Rediscovery

Indians first observed the organisms, processes, and history of California deserts. Over millennia, native people obtained knowledge both practical and esoteric, necessitated by survival in a land of extremes and accumulated by active minds recording how nature worked. Such knowledge became tradition when passed across generations, allowing cultural adjustments to the changing environment. The depth and breadth of their understanding can only be glimpsed or imagined, but should never be minimized. Indians lived within deserts, were born, fed, and raised on them, suffered the extremes and uncertainties, and passed into the ancient, stony soils. Theirs was a discovery so intimate and spiritual, so singular, that we can only commemorate it with our own 10,000-year-long rediscovery of this place and all of its remarkable inhabitants. Our rediscovery has only begun.

Our rediscovery is not based upon living in the deserts, despite a current human population of over one million who dwelling east of the Sierra. We do not exist within the ecological context of the land. We are not dependant upon food webs of native plants and

[Plate

Aha Macav, the Mojave people, depicted in 1853. (H. B. Molhausen)

[Map 2.]

The aboriginal desert, showing linguistic territories and tribal regions. Place names are from many traditions (Heizer 1978; D'Azevdo 1986), with rough correspondence to map 1.

animals, nor do we contribute to the development of soils with our own ashes. We import building materials and energy sources and refuse to be fully subjected to the harsh climate or limited by the sparse waters. Instead, our rediscovery rises from a cultural juggernaut of explorers, immigrants, entrepreneurs, scientists, and artists with conflicting motives: some came to explore the deserts, some to conquer, some to understand, and others to cherish. Each motive left its imprint, and each determines the breadth of our rediscovery and the future of this arid region.

COMING TO EXPLORE

The first discovery of California deserts took place during the peopling of North America at the end of the Pleistocene, approximately 12,000 years ago. Glaciers, forests, rivers, and lakes retreated from lowland landscapes, gradually replaced by landforms and species favored by aridity. Such sweeping ecological changes necessitated human exploration because old ways of obtaining food and water became unreliable. The record of chipped stone tools, fish traps, cave dwellings, and other persistent material provides evidence of technological innovation and population migration as diverse peoples expanded or contracted their territories. But even as extreme conditions of drought and heat developed, there were no undiscovered springs, no lost herds of bighorn sheep, no "terra incognita" or "empty" lands. By the time Europeans arrived near the end of the eighteenth century, at least 12 major linguistic tribes, hundreds of cultural groups, and thousands of individuals had completely explored and occupied California's desert lands.

[Plate 14.]

Friar Francisco Garcés, the first European to cross the Mojave Desert. (Unknown artist, USC Libraries)

The rediscovery of the California deserts was begun by Friar Francisco Garcés. Garcés was an intrepid, soft-spoken Franciscan missionary who often traveled alone or with a handful of Indian guides and interpreters. He was described at the time by Friar Pedro Font:

> Father Garcés is so well fitted to get along with the Indians and to go among them that he appears to be but an Indian himself. Like the Indians he is phlegmatic in everything. He sits with them in the circle, or at night around the fire, with his legs crossed, and there he will sit musing two or three hours or more, oblivious to everything else, talking with them with much serenity and deliberation. And although the foods of the Indians are as nasty and dirty as those outlandish people themselves, the father eats them with great gusto and says that they are good for the stomach and very fine. In short, God has created him, as I see it, solely for the purpose of seeking out these unhappy, ignorant, and rustic people. (Cous 1900)

5.]

Macedonia Canyon, possibly used by Garcés to cross the Providence Mountains and reach the Mojave River. (Author)

Unlike his contemporaries, Garcés was able to communicate across boundaries of ignorance with respect and kindness. He also was ambitious, introducing native souls to sacraments and attempting to establish a land route from New Mexico to the fledgling missions of California. Required by the crown of Spain to keep a *diario,* Garcés recorded in detail the native people he encountered and the landscapes he traversed. He left the mission of San Xavier del Bac (near Tucson) in 1771, crossed the Colorado River at Yuma, headed south to avoid the Algodones Dunes, entered the Imperial Valley, and traveled far enough north to see the San Bernardino Mountains. Garcés had also accompanied Lieutenant-Colonel Juan Bautista Anza on expeditions in 1774 and 1775, which included caravans of men, women, children, and animals across vast, uncharted terrain. Over his life, Garcés had made five such journeys, or *entradas,* logging more than 5,000 desert miles.

But the most remarkable *entrada* would make him the first European to enter the heart of the California deserts. In February 1776 he followed the Colorado River north from Yuma along with two Indians, a few horses, and some pack mules. After 15 days of rugged travel they reached a village of Mojave people (whom he called Jamajabs — "hama-ha-bees") in the vicinity of present-day Needles. He wrote:

> I can say with entire truth that these Indians have great advantages over the Yumas and the rest of the Nations of the Rio Colorado; they are less molestful, and none are thieves; they seem valiant, and nowhere have I been better served. I showed them a picture of the Virgin; it pleased them very much. . . . As I am the first Español who has been in their land they celebrated it beyond bounds. . . .
>
> The female sex is the most comely on the river; the male very healthy and robust. The women wear petticoats of the style and cut that the Yumas [wear]. The men go entirely naked, and in a country so cold this is well worthy of compassion. These say that they are very strong; and so I found them to be, especially in enduring hunger and thirst. It is evident that this nation goes on increasing, for I saw many lusty young fellows, and many more boys; the contrary is experienced in the other nations of the river. They came together to visit me about 20 hundred souls. Abound here certain blankets that they possess and weave of furs of rabbits and otters brought from the west and northwest, with the people of which parts they keep firm friendship. (Cous 1900)

But the ambitious Garcés was not to remain with these vigorous people in their riverine paradise. Along with three Jamajabs he headed due west on March 4, covering six to 20 miles in a day, being led from one watering hole to another amidst the arid valleys and

hills of eastern California. This was a major route for the Mojave people, who routinely traded with coastal tribes hundreds of miles away. Garcés and his party arrived at Cedar Spring in the Providence Mountains, where they met four naked Jamajabs returning from the west with highly prized seashells.

I was lost in wonder to see that they brought no provisions whatever on a route where there is naught to eat, nor did they carry bows for hunting. They replied to my amazement "the Jamajabs endure hunger and thirst for four days," to give me to understand that indeed are they valiant men. (Cous 1900)

From these mountains Garcés was the first European to view the interior of this vast desert and its great sea of sand (near present-day Kelso). Descending into the dry lowlands, perhaps through Macedonia Canyon, was a pure act of faith. After two more days the party reached the flowing waters of a "saltish" river, which Garcés named the Arroyo de los Martires. They were somewhere between the south shore of Soda Lake (the terminus of the modern Mojave River) and the gaping mouth of Afton Canyon. The miracle of desert water brought forth cottonwood trees, wild grapes, and lush grass. Over the next 12 days Garcés described small villages of Vanyume people, who harvested the marshes and were skillful basket weavers. Although provisions had been sparse (at one point the party killed and entirely consumed one of their horses, "not even the blood was wasted"), the Vanyume "regaled me with hares, rabbits, and great abundance of acorn porridge, wherewith we relieved the great neediness that we had." This generosity astounded the gray-robed Franciscan:

The [chief] of these rancherias [villages] presented me with a string of white seashells; and his wife sprinkled me with acorns and tossed the basket, which is a sign among these people of great [veneration]. In a little while after that she brought seashells in a small gourd, and sprinkled me with them in the way which is done when flowers are thrown. . . . I reciprocated these attentions as well as I could, and marveled to see that among these people so rustic are found demonstrations proper to the most cultivated, and a particular prodigality in scattering their greatest treasures, which are the shells. (Cous 1900)

[Plate 1

[Plate 1

Upper Garcés came to the terminus of the Mojave River at Soda Lake. The white flowers belong to yerba manza *(Yerba manza)*, a common plant of saline marshes and alkali meadows. (Mona Bourell)

Lower Afton Canyon and the dry bed of the Mojave River. (Robert C. Pavlik)

Turning south with the river near present day Barstow, they began to ascend the San Bernardino Mountains. Villages became numerous (mostly Serrano people) and more prosperous, as oaks, junipers, and pines formed the vegetation of the headwaters. Reaching the summit on March 21, 1776, Garcés could see the winding course of the Santa Ana River and the shimmering blue Pacific beyond. This epic desert *entrada* had come to an end, but the friar went on to mission San Gabriel, Tejon Pass, Tulare Lake, and back to the Mojave River, probably by way of Tehachapi Pass and the Antelope Valley. His route established the California section of the Old Spanish Trail that thousands of immigrants would subsequently follow, and his *diario* recorded that singular, fleeting moment of first contact between two previously isolated worlds. One of those worlds would not survive, the world of vibrant indigenous culture and joyous hospitality. In 1781 Garcés himself was killed by Yuma Indians who could no longer tolerate exploitation and brutalization by the Spaniards.

Other explorers came for material, rather than spiritual, purposes, seeking a west-flowing river that would connect the deserts to the Pacific (the mythical Buenaventura River). Jedediah Smith came via Utah in 1826, a trapper searching the fur-producing waters of the continental interior. He had returned from California with several bales of beaver pelts and was seeking another route along the Virgin River in fall of 1826. Smith was met at the Colorado by the Mojaves, who gave him a supply of "corn, beans, locust bread [made from beans of honey mesquite], and a little Indian flour." After building a raft to cross the river at what would become Fort Mojave, the party traversed the southern end of Lanfair Valley and intercepted the Garcés route at Vontrigger Spring. They crossed the Providence Mountains, Kelso Wash, and reached the Mojave River just as Garcés had done some 50 years before.

> Our course was up the River which sometimes runs in sight and then for miles disappeared in the sands [hence he called it the Inconstant River]. In places I found grass and the Sugar Cane [the tall grass Phragmites communis, or carrizo] and in some places small Cottonwood. I also saw tracks of horses that had been here during the summer. My guides belonged to a tribe of Indians residing in the vicinity called the wanyumas [Vanyume], not numerous for this barren country could not support them. At this place was some sign of Antelope and Mt sheep. Mr. Rogers killed an antelope which tasted quite strong of wormwood [Artemisia, or sagebrush].
>
> (Brooks 1977)

And like Garcés, Smith was greeted with great hospitality by these Vanyume people. They shared loaves of hard, crystalline sugar threshed from vast quantities of cut cane. Trade with upslope tribes provided the same acorn mush that Garcés appreciated, and a sweet bread made from pinyon pine nuts. Smith also witnessed a rabbit hunt:

> As there were in the neighborhood a plenty of hares the Indians said they must give us a feast. Several went out for this purpose with a net 80 or 100 yards long. Arriving at a place where they

knew them to be plenty the net was extended among the wormwood. Then divided on each wing they moved in such direction as to force the frightened game to the net where they were taken while tangled in its meshes. Being out but a short time they brought in two or three dozen a part of which they gave me. (Brooks 1977)

Other sections of his trip were more arduous, but not without small wonders worthy of a note in the trapper's journal:

I traveled a west course fifteen days over a country of complete barrens, generally traveling from morning until night without water. I crossed a salt plain about 20 miles long and 8 wide [probably Soda Lake]; on the surface was a crust of beautiful white salt, quite thin. Under the surface there was a layer of salt from a half to one and a half inches in depth; between this and the upper layer there is about four inches of yellowish sand. (Brooks 1977)

Smith's party arrived in San Gabriel, headed north to the San Joaquin Valley and east to cross the Sierra for the first time at Ebbetts Pass in May 1827. Passing Walker Lake, he may have been one of the first Europeans to cross the Great Basin of eastern California and central Nevada on his way back to Great Salt Lake. But he never struck the Buenaventura, leaving others to that legendary quest.

Peter Skein Odgen, another fur trapper, followed the Humboldt River across central Nevada in 1829 but headed south from Walker Lake to cross the White-Inyo Range for the first time. His party came to the Owens River, followed it through Owens Valley, past Owens Lake, and all the way to the Gulf of California. But beaver had already become scarce, so they turned north and east back to Utah without finding a better route to the Pacific.

s/b "Ogden"?

John C. Frémont ("The Pathfinder") led his expeditions in the 1840s with the expressed purpose of finding the Buenaventura (and an unexpressed purpose of conducting military reconnaissance), but he was also the first scientific explorer to enter the California deserts. Trained as a topographic engineer, Frémont also had an appreciation of geology and botany. On his second expedition during the spring of 1844, he and a party (which included the guide Kit Carson) followed the crest of the Transverse Ranges from Tejon Canyon to Cajon Pass, along the southwest edge of the Antelope Valley. They were searching for the western end of the Garcés route, using the Mojave River to go north and east through Tecopa and Las Vegas. He wrote about descending into the desert:

[We] emerged from the *yucca* forest at the foot of an outlier of the Sierra before us, and came among the fields of flowers we had seen in the morning, which consisted principally of the rich orange-colored Californian poppy, mingled with other flowers of brighter tints. Reaching the top of the spur, which was covered with fine bunch grass, and where the hills were very green . . . we

[Plate 19.]

John C. Frémont, explorer, botanist, territorial governor, and presidential candidate. (Unknown artist, Bancroft Library)

continued our beautiful road, and reached a spring in the slope, at the foot of the ridge, running in a green ravine, among granite boulders; here nightshade, and borders of buckwheat, with their white blossoms around the granite rocks, attracted our notice as familiar plants. Several antelopes were seen among the hills, and some large hares. . . .

We continued on through a succession of valleys, and came into a most beautiful spot of flower fields: instead of green, the hills were purple and orange, with unbroken beds, into which each color was separately gathered. A pale straw color, with a bright yellow, the rich red orange of

[Plate 2

the poppy mingled with fields of purple, cover the spot with a floral beauty; and, on the border of the sandy deserts, seemed to invite the traveler to go no farther. (Jackson and Spence 1970)

The flower fields are still visible today in the Gorman Hills, Tejon Ranch, and the Antelope Valley California Poppy State Reserve, as are the granitic rocks that lie along this portion of the San Andreas Fault. They camped among the "nut pines," from which Frémont collected the first specimens of pinyon pine *(Pinus monophylla),* and struck the Old Spanish Trail on April 20 just north of Cajon Pass. Within a day they were following the Mojave River north (past the "narrows" of Victorville), noticing that they were on a rather well worn road through a rapidly changing wilderness:

We traveled down the right bank of the stream, over sands which are somewhat loose, and have no verdure, but are occupied by various shrubs. A clear bold stream,

[Plate 2

Upper Tejon Canyon Pass, possibly Frémont'sroute across the Tehachapi Range and into the Mojave Desert. (Author)

Lower California poppies and Joshua trees in the western Antelope Valley. (Q. T. Luong)

Upper Upper Narrows of the Mojave River near Victorville, where Garcés and other explorers of this desert must have passed. (Author)

Right Riparian forest along the Mojave River near Camp Cady, dominated by Frémont cottonwood *(Populus fremontii)*. (Author)

60 feet wide, and several feet deep, had a strange appearance, running between perfectly naked banks of sand. The eye, however, is somewhat relieved by willows, and the beautiful green of the sweet cottonwoods [later to be named *Populus fremontii*] with which it is well wooded. As we followed along its course, the river, instead of growing constantly larger, gradually dwindled away, as it was absorbed by the sand. We were now careful to take the old camping places of the annual Santa Fe caravans, which, luckily for us, had not yet made their yearly passage. A drove of several thousand horses and mules would entirely have swept away the scanty grass at the watering places.

(Jackson and Spence 1970)

Cautiously venturing beyond the dry riverbed, they made their way past present-day Barstow, obtaining water from shallow wells that coyotes had dug into the wet sands. The sun burned, the air was hot, and a strong wind drew moisture from every breath. The progression toward aridity changed the country into a series of desolate basins separated by rocky slopes and serrated ridges. Nevertheless, Frémont continued his botanical observations:

> But, throughout this nakedness of sand and gravel, were many beautiful plants and flowering shrubs, which occurred in many new species, and with greater variety than we had been accustomed to see in the most luxuriant prairie countries; this was a peculiarity of this desert. Even where no grass would take root, the naked sand would bloom with some rich and rare flower, which found its appropriate home in the arid and barren spot.
>
> Scattered over the plain, and tolerably abundant, was a handsome leguminous shrub, three or four feet high, with fine bright-purple flowers. It is a new *psoralea,* and occurred frequently henceforward along our road. [The shrub would later be named *Psorothamnus fremontii*.]
>
> (Jackson and Spence 1970)

This was at least 60 years before the biological study of home would be called *ecology* and more than 100 years before the Mojave's richness of unique plant species would be fully documented. And his observations of floral diversity (and beauty) were not just made from the perch of a saddle, 10 feet above the soil surface. The flowers of many species barely overtop the surrounding pebbles. It is amusing to imagine John C. Frémont, who eventually led the Bear Flag Rebellion and became territorial governor, stooped before a patch of "belly plants" enthusiastically cataloging the desert flora.

[Plate 23

[Plate 2

Upper Fremont's indigobush *(Psorothamnus fremontii)*, one of the many plants named for "The Pathfinder." (Gary A. Monroe)

Lower The flowers told Frémont that the "handsome leguminous shrub" he discovered belonged to the pea family. (James M. Andre)

The expedition turned north to intersect the Amargosa River where it flows into Death Valley (near the Salt Creek Hills). More plants were collected as they passed through the narrow river canyon (including both species of mesquite and the caperlike *Oxystylis* known

[Map 3.]

Imagine crossing the vast intermountain west using John Frémont's map of 1848.

only from this drainage). Crossing the Ibex Hills and the ancient, eroded bed of Lake Tecopa, he wrote:

> [W]e traversed a part of the desert, the most sterile and repulsive that we had yet seen. Its prominent features were dark *sierras,* naked and dry; on the plains a few straggling shrubs—among them cactus of several varieties. Fuentes pointed out one called the Spaniards *bisnada* [probably *Ferocactus cylindraceus*], which has a juicy pulp, slightly acid, and is eaten by the traveler to allay thirst. Our course was generally north; and, after crossing an intervening ridge, we descended into a sandy plain or basin, in the middle of which was the grassy spot, with its springs and willow bushes, which constitutes a camping place in the desert, and is called the *Archilette*.
>
> (Jackson and Spence 1970)

The grassy spot was probably the lush marshes fed by Tecopa Springs, surrounded by ice-age lake sediments and layers of volcanic ash. They stopped at Resting Springs to bury

the bodies of a Mexican man and boy who had been killed and mutilated by vengeful Indians, and went on to make Las Vegas ("the meadows") by May 3.

When he finally returned to the eastern states, half of Frémont's 1,400 plant specimens had not survived the journey. Some were lost by accident, others destroyed or damaged during river crossings or by "the dreadful flood of the Kansas." The remainder was given to Frémont's academic counterpart, Dr. John Torrey, who began the process of describing and naming many species previously unknown to science. Convention and modesty prevented Torrey from naming these plants after himself or Frémont, but authorship of each species description was shared and remains valid today (for example, desert trumpet is still officially known as *Eriogonum inflatum* Torrey and Frémont). Frémont published his epic, often flamboyant report in 1845, which became a best seller among those following his adventures and those who would soon aspire to westward migration.

COMING TO CONQUER

To overland immigrants, California was separated from the rest of the continent by two great obstacles: the Sierra Nevada and the "Great American Desert." Frémont's expeditions convinced them the obstacles could be surmounted, while Marshall's discovery of gold convinced them the effort would pay off. Although passage from Salt Lake City into southern Nevada was filled with challenge, the Old Spanish Trail through arid California was considered especially dangerous. Jim Bridger and Kit Carson had followed it on horseback and warned against taking wagons, women, and children by that route. The essential elements of water, wood, grass, and game were in short supply, and much of region remained unmapped until 1861. Frémont simply labeled much of this desert country as "unexplored" on his map of 1848, but the lure of California was overpowering.

The first wagon train to attempt the desert crossing was led by Jefferson Hunt in 1849. Having spent 30 days in a long caravan from Salt Lake City, Hunt's party of 107 wagons and 500 cattle, horses, and oxen had become fragmented and spread across an increasingly difficult landscape. A small splinter group, guided by William Manley, found their way to Ash Meadows in western Nevada by early December. The springs and grass of "Relief Valley" (now called Amargosa Valley) provided a boost before pushing toward the snowy mountain (Telescope Peak) they mistook for the final Sierran barrier. Manley wrote his famous, detailed memoir in 1894:

> Some who had read Frémont's travels said that the range immediately west of us must be the one he described, on the west of which was beautiful country, of rich soil and having plenty of cattle, and horses and containing some settlers, but on the east all was barren, dry rocky, sandy desert as far as could be seen. We know this eastern side answered well the description and believed that this was really the range described, or at least was close by.

[Plate 25.]

The view of snowy Telescope Peak, which haunted William Manley's party during the winter of 1849/1850. (Charles Webber)

Ahead of the Manley party were the "Jayhawkers," a group of exuberant, impetuous, and youthful gold seekers that believed they could cross this false Sierra to the north, over what is now called Towne Pass. But first they had to traverse the deep, salty valley that lay ahead, a valley deceptive in size and difficult of passage. Manley scouted it with determination, hoping that the route was not as bad as it looked:

I was pretty near the summit, where a pass through the rocky range [between the Funeral and Black mountains] had been found and on this mountain not a tree or shrub or spear of grass could be found—desolation beyond conception. I carried my gun along every day, but for the want of a chance to kill any game a single load would remain in my gun for a month. Very seldom a rabbit could be seen, but not a bird of any kind, not even a hawk, buzzard or crow made their appearance here.

In one of the perpendicular portions [of Furnace Creek Canyon] it seemed to be a variegated clay formation, and a little water seeped down its face. Here the Indians had made a clay bowl and fastened it to the wall so that it could collect and retain about a quart of water, and I had a drink of water, the first one since leaving the running stream.

Manley unknowingly led his wagon train into the driest, hottest, lowest, and least vegetated valley in North America. Determination and optimism rapidly gave way to the reality of this extreme desert. Juliette Brier recalled in 1897:

[Plate 26.]

The '49ers cross Death Valley. (Unknown artist, Bancroft Library)

We reached the top of the divide between Ash Meadows and Death Valley, and oh! what a desolate country we looked down upon. The men said they could see what looked like springs down in the valley. . . .

I was sick and weary, and the hope of a good camping place was all that kept me up. Poor little Kirk [her two-year-old son] gave out and I carried him on my back, barely seeing where I was going, until he would say, "Mother, I can walk now." Poor little fellow! He would stumble on a little ways over the salty marsh and sink down crying, "I can't go any farther." Then I would carry him again and soothe him the best I could. . . .

I was ready to drop, and Kirk was almost unconscious, moaning for a drink. Mr. Brier took him on his back and we hastened to camp to save his life. It was 3 o'clock Christmas morning when we reached the springs [Travertine Springs near the mouth of Furnace Creek Wash]. I only wanted to sleep; but my husband said I must eat and drink or I would never wake up. (Latta 1979)

Mrs. Brier was one of the first three white women to enter Death Valley, along with Abigail Árcan and Sarah Bennett. Their fortitude had already been tested, but the party was still more than 200 miles north of Los Angeles and almost 300 miles from the Pacific Ocean, with several intervening mountain ranges and the western Mojave to cross. The journey was now desperate, but many of the hardships had been self-imposed. The historian Frank Latta pointed out:

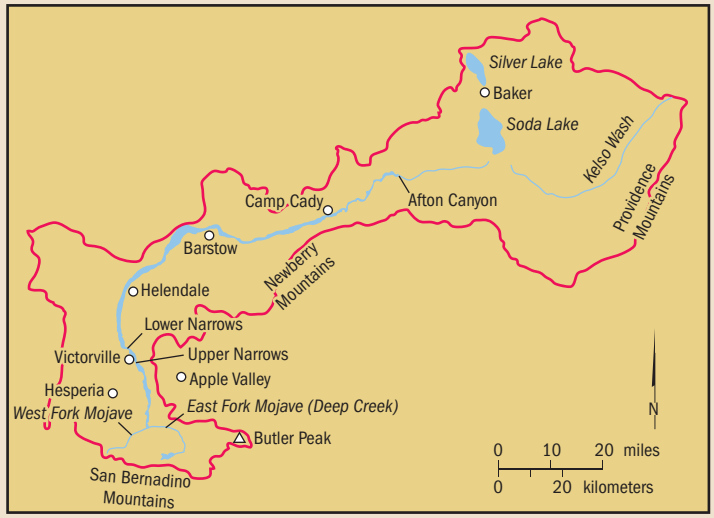
(text continues on page 35)

ALONG THE MOJAVE RIVER IN 1863

Originating on Butler Peak in the San Bernardino Mountains (8,535 feet), the east fork of the Mojave River brings snowmelt into the hot, dry desert. During wet years the surge of water extends to Helendale, the former site of an extensive freshwater marsh. Deep sands absorb most of the runoff beyond this point, but local drainages and bedrock basins can bring flows back to the surface. Reemerging in Afton Canyon, the Mojave picks up groundwater tinged with alkali, which it delivers to the sink of Soda Lake (937 feet elevation).

[Map 6.]

AU: No numbers in map. Please revise caption.



The Mojave River system: ancient remnant, historical landmark, modern treasure. Numbers correspond to figures in this book. (Based on Lines 1999.)

Along its 120-mile-long course, the "Inconstant River" not only provided the water and feed that made desert exploration possible, it also offered psychological comfort in a frightful and foreboding landscape. Traveling from east to west in 1853, Gwynne Heap captured the fear of crossing the dry expanse from the Colorado River to Soda Lake:

> The solitude was unrelieved by the song of bird or the chirp of insect; the mournful murmur of the breeze, as it swept over the desert was the only sound that broke the silence. In many places a deceptive mirage spread fictitious lakes and spectral groves to our view, which a puff of wind or a change in our position, suddenly dissolved. . . .

The pale moon occasionally overshadowed by clouds through a ghostly light over the desert, and skeletons of animals glistening in her beams, strewed the way, adding horror to the scene.

[Plate 46.]

Beginning a desert journey at Cajon Pass Tollhouse along the Government Road, 1863.

And he also conveyed the sense of relief after this section of the journey had been passed and the Mojave River was reached:

> The sandy soil through which the Mohaveh flows absorbs nearly all its water, and where we struck it [east of Daggett] was no longer a running stream. Grass, however, was everywhere abundant together with a thick growth of willows, reed, mesquite bushes, interlaced with grapevines; and in some places there were beautiful groves of cottonwoods.
>
> Where we crossed the Mohaveh [two days later] it was a rapid stream, twenty-five yards in breadth and one foot in depth, but its water was too warm to be drinkable. Passed several fine meadows near the river and saw bands of antelopes, also hares and partridges. . . . The road leading up to an extensive plain thickly covered with cedars and pines [California junipers and pinyon], intermingled with palmyra cactus and aloes [Joshua trees and Mojave yucca].

The western section of the river route, from Cajon Pass to Camp Cady, remained an important corridor for travel into the twentieth century (much of it was later paralleled by U.S. Highway 66). But the drier, eastern section of the Garcés route, from Soda Lake to the Colorado River, was replaced in 1858 with a new road that could support wagons and large numbers of immigrants. This "Government Road" took advantage of several strong, well-positioned springs (Government, Rock, Marl) that had been surveyed along the 35th parallel. It was built by Edward F. Beale, who received funding from the U.S. Army and who used camels to support the construction effort. Small earthen forts (redoubts) were established at key locations to protect the flow of mail, soldiers, and travelers from hostile Chemehuevis and Southern Paiutes. Lieutenant Milton Carr described Hancock's Redoubt at Soda Springs (near present day Zzyxz) after completion in June 1860:

> Lay over to-day to rest the horses and finish the Redoubt. Had it finished so that a small party of men can hold it securely against any number of Indians

➤

[Plate 49.]

[Plate 47.]

[Plate 48.]

Upper left Bed of the Mojave River above Afton Canyon. Dr. Stark examines the sandy, open banks. (Rudolph D'Heureuse, Bancroft Library)

Lower left The redoubt at Camp Cady. (Rudolph D'Heureuse, Bancroft Libary)

Right First botanical photo from the California deserts. The line-up includes *(left to right)* beavertail cactus, silver cholla, California barrel cactus, creosote bush, Mojave yucca, and barrel cactus. (Rudolph D'Heureuse, Bancroft Libary)

> that will ever be likely to be in that part of the country. Loop-holes are so arranged around the top, that men inside of the redoubt can command all the ground around, without exposing themselves to the fire of the Indians. Had the front traverse so arranged, also, that it will afford secure shelter to three or four horses. (Duffield-Stoll 1994)

The first photographer of the California deserts, Rudolph d'Heureuse, traveled along the Mojave River and the Government Road with Philadelphia Company in 1863. His photos show the journey from Cajon Pass to the Colorado River, including "Narrows," "Lanes Crossing," and the "Caves," places that Garcés would have recognized from the century before. Wagons and lone travelers are shown against the pristine landscape—no salt cedar or other weeds are visible. The first deliberate botanical photo from the bioregion was taken near Rock Springs, as men posed with arranged specimens of beavertail cactus *(Opuntia basilaris)*, silver cholla *(O. echinocarpa)*, and California barrel cactus *(Ferocactus cylindraceus)*, along with Mojave yucca *(Yucca schidigera)* and creosote bush *(Larrea)*. In another haunting image, a Dr. Stark

[Plate 51.]

[Plate 52.]

Upper left Philadelphia Company poses at Rock Springs, 1863, an important water supply along the Government Road. (Rudolph D'Heureuse, Bancroft Libary)

Upper right Author poses at Rock Springs, 2005, now in the Mojave National Preserve. (Richard Hiett)

Left Dr. Stark with Mojave women in "modern" dresses made from traditional materials. (Rudolph D'Heureuse, Bancroft Libary)

[Plate 53.]

stands awkwardly beside two young Mojave women wearing rabbit fur clothes and shell necklaces from a culture that would soon disappear. And when Philadelphia Company finally reached the great Colorado, its riverbed was open, rocky, and unvegetated, revealing a long history of terrible floods. These precious photos are the last glimpses of an ancient, intact desert bioregion in California.

In addition, their improvidence regarding the use and conservation of drinking water soon becomes apparent to one who reads about Death Valley '49ers. They made no intelligent use of the Indians who occupied almost every portion of the great desert across which they were traveling. A few presents of coffee, sugar or beads would have caused the Indians to lead them to water or to the trail of the Hunt party, which was, during most of the time, only a few days' travel south of them. News of such treatment would have traveled days ahead of them and would have paved the way for their safe and speedy passage to California.

Instead of cultivating the acquaintance and friendship of the Indians, they stole corn, squashes and other foodstuffs from them and gave them every reason to keep out of sight.

Indians were following the party at all times. . . . The Indians were actually trying to help them. At the head of Searles Lake Valley a small group of Indians presented themselves to Jay Hawk Deacon Richards, led him to the water which the '49ers called Providence Spring and unquestionably saved the lives of some forty struggling, famished persons.

It became necessary for the Bennett-Árcan party to set up camp near Tule Springs, almost 280 feet below sea level, and wait for Manley and John Rogers to go on ahead to Los Angeles and return with food and knowledge of the route. The 26-day rescue, like the journey as a whole, was both heroic and foolhardy. They returned to find most of the party still alive, maniacal with gratitude and anxious to surmount the looming Panamint Range. After several days of a long, rocky climb Manley recalled:

Just as we were ready to leave and return to camp we took off our hats, and then overlooking the scene of so much trial, suffering and death spoke the thought uppermost saying:—"Good bye Death Valley!" then faced away and made our steps. . . . Ours was the first visible footsteps, and we the party named it the saddest and most dreadful name that came to us first from its memories.

Eventually they would make their way through Panamint, Searles, and Indian Wells valleys, joining the Joe Walker Trail and turning south toward Soledad Canyon near Palmdale. They would not arrive in the oak-filled canyons and luxurious meadows of Ranch San Francisquito (Newhall) until March 7, 1850.

Other parties of immigrants wisely avoided the Death Valley region entirely. Some kept farther south to connect with the drainage of the Mojave River and Cajon Pass, others followed the eastern Sierra from Reno through Owens Valley before linking up with the Walker Trail. A third option was westward from Tucson to Yuma and north into the Coachella Valley and San Gorgonio Pass. A steadily increasing stream of people led to commercial transportation and government engineering projects. Stagecoaches were already operating in northern California before the '49ers had left Death Valley. Regular service across arid lands was established by 1860. Roads soon proliferated, some constructed of wood planks on shifting sands, others hand-cut into solid rock. Now the desert and its inhabitants could be conquered by a flood of people in search of land, as well as gold.

European settlement of Owens Valley began in 1861 with the establishment of ranches in lush, creek-fed meadows. Until this time more than 2,000 Owens Valley Paiutes had harvested bulbs and roots from these meadows *(pitana patu)*, even developing an irrigation system and cultivation practices that greatly increased natural productivity. Violence soon erupted south of present day Bishop, beginning a conflict that required military intervention. Lt. Colonel George Evans of the Second Cavalry, California Volunteers, was dispatched with a garrison to engage the Indians, tempting them to fight by destroying their food caches. On July 1 he wrote to commanders in San Francisco:

The Indians claim the valley as belonging to them, and still insist upon it that no white man shall settle, or, as they term it, sit down in the valley. They say that whites may locate in the hills and work the mines, but must not sit down on the grass patches.

These Indians subsist at this season of the year entirely upon the grass seeds and nuts gathered in the valley from the lake up, and the worms gathered at the [Owens] lake. They gather this food in large quantities during the summer and prepare it for winter use, which together with the pinon nuts gathered in the mountains in the fall of the year, is their only subsistence. Without this food gathered and laid up they cannot possibly subsist through the winter. From the facts set forth above, the nature of these Indians and the surrounding country, it does seem to me that the only way in which they can be chastised and brought to terms is to establish a temporary post, say for one winter, at some point near the center of the valley, from which point send and keep scouts continually ranging through the valley, keep the Indians out of the valley and in the hills, so that they can have no opportunity of gathering and preserving their necessary winter supplies, and they will be compelled to sue for peace before spring and grass come again. (McGrath 1988)

By 1862 Camp Independence had been established and a truce signed with the starved and subjugated Paiutes. The ranchers and miners returned, and the Visalia Delta reported on September 25:

The Indian troubles have finally ceased to scare the timid or retard our progress, from the fact that a military post has been established on Owens' River. So those wishing to pay us a visit need have no fears of leaving their scalps. (McGrath 1988)

But hostilities were soon renewed in the spring of 1863 with the death of Joaquin Jim, who had led the Paiutes. The lives of 200 Indians and 30 whites were soon lost by mutual atrocity, but the ultimate blow to indigenous Owens Valley culture was to separate the Paiute from their "grass patches," seeds, nuts, and worms. Separation led to desperate dependency, as a militiaman from Lone Pine related to the Visalia Delta (January 11, 1865):

We have fed them all summer, and it is a pretty hard thing now, because we are unable to do it any longer on account of County Taxes, high price of living, and altogether are unable to do it any longer to have our throats cut and butchered. Only last week an Indian drew his knife on my wife because she would not let him take possession of the kitchen and give him sugar in his coffee. (McGrath 1988)

Immigration and settlement would continue to drive a wedge between native peoples and their lands, withering a long tradition of desert knowledge. The Vanyume tribe, first

27.]

A Cahuilla man tends beans and transforms the Imperial Valley from desert into farm. (George W. James)

encountered by Garcés near Afton Canyon, had already been collected into missions between 1820 and 1834 and driven to extinction before the end of the century. Government subdivision of the "vacated" territory had begun in 1855, with the first European crops planted along the Mojave River in 1872.

The rush of progress accelerated after a series of railroad surveys were launched in the 1850s, with construction begun in the 1870s and 1880s. The purpose of the surveys was to find routes to serve industrial mining and agricultural development, as well as westward expansion. Eventually the desert would be crossed by five major lines, with a dozen or more smaller branch operations that facilitated the transport of ore, produce, and cattle. The stage had been set for burgeoning commerce and land speculation, to be finally and completely unleashed when desert waters were driven into canals and pipelines. As he chronicled the hopeful agrarian spirit of this era, George Wharton James wrote (1914):

> In the Antelope Valley, on the Mohave desert, . . . astonishing transformations have taken place. . . . Forty, fifty years ago, herds of antelope roamed over this valley in vast numbers, hence the name. Standing at what is now Palmdale one can look over about 640,000 acres, of what in those early days were regarded as absolutely irreclaimable desert. Thirty years ago, before the day of the gasoline engine and cheap pumping-plant, settlers came to this gaunt land of yuccas, brush, grass and sage. They dug wells, and found enough water for their own use near enough to the surface. . . .
>
> In 1909 it was discovered that one of these men who, seventeen years before, had planted pear trees, was receiving $2,000 per acre *gross,* from his crop. . . . The result can be well imagined. . . . Here, as in so many other regions of California, the constant cry is for more capital for development, and as fast as it comes it is being put into good use, —use that will soon convert land that has been "desert" for centuries into orchards of beauty and great monetary value.
>
> To some mentalities, however, there may not seem to be much beauty in the romantic transformation of the desert, yet there are few who can look upon these vast fields of green alfalfa, the

immense areas of olive, orange, lemon, peach, apricot, pomegranate and fig orchards, with the stately groves of tropical date-palms, the miles and miles of luscious melons and cantaloupes, and the thousands of acres of growing cotton with its fluffy balls of purest white making the green all the more delicious, without feeling a quick wave of admiration sweep over him.

All that has been said of the remarkable development of the Imperial Valley applies with equal force to the Coachella Valley, except that the source of the water, which has worked the transformation is different. . . . [A] few years ago the government, in seeking to aid the Indian, sunk a trial artesian well. At great depth a marvelous flow of pure water was struck, which came forth with such force as to demonstrate the existence of a great underground flow. Since then scores of wells have been put in from above Indio to below Mecca, with gratifying results. . . . In 1913 I put in a well on land I had purchased from the Southern Pacific Company. We went down in the neighborhood of nine hundred feet, and there came rushing out [the water], with great force over the casing.

James describes the rapid progress of the late nineteenth century that would finally conquer these desert lands. Mass migration, settlement, military enforcement, establishment of reservations, access, and modern agriculture would displace the original inhabitants, humans and otherwise. Once its wildness was subdued, the "Great American Desert" would no longer be feared, but instead regarded as a vast interior in need of reclamation. Even tourism would come with the easy access afforded by the first railroads and highways, supported by mission-style rest stops in the wilderness (for example, Kelso Depot), and even grand hotels in Barstow (Casa del Desierto) and Needles (El Garcés). Outsiders with romantic and often bizarre notions of this changing landscape and its people could now follow the ancient footpaths in luxury. The text of a Santa Fe Railroad postcard from the early 1900s proclaimed the sad juxtaposition of old and new:

Close to Needles live the remnants of the once powerful and warlike tribe of Indians, the Mojaves, now beggarly hangers-on to civilization, who love to congregate around the trains and offer their wares to passengers.

Postcard from the El Garcés Hotel along the Santa Fe Railroad at Needles. (Unknown photographer, California Historical Society)

[Plate 28.]

COMING TO UNDERSTAND

The Chemehuevi people expressed their understanding of the California deserts in myth and ritual song. As transcribed from tribal elders by the anthropologist Alfred Kroeber in the early twentieth century:

> The heros are Coyote and his elder brother Puma . . . who build a house on Nuvant [Charleston Peak] while the world is still covered with water. When the earth has become dry through the instrumentality of an old woman in the west, [they] could not find men. Coyote marries a louse, from whose eggs spring many tribes. The Chemehuevi themselves, however, the Mohave, and other southerners come from Coyote's own voidings [scat]. As shamans dream of Nuvant, they see there Coyote and Puma and Yunakat, the personification of food. The shamans acquire their songs and powers from these or other mythological beings at Nuvant. A man "dreams" of the time when the earth was still wet from the primeval flood and without mountains, when the cane sprang up and Older Brother Puma instructed him in detail how to make each part of bow and arrow . . . [and] to flake arrowheads.

Such tales of origins, animal deities, sacred mountains, and knowledge were probably told during rituals. A cyclic ritual, consisting of 100 or 200 songs about a single myth, often began an elaborate ceremony that could last for days. The Chemehuevi had four song cycles, entitled "Salt," "Deer," "Mountain Sheep," and "Shaman's," while the Mojave people had 30. "Salt" told the story of four mountain-sheep brothers traveling from the Aha'av'ulype [Providence Mountains] toward Yava'avi-ath'i [near Daggett] along portions of the lower Mojave River:

> On the way they saw and talked or disputed about their tears, their powers and future, several insects, rats, birds, and tobacco plants, meteors and constellations, and a lake which they took to be the sea. Then they turned southeastward across the desert, and finally at Himekuvauva [west of Parker], their tears turned into salt and they into stone. The Chemehuevi now gather salt there, the Mohave say, and sing what they have dreamed about Salt.

The myths and songs, rendered in dream states and visions, were nevertheless inspired by the reality of the desert. Memories of vast lakes, the arrival of aridity, and the deposition of salt were part of the collective understanding of the landscape in which they lived. These facts were rediscovered by expeditions that included observant military officers and scientists. This is illustrated in the report of William P. Blake who served as geologist on the 1853 railroad survey of Lt. R. S. Williamson of the Army Corp of Topographical Engineers. While crossing the Salton Basin he noted:

On turning around the point, I saw a discoloration of the rocks extending for a long distance in a horizontal line on the side of the mountains. On approaching this, it was found that the white color was produced by a calcareous incrustation, extending over the whole surface, and into every cavity and crevice. This crust had evidently been deposited under water, and, when seen at a distance of a few yards, its upper margin appeared to form a distinct line, which indicated the former level of the water under which it was deposited. This water-line, at the point where it was first observed, was only about fifteen feet above the general level of the clay, but it could be traced along the mountain sides, following all the angles and sinuosities of the ridges for many miles—always preserving its horizontality—sometime being high up above the plain, and again intersecting long and high slopes of gravel and sand; on such places a beach-line could be traced. These evidences of a former submergence were so vivid and conclusive that it became evident to every one in the train [of wagons] that we were traveling in the dry bed of a former deep and extended sheet of water, probably an *Ancient Lake* or an extensive bay. . . .

In the interstices of the incrustation, and in its mass, many small spiral shells were found; they were also very abundant upon the surface of the clay. . . . They were so numerous in some places as to when the ground. Five or six species of the genera, *Planorbis, Anodonta, Physa,* and *Amnicola,* were soon collected, and showed that the former lake was of fresh water. . . .

The adjoining valleys in the mountains, and the upper portions of the slope of the Desert are inhabited by a tribe of Indians called Cohillas. Up to the time of our arrival their country had never been visited by the whites with a train of wagons. . . .

The chief, or "capitan," and the principal men having collected for a talk with Lieutenant Parke, they learned

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Upper The waterline of ancient Lake Cahuilla, on the west side of the Salton Trough. (Author)

Lower Shells of freshwater mollusks imbedded in desert soils of the Salton Trough, evidence of Lake Cahuilla. (Author)

[Plate 31.]

Fish traps precisely mark the shoreline of ancient Lake Cahuilla where it is now desert scrub. (Author)

the object of our visit, and appeared much pleased. When questioned about the shore-line and water marks of the ancient lake, the chief gave an account of a tradition they have of a great water *(agua grande)* which covered the whole valley and was filled with fine fish. There was also plenty of geese and ducks. Their fathers lived in the mountains and used to come down to the lake to fish and hunt. The water gradually subsided "*poco a poco*" (little by little) and their villages were moved down from the mountains, into the valley it had left. They also said that the waters once returned very suddenly and overwhelmed many of the people and drove the rest back to the mountains.

The Indians had a grand feast and dance during the night, keeping us awake by their strange songs and indescribable noises. At 4 A.M. the temperature of the spring was 56 degrees and the air 52 degrees.

Clearly, Blake had rediscovered ancient Lake Cahuilla, which had been filled most recently by the Colorado River in prehistoric times and was over 100 miles long and 300 feet deep. Along its shallows the Indians built fish traps that still mark the shoreline high on valley slopes. Although dry for almost 400 years before he arrived, the lake's beauty, bounty and decline (over a period of 55 to 60 years) were perfectly preserved in Cahuilla song. His journals record for the first time the idea that the desert had undergone great transitions in its past, from wet and lush to dry and sparse.

The effects of the distant past were also emerging in studies of Mono Lake by geologist Israel Russell, published in 1889:

> Reaching the plain, which we shall call Aurora Valley, after the mining town on the hills above, we find its surface a level-floored desert, scantily clothed with sage-brush and bunch-grass. From obscure terraces about the base of the hills we are enabled to determine that this was once the bed of a lake. In the lowest part of the basin the water was formerly 250 feet deep. We can trace the ancient water lines with tolerable certainty about the northern border of the basin, and are thus assured that the ancient lake did not overflow in that direction. . . .
>
> When the cold wave of the Quaternary had passed its climax and begun to decline, the snow and ice were melted from the mountains and increased the flood of the lowlands. This change

[Plate 32.]

The now-exposed tufa towers of Mono Lake were formed underwater long ago. Israel Russell linked the lake's history, and the history of the Great Basin, to Sierran glaciers of the Pleistocene. (George Hawxhurst)

was similar to that which now takes place each year in the same region with the advance of summer. The maximum expansion of the lakes in the inclosed basins at the eastern base of the mountains followed the maximum extension of the glaciers.

We pass on down the sloping plain leading to Lake Mono and after a monotonous ride of ten or twelve miles through sage-brush, over sand dunes, and across ancient lake beaches, reach Warm Springs, on the eastern shore of the lake. When I gained this camping place in the spring of 1881, the only evidence that it had been frequented by man was a trail leading to a spring. A year later I found a railroad crossing the valley, and a station near where I had previous camped. . . .

While riding along the shore of Lake Mono, one's attention is continually attracted to the islands that break the monotony of its surface. . . . In seeking names by which to designate them, it was suggested that their differences in color might be used, but the writer preferred to record some of the poetic words from the language of the aboriginal inhabitants of the valley. On the larger island there are hot springs and orifices through which heated vapors escape, which are among the most interesting features of the basin. In the legends of the Pa-vi-o-osi people, who still inhabit the region in scattered bands, there is a story about diminutive spirits, having long, wavy hair, that are sometimes seen in the vapor wreaths ascending from hot springs. The word Pa-o-ha, by which these spirits are known, is also used to designate hot springs in general. We

[Map 4.]

A map of the Pleistocene, showing Sierran glaciers and ancient Mono Lake (later named Lake Russell). (From Russell 1889.)

may therefore name the larger island Paoha Island, in remembrance, perhaps, of the children of the mist that held their revels there on moonlit nights in times long past.

Russell was clearly enchanted by the Mono Basin and its inhabitants. He established the relationship between Sierra glaciers and desert lakes and portrayed a lost landscape of frigid rivers, overflowing basins, and endless sandy beaches. Although he could imagine the dancing spirits of Indian children, he did not know the antiquity of their presence. Subsequent work by archeologists in other desert locations provided evidence for that antiquity. Elizabeth and William Campbell wrote in 1937:

In brief, Lake Mohave was selected for study because so many noted students of geology had characterized it as a Pleistocene body of water. When its fossil shore features yielded archeological material not elsewhere found, it seemed definitely established that man lived here when the lake overflowed. A study of this material also disclosed great age. Its dissimilarity to recent cultures, its more primitive technique, its resemblance to relatively ancient forms, and its extreme weathering, not only placed it in a class apart, but pointed to a very remote origin. The discovery of the cut in the outlet channel and finding of worked flints beneath the surface of the beaches at Soda Station, prove that human beings occupied Mohave's shores at its high-water stage.

The evidence of an inhabited [lake] on an extinct river system indeed turns back a page on man's antiquity in the Mojave Desert region.

If these scientists rediscovered the desert's ancient wetness, others sought an understanding of its recent dryness. Weather stations were not established here until 1885 (at Camp Independence), so little was known about the intensity and duration of drought, much less its effects on plants and animals. During his famous surveys between 1860 and 1864, naturalist William Brewer recorded this very early remark:

Doctor Horn, of Camp Independence, in Owens Valley, a perfectly reliable man, was stationed in that valley last August. He has kept a rain gauge, and from that time to this [mid-May], *the rainy season, there has fallen in the aggregate less than a quarter of an inch of rain!* [italics his] None can fall now until next winter, and possibly not then, and yet these shrubs can live in such a climate, if they get a good wetting every two or three years. A view, comprising a field as large, or nearly as large, as the state of Connecticut, *has not a single tree in sight*. Such are the Californian deserts.

But facts and first-hand accounts were rare, often mixed with bizarre speculations and homespun anecdotes. Little could be done to disabuse the public of desert distortions, some of which originated with the tragedy of the Death Valley '49ers. Even *Scientific American* (1885) perpetuated the notion that the "climatic violence" of the region would itself impede objective inquiry because

. . . it is certain that no man could survive there long enough to secure continuous observations of any kind. [The existence of resident Indians and borax miners notwithstanding.] (Chalfant 1930)

Chautauquan magazine (1891) summarized the popular impression of the deserts as uninhabited wastelands:

Animal life is confined to the most repulsive forms, such as the lizard and rattlesnake, scorpion and tarantula, the horned toad, and in some months, gnats. Occasionally a few blackbirds and crows hover about, but usually only in the train of the traveler in the hope of finding food in the scraps left behind. [Despite the fact that explorers, immigrants, and miners had long hunted quail, jackrabbit, desert bighorn sheep, and pronghorn.] (Chalfant 1930)

Although scientists had been sent on every topographic survey since Frémont's, their writings were presented as supplements to technical reports on railroad routes, border alignments, and military missions. They collected a myriad of specimens, eventually described in obscure and arcane journals, but could not capture the context of, or relationships among, desert organisms. It would have been impossible to imagine the biological diversity and abundance of California's arid lands from this first generation of pressed plants and mounted skins.

The U.S. Congress recognized the need for a comprehensive scientific survey, which was finally authorized and funded by 1890. Launched from Washington, D.C., the Death Valley Expedition was ordered "to study the geographical distribution of plants and animals" of the region and report back to the Department of Agriculture and the Smithsonian Institution. Renowned naturalist and ethnographer Clinton Hart Merriam was appointed expedition head. He assembled a team of eight young scientists, including six zoologists and two botanists, along with nine assistants, teamsters, and packers. They descended from Cajon Pass on January 3, 1891, and followed the trails of Garcés, Frémont, and Manley across the Mojave. Heading north from Daggett they eventually crossed the Panamint Range and set up a base camp at Bennett Wells. Nearly six months were spent exploring basins and ranges throughout the region, taking extensive notes, making collections and photographs, mapping terrain, and talking to the Timbishu Shoshone about life in the valley.

The sheer volume and quality of material gathered by this expedition is remarkable and much remains to be examined. Leonhard Stejneger, a curator for the Smithsonian wrote (1893):

No collection of North American reptiles and batrachians [frogs and toads] has been made equaling or even approaching that brought home by the Death Valley Expedition. In the extent of the series of many species it stands unrivaled, and in the accuracy and detail of its labeling it surpasses them all. . . . Many of the specimens of the older collections have localities very vaguely

[Plate 33r.]

The Death Valley Expedition of 1891—Vernon Bailey, C. Hart Merriam, T. S. Palmer, and A. K. Fisher—take a rest in Lone Pine. (Unknown photographer, Huntington Library)

indicated, as "California"; "From San Diego to El Paso"; in others, detailed localities are given, but in such a way that in many cases it is impossible to identify them. . . . In the collection of the Death Valley Expedition all the nine hundred specimens are individually and fully labeled; altitudes are frequently given, and there is no the slightest doubt as to the correctness of the statement attached to each and every specimen. . . .

It is the first attempt in this country on a similar scale to gather the herpetological material together according to a rational plan and with a definite purpose in view. The result is a fine series of specimens, unique in its completeness with respect to geographical localities within the area explored by the expedition, a tract of almost 100,000 square miles, comprising a number of nearly parallel desert valleys separated by intervening barren mountain ranges. . . . It has been possible in many instances to follow the geographic variation in its various directions. The present report does not pretend to exhaust this material, which will yield more definite results when the adjoining territory shall have been searched as thoroughly and as intelligently as that covered by the present expedition.

Virtually all organisms encountered received the same careful treatment, and many new species and genera were eventually described. Beetles were most abundantly collected (258 species, 19 new with two new genera), followed by moths and butterflies (85 species, six new with three new genera). Bees, flies, grasshoppers, and even lice ("from a child's ear, Lone Pine") were catalogued with thousands of specimens. At least 16 species of mol-

Route of the Death Valley Expedition led by C. Hart Merriam in 1891. (Fitch 1892.)

lusks, four fish, 12 amphibians, and 44 reptiles from the desert were included in the final report, with more than 150 species new to science. Interestingly, the account of mammals was never published, but several members of the expedition would make disproportionate contributions to our understanding of the biota.

Ornithologist Albert K. Fisher compiled a list of 290 species and subspecies of birds for the entire expedition, 78 specifically observed in Death Valley and 137 in Owens Valley. Such impressive numbers dispelled the view that desert birds consisted of "a few blackbirds and crows," but even more remarkable was the attention paid to exact distribution and life history. Writing about Costa's Hummingbird *(Calypte costae)*:

At Coso the species was very abundant and several of its nests were found. Various kinds of plants were used as nesting sites, though the branching cactus *(Opuntia echinocarpa)* was most commonly chosen. Usually the structure was placed on the top of a lower branch, a foot or so from the ground, and under an overhanging mass of thick spiny branches, which formed a protection for the parent bird from the sun and weather, as well as its enemies. At Coso one of

(text continues on page 52)

[Plate 34.]

Costa's Hummingbird nests in a silver cholla, as also observed by A. K. Fisher near Coso in 1891. (Angela Hyder)

REDISCOVERY: DESERT FISHES

European explorers had no reason to believe that the Great American Desert was teeming with native fish. Along the wide and deep Colorado River, fish would be expected, and indeed there were big fish—species of Razorback Sucker *(Xyrauchen texanus),* Bonytail *(Gila elegans),* and "Bull Salmon" *(Ptychocheilus lucius)* that routinely achieved 20 pounds. They were a staple food of Mojave people, who also used the remains to fertilize floodplain gardens of corn and beans. The Chemehuevis have a tribal name that literally translates as "those who work with fish." But expectations for finding fish within the dry interior were indeed low. Just before they entered Death Valley by way of Furnace Creek, the '49ers spent several December days at Ash Meadows. Staying near Fairbanks Springs, the immigrants gratefully drank the abundant, pure water and grazed their exhausted animals on the marsh vegetation. And during these restful days, William Manley recorded in his memoir the first sighting of a desert pupfish (the Ash Meadows Pupfish *[Cyprinodon nevadensis mionectes]*) in its spring-fed habitat:

Plate 55.] (pickup from McGinnis pl 45)

AU: Please confirm source for pl. 55.

Bull Salmon, also known as Colorado Pikeminnows, grew up to five feet long in the lower Colorado River. It is presumed extinct in California. (Doris Alcorn)

[Plate 54.]

Colorado River looking east to Fort Yuma, with ocotillo in the foreground. (Unknown artist, California Historical Society)

[Plate 56a.]

Ash Meadows Pupfish is confined to springs. (D. W. Sada)

> One night we had a fair camp, as we were close to the base of the snow butte [Telescope Peak?], and found a hole of clear or what seemed to be living water. There were a few minnows in it not much more than an inch long. This was among in a big pile of rocks, and around these the oxen found some grass.

Others began to notice the splendid anomaly of fish in desert waters. Traveling along the Mojave River, Gwynne Heap was journalist for Lt. Edward Beale on the railroad expedition of 1853. They followed the Garcés route in midsummer but were delighted to find running water, abundant grass, grape vines, and shady groves of cottonwood. Near the Upper Narrows of present day Victorville, Heap was surprised by what he saw:

> August 19. We encamped at noon near a large and deep pond of very cool and clear water, alive with fish, principally mullets, some of which were large.

This is the first description of the Mojave Tui Chub *(Siphateles mojavensis)*, endemic to this single desert drainage and long isolated from its relatives in the Central Valley and the northern Great Basin. Fossil evidence from the beds of Pleistocene Lake Manix suggests that great numbers of these large minnows (up to seven inches) were an important food source for many shorebirds, waders, diving birds, and raptors, some now extinct or absent from the modern landscape. These included two species of flamingo, a stork, a cormorant, and both extant eagles (bald and golden). As the desert lake receded, Mojave Tui Chub were confined to river and spring habitats that were less favorable in terms of water temperature (higher), oxygen content (low if stagnant), and quality (high salinity). Consequently, these

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[Plate 56.]

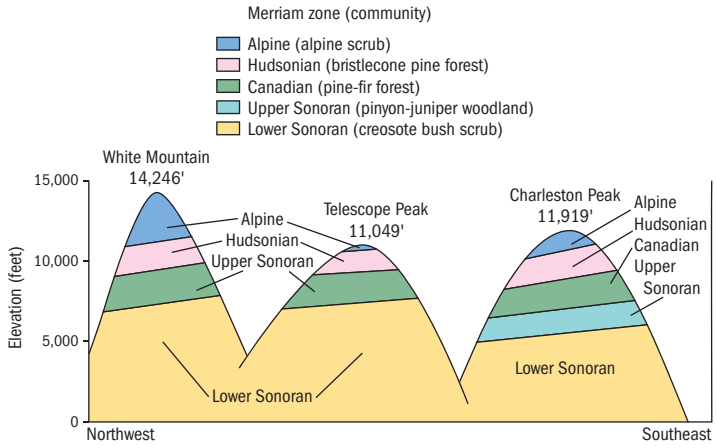
Mojave Tui Chub is the only native fish of the Mojave River.
(Steve Parmenter)

remnant lakefish were historically found only in deep pools and sloughlike marshes that best resembled the ancient habitat.

The Mojave Tui Chub is now listed as endangered and no longer can be found in the Mojave River. The natural populations observed by Heap were genetically polluted after hybridizing with Arroyo Chub *(S. orcutti)*, which someone introduced to the river in the 1930s. Arroyo Chub were also better competitors, having evolved in coastal rivers that selected for greater tolerance to variations in water temperature, oxygen, and quality. Only a single natural population of Mojave Tui Chub persists in Soda Springs at the Desert Studies Center in Zzyzx. To lessen the chance of extinction, fish from this population have been relocated to artificial habitats near China Lake, Barstow (once called "Fishpond"), and Camp Cady. But without a healthy, flowing, and protected Mojave River, this relict species has an uncertain and tenuous future.

these hummers was seen on a bright moonlight evening hovering about a bunch of flowers, and was heard again later in the same night. During our last trip to Death Valley Mr. Bailey saw one at Furnace Creek June 19, and the species was abundant all through the Panamint Mountains.

Botanists Frederick V. Coville and Frederick Funston compiled the first comprehensive flora from the Death Valley region, documenting 305 species from four categories of distribution (aquatic, wet soil, dry rock slope, and dry valley soil). They demonstrated that the native flora was exceedingly diverse by collecting 25 species of buckwheat *(Eriogonum)*, 18 species of milkvetch *(Astragalus)*, and 12 species of saltbush *(Atriplex)*, along with 42 new species and two new genera. They also documented that human-caused change had already begun, even in the most remote places. Eighteen species of European weeds had already become established along trails and at campsites, with six known from the re-



[Figure 1.]

[Plate 35.]

AU: add lines to photo to show life zones

Upper Merriam's life zones applied to three desert peaks. Only Charleston Peak has all five zones, an unresolved mystery. (Based on Kurzius 1981.)

Lower Merriam's life zones on Telescope Peak, viewed from Panamint Valley. (Author)

cently plowed fields at Furnace Creek Ranch. Perhaps the most remarkable aspect of the Coville and Funston flora was its modern, ecological approach, recognizing assemblages of species that shared habitats across the landscape.

But it was Merriam that formalized the concept of ecological groupings of species from his observations in Death Valley and throughout the American West.

> Most of the desert shrubs are social plants and are distributed in well-marked belts or zones, the vertical limits of which are fixed by the temperature during the period of growth and reproduction. Since the temperature at this season in places of the same latitude depends mainly on altitude, base level, and slope exposure, it follows that the boundaries of the several belts conform largely to the contours of altitude. . . .
>
> The principal plant zones conform also to the animal zones, as defined by the limits of distribution of terrestrial mammals, birds and reptiles.

He goes on to propose the first system of community classification in North America based upon observations of plant, bird, and mammal distribution in relation to temperature. Although we now recognize the overwhelming importance of water availability, as well as the influence of many other environmental factors, Merriam's system of life zones (Sonoran, Transitional, Canadian, Hudsonian, and Alpine/Artic) is still used by naturalists to describe the general effects of elevation and latitude on the biota. His perspective, forged in the heat and aridity of California's deserts, established the conceptual framework for understanding natural communities (species that occur together in space and time) and ecosystems (interactions between living entities and the nonliving environment). The Death Valley Expedition led by C. H. Merriam did nothing short of preparing the world for a new understanding of this place and its many remarkable inhabitants.

COMING TO CHERISH

Perhaps exploration, exploitation, and understanding are necessary before we can cherish a land. When a society is newly immersed in wilderness, the bravery and cruelty of the pioneer, the necessary emphasis on survival and the strong focus required for scientific inquiry simply forestall contemplation and artistic rediscovery. Footprints, flags, furrowed soil, and dead machinery become welcome signs that others had gone before, whether in the desert or on the moon. In California, the final rediscovery began when it was clear that the deserts had been subdued by roads, railroads, and reservations and deemed safe for all to come.

The reporter Charles Lummis sent dispatches from his desert wanderings to the Los Angeles Times, portraying himself as the last explorer of a disappearing frontier. He walked from Ohio to California, a journey of more than 3,500 miles in six months, to make a name for himself and the American West. His adventures often reinforced perceptions

of danger and desperation that echoed those of the pioneers, including death at the hands of bandits, hunger, and unbearable thirst. But Lummis also saw something different in the land, something benign that had yet to be expressed in the journals and papers of the day—beauty. On his "tramp across the continent" in 1884–1885 he wrote:

[Plate 36

Charles Lummis, flamboyant reporter for the Los Angeles Times, on his tramp in 1884. (Unknown photographer, Autry National Center, Southwest Museum)

On over the sandy, volcanic wastes, past the barren, contorted ranges of savage ruggedness and wonderful color, I trudged rapidly as possible; and still neither too hurried nor too beset with discomfort to extract a great deal of interest and information from every cruel day. This is a country of strange things; but none stranger than the appearance of its mountains. They are the barest, barrenest, most inhospitable-looking peaks in the whole world; and they are as uncordial as they look. Many a good man has left his bones to bleach beside their cliffs or in their death-trap valleys. They are peculiar in the abrupt fashion in which they rise from the plain, and more so in their utter destitution of vegetable life in any form. But strangest of all is their color. The prevailing hue is a soft, dark, red brown, or occasionally a tender purple; but here and there upon this deep background are curious light patches, where the fine sand of the desert has been whirled aloft and swept along by the mighty winds so common there, and rained down upon the mountain slopes where it forms deposits scores of feet in depth, and acres in extent. The rock bases of the mountains are completely buried in gentle acclivities of sand, while the cream or fawn-colored patches are often to be seen many hundreds of feet above the surrounding level. These mountains are not very high—none, I should judge, over 5,000 or 6,000 feet—but very vigorous in outline, and, at certain stages of the daylight, very beautiful in color.

Could the desert be more than cruel? Could it be pleasant and wondrous, a land of "fantasticalities" worth seeing despite the risks?

If Lummis was the first desert tourist in California, then John Van Dyke was the first desert philosopher. Van Dyke was a professor of art at Rutgers who traveled across portions of southeastern California at the turn of the century. He saw the desert as a metaphor for pure beauty and the ultimate destiny of the planet. He believed that long after humans

[Plate 37.]

John Van Dyke, perhaps the first philosopher of the California deserts. (Unknown photographer, Rutgers University Libraries)

and their meaningless civilization had been destroyed, all would be transformed into a shimmering, lovely landscape. In 1902 he wrote:

> The desert has gone a-begging for a word of praise these many years. It never had a sacred poet; it has in me only a lover.
>
> Is then this great expanse of sand and rock the beginning of the end? Is that the way our globe shall perish? Who can say? Nature plans the life, she plans the death; it must be that she plans aright. For death may be the culmination of all character; and life but the process of its development. If so, then not in vain these wastes of sand. The harsh destiny, the life-long struggle which they have imposed upon all the plants and birds, and animals have been but as the stepping-stones of character. . . .
>
> Not in vain these wastes of sand. And this time not because they develop character in desert life, but simply because they are beautiful in themselves and good to look upon whether they be life or death. In sublimity—the superlative degree of beauty—what land can equal the desert with its wide plains, its grim mountains, and its expanding canopy of sky! You shall never see elsewhere as here the dome, the pinnacle, the minaret fretted with golden fire at sunrise and sunset; you shall never see elsewhere as here the sunset valleys swimming in a pink and lilac haze, the great mesas and plateaus fading into blue distance, the gorges and canyons banked full of purple shadow. Never again shall you see such light and air and color; never such opaline mirage, such rosy dawn, such fiery twilight. And wherever you go, by land or by sea, you shall not forget that which you saw not but rather felt—the desolation and the silence of the desert. . . .
>
> The deserts are not worthless wastes. You cannot crop all creation with wheat and alfalfa. Some sections must lie fallow that other sections may produce. . . . The deserts should never be reclaimed. They are the breathing-spaces of the west and should be preserved forever.

Far to the north, Mary Austin was writing similar prose about the lands east of the Sierra Nevada. Among the basins and ranges she did not see the end of civilization, but its origins and salvation. Only a few decades after the Owens Valley "wars," she acknowledged the special relationship between Indian people and the desert and invited the reader to transcend prejudice and rediscover what could still be learned. In 1903, she wrote:

[Plate 38.]

Mary Austin invited America back into the desert by providing a counterpoint to the stories of the '49ers. (Unknown photographer, Bancroft Library)

So one comes to the country of the painted hills—old red cones of craters, wasteful beds of mineral earths, hot, acrid springs, and steam jets issuing from a leprous soil. After the hills the black rock, after the craters the spewed lava, ash strewn, of incredible thickness, and full of sharp, winding rifts. There are picture writings carved deep in the face of the cliffs to mark the way for those who do not know it. On the very edge of the black rock the earth falls away in a wide sweeping hollow, which is Shoshone Land.

It is the country of the bighorn, the wapiti, and the wolf, nesting place of buzzards, land of cloud-nourished trees and wild things that live without drink. Above all, it is the land of the creosote and the mesquite. The mesquite is God's best thought in all this desertness. It grows in the open, is thorny, stocky, close grown, and iron rooted. Long winds move in the draughty valleys, blown sand fills and fills about the lower branches, piling pyramidal dunes, from the top of which the mesquite twigs flourish greenly. Fifteen or twenty feet under the drift, where it seems no rain could penetrate, the main trunk grows, attaining often a yard's thickness, resistant as oak. In Shoshone Land one digs for large timber; that is in the southerly, sandy exposures. Higher on the table-topped ranges low trees of juniper and pinon stand each apart, rounded and spreading heaps of greenness. Between them, but each to itself in smooth clear spaces, tufts of tall feathered grass.

This is the sense of the desert hills, that there is room enough and time enough. Trees grow to consummate domes; every plant has its perfect work. Noxious weeds such as come up thickly in crowded fields do not flourish in the free spaces. Live long enough with an Indian, and he or the wild things will show you a use for everything that grows in these borders.

Hers was the first female voice that beckoned from the desert, a gentle voice of celebration rather than fear. She provided a counterpoint to the national disdain for arid lands and their native people. Her serene and lucid words were a welcome invitation to the very place that nearly destroyed parties of immigrants some 50 years before.

Responding to that invitation, Edna Brush Perkins and her friend Charlotte Hannahs Jordan traveled to Death Valley by horse-drawn wagon in 1920. Living in Cleveland, these early feminists could not imagine the vast, treeless expanses of the arid West. From Beatty, Nevada, a reluctant driver took their steamer trunks and camping supplies over the narrow trail through Daylight Pass:

[Plate 39r.] View of Death Valley from Daylight Pass, the "beautiful, the overwhelming valley" witnessed by Edna Brush Perkins. (Larry Sansone)

Opposite Corkscrew Mountain the road turned abruptly around a point of rock. Charlotte and I were walking ahead of the wagon, we went gaily to the end of the promontory and were brought to a sudden stop by what we saw. There, without any warning of its nearness, like an unexpected crash of orchestral music, lay the terrible valley, the beautiful, the overwhelming valley.

We all stood silent then. We were about three thousand feet above the bottom of the valley looking down from the north over its whole length, an immense oblong, glistening with white, alkali deposits, deep between high mountain walls. We knew that men had died down there in the shimmering heat of that white floor, we knew that the valley was sterile and dead, and yet we saw it covered with a mantle of such strange beauty that we felt it was the noblest thing we had ever imagined. Only a poet could hope to express the emotion of beauty stronger than fear and death which held us silent moment after moment by the point of rock. Perhaps some day a supreme singer will come around that point and adequately interpret that thrilling repose, that patience, that terror and beauty as part of the impassive, splendid life that always encompasses our turbulent littleness around. Before terror and beauty like that, something inside you, your own very self, stands still; for a while you rest in the companionship of greatness.

[Plate 40.]

That sense of greatness in the landscape led to the establishment of Death Valley National Monument in 1933. The nation's largest state park, Anza-Borrego, was formed the year before after the renowned landscape architect Frederick Law Olmsted had argued on behalf of a sanctuary:

Edmund Jaeger in Death Valley, 1965. (Tom G. Murphy, Riverside Metropolitan Museum)

> Certain desert areas have a distinctive and subtle charm, in part dependent on spaciousness, solitude, and escape from the evidence of human control and manipulation of the earth, a charm of constantly growing value as the rest of the earth becomes more completely dominated by man's activities. This quality is a very vulnerable one. . . . Nowhere else are casual thoughtless human changes in the landscape so irreparable, and nowhere else is it so important to control and completely protect wide areas.

The zoologist Edmund Jaeger not only saw greatness in the California deserts, he also saw the remarkable diversity of desert life. Unlike Merriam, his books appealed to a general audience of "so many travelers, vacationists and students of nature" coming to see for themselves in the 1930s and 1940s. Jaeger was very modern in his presentation of the desert, not only describing its plants and animals but also portraying their ecological interactions within the landscape. He knew that people must learn to *see* the desert to understand and cherish it. Seeing was more than looking out a car window, it was an active process of observation and interpretation. Toward that end, he took students into the Mojave, along some narrow, sandy track, stopping near a strikingly tall Joshua tree in the middle of wilderness:

> We walked around to view the tree from many angles and to learn what curious desert wonders could be found near it. We were soon rewarded with so many sights of unusual interest that we decided to draw an imaginary circle, with the Joshua tree as its center and with a radius of a hundred feet, and then to list all the things we saw within what we decided to call our "Magic Circle." Let those who think that desert areas are places of desolation and just so much gray-green brush, sand, and gravel read now an account of our census. (Jaeger 1961)

Jaeger's census (see sidebar) gives equal weight to slime mold, millipede, cactus, and rabbit, noting only that they occupied the same envelope of space and time. This view of biological diversity as place based, as comprehensive, as the intersection of science and magic would strengthen during this phase of rediscovery. Others had acknowledged di-

versity among desert organisms. Frémont first noted that plants of the Mojave had "greater variety than we had been accustomed to see in the most luxuriant prairie countries; this was a peculiarity of *this* desert." But Jaeger pointed out that a tally of all forms of life would lead to an even greater appreciation of evolutionary origins and ecological process in what many had judged to be a "wasteland." His magic circle forced a new view, one born from actually seeing a place and its inhabitants before pronouncing vacancy or declaring minimal value. And, as John Muir view's had done for the Sierra Nevada, this view would lead to an urgent call for conservation and better management of public lands in arid California.

Jaeger invited us to look for the inhabitants of the desert, and John Steinbeck asked us to consider their importance to the nation. Later in life he took a journey in search of America with his dog, Charley. They camped and fished and rambled the continent, eventually crossing California on Route 66 through Needles. Steinbeck met the people, col-

WITHIN THE MAGIC CIRCLE

The account of objects within the Magic Circle, extracted from Dr. Jaeger's elegant text:

"A black meteoric stone over an inch and a half long"

"Two cactus wren's nests . . . made of the stems of wild buckwheat and vinegarweed, and decorated and lined with bits of woolly filago"

A cholla cactus with "some seldom-seen fleshy, ephemeral leaves, no doubt vestiges of organs much better developed in some ancestral cacti"

Another Joshua Tree with "most of its long, spine-tipped leaves . . . twisted into a Turkish scimitar or into a corkscrew"

"On a creosote bush . . . the small, dark-brown nest of a potter bee, with its water-proof protective cover of bits of gravel set in hardened wax to form an intricate mosaic"

"A little *Trombidium* crawling over the sand . . . a handsome, harmless harvest mite . . . in search of food"

"A plump, brown millipede"

"The entrances to the subterranean homes of white-footed mice, kangaroo rats, and antelope ground squirrels . . . scorpions . . . ground spiders . . . harvester [ants] and the honey ants"

"A brush rabbit's shallow burrow . . . [containing] the gray proprietor all hunched up"

Inside a "dead Joshua tree trunk, we discovered a four-inch *Xantusia,* or desert night lizard, . . . feeding upon termites"

lected the stories, and saw the relationships between landscapes and life. He also echoed the premonitions of John Van Dyke within a modern, cold war context:

The Mojave is a big desert and a frightening one. It's as though nature tested a man for endurance and constancy to prove whether he was good enough to get to California. The shimmering dry heat made visions of water on the flat plain. And even when you drive a high speed, the hills that mark the boundaries recede before you. . . .

I have driven through the Southwest many times, and even more often have flown over it—a great and mysterious wasteland, a sun-punished place. It is a mystery, something concealed and waiting. It seems deserted, free of parasitic man, but this is not entirely so. Follow the double line of wheel tracks through sand and rock and you will find a habitation somewhere huddled in a protected place, with a few trees pointing their roots at under-earth water, a patch of starveling

"Flattish lumps of dried, white froth . . . [composed of] millions of microscopic gray-black spores . . . of slime molds or Mycetozoa"
"An abandoned badger's den"
"Cocoons of a case-bearer moth, as well as the 'robin's pin-cushion' or fuzzy creosote gall"
"A small green creosote grasshopper"
the songs of a thrasher and a cactus wren and "the pungent scent of creosote bush"

All these things and more we saw or heard within our Magic Circle of a hundred-foot radius. And in the center stood our tall, long-trunked Joshua tree with its crown of four branches and its basketlike hawk's nest of creosote twigs.

Joshua tree at the center of a magic circle. (Angela Hyder)

[Plate 41.]

In the evening against the silhouette of the rocky hills surrounding the valley and the colorful clouds, small pipistrellid bats darted overhead. The last notes of the thrasher were heard far away. As the sky grew darker, bringing out the stars, we looked beyond our Magic Circle to that larger circle, the rim of the horizon.

[Plate 43.]

This cactus-rich view of Mount San Jacinto was named "Devil's Garden" in the 1930s. Note the steam train crossing the pass. (Stephen H. Willard)

[Plate 44.]

Similar view of Devil's Garden, 2006. The cacti were removed by collectors, the pass filled with highways and windmills, and the vegetation invaded by weeds. (Author)

corn and squash, and strips of jerky hanging on a string. There is a breed of desert men, not hiding exactly but gone to sanctuary from the sins of confusion.

At night in this waterless air the stars come down just out of reach of your fingers. In such a place the hermits of the early church piercing to infinity with unlettered minds. The great concepts of oneness and of majestic order seem always to be born in the desert. The quiet counting of the stars, and observation of their movements, came first from desert places. I have known desert men who chose their places with quiet and slow passion, rejecting the nervousness of a watered world. These men have not changed with the exploding times except to die and be replaced by others like them.

In the war of sun and dryness against living things, life has its secrets of survival. Life, no matter on what level, must be moist or it will disappear. I find most interesting the conspiracy of life in the desert to circumvent the death rays of the all-conquering sun. The beaten earth appears defeated and dead, but it only appears so. A vast and inventive organization of living matter survives. . . .

The desert, being an unwanted place, might well be the last stand of life against unlife. For in the rich and moist and wanted areas of the world, life pyramids against itself and in its confusion has finally allied itself with the enemy non-life. And what the scorching, searing, freezing, poisoning weapons of non-life have failed to do may be accomplished to the end of its destruction and extinction by the tactics of survival gone sour. If the most versatile of living forms, the human, now fights for survival as it always has, it can eliminate not only itself but all other life. And if that should transpire, unwanted places like the desert might be the harsh mother of repopulation. For the inhabitants of the desert are well trained and well armed against desolation. Even our own misguided species might re-emerge from the desert. The lone man and his sun-

toughened wife who cling to the shade in a unfruitful and uncoveted place might, with their brothers in arms — the coyote, the jackrabbit, the horned toad, the rattlesnake, together with a host of armored insects — these trained and tested fragments of life might well be the last hope of life against non-life. The desert has mothered magic things before this.

But Steinbeck could not have imagined the crush of humanity that would arrive at the doorstep of the California deserts by the end of the twentieth century. The military claimed areas large enough to conduct mock wars with battalions, heavy artillery, and jet bombers. Coastal cities would overflow the windy passes, spreading freeways, houses, and malls into the dry solitude. The land beneath the desert would finally become wanted, scraped clean of its life and watered into monotonous oblivion using distant rivers and ancient aquifers. Yet millions come each year to see and perhaps surrender themselves to the teeming, rugged vastness. Will these arid lands be cherished before irreversible degradation or meaningless consumption? Is American society capable of sustaining rediscovery, or will it be over after a few hundred years?

To cherish something with the heart is to live in fear of its demise. But our rediscovery must balance a fear for the future with the joy of today and an appreciation of the past. Our rediscovery must develop a healthy blend of human tendencies to explore, conquer, understand and cherish. All are important, but none should be the only path available to all people and all corners of the landscape. People will decide the fate of the California deserts, people that speak, listen, see, and learn across boundaries of ignorance.

REQUIEM FOR SONORA

by Richard Shelton

1

a small child of a wind
stumbles toward me down the arroyo
lost and carrying no light
tearing its sleeves
on thorns of the palo verde
talking to itself
and to the dark shapes it touches
searching for what it has not lost
and will never find
searching
and lonelier
than even I can imagine

the moon sleeps
with her head on the buttocks of a
young hill
and you lie before me
under moonlight as if under water
on my desert
the coolness of your face

2

men are coming inland to you
soon they will make you the last resort
for tourists who have
nowhere else to go

what will become of the coyote
with eyes of topaz
moving silently to his undoing

the ocotillo
flagellant of the wind
the deer climbing with dignity
further into the mountains
the huge and delicate saguaro
what will become of those cannot learn
the terrible knowledge of cities

3

years ago I came to you as a stranger
and have never been worthy
to be called your lover or to speak your
name
loveliest
most silent sanctuary
more fragile than forests
more beautiful than water

I am older and uglier
and full of the knowledge
that I do not belong to beauty
and beauty does not belong to me
I have learned to accept whatever men
choose to give me
or whatever they choose to withhold
but oh my desert
yours is the only death I cannot bear