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Cover: Diver Yossi Tur-Caspa of the University of Haifa investigates Herodian harbor remains at Caesarea with the aid of a water jet probing device using compressed air from his tank. See, *The Ancient Harbors of Caesarea Maritime*, page 56

Gold Rush Archaeology:



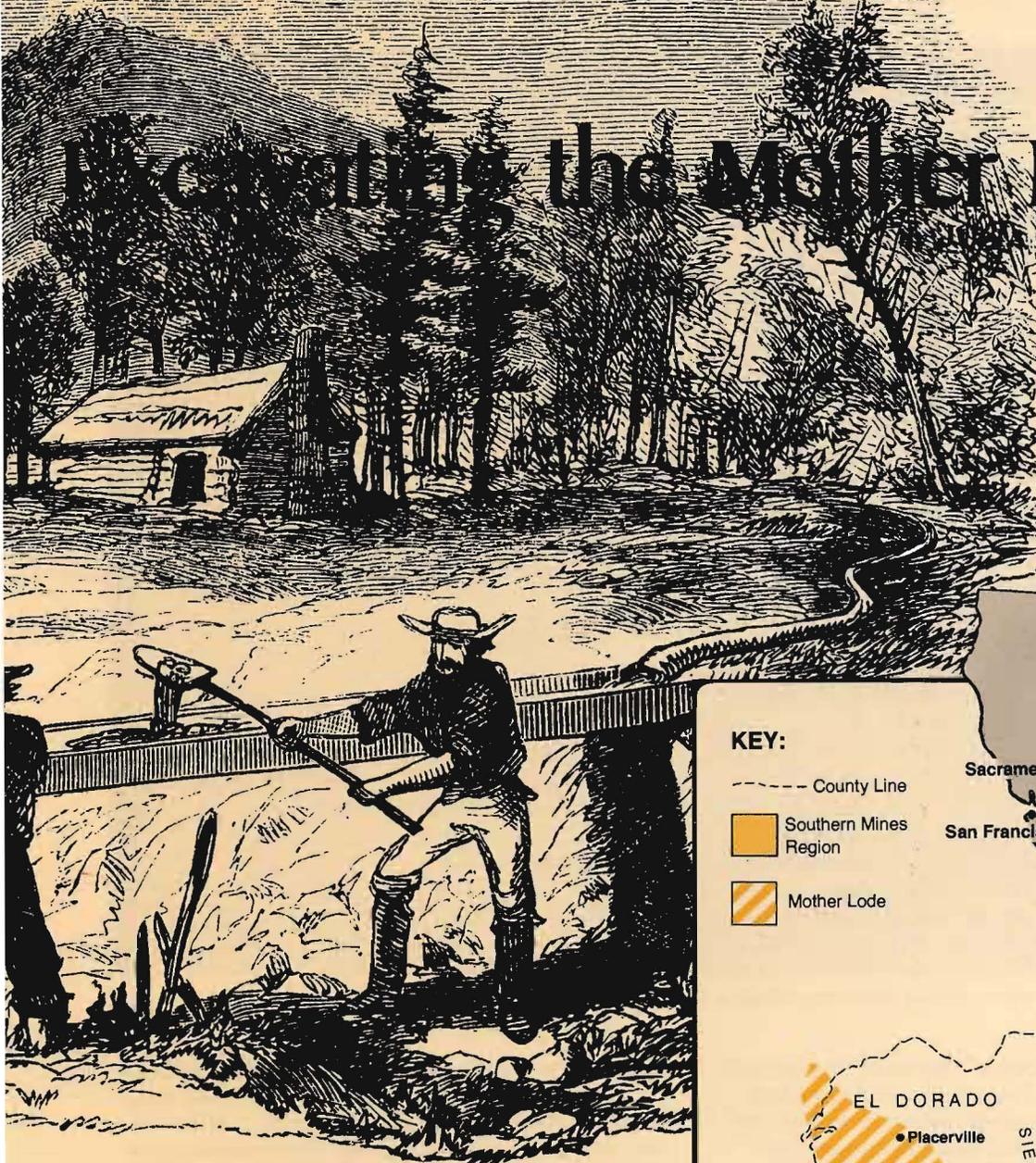
It was 1869. Joseph Demertini surveyed his homesite from the shade of the pine. The canvas roof would last through the coming winter, the final winter, if plans went well. His family had been on this spot for three years and he doubted if there was much more gold to come out of the creek. John, his second son, was repairing the ditch again and he and the eldest, Gino, would be washing earth by tomorrow. If they had spent as much time running the long-tom and the cradle as they had maintaining that water channel they would be rich today.

Joseph eased himself to his feet. At 50 it took him longer to do things than it used to. But he was still strong; California made men strong again. He remembered the dry, hard fields of the Abruzzi in Italy. Exposed to the sun when the forests were felled, they were ruined for pasture and soon leached of good crop soils. It was five years ago that he and Gino and John had left for California. Mama's nephew, Alfonzo, had written of the gold in the streams and the grasses of the hillsides, and they had decided to go.

It was suppertime and John was washing up below in the creek. Joseph checked the bread and then removed it from the oven: nine golden loaves. It would last them through tomorrow. The garden had done well this year and they had vegetables to trade in town. Gino would be back by dark with flour and a new shovel and perhaps a letter. Mama and Carmenne, Gino's wife, would come next year with the children. He and the boys would be in San Andreas by then where Gino and John were going to open their store. It was all John could talk about lately. They had saved money living on Angels Creek, enough to send for the family and buy a bit of land. The boys' English was polished now and Joseph let them do all the negotiating with the Americans. Here on Angels Creek mostly Italian was still spoken. The Gharadelli boys were only 200 yards down the creek and past them were Antonio Cilenti and his brother. The four men from Chiavari with a cabin below the narrows had just left last month. He missed Luigi Cavalero, his neighbor to the north who had moved to Tuolumne County last spring. But Al Volponi and his camp

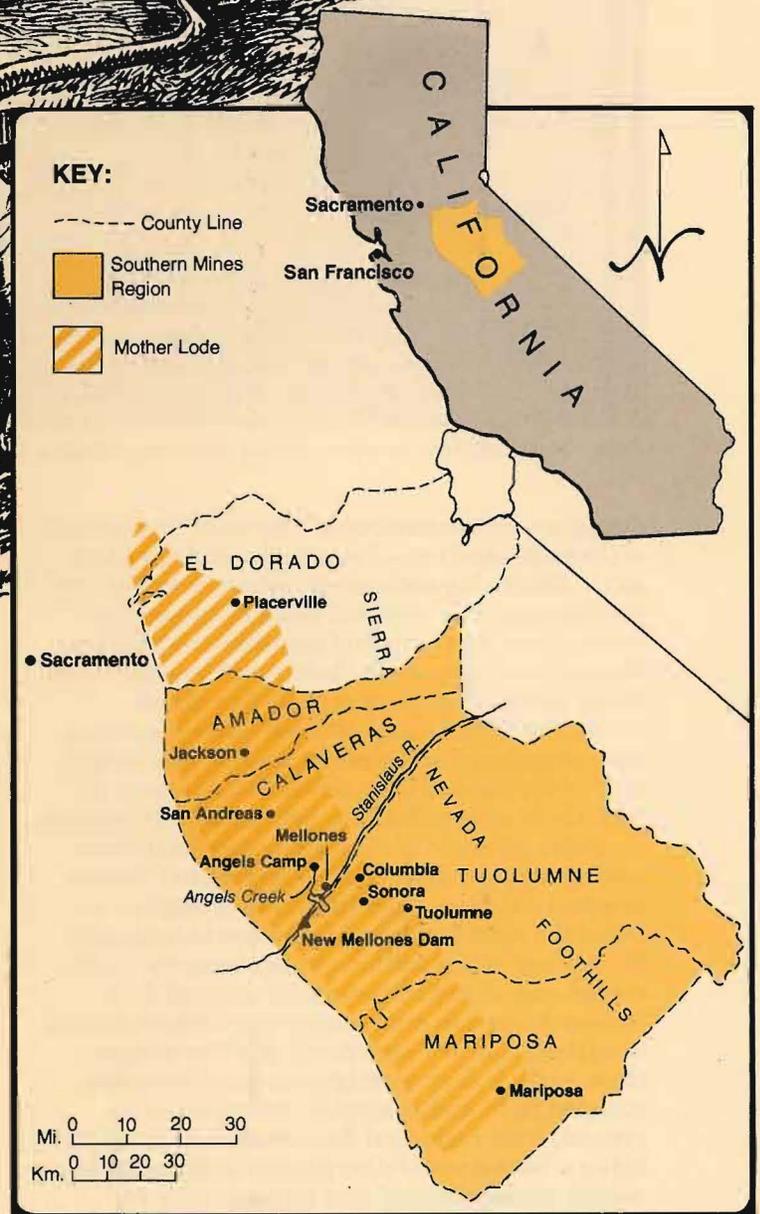
Reclaiming the Mother Lode

BY G. COSTELLO



were going to stay this winter also; the last for them, too. The last winter on Angels Creek.

During the late 1850's and 1860's, Italian immigrants began arriving in groups to the Southern Mines region of the California Mother Lode. Most came by ship around the Horn, disembarked at San Francisco and proceeded east to the foothills of the Sierra Nevada. The 1849 Gold Rush was spent and the new prospectors largely found worked-over stream beds and abandoned mining camps. While gold may have provided the impetus for immigration, the Italians were looking for more than quick riches: they had come to settle. Men arrived first and established themselves on the land. Isolated by their language, they tended to remain in more rural areas, lived close to one another, and took advantage of their skills in gardening. One group of such Italian men settled along Angels Creek in southern Calaveras County. More than a dozen homesteads each supported three to five men who worked nearby placer



Nearly 23 miles of the Stanislaus River channel containing Gold Rush sites will be inundated by the waters of the New Melones Reservoir. (Above) 1860 lithograph depicts a typical placer mining operation near Angels Creek.

SCHEDULE I.—Inhabitants in 8th Township, in the County of Calaveras, State of California, enumerated by me on the 27th day of June, 1870.

Post Office: Copperopolis

Barlow Ass't Marshal.

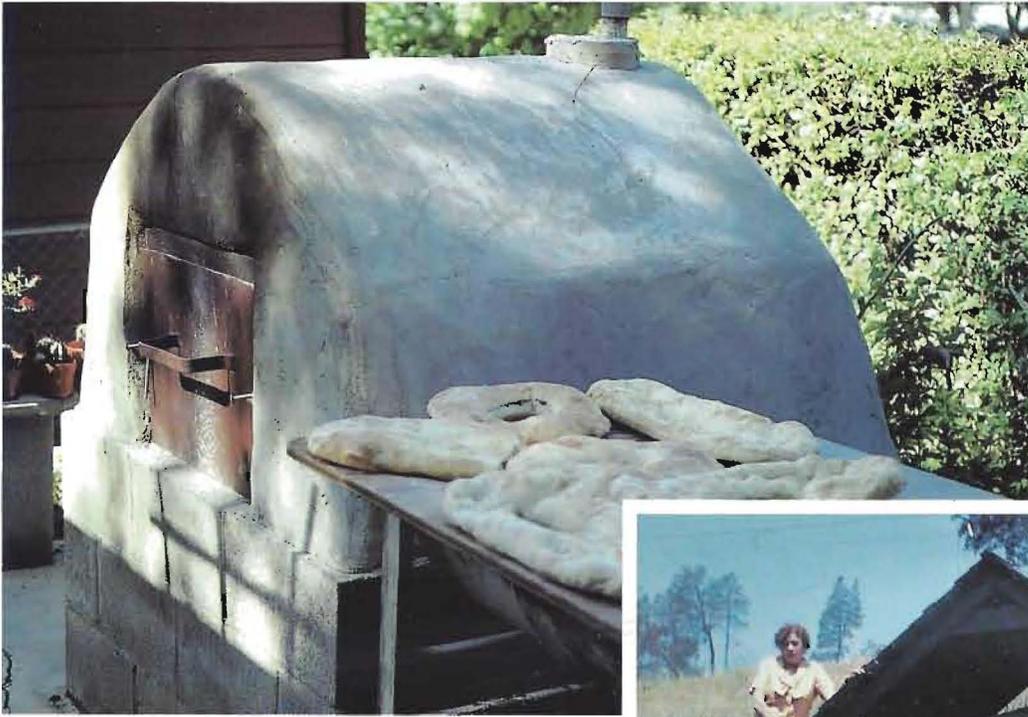
1	2	3	IDENTITY			7	VALUE OF REAL ESTATE OWNED		10	PRESENTAGE				15	16	17	18	COMMENTS	
			4	5	6		8	9		11	12	13	14					19	20
			Age	Sex	Profession, Occupation, or Trade of each person, male or female.		Value of Real Estate	Value of Personal Estate		Place of Birth, naming State or Territory of U. S., or the Country, if of foreign birth.	Foreign Birth	Months of foreign birth	If born within the year, state month (Jan., Feb., etc.)	If married within the year, state month (Jan., Feb., etc.)	Attended school within the year	Enrolled	Whether deaf and dumb, blind, insane, or idiotic.	Main Office of U. S. Census	Remarks
1			62	M	Woods on farm					Massachusetts								/	
2			22	M	Woods on farm					New York								/	
3	24620		41	M	Gold Miner					Nassau	/	/						/	
4	24626		38	M	Gold Miner					Italy	/	/						/	
5			37	M	Gold Miner					Italy	/	/						/	
6			29	M	Gold Miner					Italy	/	/						/	
7			28	M	Gold Miner					Italy	/	/						/	
8			25	M	Gold Miner					Italy	/	/						/	
9	24627		50	M	Gold Miner					Italy	/	/						/	
10			27	M	Gold Miner					Italy	/	/						/	
11			23	M	Gold Miner					Italy	/	/						/	
12	247208		37	M	Gold Miner					California	/	/				/	/	/	
13	247208		45	M	Gold Miner					Mexico	/	/				/	/	/	
14			60	M	Gold Miner					Mexico	/	/				/	/	/	
15			40	M	Gold Miner					Mexico	/	/				/	/	/	
16			45	M	Gold Miner					Mexico	/	/				/	/	/	
17	248209		43	M	Farmer	200	100			Switzerland	/	/						/	
18	249210		45	M	Gold Miner					Prussia	/	/						/	
19			30	M	Gold Miner					Prussia	/	/						/	
20	250211		29	M	Farmer					Prussia	/	/						/	

Page from the 1870 census report showing the camps of Italian, Californian and Mexican miners on Angels Creek.

deposits—concentrations of “free gold” washed out of the rock—and raised vegetables and some livestock. Simple log-and-canvas cabins were built on leveled sites and included stone fireplaces for winter heat. Each group of men also erected a traditional baking oven in their yards to prepare the bread and foods typical of their homeland.

By the 1870's many of these homestead sites were abandoned as the residents moved to patent land or to establish themselves in businesses. By 1880 there were no Italians left on Angels Creek at all although some of their sites may have been reoccupied for a short time by persistent Chinese prospectors. More than 100 years of neglect reduced the stone ovens and fireplaces to ruins and the history of the settlement to obscurity. Unrecorded and unremembered, the story of this Italian-American community was virtually lost to twentieth-century historians. But the lives of these early Italian immigrants could be reconstructed from archaeological remains in the ground, from historical documents and from oral history. Such a multi-disciplinary study using historical, archaeological and ethnographic resources, was essential to the success of this research since no one approach could have told the tale alone.

Italians did not begin emigrating to California in significant numbers until the end of the Gold Rush of 1849-56. During this period, California was transformed from a sleepy Hispanic province into a bustling and booming frontier state. The primary catalyst was gold. Discovered on the west slopes of the Sierra Nevada foothills in 1848, gold and the lure of quick fortune attracted a geographically and culturally diverse population. The destination of the argonauts was the Mother Lode—a 120-mile-long outcropping of gold-bearing quartz running parallel to the Sierra crest on its western slopes. Where Sierra rivers and streams cut across this formation, “free gold” or placer gold was washed out of the rock and deposited downstream in the form of nuggets and flakes. This was the gold that attracted the Forty-Niners. Stream beds were turned over, rechanneled and pitted with holes as thousands of eager miners washed earth looking for easy wealth. After placer deposits began to be played out in the early 1850's, efforts were increasingly directed toward extracting the gold directly from quartz veins. These hard-rock mining operations required more sophisticated machinery and a greater investment of time and capital, discouraging independent and itinerant groups of miners.



(Above) An oven built in 1973 in San Andreas for Carmenne Cilenti Poor is the only modern one of its kind in the area. (Right) Oven built by Joseph Genocchio in 1899 in Calaveras County. His granddaughter stands next to the oven which links the Angels Creek ovens with existing Italian ovens.



By 1855 the Gold Rush was over. The cream of the placer deposits had been skimmed off and the most obvious and accessible gold veins had been mined. Transitory prospectors drifted down to the growing cities of Sacramento and San Francisco or returned home, usually with empty pockets. Although most of the Mother Lode boom towns disappeared with the gold, some settlements survived and attracted merchants, traders, artisans and families. Even today, the towns of Angels Camp, Jackson, Mariposa, San Andreas, Sonora, and Placerville still stand. Agriculture and ranching became increasingly important economic activities. Some quartz mining continued but the significance of this industry remained minor until technological innovations stimulated the mining and milling boom of the 1890's.

Archaeological evidence for the miners was identified and recorded by field crews in preparation for the area's inundation by the waters of the New Melones Reservoir. Planned in the 1960's, construction of the facility began in 1971 by the Army Corps of Engineers. Numerous archaeological surveys of the project area have been conducted since 1972. In 1978-80 mitigation work including excavation, mapping and archival research was conducted by Science Applications, Inc. of La Jolla,

California. Toward the end of this work the project was transferred from the Army Corps of Engineers to the Interagency Archaeological Services of the Department of Interior. A final phase of investigations is expected to be initiated in 1981 by IAS which, among other areas, will include additional research on the nineteenth-century gold miners.

Excavations uncovered abundant remains of mining activity. Almost every drainage contains the distinctive rock piles, channels, ground sluices, and river turnings of the placer miners. Shafts, adits and prospect holes identified the sites of the hard-rock miners, the more successful of which included adjacent milling facilities. Remains of flumes and ditches that carried the all-important water to mining operations transverse the hillsides. Footpaths, roads and ferry crossings remain to identify the early transportation systems, and the development of agriculture is recorded in the ruins of ranches established during the 1860's and 1870's.

Noticeably sparse, however, are the remains of the living sites of the miners. One reason was that the virtually exclusively male population was highly mobile and independent. Hopeful miners had to respond quickly to rumors of a new strike so they kept their possessions few and portable. Pro-



(Left and right) Archaeological investigations identified a series of miners' ovens in various states of preservation recognizable by their

ductive placer areas were also generally worked over in a matter of weeks or months and little effort was spent on improving temporary home sites. Canvas spread over sticks and a level place to lie down provided adequate accommodations. On more extensive claims worked by larger companies of men, one log or log/canvas structure with a fireplace would serve as a gathering place for the entire settlement. Because of these meager physical indications of living quarters, the presence of placer miners was more easily and reliably identified from the remains of their mining activities than the ruins of their homes. Formations of washed rock along stream channels indicated the presence of placer miners; mounds of earth on hillsides revealed the locations of abandoned adits and shafts; and arrastra stones and remains of stamp mills record early efforts of removing the gold from quartz rock.

An exception to this pattern was found in a series of placer miner cabin sites on Angels Creek where there was a relatively dense collection of leveled structure pads with ruins of fireplaces. In addition, the sites contained free-standing stone ovens constructed in the yard areas. These unique ovens provided the first clue to the story of the Italian settlement. Constructed of local schist, the ovens average two meters, or about six feet, in

diameter. Where intact, they rise approximately 1.5 meters in height and are dome-shaped with a flattened face on one side where a small doorway is located. Stones were mortared with mud and the oven floors were made either of packed earth or fitted stone. So far, 21 of these ovens have been identified in the project area. Two are associated with nineteenth-century ranches and two are located on large, turn-of-the-century mining camps. The 17 remaining ovens were found on isolated cabin sites like Angels Creek and date to the nineteenth century. Typically, these cabin sites include the ruins of a stone oven and a fireplace, a structure pad or stone cabin foundation, a year-round water supply, and evidence of placer mining. Ovens were located approximately ten meters from the ruins of the cabins. Of the 17 oven/cabin sites in the project area, 11 were on Angels Creek.

Although it appeared that the ovens were used domestically, at first it was possible that they may have been employed in some gold extraction technique or industrial purpose. As early as the sixteenth century in Germany, for example, ovens were used for roasting gold-bearing ores to remove sulphides in the extraction of gold. Ore roasting, however, is associated only with hard-rock mining. Placer miners recover the free gold that has already been separated from the parent rock by nature so this technique would not have been used at the Angels Creek sites. Additionally, excavation of



similar sizes, shapes and locations.

several ovens revealed only a minimal degree of iron oxidation and other chemical changes in the earth. A relatively low operating temperature is indicated which excludes high heat uses such as a forge furnace. The earth around the ovens was also free of slag or waste material typical of metal-processing sites.

Miners in general use a low temperature process called retorting to separate amalgams of gold, silver and mercury. Mercury, used to collect gold dust and flake from placer and milling operations, is then vaporized at about 675° F. The gas is caught and channeled to a water-cooled passage where it is recovered in liquid form. Remaining heavy metals and trace elements are then sold to a smelter for final separation. The excavated ovens, however, lacked any feature which could be associated with recovering mercury vapor. They would not have been used in this process without such a distilling mechanism—not only was mercury simply too expensive to be allowed to vent into the atmosphere, it was also highly toxic.

Once industrial operations had been rejected for the ovens, it was determined that they belonged to ancient traditions of bread baking which have their roots in the Middle East. *Hornos* or baking ovens were first introduced in the New World by the Spanish where they were adopted by local cultures. Operating these ovens is relatively simple. A fire of sticks and brush is built inside the

oven chamber and is allowed to burn down to coals, a process taking from two-and-one-half to three hours. Coals are then removed and the oven floor is swept clean of ash with a wet broom. Corn meal or flour can be sprinkled on the prepared surface as a base for the raw loaves. The flue hole in the rear roof of the chamber is closed and loaves are distributed around the floor. A damp cloth or piece of metal is used to seal the oven door; baking time is about 15 minutes with the oven at 450° F.

The identification of these structures at Angels Creek as baking ovens did not, however, explain who had built them or when. Any Mediterranean ethnic group as well as Mexicans could have occupied the sites between 1849 and the end of the nineteenth century. Initial historical research did not produce many definitive clues. Mining claims were not patented until 1860 for quartz or hard-rock claims and 1870 for placer claims. Patented placer claims were usually confined to large river operations planning to work an area for several years. Ranches were also generally not patented until near the turn of the century, although they often appear in earlier assessors and tract records. One of the ranch sites which contained an oven, however, did have some documentation. It was developed as a livestock ranch between 1859 and 1891 by Lorenz Lorenzen and his family: Italians. One of the first clues.

Artifacts found at the nineteenth-century



oven/cabin sites were sparse. Small occurrences of square nails indicated that some wood was present in the cabin construction although there was not a sufficient number to suggest a wood frame building. The rectangular, one-room cabins most likely consisted of a combination of log and canvas materials. Waist or chest-high walls were built of logs while a canvas roof hung down to complete the walls or form awnings when the weather required. One-third of the cabins had a one-course stone foundation, one-third a visible cabin depression, and one-third only the fireplace as evidence of a former building. Where their positions could be determined, the fireplaces were located toward the ends of one of the longer walls. They were rarely placed symmetrically. Two-thirds of the fireplaces consisted of semicircles of large flat schist placed on end. The remaining third were constructed of schist laid in courses on a rectangular plan. Chimneys probably followed a typical Gold Rush-style using wooden cribbing plastered over with mud.

A clearer picture of the oven builders has emerged from the archaeology. Similarity of site features, especially the ovens, indicates a culturally cohesive group of people. Improvements on the sites—the ovens, fireplaces and cabins—are not typical of the itinerant placer miner and suggest that this group had a more settled existence. The small size of the homesteads and the limited productivity of nearby placer deposits, however, would not have sustained a group of people for more than several years. Yet the question still remained—who exactly built the ovens and when? Excavation of one of the Angels Creek sites yielded an artifact which provided an absolute date. In the overburden which had accumulated on top of a cabin floor, a “Dr. Hostetter’s Stomach Bitters” bottle was recovered which could be dated to the late 1870’s. Since the bottle was deposited after the abandonment of the site, the cabin could be determined to have been vacant by at least 1880. Another clue.

With a general time period as a focus—1850 to 1880—and a specific region, Angels Creek, the historical documents were readdressed. Although these humble homesteads would not have been patented or assessed, they might appear in census reports. The traveling census taker traversed the countryside recording individual camps and households as they were encountered. He collected the name, age, sex, race, occupation, place of birth, and noted foreign or U.S. citizenship of parents for each person. The names of ranchers who lived near Angels Creek had been determined through studying patent records and tract maps. By locating their names in the census record, the path of the census taker could be reconstructed and the entries made within the community of oven/cabin sites could be identified.

The 1850 census was not helpful. It is incomplete for California and is not organized for re-

(Above) Excavations at an Italian miner’s site uncovered the cabin (left) with the oven just to the right of the archaeologists. (Middle) Fallen rock and debris have been removed, the earthen floor exposed, and an area in front of the oven mouth has been tested for artifacts. (Bottom) The exposed fallen rock at this oven site would have originally formed an interior lining for the fire area.



Lithograph showing Chinese miners in the Mother Lode region.

searching small geographic areas within counties. In 1860, the census was more thorough and names were listed by townships. A search through Township 8, however, did not produce any names known to be associated with the Angels Creek area. The 1870 census provided the first clear picture of the population living within the study area on Angels Creek. The Whittles, Quigs and Braggers all owned ranches surrounding the study sites. Between their names on the census record appeared four households of miners: a group of five Italians, three of whom were apparently brothers; an Italian family of a father and two sons; one solitary California miner and a camp of four Mexicans.

By 1880 all of the Italian, Mexican and California miners had left their former sites. In their places appeared two groups of Chinese miners: one camp of five and one camp of ten men. References to Chinese miners reworking placer deposits late in the nineteenth century are abundant in the Gold Rush literature. Their recorded presence on Angels Creek probably accounts for the Oriental ceramic sherds found above abandoned floor levels at one of the oven/cabin sites. By 1900 all the miners were gone from the excavation area which was now populated almost exclusively by ranchers, their laborers and associated families.

Who then built and operated the ovens—the Italians or the Mexicans who occupied the sites in 1870? The Italians arrived late in the Gold Rush. The 1850 census, admittedly inaccurate, recorded only 228 Italians in all of California. Although estimates differ, there were about 2,800 Italians in 1860 and more than 4,500 recorded for California in 1870. It is significant that in 1870 over 24 percent of all the Italians in California lived in the Southern and Central Mines region of the Mother Lode—Calaveras County, where Angels Creek is located, and neighboring Tuolumne and Amador Counties. They continued populating the gold fields long after the area was generally abandoned and therefore occupied a relatively more important position in gold mining during the third quarter of the nineteenth century. By 1870, 22 percent of all California Italians were miners.

The rural settlements of the Italians and their

way of life were distinctly different from those of other immigrant groups. Italians were poorly represented in manufacturing services and in the labor forces of large farms and ranches, occupations which accounted for the primary livelihoods of most other ethnic groups of this period. In addition to mining, the Italians emerged as the pre-eminent suppliers of fruit, vegetables and dairy products. Traditionally accomplished gardeners, they adapted well to the climate and topography of the Sierra foothills which was remarkably similar to their Italian homeland. The repertoire of plants which could be grown and successful methods of horticulture were well known to the new immigrants. Not surprisingly, of the 26 percent of California Italians engaged in agriculture, 18 percent were gardeners, nurserymen and vine-dressers. Also, importantly, the Italians came to stay. While most miners planned to return to their native lands with their gold, the Italians had left to find new lives. They tended to settle near each other, a clannish nature which was a product of their linguistic isolation and the feeling of community carried over from their homeland.

The Mexicans, on the other hand, had quite a different settlement pattern. Large numbers of them participated in the initial gold rush, coming primarily from the nearby north Mexican state of Sonora. Historically, mining had been an important industry in their homeland and the Spanish-speaking argonauts arrived with developed skills and techniques. Their initial large migration and successes in finding gold were resented by the Anglos and in 1850 a Foreign Miners' Tax was passed in an effort to exclude Mexicans from the gold fields. Although the law was repealed the following year, it resulted in a large exodus of Mexican miners to their homes south of the border or to their California ranches. Ill feelings toward Mexicans lingered throughout the century. Local efforts were made to keep Mexicans out of the "easy diggings" of the productive placer areas. Those who remained worked primarily at the less desirable jobs as hard-rock quartz miners and as laborers on American-owned claims. Unlike the Italians, Mexicans did not come to the California gold fields



The intensive activity depicted in this 1860 lithograph implies a rich placer area. A canvas water pipe is being used to wash earth (background).

to stay. In the early years most migrated seasonally to the mines and returned to their homes during the off-season. After 1850 these migrations declined and by 1854 they had practically ceased. It seems unlikely that this harassed minority group would or could have maintained a settlement of homesteads during this period.

A final source of information on the two ethnic groups lies in the present population of the Mother Lode. Italian-Americans are well represented in the community and have established themselves as one of the major cultural groups in the area. Although their numbers were increased by a second major Italian immigration at the turn of the century, many modern surnames can be traced back to nineteenth-century ancestors. In contrast, the modern Mexican-American population is small. While abundant Spanish place names recall the early, large Mexican presence, most modern Mexican-Americans in the gold region emigrated during the present century. Only one oven was discovered which could fairly certainly be attributed to a Mexican settlement and it dates to the 1850's. Although Mexican-American informants recall the common use of ovens in Mexico, they were not generally built at new homes in the United States.

When inquiries were made about ovens among Italians, however, almost every family had memories of their use. Most Italian-Americans over 50 years old recalled the baking ovens as a vital part of their mothers' and neighbors' kitchens. Bread would be baked every day or every other day, and lamb, goat, venison, chicken and beef were occasionally also roasted. Traditionally a woman's task, informants were asked whether single men would go to the effort to build and bake in these ovens in a frontier situation. "Why, of course," was the response, "bachelors wouldn't have any other way to cook." The more recent Italian-American ovens inspected were similar in size and design to those of the Angels Creek sites, and they were all located in yard areas adjacent to the houses. Materials employed changed with availability. Those built near or after 1900 had brick superstructures constructed on stone foun-

datations, although mud mortar was used as late as 1936 as the bonding agent. The only operating oven located near the project area was built in 1973 out of cinder block, brick and concrete.

But these baking ovens, once indispensable features of Italian kitchens, have virtually disappeared from modern Italian-American homes. Grandmothers recall the vital role the ovens played in food preparation; mothers remember the occasional holiday use; but today's children will only have stories of the past. The nature of the sites on Angels Creek suggests that an ethnic grouping of households of homesteading-placer miners lasted at least several years. This scenario fits the historic settlement pattern of the immigrant Italian gardener/miner much more comfortably than that of the itinerant Mexican hard-rock miner. Although no one source of data provided the conclusive answer to the identity of the oven builders, combined archaeological, historical and ethnographic research attribute the occupation to the Italian miners who carried cultural traditions of their homeland to the frontiers of the California Mother Lode.

FOR FURTHER READING on the gold rush and Italian participation: John Walter Caughey, *The California Gold Rush* (University of California Press, Berkeley 1948), is the first and still one of the best presentations of the discovery of gold, the first rush to California, and the outgrowths of the period; Hans Christian Palmer, *Italian Immigration and the Development of California Agriculture* (Ph.D. Dissertation, Berkeley, California 1965), is a scholarly and well-documented analysis of the Italian presence in California. Studies of Italian immigration include Andrew F. Rolle, *The Immigrant Upraised: Italian Adventures and Colonists in Expanding America* (University of Oklahoma Press, Norman, Oklahoma 1968), highlighting the contributions of individual Italian-Americans; *The Shirley Letters from the California Mines 1851-1852* (Ballantine, New York 1971), is a popular and articulate account of the daily life in the gold fields as penned by an eastern lady to her sister.