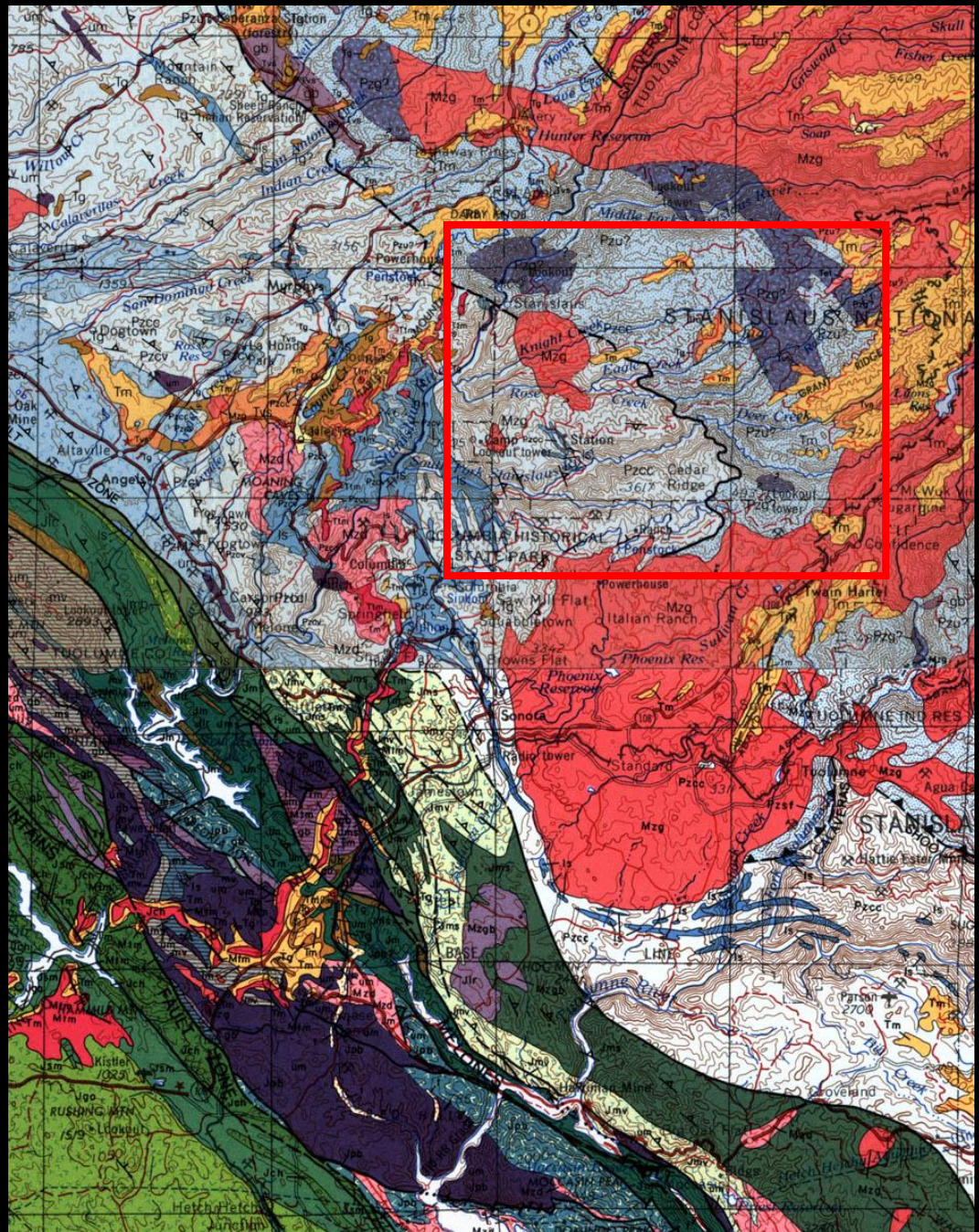
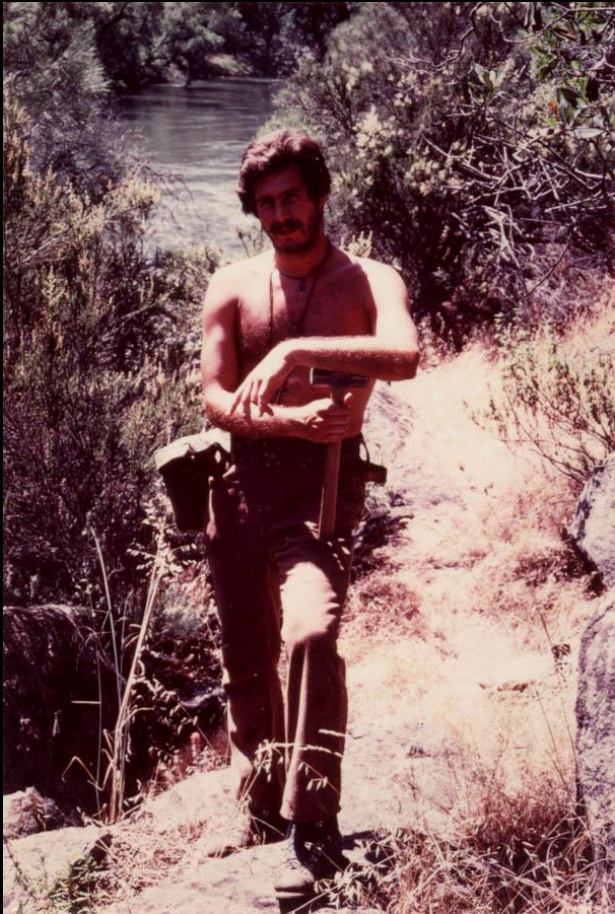


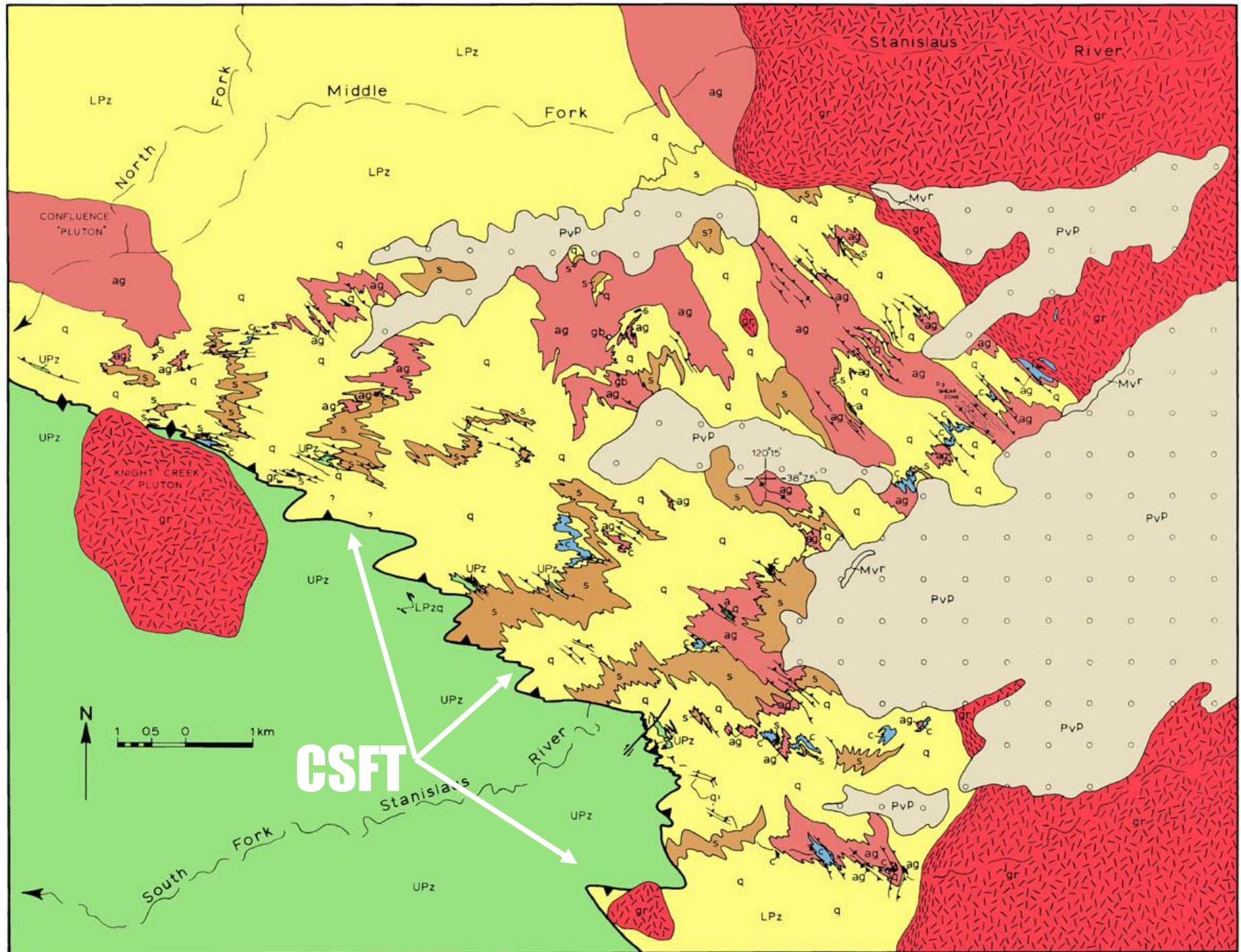
Shoo Fly Complex, Merced River Drainage

Geologic Mapping

Shoo Fly Complex

1978-1981





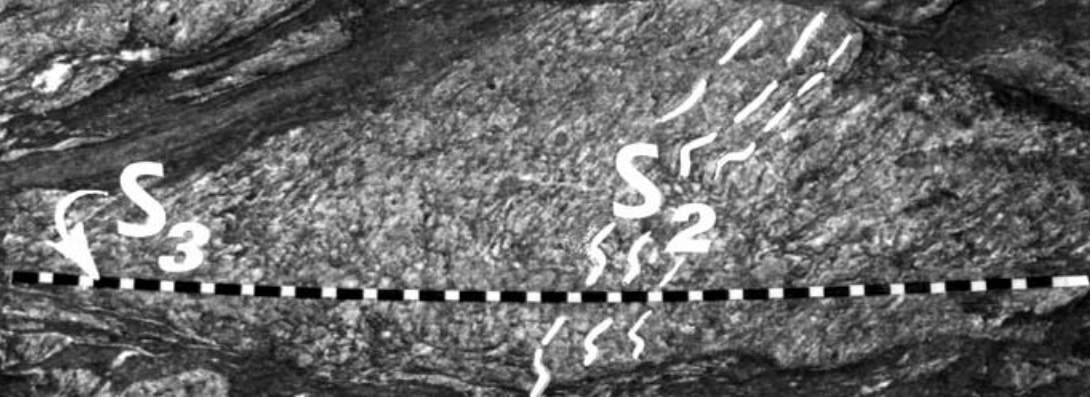
SF809.

S_3

Shoo Fly Complex

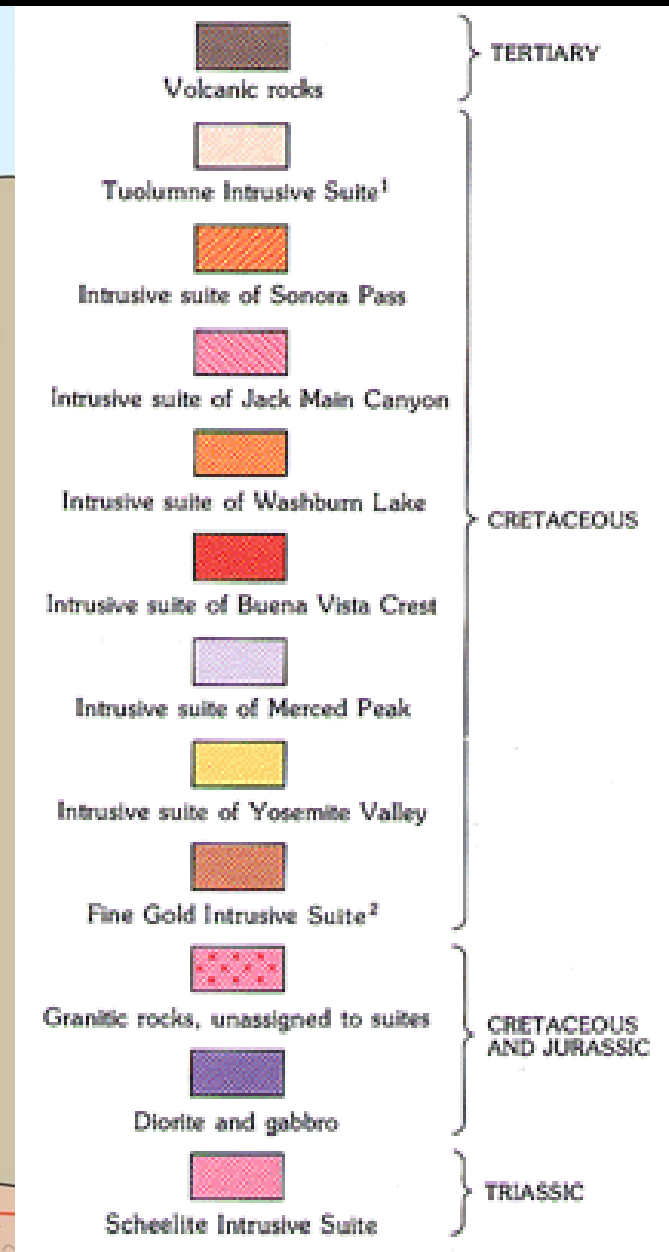
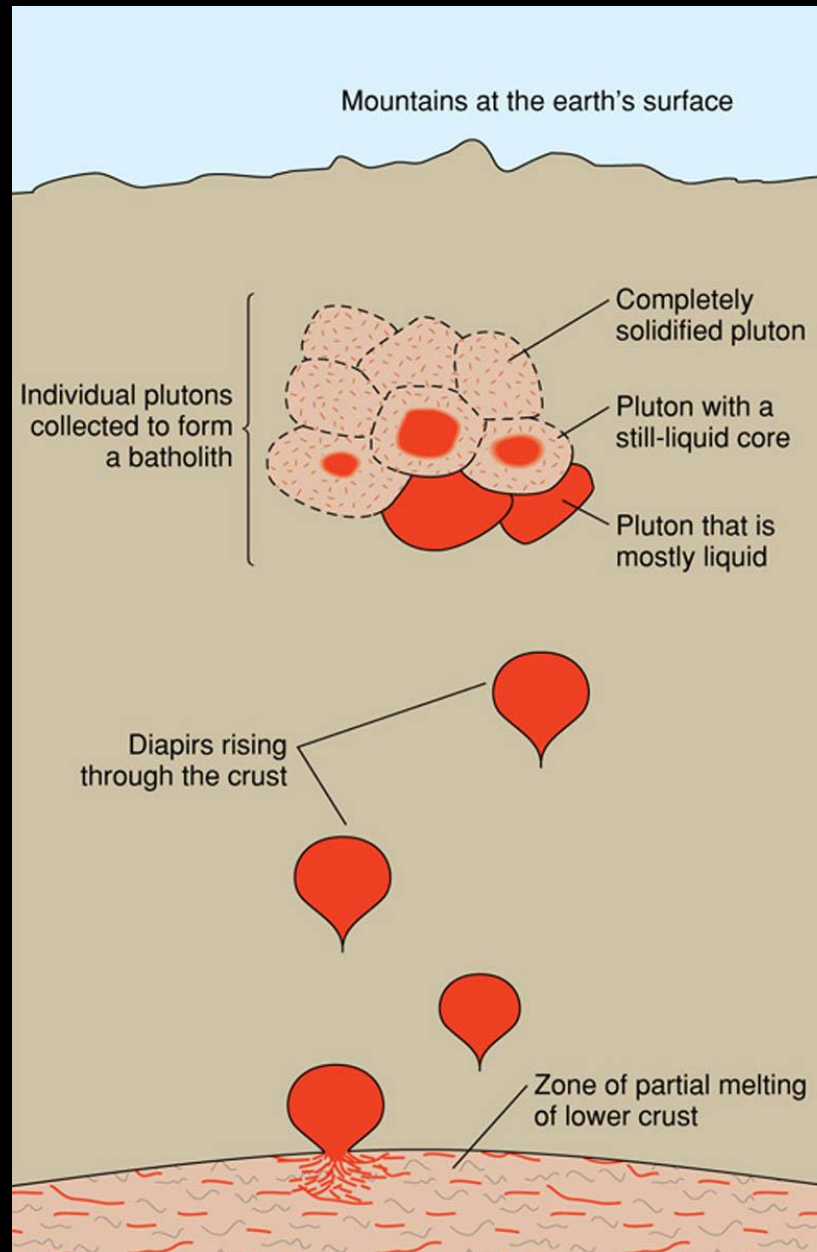
LPzq

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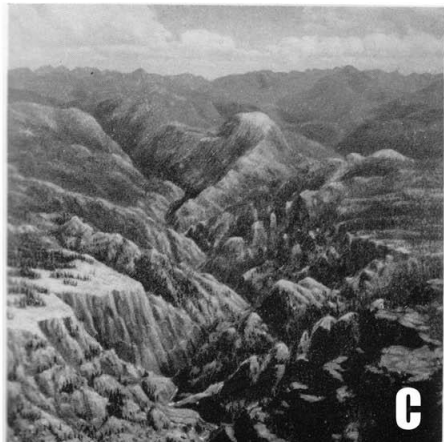
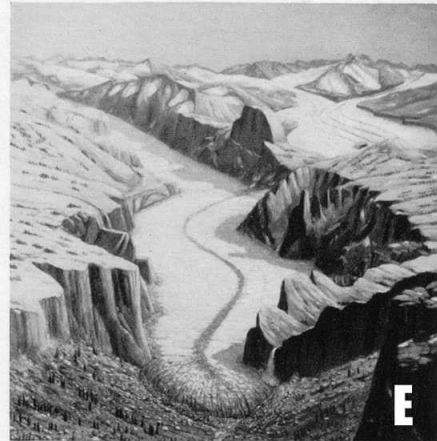
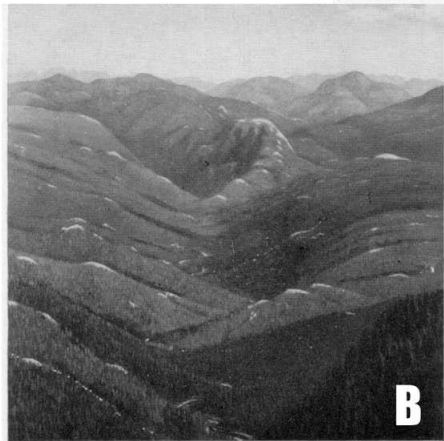
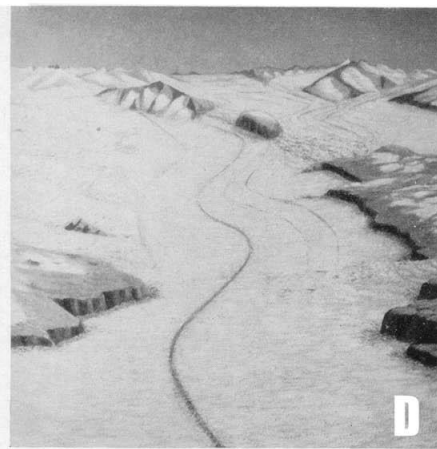
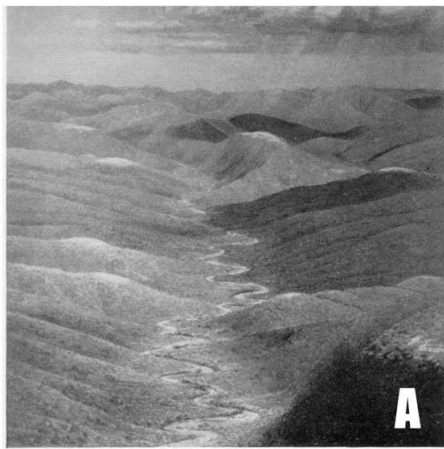
Shoo Fly Complex

High Sierra





Yosemite Valley



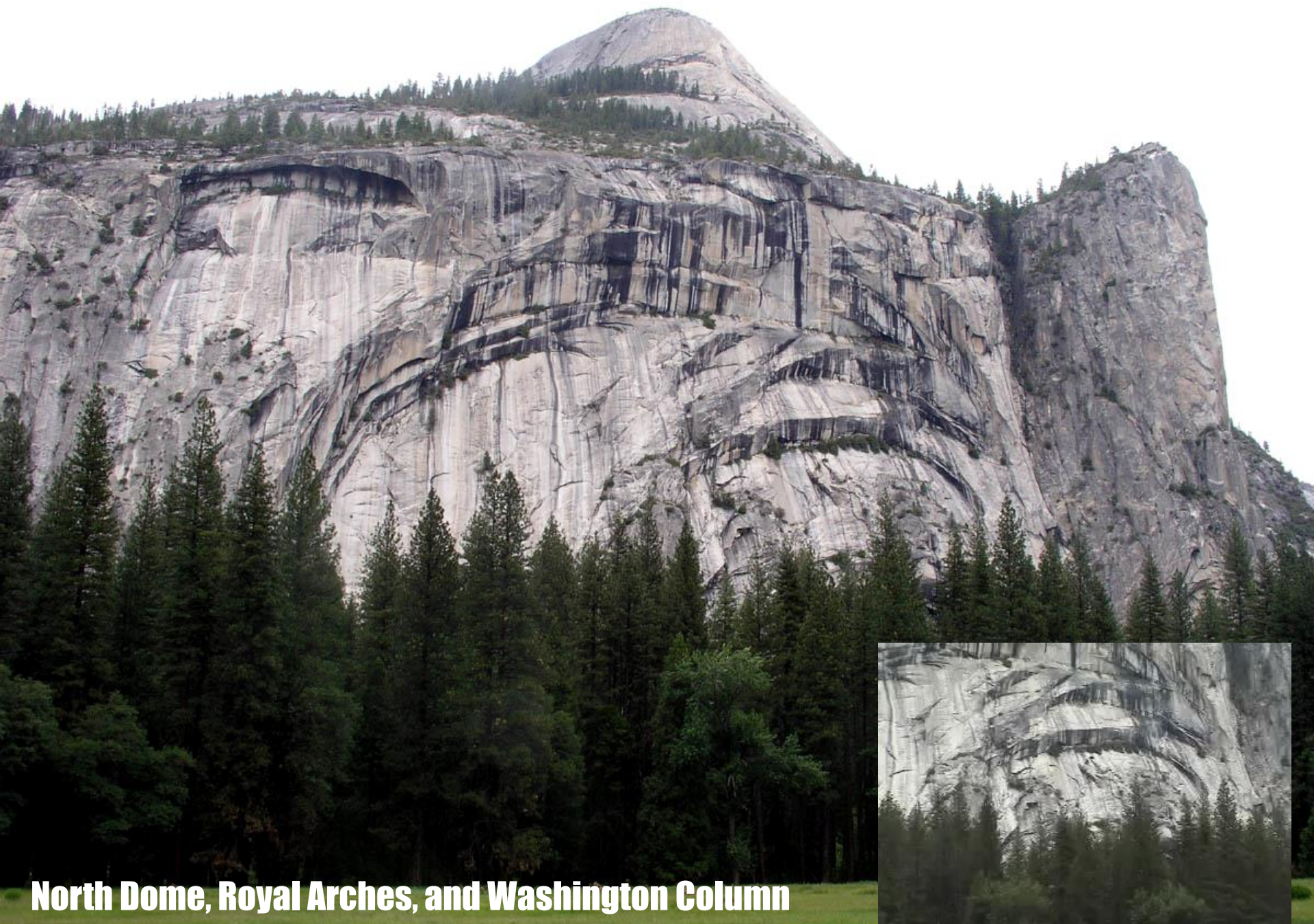
Matthes, 1956



Half Dome Yosemite



Half Dome



North Dome, Royal Arches, and Washington Column



Royal Arches



Yosemite Valley

Two Principle Mining Methods

1) Surface Mining

Panning

Cradle

Sluice

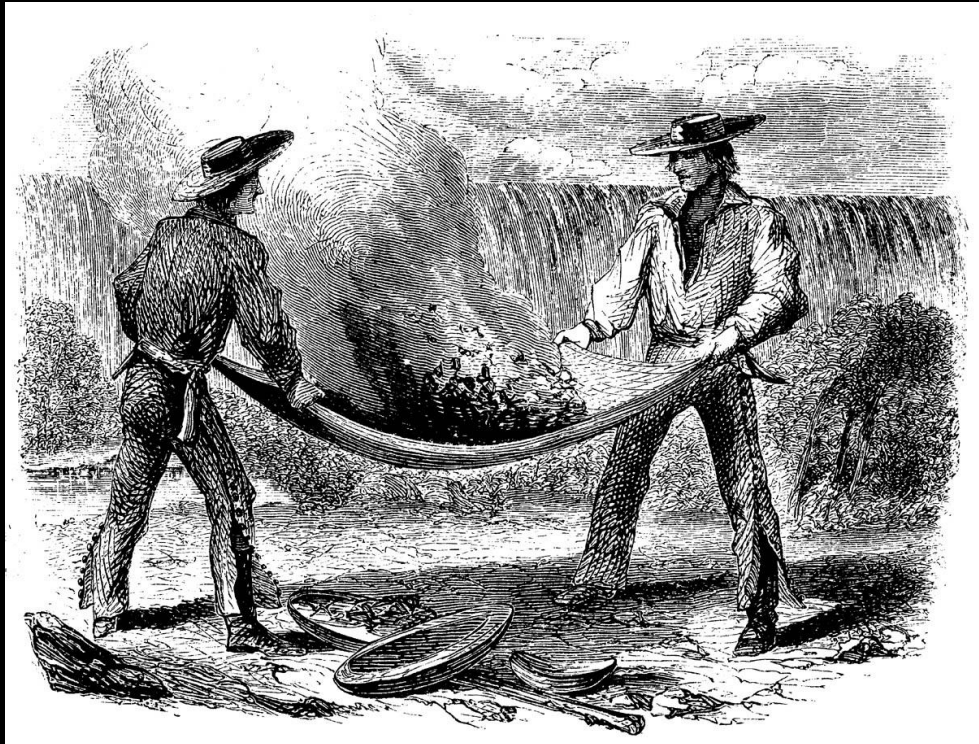
Placer

2) Hard Rock Mining

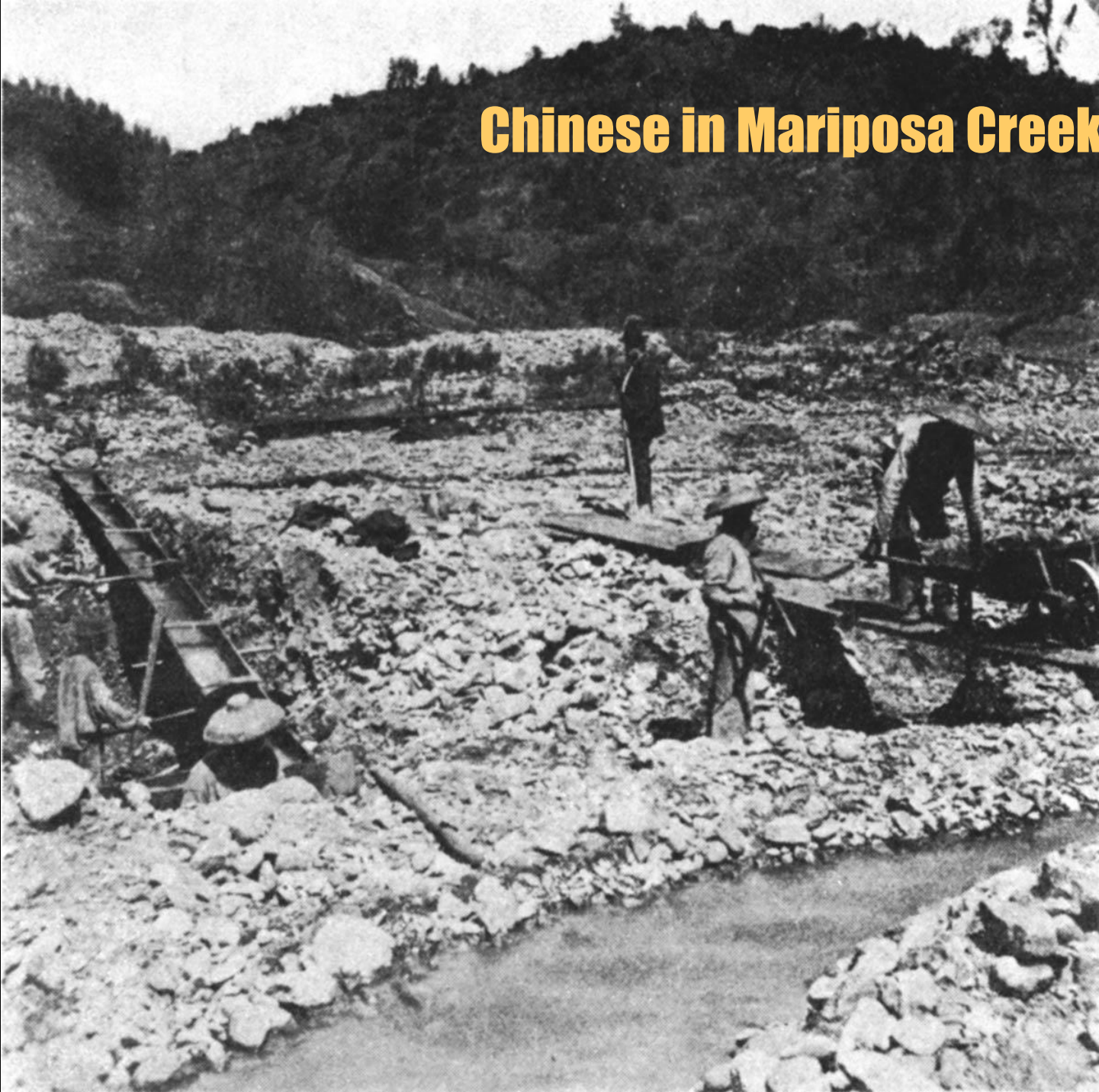
So, tell
them
about the
Mining

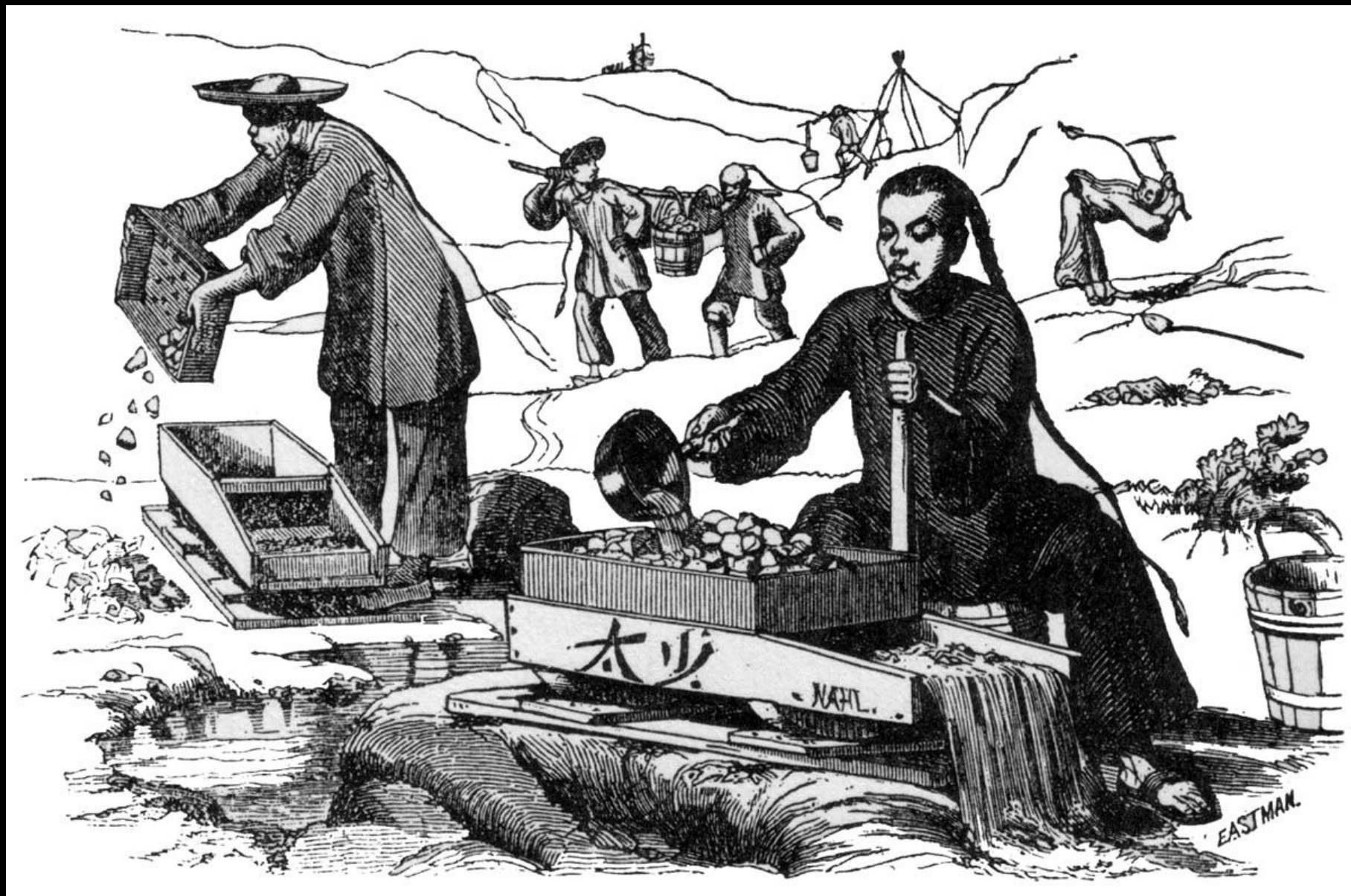


Sonorans Washing Gold



Chinese in Mariposa Creek, 1867



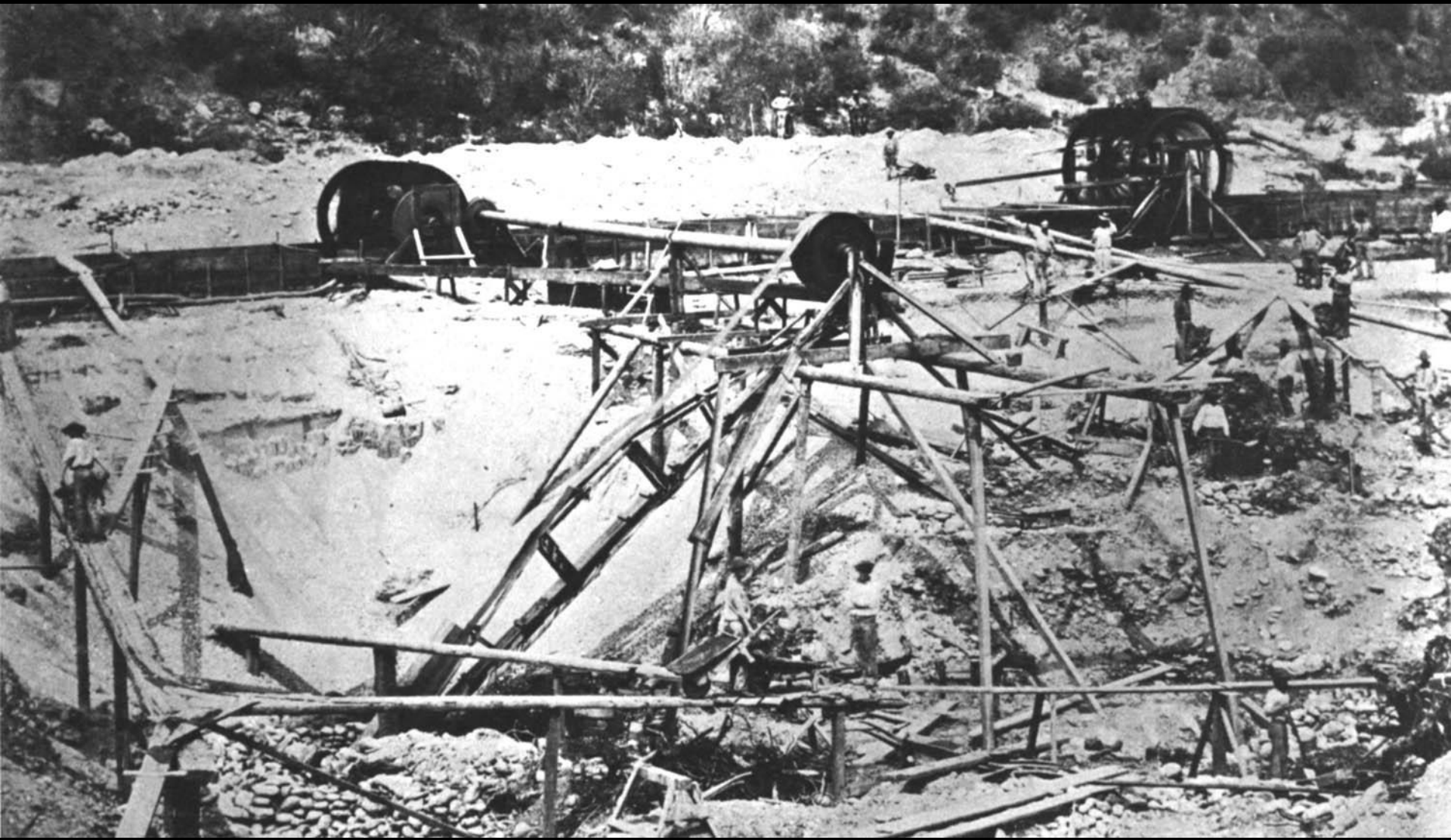


The Cradle

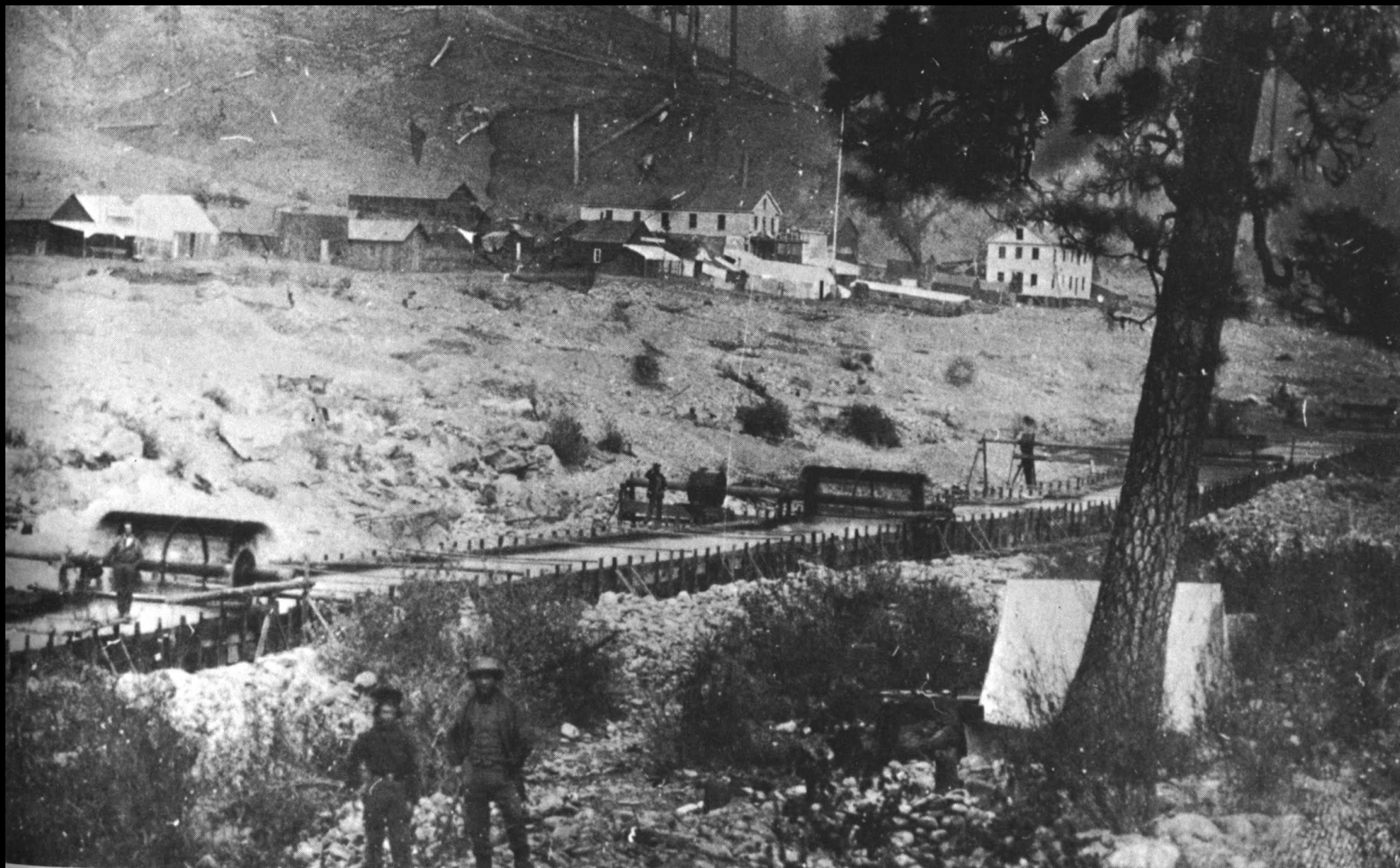
The Sluice



H. Sandham

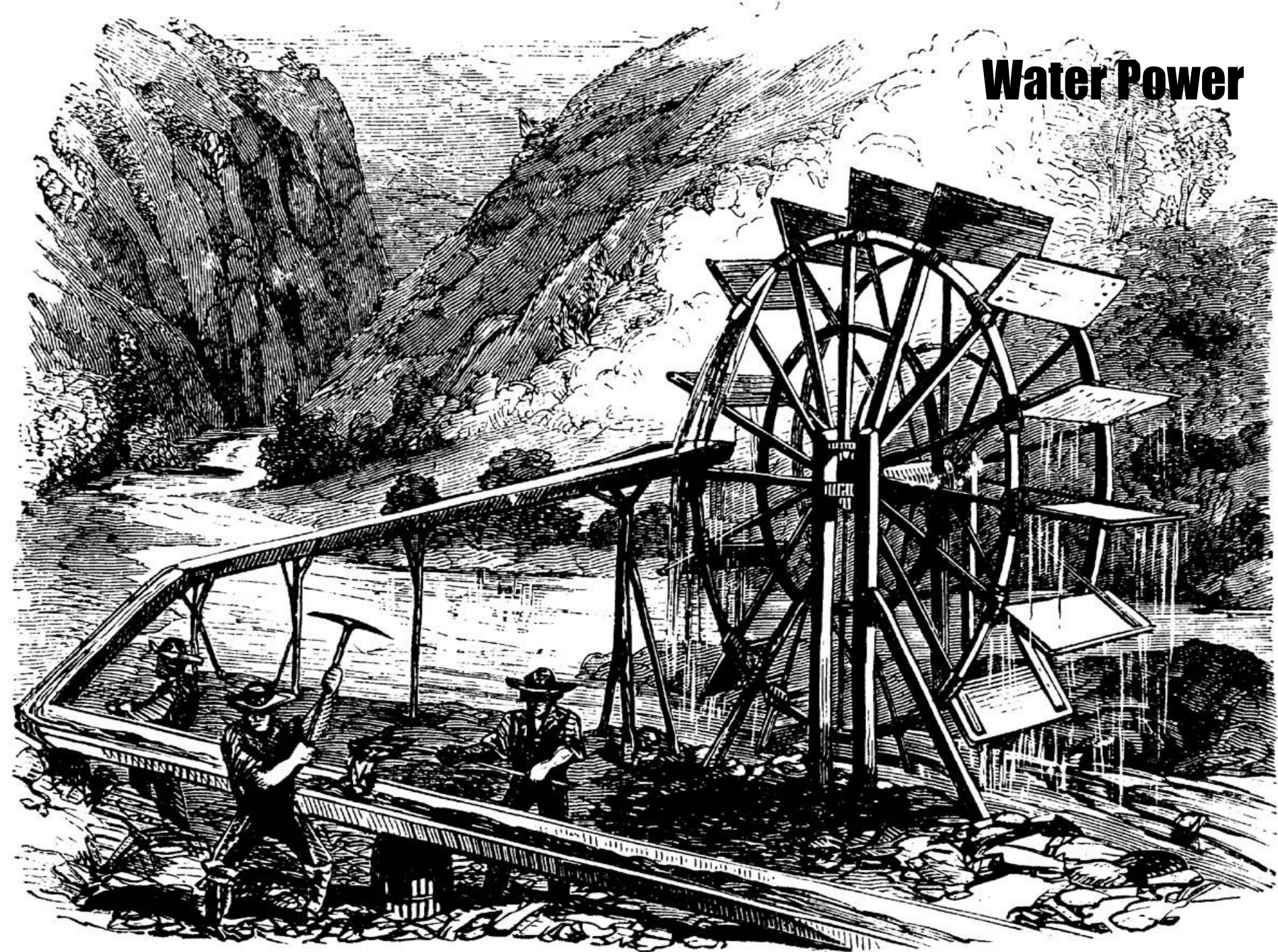


Water Power



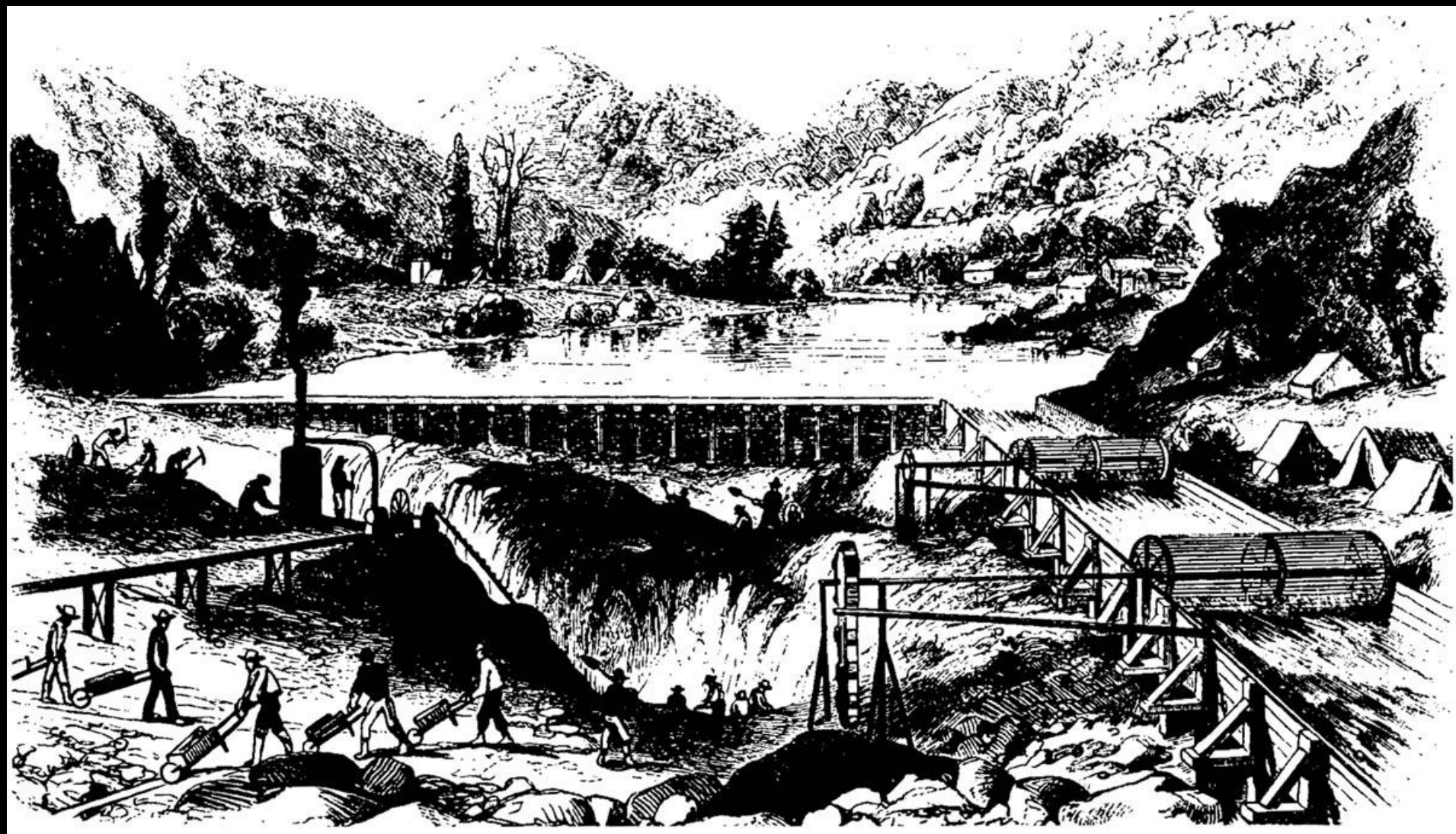
Grizzly Flat District, 1850's

Water Power





River Bed Mining



Diversion of Streams, Murderer's Bar

Diversion of Streams



A black and white photograph with rounded corners showing a group of approximately 15 men at a mining site. They are standing on a complex wooden structure, possibly a sluice or a bridge, built over a rocky, excavated hillside. The men are dressed in early 20th-century work clothes, including hats, shirts, and trousers. Some are holding tools like shovels. The background is a steep, rocky slope. The overall scene suggests a busy mining operation.

Rich Diggings = Quick Friends

Placerville, CA (Hangtown)



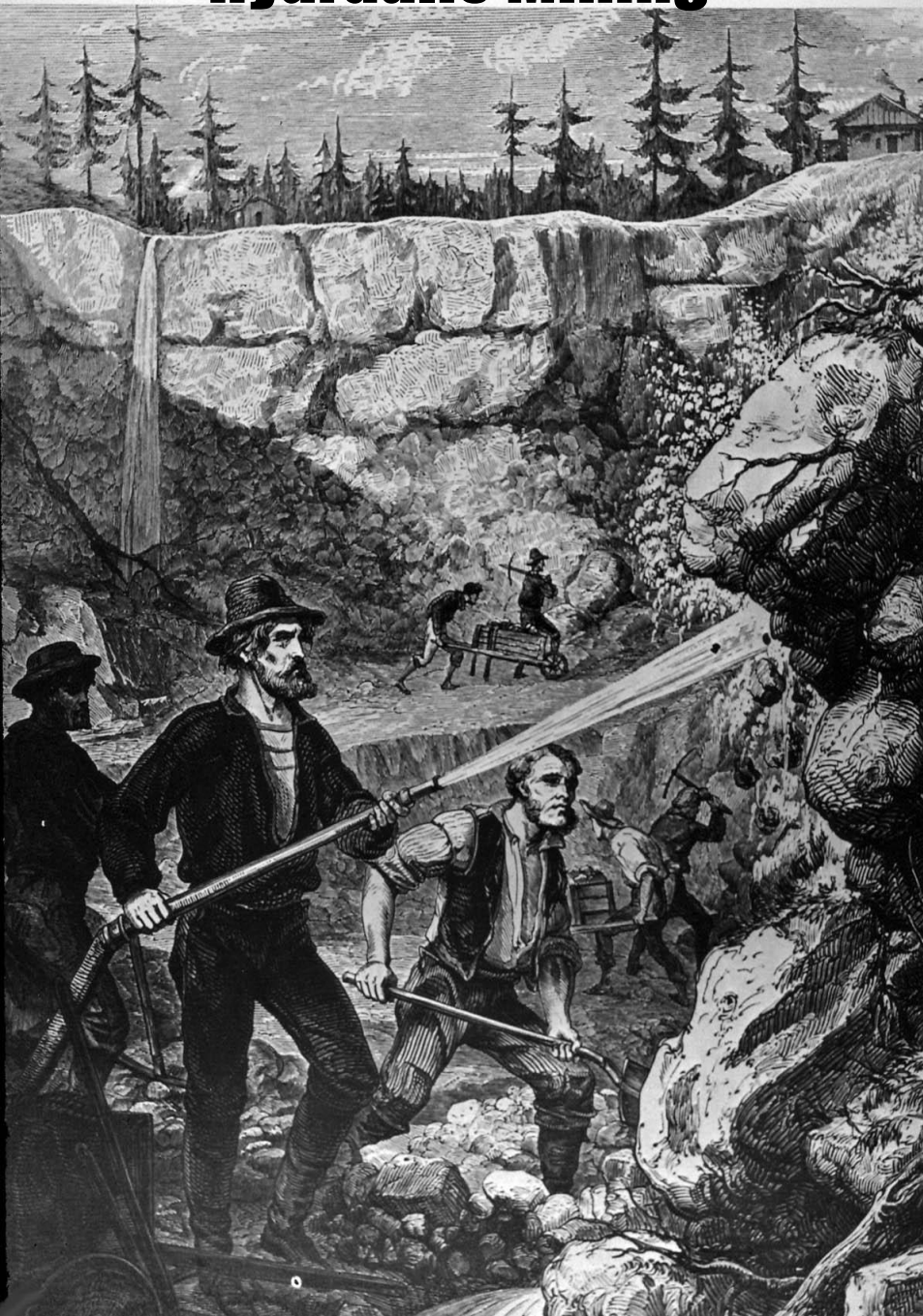
Placer Mining Columbia CA





Columbia CA

Hydraulic Mining



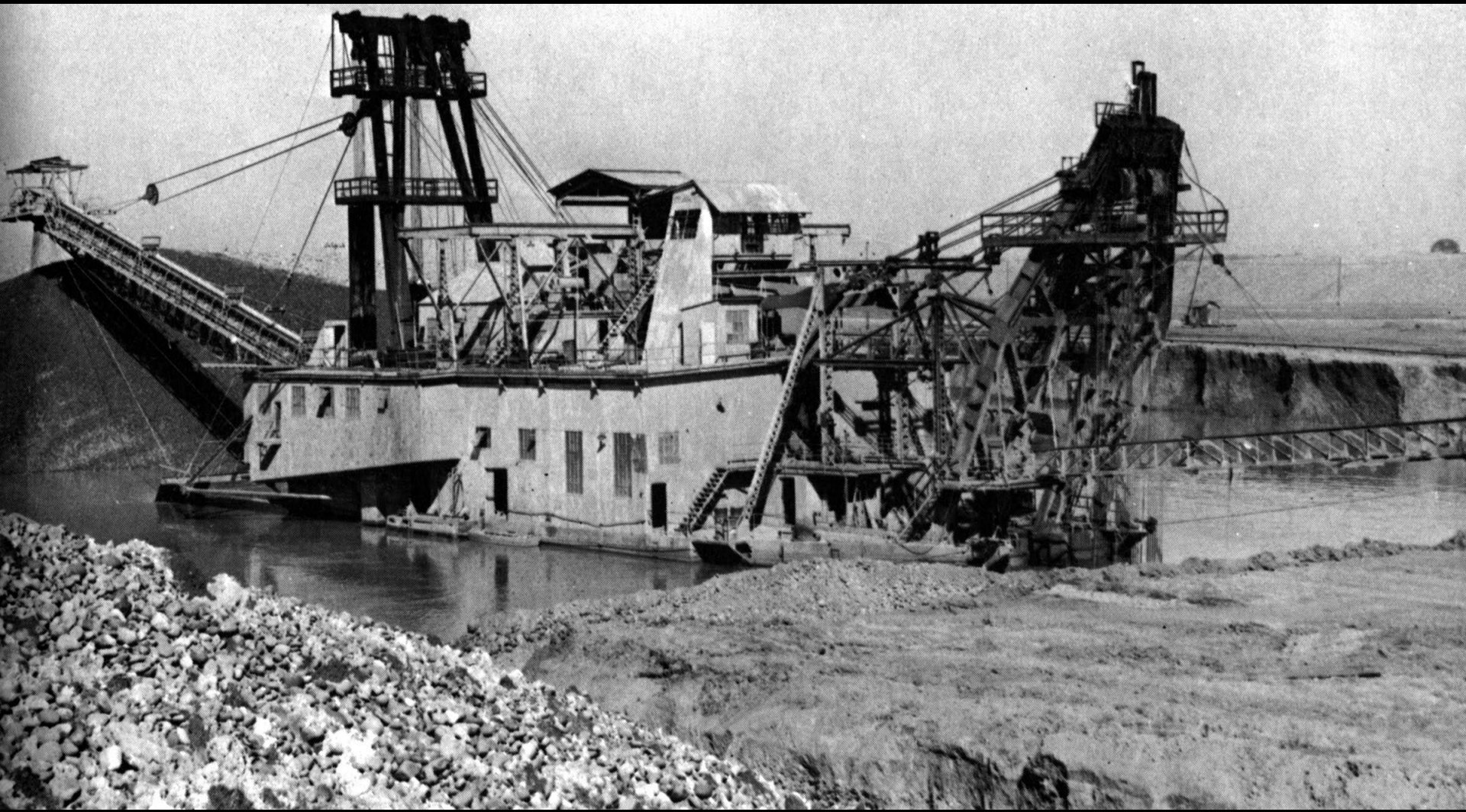
**La Grange Mine
Weaverville District
1914**



Michigan Bar 1860s



Princess Mine Shasta County 1900



Suction Dredge 1953

Running Hard Rock Tunnel





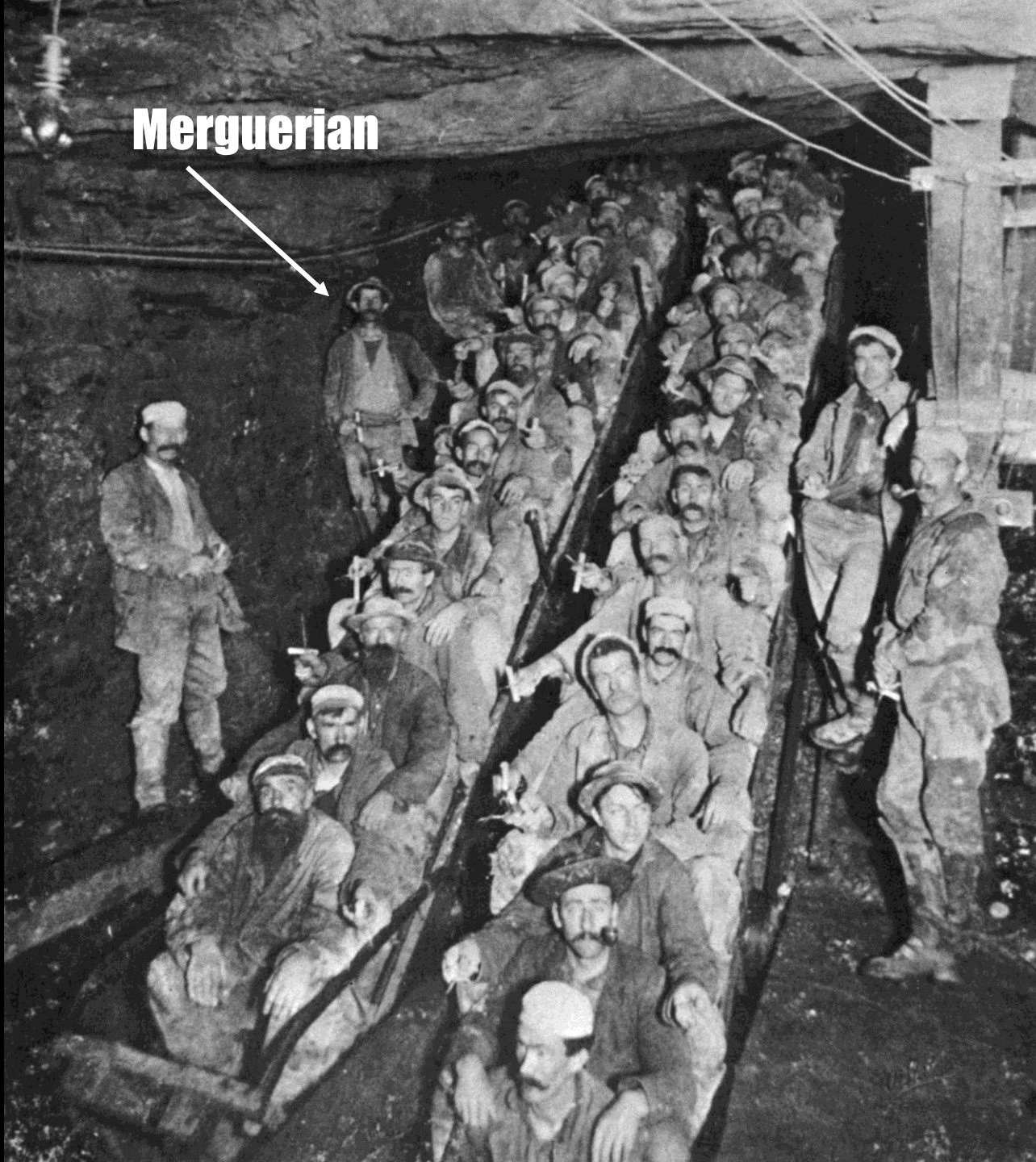
Eagle Creek Mine



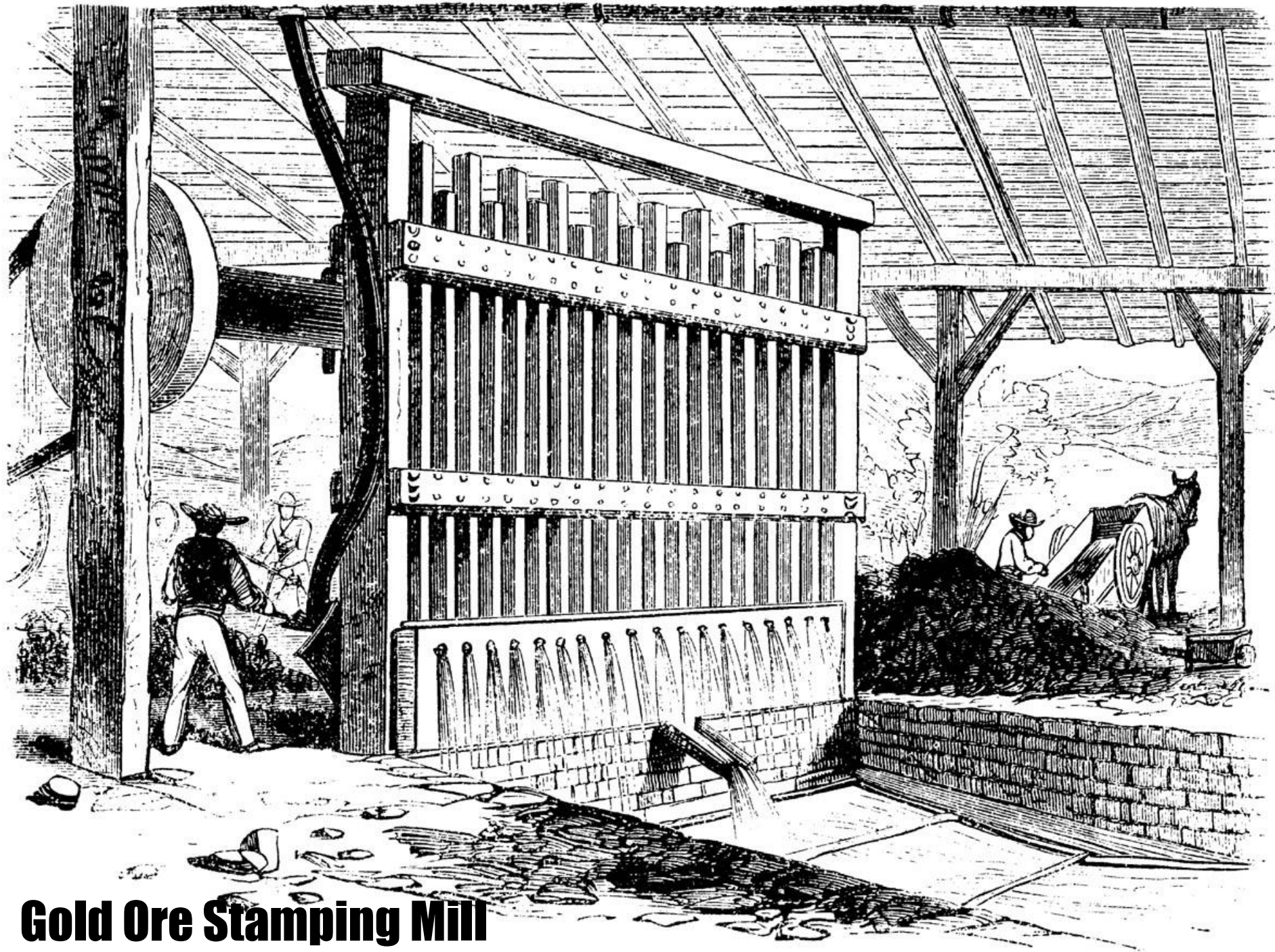
Empire Mine, Grass Valley, 1900

**Empire Mine
Grass Valley
1900**

Merguerian







Gold Ore Stamping Mill



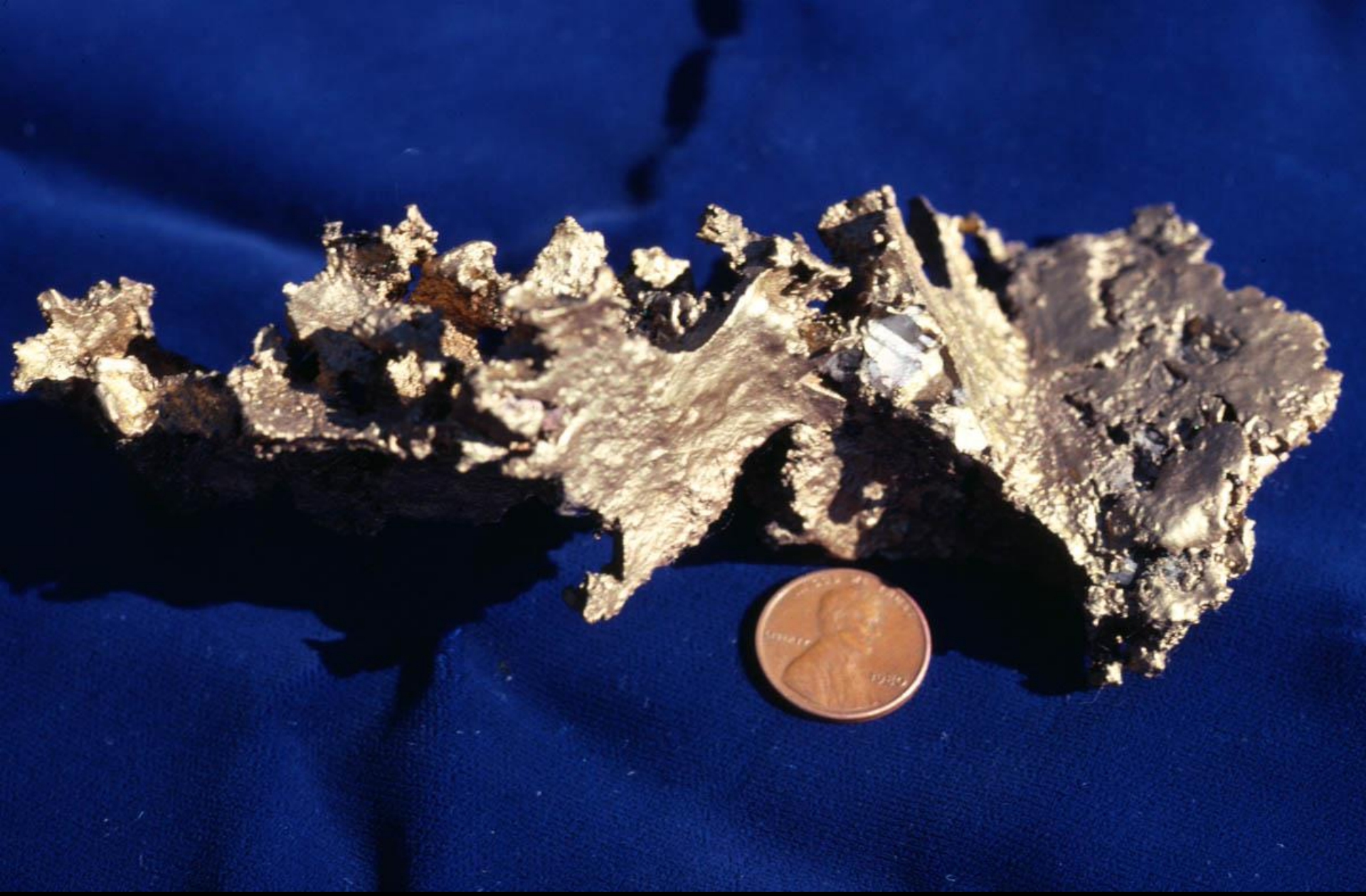
Coloma, CA

Grinding Mill



Mother Lode Gold





Mid Fork Stanislaus



Ruby Drift Mine, Allegheny District

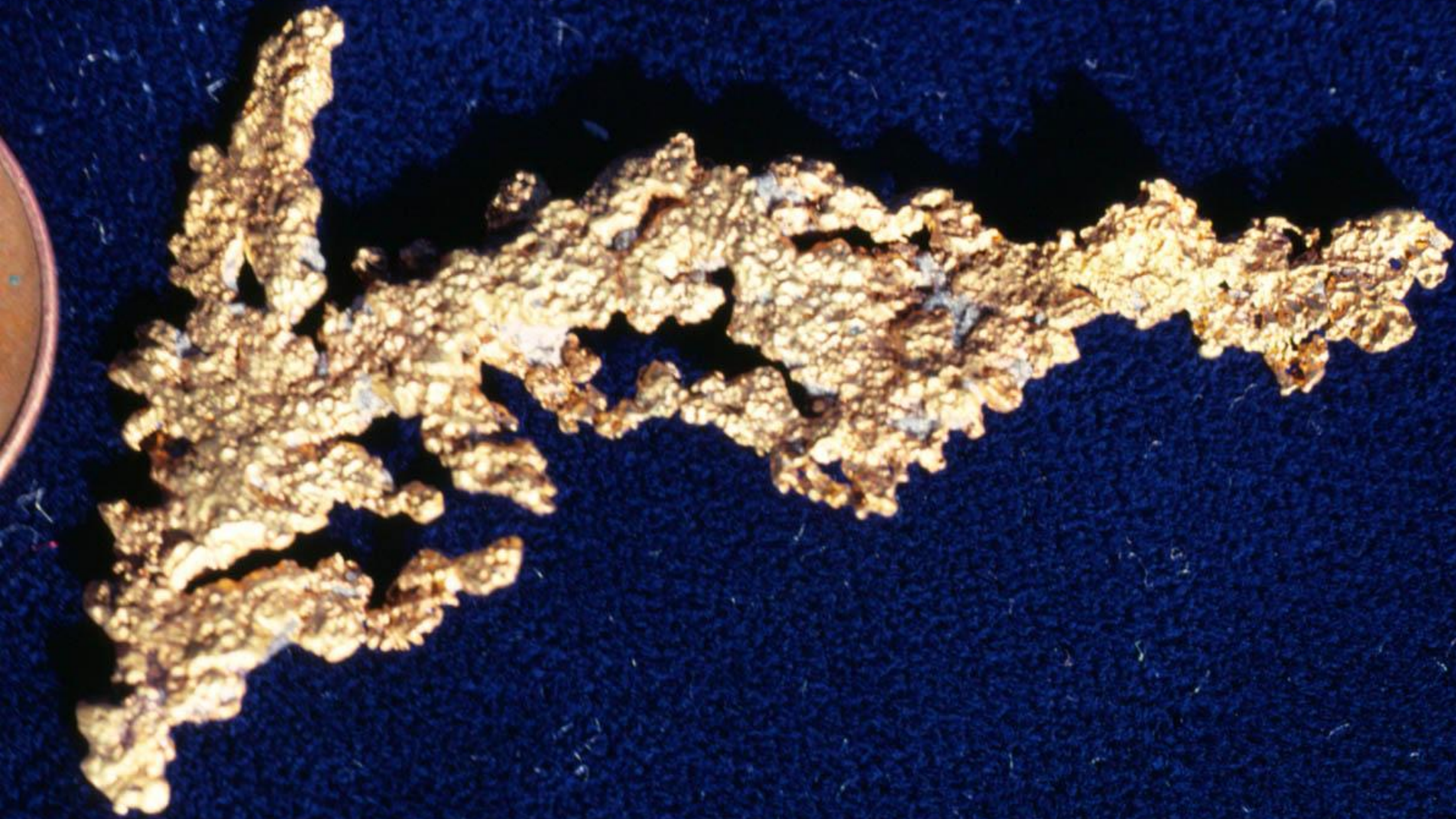


River Grit, Stanislaus River, 1980

**Gold from Phyllite
Rawhide Flat Road, Jamestown**



Gold from Phyllite
Rawhide Flat Road, Jamestown





**Duchess Mine
Sonora CA**

**Marble Quarry Mine
Columbia CA**



**Marble Quarry Mine
Columbia CA**





Coulterville, CA



Gold Octahedra, Foothills Belt CA

Hambat Says:

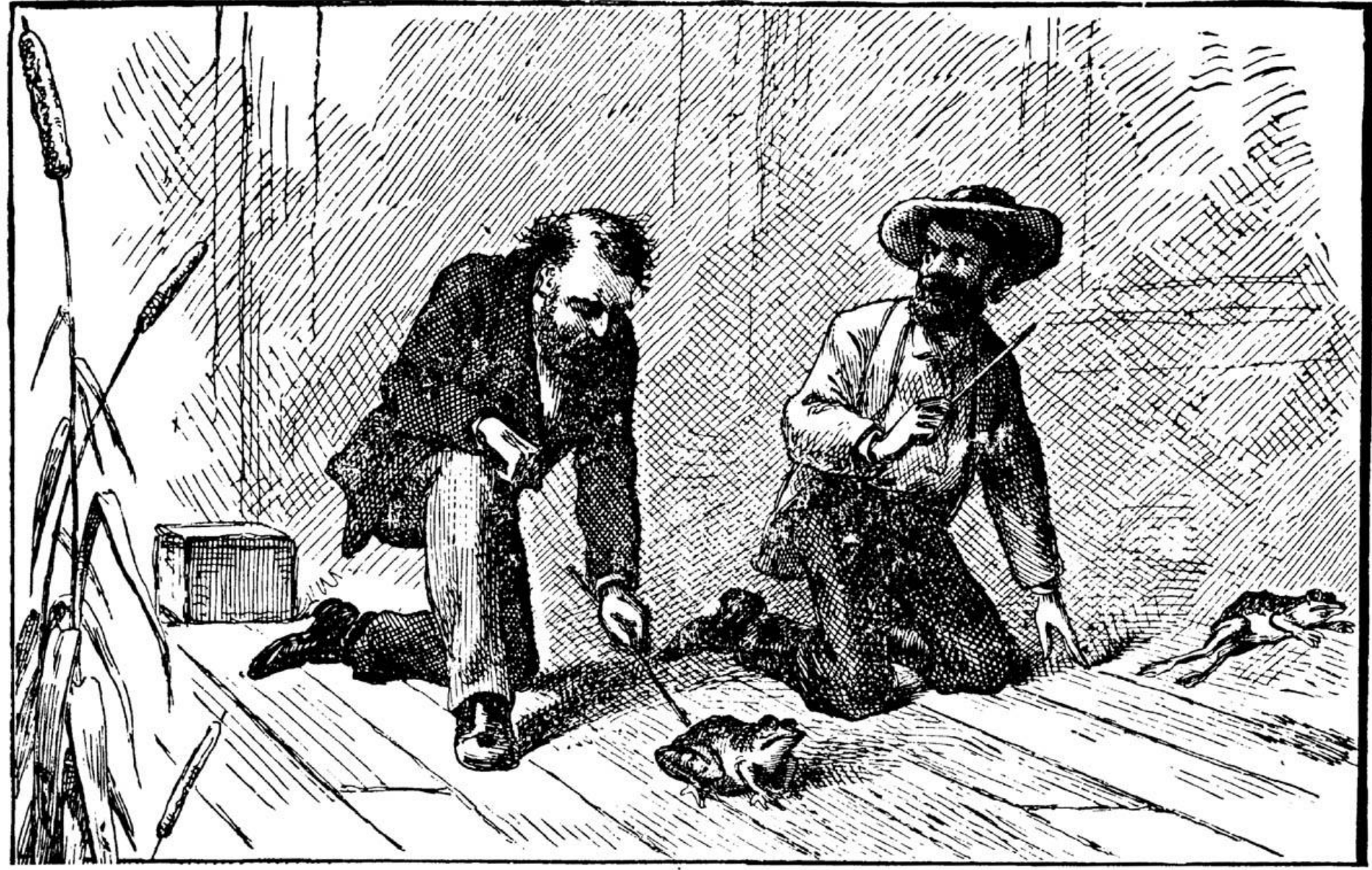
DUKE

**Thanks For
Listening**

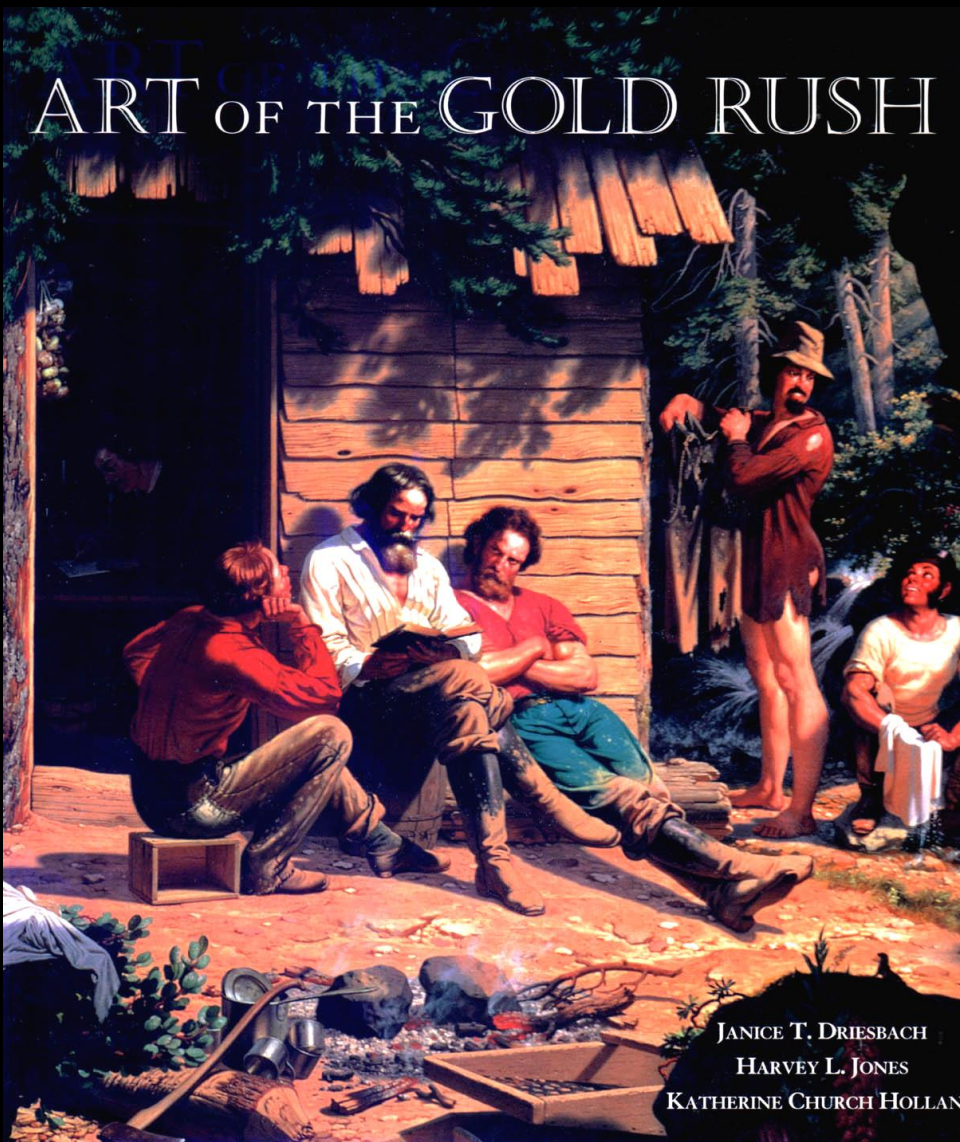
Dukelabs.com



And So



Celebrated Jumping Frog of Calaveras County





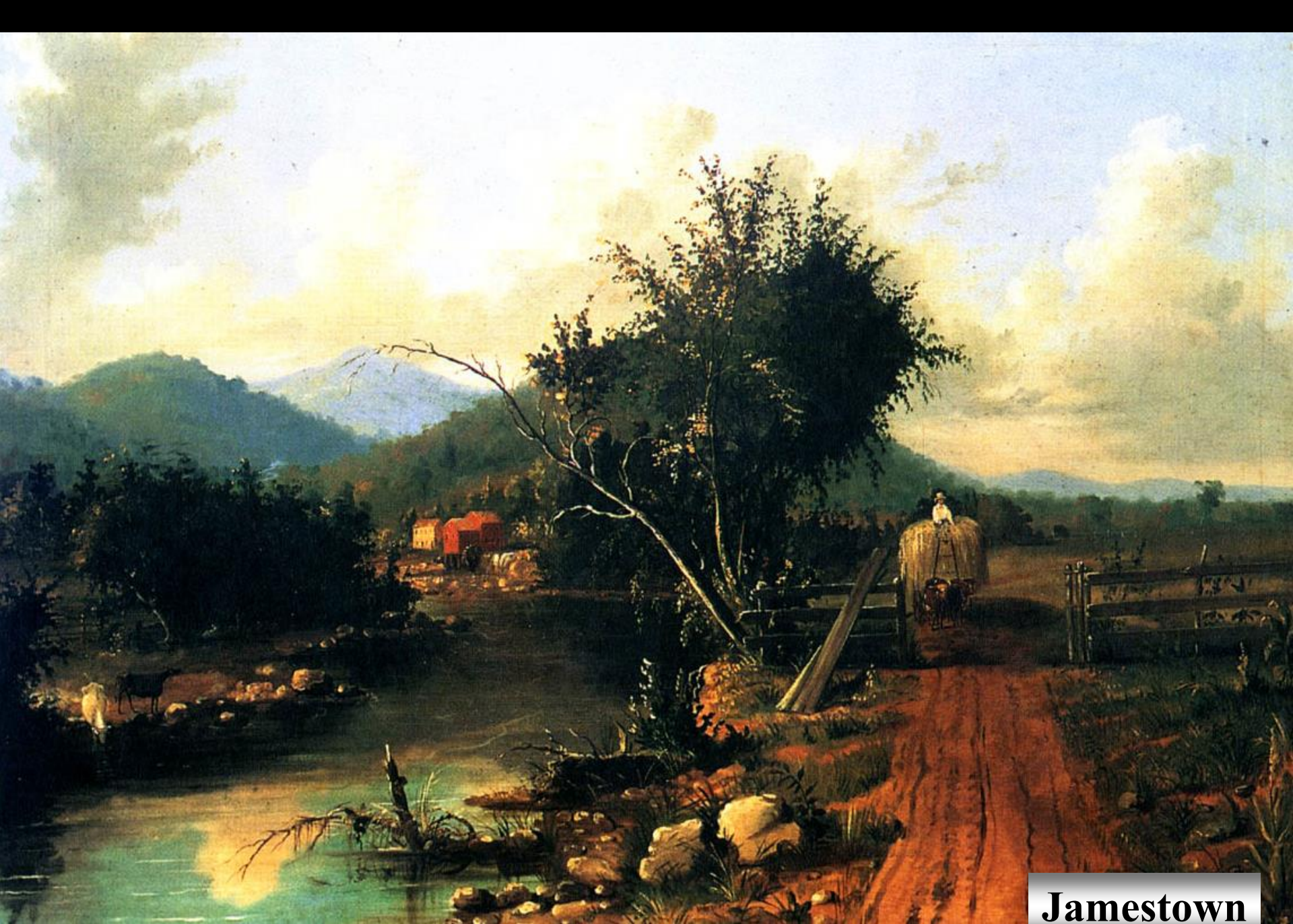
A Moment at Rest



The Card Players

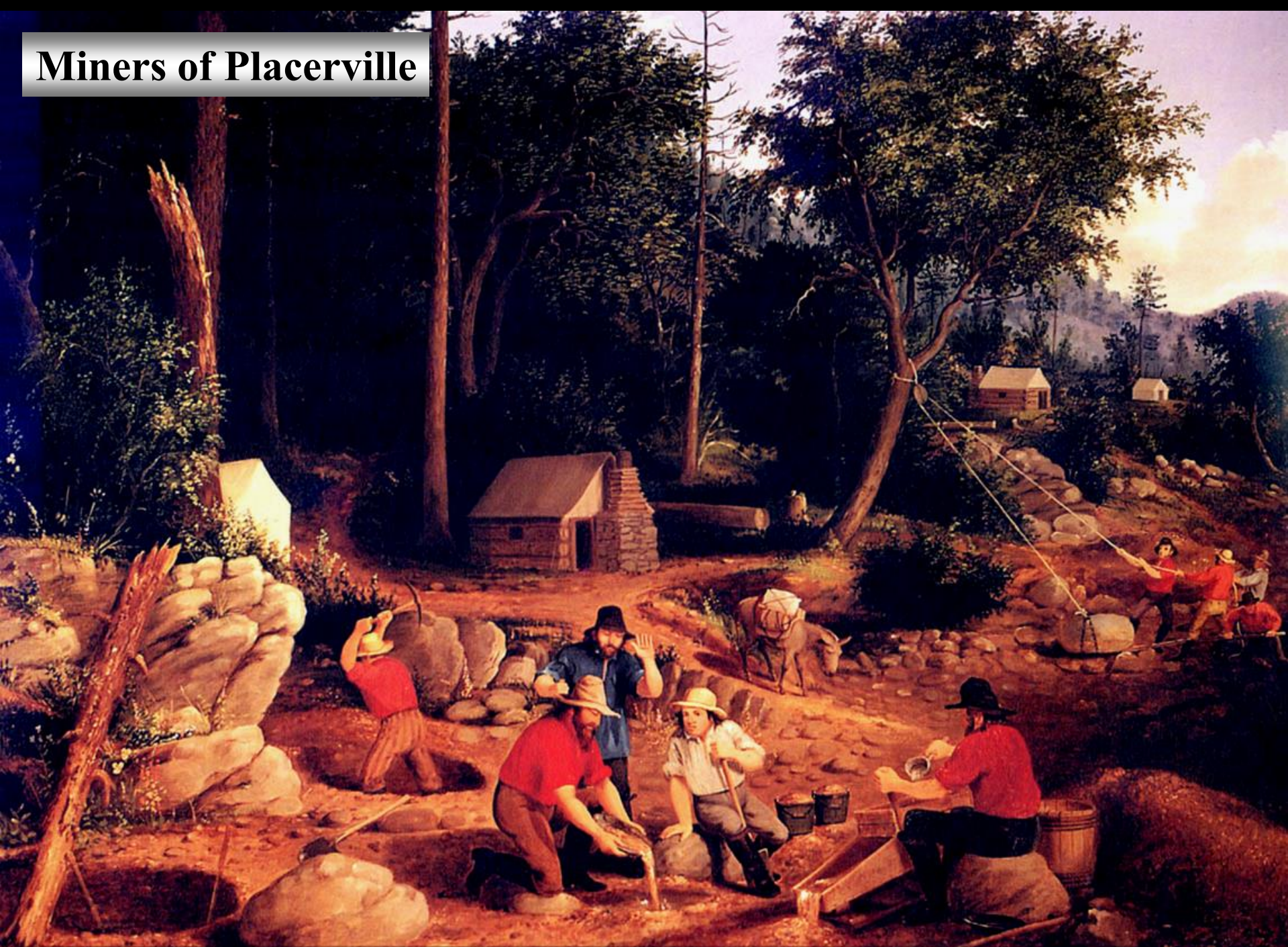


French Gold-Seekers



Jamestown

Miners of Placerville



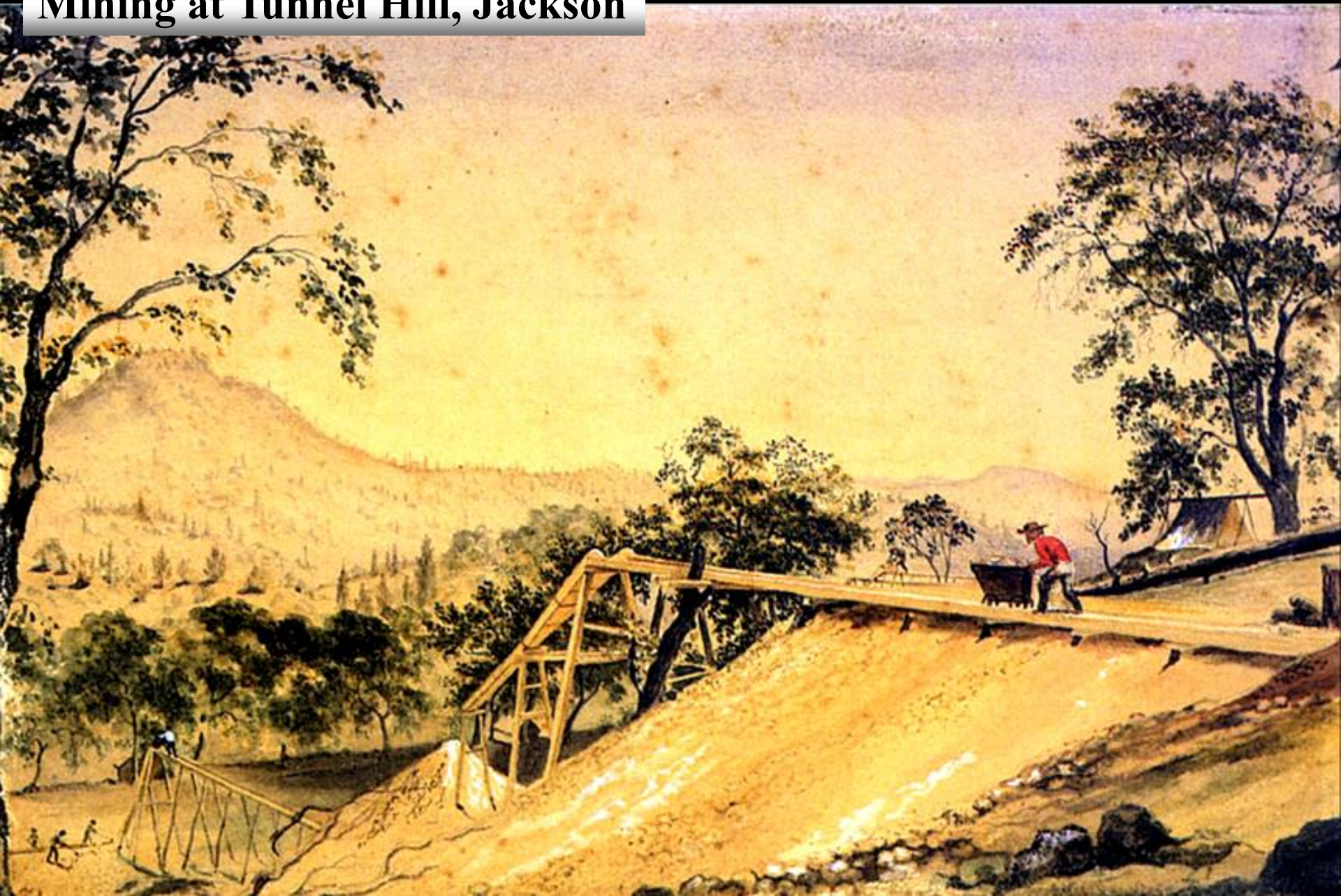
Miners in the Sierra



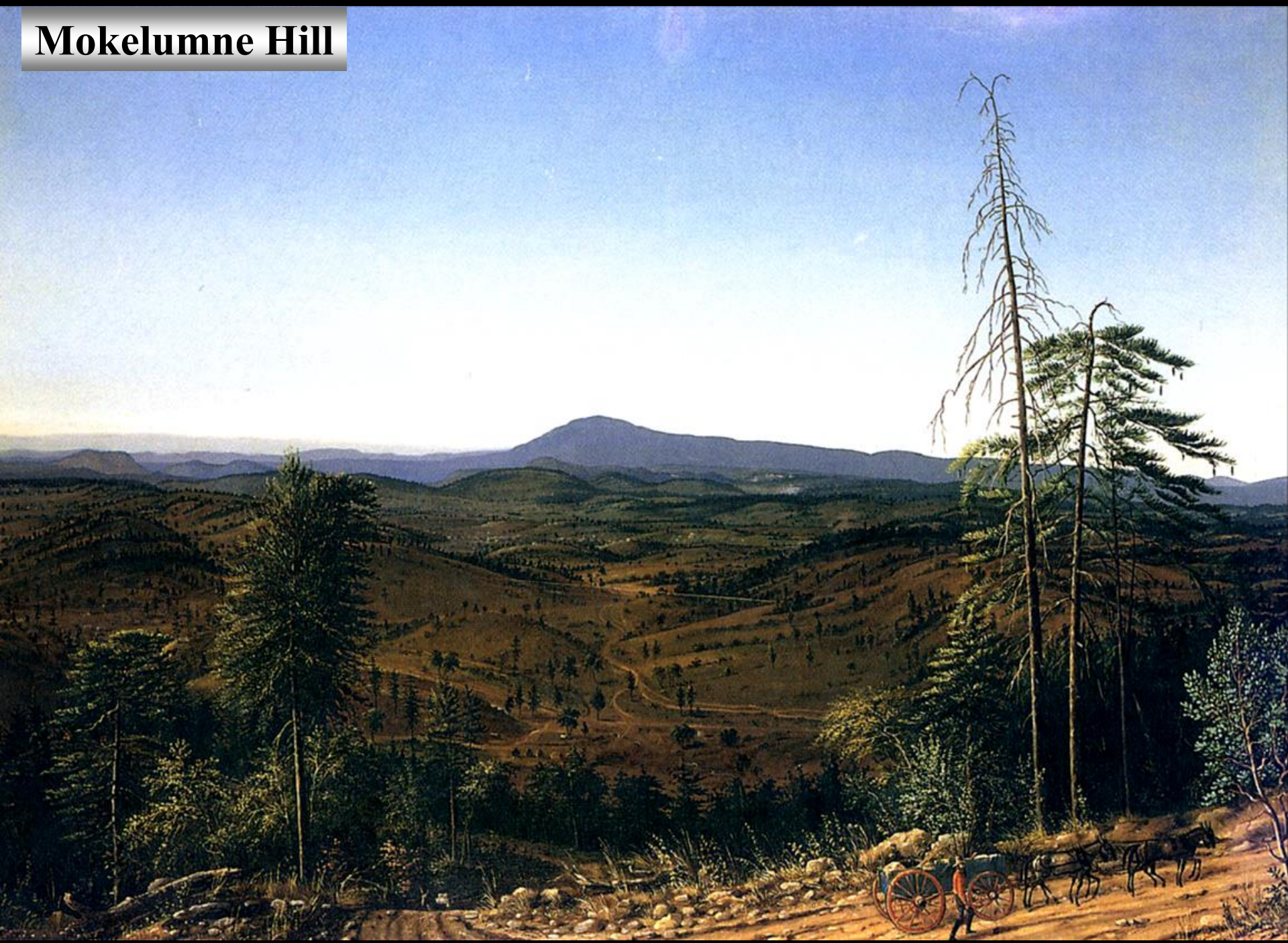
Panning Operations, Foster's Bar



Mining at Tunnel Hill, Jackson



Mokelumne Hill



Mother Lode Inn





Panning For Gold



Prospectors in the Sierra