

PART EIGHT

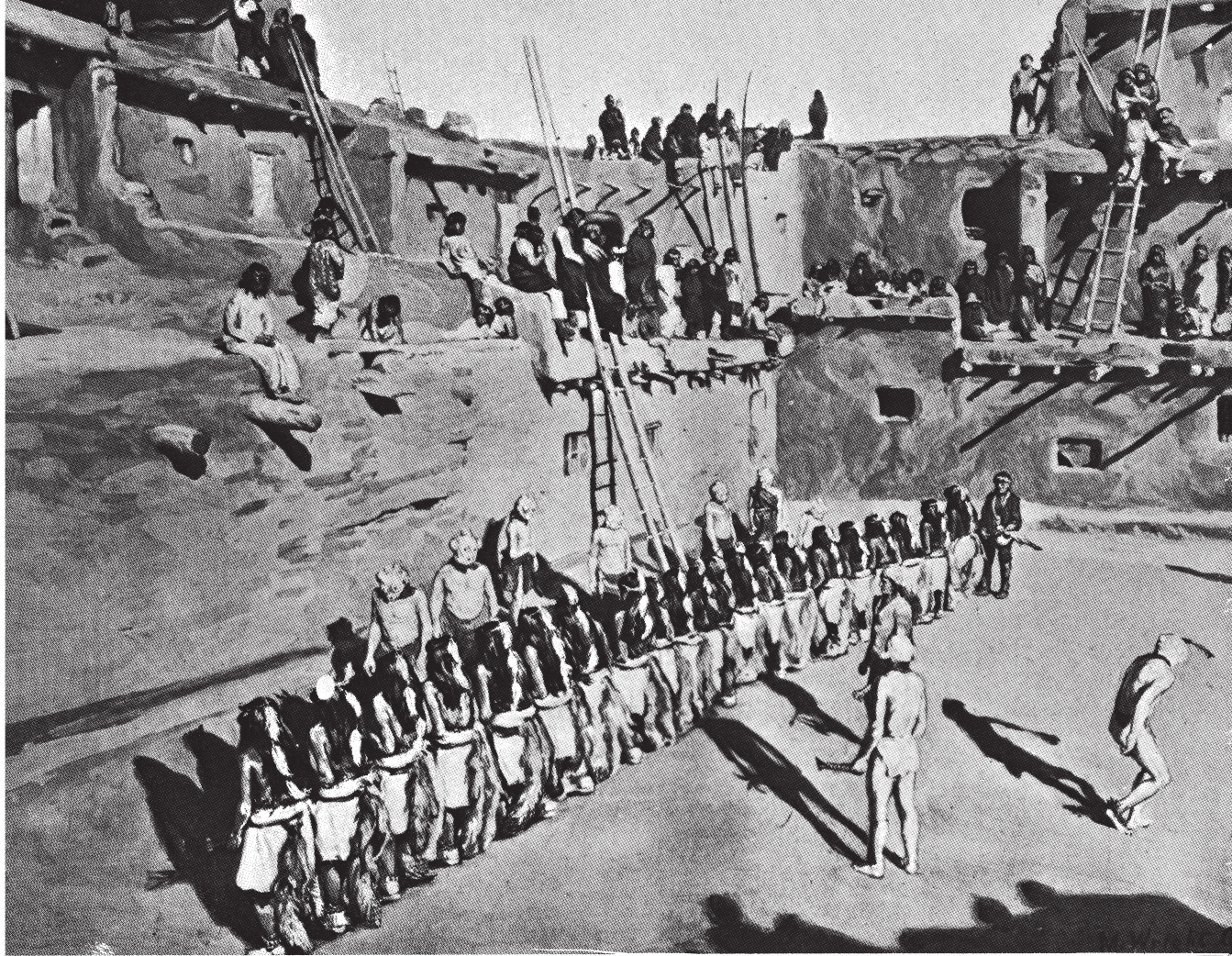
Climate and Resources

Pace Western Growth

Chapter 20: In the Land of Little Rain

Chapter 21: In the Pacific Northwest

Chapter 22: In the Mountain Regions



Bureau of American Ethnology

ZUNI RAIN DANCE

“COME, LET US GO TO OUR PEOPLE AND DANCE AND MAKE RAIN FOR THEM.”

The rain-making ceremonies of the Zuni Tribe are long and elaborate, and sometimes last for days. The men who impersonate the rain gods wear masks because clouds hide the faces of the rainmakers in the sky.

When the dancers arrive, the people gather on the roofs and in the courtyards, and watch with quiet reverence. The dance is a prayer. A flute plays ceremonial tunes, and choirs chant the sacred ritual, — one long, solemn prayer for rain.

“Let the heavens be covered with the banked-up clouds.
Let the earth be covered with fog; cover the earth with rains.

Great waters, rains, cover the earth. Lightning cover the earth.

Let the thunder be heard over the earth; let the thunder be heard.

* * *

Rainmakers come out from all roads, that great rivers may cover the earth;

That stones may be moved by the torrents;
That trees may be uprooted and moved by the torrents.

* * *

That my children may have all things to eat and be happy,

That the people of the outlying villages may all laugh and be happy.

* * *

May all my children have corn that they may complete the road of life.”

Translation of verses from a Zuni Rain Ritual (Bureau of American Ethnology)

Chapter 20

In the Land of Little Rain

THE RAINMAKERS

IN ZUNI LEGEND the rainmakers were water spirits who roamed over the world collecting showers from the four encircling oceans. They dwelled in the white cumulus clouds that crown the mountain peaks rising from the mile-high plateau of their homeland. Creatures on earth could see their breath – it was mist – but no mortal could ever look upon their faces. They wore clouds for masks.

There was great rejoicing among the Indians when the fluffy clouds began to roll into white puffs like snow and hover over the mountain ranges. The rainmakers were at home and their jars were filled with water from the four encircling oceans. Great were the holy men of the tribe, who, with their fasts, dances, and songs were able to coax the rainmakers down from the mountain to sprinkle the thirsty fields of corn. Their prayers were answered when the clouds turned gray, drifted across the sky, and cast their shadow upon the ground. Then the natives knew the water spirits were coming to empty their jars, pouring rain on the baked earth.

Since maize was the “staff of life,” the natives could live only where there was

water for their fields of corn. Historians are inclined to agree that a long drought dried up the streams before Columbus came and forced the ancient cliff-dwellers from the safety of their canyon homes. Drought forced them to settle in the river valleys where melting snows in the mountains fed the streams with water with which they could irrigate their fields. Here in the river valleys Coronado found Indians, although a few still lingered in canyons where streams trickled through the narrow floors of the gorges. One of Coronado’s exploring parties found beans growing along the banks of a creek winding through the bottom of a canyon. They were more surprised to discover that the bean farmers lived in the caves that looked like pockmarks on the face of the canyon wall. They named the stream El Rito de los Frijoles – the Little River of the Beans.

Slowly, white men trickled into the Indian country to establish trading posts and missions. They brought in new ideas for watering the corn. The Indians in their ceremonials waved sticks tipped with downy feathers, a symbol of lifting the moisture-laden clouds over the mountain barrier to spill their precious contents on the thirsty plain. The white men knew that



Courtesy, Southwest Museum, Los Angeles, California

ZUNI WATER JAR

In symbolic designs, Indians in the semi-desert country expressed their awe of sun, moon, stars, rain, and the wonders of nature all around them. This ancient jar, beautiful in form and design, is a rare work of Indian art. The need for water influenced religion and the arts of native peoples in the Southwest.

the clouds dropped their moisture in crossing the mountains. Raging torrents rolled down the dry arroyos after a cloudburst in the hills. The sudden, roaring flood took with it trees, logs, houses, cattle, sheep — anything in its path. Little by little the palefaces began to store the water in reservoirs where it fell. They brought it down in canals to irrigate the crops when needed. In times of drought when water is low in the ditches, the Indians still chant their rainmaking ceremonies as in days of old.

Yet, if Coronado returned today to lead his expedition over the same route he followed in 1540, he would find much of the country little changed. Away from the paved highways, the irrigated farms, and the lighted towns, the cacti and the sage-

brush still struggle for life in the desert. In the warm sand the spotted rattlesnake curls, unseen by the passerby until he sounds a warning with the rattles on his tail. On hot summer days long-tailed lizards doze in the scanty shade of soapweed plants. The sharp yip of the coyote may disturb the quiet of the night. The noise and bustle of modern civilization have lightly touched this land of Coronado. Water still is king and dictates the way of life in this land of little rain.

ZUNI WATER JARS DECORATED WITH RAIN SYMBOLS

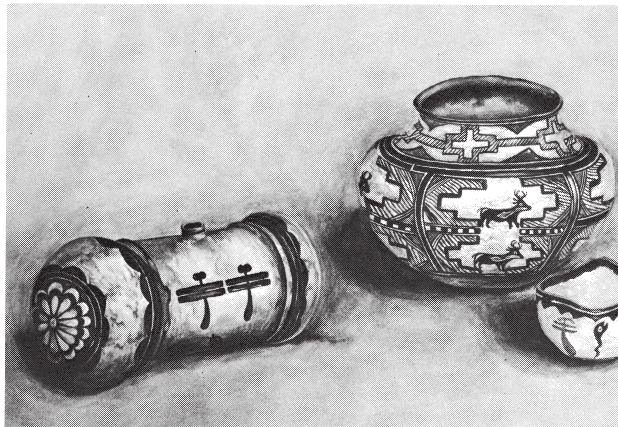
After a heavy rain, dragon flies hovered over the mud puddles where frogs croaked and tadpoles wiggled. Indian mothers told their little ones that these creatures were the rainmaker's children who brought water from the clouds to earth. Two of the jars are decorated with designs of tadpoles and dragon flies.

The Deer Clan had a special part in rain-making ceremonies. The dancers who impersonated the rain gods fasted for 24 hours. At the end of the ritual, women of the Deer Clan brought cool water to the thirsty men. Other women trailed them, carrying bowls of food for the feast that followed the long fast.

On the large jar, deer are standing in a cloud design with a background of the falling-rain pattern: \\\ Today, as in olden times, a lonely gray cloud can be seen pouring water on a small area in the Zuni country. The rain streams down in a veil so thin that the sun shines through, and the bluish mountains can be seen through the sheer downpour. Did the Indians get the pattern of falling rain from such freakish little cloudbursts?

All three jars have these familiar cloud designs: 

Courtesy, Southwest Museum, Los Angeles, California



THE PASTORAL ERA CAME FIRST

WHEN CORONADO RETURNED to Mexico from his land expedition, he learned that Cabrillo, a Portuguese navigator in the service of Spain, had been sent by sea to explore the coast line of the unknown land lying to the north. In September of 1542 Cabrillo and his sailors sought shelter from a storm in the Bay of San Diego. Here the natives told them about other palefaced men who had been seen inland a few days journey away. The bearded strangers whom the Indians described with signs and gestures probably belonged to Alarcon's expedition, dispatched by sea to carry added supplies to Coronado. With the help of friendly Indians, some of Alarcon's men traveled in small boats quite a distance up the Colorado River, but failed to find any trace of Coronado's party traveling overland.

Following the coast line of California, Cabrillo discovered the Bay of Santa Monica which he named the "Bay of Smokes." Probably, natives had started brush fires to drive rabbits from their holes and a haze of burning chaparral and manzanita veiled the surrounding hills. Continuing the voyage north, Cabrillo explored the coast almost as far as San Francisco Bay. Plagued by fog and violent winds, in which one of his two ships was lost for days, he decided to turn back. He took refuge from the ocean storms in the Bay of Monterey. With a sick and starving crew he sought a warmer climate. They spent the winter in a sheltered harbor of an island off the coast of Santa Barbara. Here, early in January of 1543, Cabrillo died and was buried. His pilot became captain and continued the exploration of

the shore line until provisions were almost exhausted. He then returned to Mexico. Upon this voyage of Cabrillo Spain based her claim to California.

It was more than two hundred years before Spain made any effort to colonize the country discovered by Cabrillo. Meanwhile Russian hunters had crossed the narrow strait separating the continents of Asia and North America to get furs. Not content with only Alaskan seal they worked their way farther and farther down the coast to trap beaver, otter, and mink along the rivers flowing into the Pacific Ocean. When the King of Spain heard that Russians were establishing trading posts in or near his territory, he became alarmed and ordered the Viceroy of New Spain "to guard that part of his Dominions from all invasion."

To carry out the King's request two expeditions were planned. One was to be by land and one by sea, under the direction of Jose de Galvez, commissioner of the King. To hold the country it had to be occupied by Spaniards. Captain Gaspar de Portola was given the military command and instructed to erect forts for defense. Junipero Serra, a Franciscan friar, was placed in charge of the missionaries who were to establish settlements and convert the natives to Christianity.

Galvez immediately began the task of recruiting both soldiers and friars and gathering supplies for the new country. Two vessels sailed first for San Diego with tools and necessities to sustain life in an unsettled land. The cargo included ornaments and vestments for the chapels of the missions. Since Spain and California lie in the same latitude, Galvez figured that the same crops could be grown in both countries. He loaded the

vessels with an ample supply of all kinds of seeds, grains for food, flax for linen, and flowers for the patios. On board, also, were bundles of tree cuttings for orchards and gardens. Junipero Serra was at La Paz on the eastern coast of Lower California when the *San Carlos* sailed on the ninth of January, 1769, for San Diego. Galvez accompanied the explorers as far as Cape San Lucas on the western tip of the peninsula. Here he found the *San Antonio*, buffeted by storms which had prevented the ship from reaching the harbor of La Paz. After supervising repairs of the vessel, Galvez ordered the captain to sail for La Paz to get supplies.

With the ships on their way Galvez turned his attention to the land expedition. He sent messengers throughout the peninsula to collect cattle, horses, and mules for the new settlements and to persuade soldiers, friars and settlers to join the caravan for California. The necessary supplies were gathered for man and beast, as the explorers traveled north from mission to mission in the peninsula. From the northernmost outpost of civilization, the expedition proceeded in two sections. The first went ahead to drive the cattle and the second traveled behind with soldiers under Portola and missionaries under Junipero Serra. It was the middle of May when the second party left the last mission to cross unknown country, proceeding to San Diego to meet the men who had gone by sea. Misfortune upset the well-laid plans of Galvez.

The *San Antonio* sailed a month after the *San Carlos*, but arrived first at San Diego April 11, 1769 after fifty-nine days at sea. About half of the men on board were suffering from scurvy. After being lost in storms for 110 days, the San

Carlos reached the port of San Diego later in the month of April, 1769. Only a few men of the crew were able to stand and handle the boat. Both soldiers and sailors were gravely ill from scurvy and thirst. A number of the seamen died after reaching San Diego, although the ship's doctor had searched the country nearby and found herbs from which he made tea in an effort to cure the scurvy.

By the first of July the land expeditions arrived at San Diego. The combined sea and land parties numbered only a little over a hundred men. The land parties traveled through desert country and some of the livestock perished on the way. These marchers suffered less than the sea voyagers. It was decided to send the *San Antonio* back to San Lucas to report what had happened and to ask for more sailors to man the *San Carlos* which was to proceed north to Monterey. Junipero Serra waited in San Diego with the sick men expecting the *San Jose*, a supply ship, to arrive any day with men and supplies.

On July 14 with sixty-six men, a fourth of whom were friendly Indians, a military expedition under Portola started north from San Diego to occupy the country and erect forts to defend it. Two days later Junipero Serra founded the first mission at San Diego.

Meanwhile, Portola's explorers made their way inland, through valleys and over mountains. They were looking for the place marked on a map made by an early explorer in 1602 and named after the Count of Monte-Rey, Viceroy of New Spain. On November 2, 1769, Portola dispatched Sergeant Ortega and a squad of soldiers to explore the region near his camp. They had orders to return in three or four days. On that same day a few

men from camp went deer hunting, and returned that evening with the exciting news that they had seen a huge inland sea not far from the ocean. The next day Ortega returned with the same news, stating that he and his companions had tried to go around the great body of water, but that their way had been blocked by a narrow outlet leading into the ocean. Four days later Portola and the missionaries viewed this "arm of the sea." What would they name it?

Before leaving Lower California in 1769, Junipero Serra had been given a list of names for the missions he was to start in California, the northernmost province of New Spain. Disappointed that one was not

named for St. Francis of Assisi, founder of his order, Serra had asked, "Is there to be no mission for our father St. Francis?"

Galvez had replied, "If St. Francis wants a mission, let him cause his port to be discovered, and it will be placed there."

Another bay had been charted by an early explorer in that region and called by him, St. Francis Bay of Cermeno (probably Drake's Bay). Thinking the enclosed harbor was part of this body of water, the friars named it, San Francisco Bay. Provisions were running low and the natives who had been so kind and brought them food were becoming unfriendly. After a few more days of exploring, Portola decided to turn back, hoping to discover Monterey on the

THE GOLDEN GATE

Great mariners failed to find this narrow strait leading into San Francisco Bay. Cabrillo missed it in 1542, and so did Francis Drake thirty-seven years later. It was discovered by a landlubber who stumbled upon it by accident. He was Jose Francisco Ortega, a sergeant, whom Portola had sent with a squad of soldiers to explore the coast as far north as Port Reyes. A gateway to the "arm of the sea" barred his way. On the fifth of August in 1775, the Spanish supply ship, San Carlos, sailed through this uncharted strait, opening the Golden Gate to the trade of the world.

Courtesy, Californians Inc.



way south. He hoped to find either the *San Jose* or the *San Antonio* anchored in the harbor with much needed supplies.

The retreat began on the eleventh of November, and on the twenty-eighth, Portola unknowingly camped on the site of Monterey. After waiting there for twelve days for provisions he headed south, having only a few sacks of flour to feed his men. It was necessary to kill twelve of the pack mules to provide meat for the party, which arrived in San Diego on the twenty-fourth of January in 1770. There, Portola learned that most of the men who had been sick with scurvy had died but that Junipero Serra had recovered from the disease.

Before leaving Lower California, it had been agreed that the explorers were to return if ships carrying supplies failed to arrive by the nineteenth of March. The despondent men watched anxiously for a sail as the March days slipped by. Neither the *San Jose* nor the *San Antonio* appeared in the harbor. As the day approached to abandon the settlement, Junipero Serra went aboard the *San Carlos* lying helpless in the bay without a crew. He went to inform the captain that he and Father Crespi would remain to preach the gospel when the expedition returned. Serra refused to desert the mission.

On the nineteenth of March farewell religious services were held in the morning. The expedition was packed and ready to leave on the morrow. Portola, the commander, decided to wait one more day for help to arrive. On the afternoon of the nineteenth a sail was sighted in the distance. Captain Perez of the *San Antonio* enroute to Monterey had turned back from Santa Barbara Channel when he learned from natives through their sign language that Portola had returned to San

Diego. The expedition waited four days for the *San Antonio* to anchor in the harbor with provisions for the land forces and sailors for the *San Carlos*. Serra's first mission was saved.

With only twenty men Portola left San Diego on the seventeenth of April to make another search for Monterey which he had not recognized the first time. His orders were to build a fort there to defend the territory from invasion by the Russians or any other settlers. Two days after Portola started overland to Monterey, Junipero Serra sailed on the *San Antonio* for that northern port. The fort was erected at Monterey. The mission where Junipero Serra labored was located at nearby Carmel where the land could be irrigated from a mountain stream.

The Bay of San Francisco was fortified with a garrison of soldiers in a district still called the Presidio, and still an army post. The missionaries looked around for a mission site not far away; a place with water handy and a view of the surrounding country. One of the friars, Juan Crespi, wrote in his journal describing the spot that was selected:

From this mesa one enjoys a most beautiful view – a good part of the bay and its islands – and a view of the ocean. In fact, although, so far as I have traveled, I have seen very good places and beautiful lands, I have yet seen none that pleased me so much as this. I do believe that, if it could be well populated, as in Europe, there would be nothing more beautiful in the world. This place has the best accommodations for founding on it a most beautiful city, inasmuch as the desirable qualities exist as well on the land as on the sea. The port is exceptional and large for dockyards, docks, and whatever would be wanted.

Five days before the Declaration of Independence was signed in Philadelphia, a mission for St. Francis of Assisi was

founded near the tip of the peninsula which separates the ocean from the “arm of the sea” destined to be known as the Bay of San Francisco. The first religious service was held in an arbor fashioned of boughs. This crude shelter was the first church. Soldiers with their families and servants and the native Indians made up the congregation. Thus in the year of independence, the future city of San Francisco started with a fort and a mission. If the early missionary could return today, he would see his dream fulfilled.

MISSIONS – RANCHOS – PUEBLOS

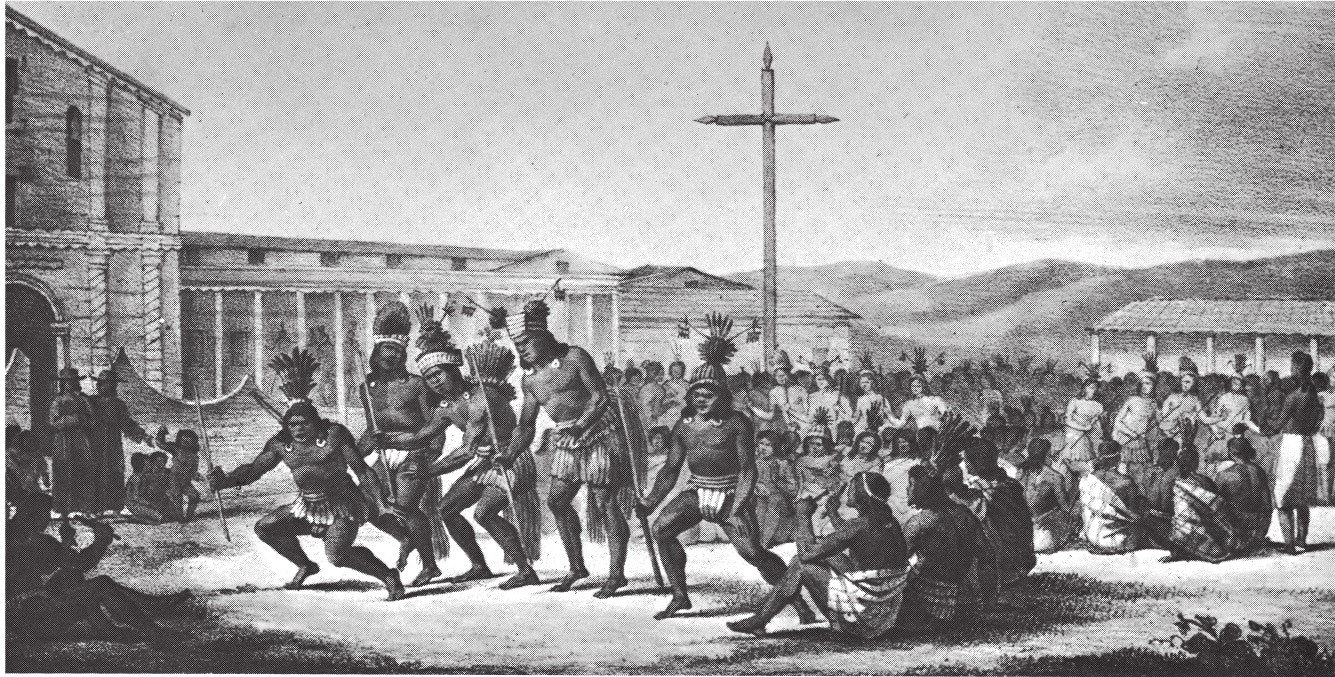
UNDER SPANISH LAW all colonial territory in the New World belonged to the King. He could give this land to anyone for any purpose. He was generous with land grants to missionaries who pushed the Spanish frontier north into California and induced settlers to occupy the country. Since land was plentiful, these grants included thousands of acres with scarcely any limit at first. The friars sought to convert the natives not only to Christianity but also to a civilized way of life. Indians were trained in agriculture, trades, and handicrafts, and the talented ones were taught the arts. The Christian Indians who lived at the missions worked in the fields, molded adobe bricks, cut wood, hauled water, herded cattle and sheep, took care of horses, erected buildings, cobbled shoes, and fashioned tiles. The women washed wool, carded, spun, and wove it. Most of the young women worked at grinding wheat and corn into coarse flour and meal by rubbing the grains between rocks. A large stone served as a bread board

and a small one as a rolling pin. Mush made from these grains was the main dish.

All the natives did not come to the missions to work, even though they frequently starved in their wild surroundings. Some who accepted Christianity ran away from food and care to escape toil and discipline, preferring to live in the mountains and eat berries, roots, and game. When ill and in need, however, many runaways returned to the missions, which became self-supporting communities for both the natives and missionaries. When soldiers were garrisoned in presidios near missions, the friars were expected to contribute both food and clothing for their support, although each fort was allotted land for cultivation and pasture. Thus in the early days the missions bore the main burden of extending the outposts of civilization into California.

How the missionaries met the problems of establishing settlements in new country was observed by an English visitor to the mission in San Francisco. In November of 1792, George Vancouver, Captain of the British ship *Discovery*, anchored in the Bay of San Francisco to find wood and water. He had been exploring the western coast of North America and searching for the mythical Northwest Passage. The Spaniards received him cordially. The soldiers at the Presidio vied with the friars at the mission in making him welcome and comfortable. In the journal of his travels Vancouver described the Mission of St. Francis on Dolores Creek.

One of the missionaries boarded the *Discovery* to invite the captain to dinner on Sunday, the eighteenth of November. Since he was the guest of the commander at the Presidio, he was escorted by officers on horseback from the fort to the



California Historical Society

CALIFORNIA INDIANS DANCING AT THE MISSION OF ST. FRANCIS

mission, not quite three miles distant. Vancouver wrote of the mission and the Presidio:

While dinner was preparing, our attention was engaged in seeing the several houses within the square. Some we found appropriated to the reception of grain, of which however they had not a very abundant stock; nor was the place of its growth within sight of the mission. One large room was occupied by manufacturers of a coarse sort of blanketing, made from the wool produced in the neighborhood. The looms, though rudely wrought, were tolerably well contrived, and had been made by the Indians under the immediate direction of the fathers. The produce resulting from this manufactory is wholly applied to the clothing of the converted Indians. The garden contained about four acres, was tolerably well fenced in, and produced some fig, peach, apple, and other fruit trees, but afforded a very scanty supply of useful vegetables.

On our return to the convent we found a most excellent and abundant repast provided of beef, mutton, fish, fowls, and such vegetables as their garden afforded. The attentive and hospitable

behavior of our new friends amply compensated for the homely manner in which the dinner was served; — After dinner we were engaged in an entertaining conversation, in which, by the assistance of Mr. Dobson, our interpreter, we were each able to bear a part.

Vancouver arranged for cattle, sheep, poultry, and some vegetables to be taken aboard the *Discovery* to feed his crew. When he called at the fort to pay for these supplies, the commander refused to accept any money. Wishing to show his appreciation, Vancouver presented the commander with a few kitchen pans and dishes, some bar iron, and decorations for the churches, asking that these small gifts be divided between the Presidio and the mission. Vancouver wrote:

Thus we quitted San Francisco highly indebted to our hospitable reception, and the excellent refreshments, which in a few days had entirely eradicated every apparent symptom of the scurvy.

In time, however, the famed hospitality of the ranchos surpassed that of the forts and missions. Soldiers in the presidios also wanted land for themselves on which to pasture their flocks and herds. Their pay was small and life was dull and idle in the forts. Only a few disturbances occurred to break the monotony of the pastoral way of life. On the whole the natives were peaceful and docile. No enemy came to invade and conquer the country. Soldiers pastured their stock on land allotted to the fort or nearby missions until their herds grew too large and more space was needed for grazing. Portola's men, nicknamed "leather-jackets" because they wore vests padded with layers of deerskin and carried shields of raw bullhide,

petitioned for land. They had endured the dangers and hardships of exploring and occupying the country for Spain.

In 1784 Pedro Fages, a leather-jacketed captain under Portola who was appointed governor, made the first land grants to three corporals in his command and thus founded the rancho system. Jose Dominguez received about 75,000 acres lying along the ocean front. He named his grant the Rancho San Pedro. When Jose Verdugo, stationed at the San Gabriel Mission, heard about the grant to Dominguez, he asked the governor for the same favor, and received 36,000 acres of wooded hills bordering the mission tract. Upon retirement from the army Verdugo lived on his Rancho San Rafael which

MISSION SANTA CLARA

Santa Clara Mission was founded in 1777 in a valley south of San Francisco. This painting by Andrew Hill tells the story of Spanish California during the pastoral era. Less than fifty years after its founding, this mission owned 6000 cattle, 13,000 sheep, 760 horses, 20 mules, and 20 hogs.

Title Insurance and Trust Company Historical Picture Collection, Los Angeles



extended into the foothills. The third corporal was Manuel Nieto whose grant for the Rancho Santa Gertrudes was the largest – 300,000 acres – but it was cut in half shortly because the grant overlapped the tract assigned to the Mission San Gabriel. Thus began the rancho system which spread throughout the province of California.

Pueblos were part of the Spanish plan to populate California and towns were founded along with the missions and the ranchos. Sites for these pueblos, or towns, were also grants from the King of Spain. They usually contained about 17,500 acres, although a few amounted to about 70,000 acres. Land was always reserved for a plaza, or central square, a church, and public buildings. To encourage settlers in the pueblos, each head of a family was given a place to build his house with ample space for an orchard and a garden. Each pueblo had a communal pasture where all the colonists could graze their livestock. Still the Viceroy of Mexico, charged with the responsibility of populating California, had a hard time persuading colonists to venture north into the new country.

Before Felipe de Neve left Lower California to become the first governor in the new capital, Monterey, he and the viceroy had talked over plans for establishing towns in the territory. San Jose was the first pueblo, founded in November of 1777, not far from the capital. For the second pueblo de Neve selected a site in the southern part, near the Mission San Gabriel, where a river provided water to irrigate the fields. Two years after the founding of San Jose, de Neve sent his lieutenant-governor to northern Mexico to recruit fifty-nine

soldiers for a fort at Santa Barbara and twenty-four families to start a town near San Gabriel.

In a year and a half the leader of the expedition enlisted the soldiers but secured only half the quota of settlers. He took a few soldiers with him and joined the party going overland to drive the cattle and horses for the new pueblo. The colonists and most of the soldiers crossed the Gulf of California and then marched north through the peninsula. This party reached the Mission San Gabriel on the eighteenth of August after traveling for four months, only to learn that their leader and his small party had been massacred by the Yuma Indians while camping on the bank of the Colorado River.

On September 4, 1781, Governor de Neve proudly led the procession from the San Gabriel Mission to found the pueblo which grew into the city of Los Angeles. Soldiers and friars joined the march, adding Indians to swell the number escorting the settlers to their new home. The founders of Los Angeles, now one of the largest cities in the United States, consisted of eleven men, eleven women, and twenty-two children. The adults were two Spaniards, nine Indians, one mixed Spaniard and Indian, eight mulattoes, and two Negroes. Not one could read or write and only one had a trade. He was a tailor. They went to work digging their irrigation ditches and erecting their mud-roofed huts.

Towns also grew up around the presidios and missions. However, the ranchos set the pattern of living as more and more settlers came. The huge grants of land were divided into smaller plots through inheritance and purchase. Life on a rancho was quiet and peaceful, except when the daily routine was broken by social gatherings. There were fiestas with dancing and music,

picnics in the groves of oak trees, and bullfights in the corrals. Strangers and invited guests were welcomed on the ranchos where they were fed, housed, and entertained as if they belonged to the family. They stayed as long as they pleased. Such courtesies won for the ranchos their far-famed reputation for hospitality.

Luxuries were acquired by selling hides and tallow, the main products of both ranchos and missions. During the pastoral days in California trade was largely carried on by barter. Smuggling was general since there was only one custom house and that was at Monterey. Many a captain from New England found shelter and security in the smuggler's den on Catalina Island, beyond the reach of Spanish officials who might order him to sail north and pay duty on his cargo.

When sails appeared in the bay off San Pedro, oxcarts were soon rumbling over the dusty road. Some hauled bundles of hides and others, bags of tallow. This poor harbor, where ships could not anchor near the shore, became the hide and tallow port of the Pacific. From a ship captain one ranch owner received supplies of tobacco, rice, knives and forks, dishes, hooks and eyes, cotton cloth, colored prints, gingham, shoes, slippers, thread, linseed oil, glass bottles, corks, hammers, nails, and numerous small items for his household, amounting to \$1196.20. For each cartload the captain issued a hand-written receipt like the following copied from his personal records:

Ship Alert – April 14, 1841

Received from Don Abel Stearns Sixty-two Bullocks' hides, being for his own account. Received – nine bags weighing 164 lbs. – tallow.

Carts arrived with hides and tallow until the rancher's credit equalled the amount of

the bill. Debts were also paid with produce instead of money, according to the handwritten order of a rancher, requesting an employee to deliver:

One hundred and thirty-one hides – if there is not that number in the warehouse, make up the amount in tallow. November 16, 1835.

The pastoral life of the missions and the ranchos was not as easy-going as it appeared to be on the surface. The major problems were water, politics, and gold. It was semi-desert country. In years of drought the missions suffered because in both good and bad years the same requests for corn, beans, soap, shoes, blankets, stockings, and woolen cloth were received from the California governors to supply the soldiers and their families. In June of 1822, a friar from Mission San Jose wrote to the governor:

I do not know what we shall have to do since this year through lack of water, scarcely any corn and beans will be grown. Everything is dried up and ruined. – If all that is demanded must be furnished, the Indians will have to go hungry.

Although sites for missions and ranchos were selected near rivers, these streams were torrential in winters when rainfall was normal and dried up entirely during summers of drought. By digging wells to tap the underground supply of water stored by winter rains, early Californians managed to get enough water to maintain a pastoral way of life which brought them a measure of prosperity. In rainy seasons their cattle fattened on wild oats; in times of drought, their herds dwindled in number.

In 1821 the Mexicans declared their independence of Spain and took over most of the Spanish territory in North

America, including California. Years of revolution followed in Mexico with governments that rose and fell in rapid succession. Politicians passed new decrees and were out of office before their laws had time to be enforced. The missions suffered heavily in this political upheaval. At the close of the year 1832 the twenty-one missions of California owned 151,180 cattle, 137,971 sheep, 1,711 goats, 1,164 hogs, 14,522 horses, and 1,575 mules. Two years later the lands and herds of the missions were taken over by the Mexican Government. The missions gradually fell into ruin. (In recent years, a number of these old buildings have been restored by private funds and are used for church services.)

In 1848 following the war between the United States and Mexico, politics interfered again to change the way of life. By the Treaty of Guadalupe Hidalgo the United States gained the present states of California, New Mexico, Utah, Nevada, nearly all of Arizona, and parts of Wyoming and Colorado. The United States recognized the property rights of former Mexican citizens living in this vast territory. It was gold, more than war and politics, that sounded the death bell for the pastoral era.

Gold was discovered in California shortly before the treaty was signed. The rush of immigrants from all over the world brought a period of prosperity to the ranchers who sold their cattle, sheep, and horses to the goldseekers passing through on their way to the "diggings" in the Sacramento River Valley. However, it was not long before hundreds of disillusioned miners were abandoning the pursuit of gold and were settling upon the land. Although ranch owners tried to

defend their property in the courts, they gradually lost their vast estates. They were forced to sell them piece by piece to pay the costs of years of court trials over titles and boundaries. Again the plowman replaced the herder. Little by little the pastures were turned into farms by means of irrigation.

Water ended one era and ushered in another. Drought completed the destruction of the old Spanish land system of the ranchos. During the dry years of 1856 and 1857 over 100,000 cattle were lost in Los Angeles County, alone. Scarcely had the remaining ranchers recovered from this blow when the drought of the early 1860's practically destroyed their herds. In Santa Barbara 60,000 cattle were sold for 37½ cents a head as there was neither green grass for the animals to eat nor water for them to drink. Thousands of cattle, so starved that even their hides were worthless, were driven to ocean cliffs and crowded over them to drown in the surf that washed their bodies out to sea. After this disastrous drought the large ranchos began to break up. The pastoral era in the Southwest faded into memory as scientists and engineers put water on the land. They made the desert bloom.

THE FEDERAL GOVERNMENT ENCOURAGES RECLAMATION

RECLAIMING THE ARID LANDS of the West became the dream of a cowboy who was born in New York City. In 1883 after serving in the state legislature at Albany, Theodore Roosevelt took over a partnership in two cattle ranches, Chimney Butte and Elkhorn, on the Little Missouri River. Like other cowboys, the

man from the big city shared the duties of the spring roundup. He crawled from his bedroll before daybreak at the cook's call; rode the long circle to cut out calves and yearlings for branding; and kept the lonely night watch to quiet the restless herd. Jogging in the saddle on the open range gives a man time to think. Roosevelt pondered the future of the dry sagebrush country if water could be found to irrigate the land. Years later he was in a position to make his dream come true.

In 1900 Theodore Roosevelt was nominated for Vice President on the Republican ticket with William B. McKinley for President. They won the election. Six months later McKinley was shot by a young Polish anarchist at the Pan American Exposition in Buffalo, New York. The Vice President succeeded McKinley in office. Roosevelt, in his first message to Congress, presented his plans for conservation and reclamation. The program was planned to protect national forests, to irrigate dry lands, and to improve inland waterways. He wanted to enlist the cooperation of the states with the Federal Government in this work.

On June 17, 1902, Congress passed the Reclamation Act which allotted money from the sale of public lands in western states to a reclamation fund. The money would be used for "the storage, diversion, and development of arid and semi-arid lands in the said States and Territories." This act was a long legal document covering many problems that would arise in carrying out the projects. In general the act provided "that the settlers would reimburse the Government for the actual cost," with payments extending over a number of years.

About a month after the Reclamation

Act was passed, surveys were being made to estimate the cost of constructing a dam in the Salt River of Arizona. Since the desirable land in the Salt River Valley was privately owned by farmers who had been using water from the stream, there were no public lands of value to be sold to defray the costs of a dam. The four thousand individual landowners who would be benefited by the project formed the Salt River Valley Water Users' Association in February of 1903 for these purposes:

To establish a central organization to represent the individual water users in dealing with the Secretary of Interior under whose direction the dam would be erected.

To maintain this central organization to guarantee payment to the Government for the costs of the irrigation project.

To use this organization for operating the irrigation works, distributing the water to the landowners, and insuring members that water rights and assessments would be equally allotted.

Under a contract with the Salt River Valley Water Users' Association, the Federal Government financed the construction of the Theodore Roosevelt Dam, the first to be built under the Reclamation Act. The members of this Association repaid the Government for the cost without interest on the money borrowed. To reduce the cost per acre for water, the Association erected power plants to sell electricity to nearby towns. As more and more people wanted water and power, the same plan was used to build three more dams in the Salt River and three in the Verde River. The soil is rich and the climate is mild. Although cotton is a main crop, vegetables and fruits are being planted or harvested the year round in the valleys of the Salt and Gila Rivers flowing through desert country in Arizona, redeemed by irrigation.

THEODORE ROOSEVELT DAM

INDIAN LABOR

With a team of horses hitched to a shovel, an Apache Indian scoops out dirt and rocks for the dam site in a remote canyon, sixty miles from a railroad. The Apaches fought fiercely to hold their bleak dry homeland. Water on the desert brought settlers and defeat to the Indians.

SQUARING THE FIRST STONE SEPTEMBER 20, 1906

Skilled masons were brought from Italy to shape blocks of stone cut from the mountainside to erect the wall. Hydroelectric power was generated at the mouth of the canal diverting the Salt River around the dam site. This power was used to manufacture 350,000 barrels of cement that fitted the stones into a solid wall 184 feet thick at the base, tapering 284 feet above bedrock to 16 feet at the top.



THEODORE ROOSEVELT SPEAKING AT DEDICATION MARCH 18, 1911

A salute of eleven guns reverberated through the canyon as Theodore Roosevelt approached to dedicate the dam named for him. He told the crowd:

If there could be any monument which would appeal to any man, surely it is this. You could not have done anything which would have pleased and touched me more than to name this great dam, this great reservoir site, after me, and I thank you from my heart for having done so.

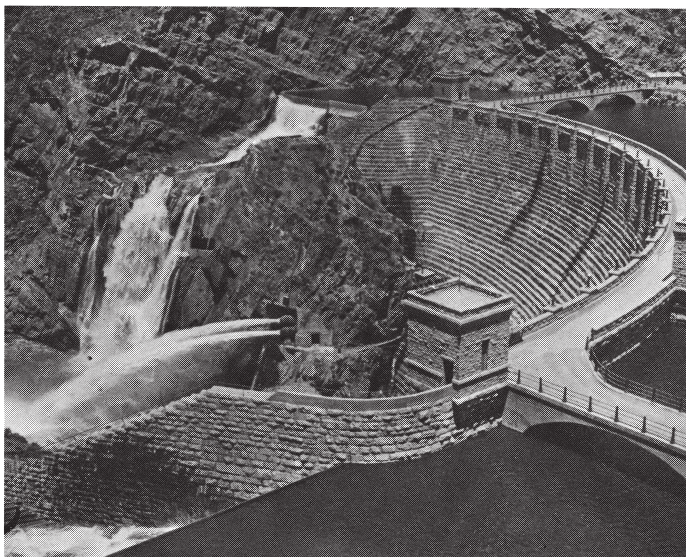


IN THE SALT RIVER, ARIZONA

IN OPERATION

The sum borrowed from the federal government to erect this dam at the junction of the Salt and Tonto Rivers has been repaid, without interest, by the Salt River Water Users' Association. The project is operated by this organization.

The Theodore Roosevelt Dam is still the tallest masonry dam in the world.



HEAD GATE

Water stored behind the dam flows through the countryside into a system of canals. Along the way, head gates are lifted and water pours into ditches to irrigate the fields of farmers who order the water and pay for it.

IRRIGATING A FIELD

Water flowing in the farmer's ditch is turned down the rows of plants to water land that was a desert not long ago.

In the dry country of the West, the value of a farm depends upon the water rights per acre for the land. Water sets the price.



What this country was before irrigation can best be told by the emigrants who crossed the southwestern desert during the gold rush days. Among the forty-niners was the artist and naturalist, John Woodhouse Audubon, who joined a wagon train to make sketches on the way. In passing through the valley of the Gila River, he wrote in his diary:

Broken wagons, dead shrivelled-up cattle, horses and mules as well, lay baking in the sun, around the dried-up wells that had been opened in the hopes of getting water. Not a blade of grass or green thing of any kind relieved the monotony of the parched, ash-colored earth.

As a naturalist, Audubon forgot thirst, heat and dust in his enthusiasm for the wild life in the desert. He wrote:

For lizards this country cannot be surpassed; one little beauty with a banded tail runs before us and across our path by dozens. It makes frequent stops, and each time curls its tail on its back, and waves it gently four or five times most gracefully, finally retreating to some hole in the sand, or to a thicket of cactus which abounds.

About 300 B.C., Indians settled along the Salt River. By hand, they dug canals to water their little fields of corn, squash, beans and cotton. They came to be called Hohokam (Hoe-Hoe-Kom), a word in the Pima Indian language meaning "The People Who Went Away." Mysteriously, they left the valley about a hundred years before Columbus came, leaving only canals to prove their triumph in irrigation. Modern engineers found traces of these old channels so well placed that they followed the shadowy beds in surveying some of the new irrigation ditches.

In Egyptian mythology the Phoenix was a *large* bird that lived five hundred years, was

consumed by fire, and then rose again from its ashes to be young again. In 1868 Darrell Duppa, an early pioneer, was living in a village near the Salt River. He predicted that a modern city would rise on the spot, "Phoenix-like," from the ashes of ancient civilizations. Duppa named the largest city in Arizona.

IMPERIAL VALLEY OASIS IN THE DESERT

THE GILA EMPTIED into the Colorado River that emigrants crossed to enter the dreaded Colorado Desert in California. Wagon trains followed a trail blazed by Anza, a Spanish explorer, and later by trappers and traders from the United States. This path across the sandy waste was known as the Sonora Road, the Colorado Road, the Emigrant Trail, and the Butterfield Route.

A long time ago, geologists claim, the Imperial Valley was under water, part of the Gulf of California. Through the ages silt dropped from the muddy waters of the Colorado River and built a delta at the head of the gulf. Sediment carried yearly by this stream, before dams were built, amounted to a square mile of dry earth 125 feet deep. At flood time each year, May to July, the river spread over this lowland, deposited layers of mud, and formed a valley as level as the page of a book. Then the fickle Colorado cut another channel farther east, leaving its former flood bed to wither into desert. During the Mexican War General Kearny marched through this valley enroute to San Diego. Forty-niners on their way to the gold diggings crossed the barren land, rich with the soil deposits of the ages. It was farmland and the best, but worthless without water.

Then came the irrigation engineers to turn the Colorado desert into a garden spot, the fertile Imperial Valley. The Imperial Dam was erected in the Colorado River to divert water into the All American Canal. The "big ditch" flows into the thousands of acres of vegetables. With large crops of lettuce, the region has become the nation's salad bowl.

The Imperial Irrigation District was organized under the reclamation laws of the state of California. The All American Canal is publicly owned by the people living in Imperial Valley. They control the use of the water through their votes at the polls. Without this man-made river, the lush Imperial Valley would soon dry up into a parched wasteland.

If Audubon returned today to the irrigated desert lands of Arizona and California, he would need tubes of green oils and water colors to paint the fields of vegetables, grains and cotton. Acres and acres of the valleys of the Gila, Salt, and Colorado Rivers would be bluish-green with alfalfa, the farmer's standby in a dry country. It is water from the rivers, stored in lakes behind dams, that makes the desert bloom.

THE COLORADO RIVER IS HARNESSSED BY MAN

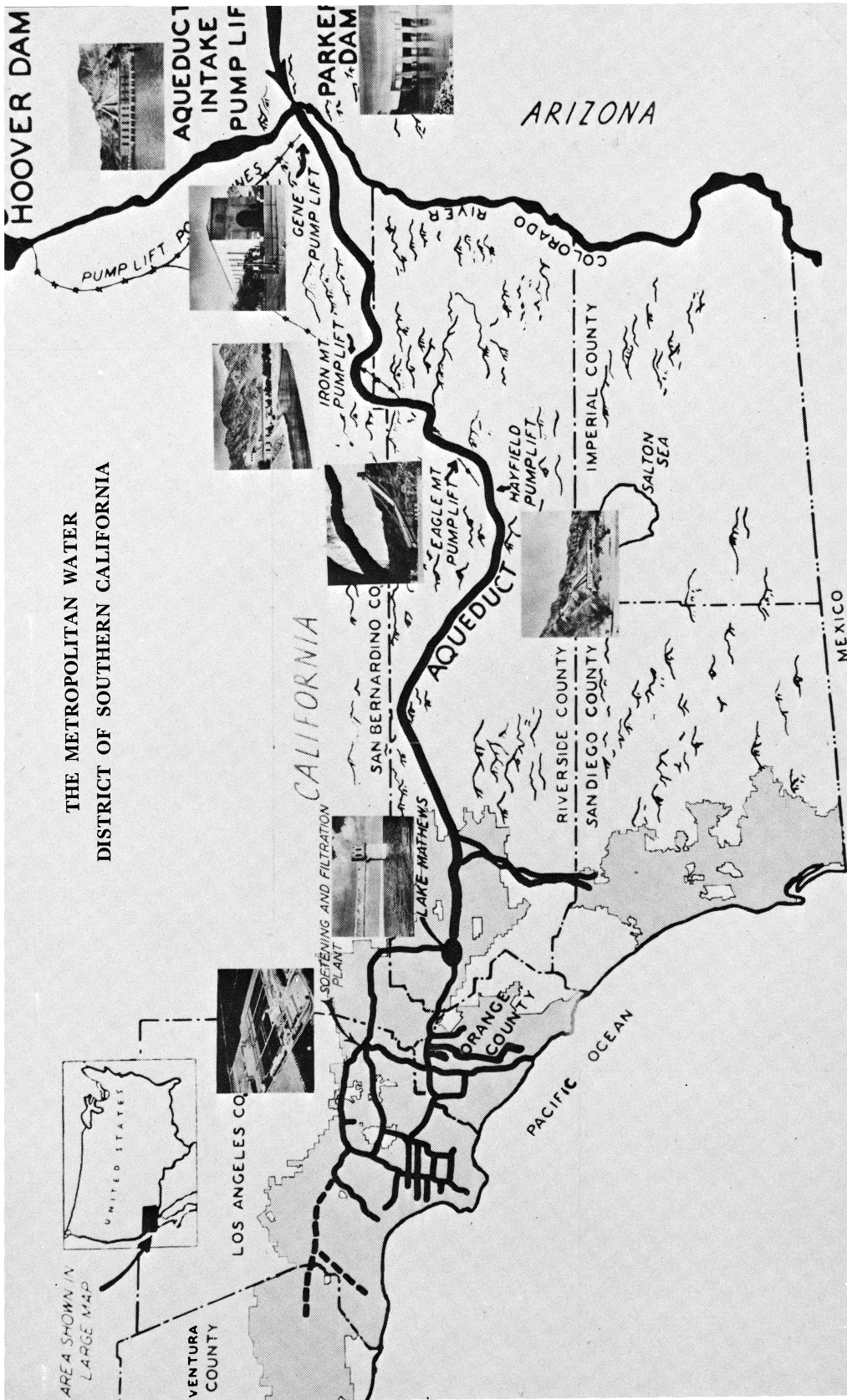
MELTING SNOWS on the western slopes of mountain ranges in Colorado and Wyoming feed streams of water into the

THE DESERT — BEFORE AND AFTER

An early aerial view of the All American Canal in the Imperial Irrigation District. From this man-made river, water from the Colorado River is distributed through 2000 miles of canals to farmers in Imperial Valley. The ground on the left is a patchwork of green fields watered from the big ditch. On the right lies the gray, barren, thirsty desert.

Spence Air Photos





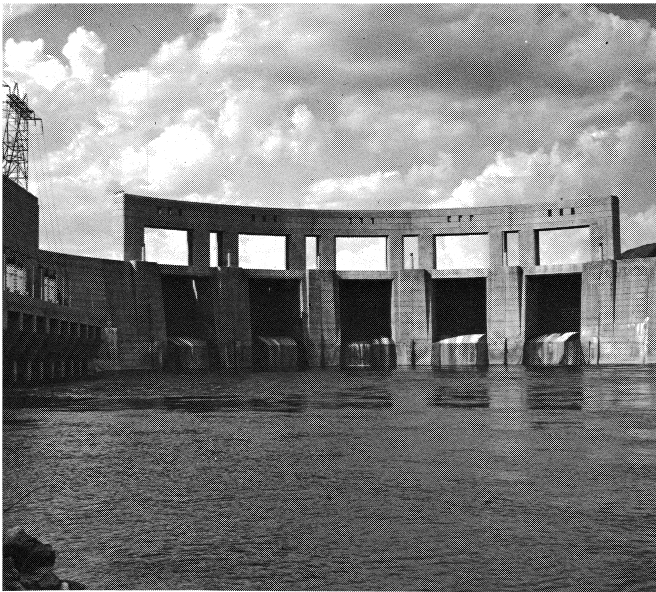
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Metropolitan Water District

COLORADO RIVER AQUEDUCT

Barren desert country of 25,000 square miles was surveyed to chart the route of this aqueduct, bringing water from the Colorado River to the coastal region of Southern California. The total length of the aqueduct system is almost 700 miles. The aqueduct is able to carry a billion gallons of water per day.

The cost of building and operating this aqueduct is paid by The Metropolitan Water District, composed of the thirteen cities that joined together originally and other districts that joined later.



Metropolitan Water District

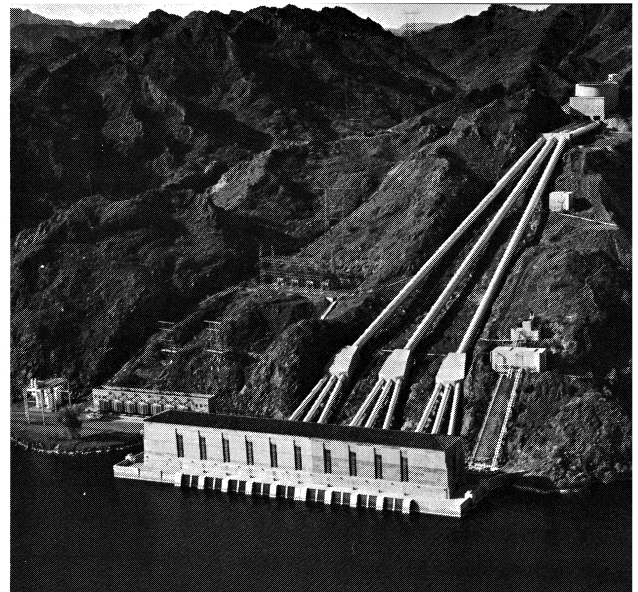
PARKER DAM

Parker Dam halts the flow of the Colorado River to make a reservoir 55 miles long, named Lake Havasu after a nearby Indian tribe. A few miles down the river, water from Lake Havasu backs up behind Headgate Rock Dam to store a supply of water for Indians living in that area.

ON THE WAY

Where the aqueduct crosses level desert land, the water flows in concrete-lined canals, 55 feet wide and 12 feet deep, protected by high steel wire fences. This aqueduct carries 1,000,000,000 gallons every day to supply 70 percent of the water used by 10,000,000 people living in Southern California.

Metropolitan Water District



Metropolitan Water District

WHITSETT INTAKE PUMPING PLANT

From Lake Havasu, Colorado River water is lifted nearly 300 feet to start on its long journey of 242 miles to Lake Mathews, the storage reservoir. The pumping plants are mainly operated by electricity generated at Hoover Dam and Parker Dam.

LAKE MATHEWS

The main aqueduct flows into Lake Mathews, the storage reservoir, from which water is distributed through a network of canals to the wholesale customers who, in turn, sell it to retail units serving home needs. A citizen turns on a faucet and the Colorado River pours out.

Metropolitan Water District



Colorado River, flowing 1700 miles from the Rocky Mountains to the Gulf of California. Down through the ages this torrent had not been checked. It has been jokingly said that water in the Colorado River was “too thick to drink and too thin to plow.” In tumbling down the mountains, streams feeding the great river gathered heavy loads of silt. In fact, the river was named Colorado, Spanish word for red, because of the reddish-brown soil washed into it.

Every spring as snow melted in the mountains, the flood waters charged through the narrow canyons and spread over the lowlands. Sometimes the wild river changed its course and cut new paths through the delta to the Gulf. This winding river drains an area of 244,000

ELECTRIC POWER CROSSING THE MOJAVE DESERT IN CALIFORNIA

Over these wires, high voltage is transmitted across the rugged terrain of mountain and desert from Hoover Dam to Los Angeles, 266 miles away. The spiny plant is the rare Joshua tree.

Department of Water and Power, Los Angeles



square miles, extending from the western slope of the Rocky Mountains to the plateau on the eastern slope of the Sierra Nevada Range. Much of this vast territory is land with little rainfall or semi-arid country like the coastal region between the mountains and the Pacific Ocean. It was a bold undertaking to harness this stream and force it to serve the needs of mankind.

In Nevada where the treacherous stream flows through Black Canyon, Hoover Dam now blocks the waterway. Spring floods rolling into this gorge strike a concrete barrier a seventh of a mile high and fall back to fill Lake Mead. Below this dam the Colorado River flows serenely on its way, halted here and there by other dams. Its wild free days are gone. Since floods have been checked by dams, the delta of the Colorado River is shrinking. Without the tons of mud dumped yearly on the upper rim, the Gulf of California is cutting back into the delta and washing away the land – not much, as time goes, but enough to be measured.

In the land of little rain, every project to bring water to dry land and thirsty people costs millions and millions of dollars. The Reclamation Act of 1902 was based upon the idea that the Bureau of Reclamation would build dams to provide water, but the people who used the water would repay the cost to the Government. President Herbert Hoover refused to sign the bill passed by Congress to erect a dam in the Black Canyon of the Colorado River until contracts had been signed by users of water and power to repay the cost *with interest* in fifty years. Hoover Dam enjoys the distinction of being the only one in the West built without cost or risk to the taxpayers of the nation.

The sale of electricity is paying the largest part of the bill. The same water that stores the flood and irrigates the land, turns the wheels in the power plant. Public and private water and electric companies, in the early years, were required to pay for more electricity than they could use, under their contracts to pay for Hoover Dam in fifty years. The Boulder Canyon Project Act, passed by Congress in 1928, ushered in a new way of life in the thirsty Southwest. The Colorado is the only river with tributaries entirely within the United States which travels for the greater part of its course through desert country. With electric power from Hoover Dam, industry moved into the cattle country of the original Spanish settlers. Towns and cities competed for the grazing lands of the old ranchos. With water from Lake Mead, crops thrive in a former desert, trees line the curbs of city streets, and flowers bloom in June and January.

THE CENTRAL VALLEY PROJECT

THE CENTRAL VALLEY PROJECT is for California. The states of Connecticut, Rhode Island, and Maryland could be neatly tucked away in the long basin of 12,000,000 acres running north and south between the high Sierra Nevada Mountains and the lower coastal ranges. The Sacramento River runs south from the northern half, and the San Joaquin River runs north from the southern half. The two streams flowed through the broad, swampy delta into San Francisco Bay until engineers arrived to change their ways to suit the needs of man.

The problem of reclamation in the central valley was varied. The area



Central Valley Project

IRRIGATING GRAPES

A farmer in the San Joaquin Valley of central California soaks his vineyard with water from the Friant-Kern Canal, part of the huge Central Valley Project. He uses a system of earth checks and dams to insure proper moisture to the roots.

included both desert and swamp. Rains fell in the wrong places and at the wrong time. In the north the Sacramento Valley receives two-thirds of the rain and snow but has only one-third of the farmlands needing irrigation. In the south the San Joaquin receives only one-third of the rainfall, but has two-thirds of the farmlands needing water. Farmers in the dry country wanted water on their lands during the long hot summers. In the delta region where rich land had been drained and planted, farmers wanted fresh water from the two rivers to wash out the sea water creeping into their fields from San Francisco Bay.

This immense project to irrigate dry land, to store flood waters, to build power plants, to protect fish and fowl,



Central Valley Project

AN ALMOND ORCHARD IN BLOOM IN THE CENTRAL VALLEY

The main ditches in orchards curve among the trees, following the contour of the land. Earth dikes are thrown up around the trees, forming pools of water to insure the deepest penetration into the soil.

and to provide recreation will take many years to complete and will cost many millions of dollars. The key structure of the project is Shasta Dam in the Sacramento River at the northernmost tip of the Central Valley of California. Behind this dam lies Shasta Lake which stores enough water to provide a thousand gallons for nearly every person living in the United States. This project is being carried out gradually because the cost is so great, and these improvements are expected to pay their own way, eventually, according to the Reclamation Law. Water is expensive in the semi-desert region of the Southwest.

THE WAY OF THE RIO GRANDE

THE RIO GRANDE rises in a soggy meadow near timberline on the Continental

Divide in southwestern Colorado. The clear, cold water of the little creek runs white in a wild dash down the canyons to cross the Colorado line into the high plateau of New Mexico. The stream flows gently for 465 miles to El Paso, Texas. There it starts a winding course of more than 1200 miles to the Gulf of Mexico. This river marks the boundary between the United States and Mexico.

To whom did the Rio Grande belong? The United States or Mexico? Which nation had prior rights to its life-saving water? In 1906, the two nations made a treaty whereby the United States agreed to deliver, for all time, 60,000 acre-feet of water per year in the Rio Grande. Then, the three states through which the river flowed began to ask which state had prior rights to the water in the stream. There was not enough water for each state to irrigate all the arid lands, but each state could get more water if a plan was made to store the spring floods that sometimes washed away villages and flooded farms. How much water should each state get? To answer this question, Colorado, New Mexico and Texas would have to reach an agreement that would be acceptable to Congress. The Rio Grande Compact was approved by the legislatures of Colorado, New Mexico, and Texas; passed by Congress; and signed by the President into law on May 31, 1939.

This agreement stated:

The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these states and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a

Compact for the attainment of these purposes, and to that end, through their respective Governors, have named their respective Commissioners.

The Rio Grande Compact is a long legal document on how to operate it within the existing treaties made with Mexico and the Indian tribes by the Federal Government.

The middle Rio Grande Valley in New Mexico is the oldest area in the United States to be farmed continuously. Before white men came, natives irrigated their fields with water from the river. Indians living today in New Mexico need more irrigated land to raise food. With their numbers increasing, fewer families can be supported by herding sheep. A long-range plan is being developed for flood control, irrigation, and power to aid all peoples living in the Rio Grande Basin, and to supply the defense projects located in New Mexico.

The Federal Government will advance the money to build the dams and canals. The people who benefit from this reclamation will pay back the costs through the sale of water and power, but not the interest on the borrowed money. For levees on the river itself, dredging and like improvements, the Federal Government pays the costs. Before the Rio Grande Compact was made, the Middle Rio Grande Conservancy District under the State of New Mexico had built and operated a system of storage reservoirs and irrigation ditches.

With each new source of water tapped, little valleys fringed with reddish bluffs turn green with fields of corn and alfalfa. On holidays and at fiesta time Indian tribesmen still don their ceremonial garb and perform the old dances for rain. In this land of Coronado the search for water goes on without ceasing.

WATER PACES GROWTH

WHEN A FARMER living on irrigated land needs moisture for his crops, he calls the water clerk of his district on the phone.

"I want forty-eight hours of water on my cabbage patch in the northwest quarter," he says.

"Heavy or light?" the clerk inquires.

"Heavy for twenty-four hours, and then light for a day," the farmer replies.

"Your water will begin at eight o'clock tomorrow morning," the clerk assures him. "Be at your water gate on time."

The water flowing through the gate is carefully measured, and the landowner pays accordingly. This is the way of farming where rain comes from a ditch more often than from the sky. The miracle of the Southwest is irrigation. The gray desert wears patches of green and gold wherever water flows in the little man-made rivers from the main canals. How many farms? How many towns? How much industry? How many people can earn a living in the semi-arid region of the Southwest? The answer to these questions is summed up in one word — WATER. Here, as in ancient Arabia, "water is the fount of life. We have made of water, everything living."

CITRUS FRUITS ARE OLD — YET NEW

IN THE MILD climate of the Pacific Southwest — on land under irrigation — oranges, lemons, and grapefruit found a new home. Citrus fruits were first grown in the Orient and were eaten as a healthful food. Although grapefruit is 4000 years old, it was little known in this country

before 1880 when Florida growers began shipping the fruit to New York markets. Today, the United States supplies more than half the grapefruit grown in the entire world. Most of it comes from Florida, Arizona, California, and Texas.

It is generally believed that lemon culture began with wild trees, native to the northwestern provinces of India. Arabs brought lemon trees into Spain about 800 years ago. Along with cattle, sheep, and horses the early Spanish settlers brought lemon, orange and lime trees to plant in the New World.

The orange came from China. Portuguese sailors first brought the fruit to Europe and orange groves were planted in the warmer regions of Spain. Orange trees were growing in the West Indies before Cortes conquered Mexico, according to a story told by one of the explorers who went with Grijalva to Yucatan the year before he joined the expedition of Cortes. In 1518 Grijalva led a band of explorers from Cuba to Yucatan. At a spot where the party landed on the coast, one of the explorers climbed to the roof of a native temple to escape the swarms of mosquitoes that infested the region. He rested and slept soundly on the roof. When he awoke he wondered what he could do to show his appreciation of the peaceful slumber away from the blood-sucking pests. Fumbling in a pocket he discovered eight orange seeds that he had brought from Cuba. At the foot of the temple he planted the orange seeds, hoping the native priests would take care of the little trees.

After Mexico had been conquered by Cortes, this same explorer returned to the same spot, out of curiosity, and found the orange trees growing. The native priests had taken good care of the plants. He dug up

the trees and transplanted them on his rancho in the valley of the Guacasuleo River where many of the conquistadores had settled. It was fine country for cattle and sheep and good farming land. Thus it happened that in 1518 the first orange trees were planted on the mainland of North America. When English colonists, 250 years later, were forging a new nation on the Atlantic Coast of North America, Spanish Franciscans were planting groves of orange and lemon trees in their mission gardens on the Pacific Coast of North America.

However, it was packing and shipping more than growing that enabled the industry to grow in California.

In the fall of 1830 a hunting party of thirty men left Taos, New Mexico, to trap beaver in the central valley of California. It was winter when they reached the Sierra Nevada and the snow was too deep to cross the mountains. The party followed the eastern slope of the range, heading south and crossed the San Bernardino Mountains through Cajon Pass to reach the Mexican settlements in the coastal region. In the little village of Los Angeles, some of the hunters traded their Indian blankets from Taos for mules to ride on their way home. William Wolfskill, a Kentucky trapper and leader of the party, remained and married the daughter of Jose Lugo, a wealthy Spanish landowner.

One day, Wolfskill was strolling on a wharf in San Francisco when a schooner arrived with a cargo of oranges from the Sandwich Islands (Hawaii). Much of the fruit had spoiled during the voyage and men were throwing it overboard. Suddenly, the Kentuckian got the idea of buying the rotten fruit for seed. The cost was little. He shipped the fruit to his southern home and



Lyon Museum

THE WOLFSKILL ORANGE GROVE

Wolfskill, the trapper from Kentucky, planted this grove of orange trees from which the first carload of fruit was shipped to an eastern market. These trees grew on land now covered with business blocks in downtown Los Angeles.

had the seeds extracted. From the seedlings obtained, he set out thirty acres of orange trees near the Los Angeles River. This grove was enlarged until it had over 1600 trees bearing oranges. From this grove in 1877 the first carload of oranges was shipped by rail to a market in St. Louis, and the citrus industry was on its way to big business.

Today the former Wolfskill grove is covered with buildings in the downtown section of the city of Los Angeles that grew from the little village founded by Felipe de Neve in 1781. The old church still stands at the plaza, in the heart of the city, on the El Camino Real. Monks in brown robes and barefoot sandals once strode this path of the missions from San Diego to San Francisco. Teams of oxen, hitched to lumbering carts with high wooden wheels,

hauled the early settlers to Sunday worship along this dusty road. Now the traffic hums and snorts its way past the humble mission and the drowsy plaza. It is Main Street, not the Highway of the King.

MOVIE MAKE-BELIEVE

AS MORE WATER became available, more industries moved into the Southwest. Those needing a mild dry climate were among the early arrivals. In November, 1913, a producer, Jesse L. Lasky; a director, Cecil B. De Mille; and a Broadway star, Dustin Farnum, left New York City and headed west to start a movie studio in Flagstaff, Arizona. According to weather reports filed in Washington, this town

boasted the most hours of sunshine per year. Since sunlight was necessary for making motion pictures, Flagstaff was the place. It read well in print but the men from New York failed to grasp the meaning of altitude. The town is in the mountains, a mile and a third high.

Three surprised men from a city at sea level stepped off the train at Flagstaff in a raging blizzard. The ground was white with snow and the wind hurled icy mist into their faces. On the wintry day the little mountain town seemed lonely and forlorn to the men from a big city. They acted quickly and stepped back to the car platform. When the conductor drawled "ALL A-B-O-A-R-D," the producer, the director, and the actor were seated again in the same coach they had just left. They had decided to ride to the end of the line.

On the way the train halted at a station called Bagdad, with a water tank and a few dwellings, some being box-cars. The sandy desert stretched westward into the barren hills, sparsely covered with thorny cactus and spiny yucca. A great place for staging two-reel westerns with gun-toting sheriffs and cattle thieves, but the director had something else in mind. He was going to make feature pictures which told long stories like the plays on the regular stage.

With the help of two puffing steam engines, one pulling and the other pushing, the passenger train climbed to Cajon Pass on the crest of the San Bernardino Mountains where trappers and traders had crossed the barrier between the desert and the coast before the railroad was built. With ease, the train descended the western slope of the range into a warm and pleasant valley where the scene changed. From the car window fences of red geraniums, lanes of palm trees, and groves

of orange trees greeted Lasky, De Mille, and Farnum. The train stopped at Los Angeles, the end of the line. The winter day was clear and mild and the sun was shining. Why not start a studio here?

Out in the country a few miles from the city, the strangers rented half a barn in a lemon grove for \$25 per month. This room was the office. In a clearing among the trees they erected a small platform. Movable frames with canvas were the walls and the sky was the roof. On this crude outdoor stage was filmed *THE SQUAW MAN*, the first stage play used in movies. The picture was a big "hit." From that time on there was never any doubt that movies would succeed as entertainment. With mountains, deserts, and beaches nearby for scenery, the motion picture industry grew from a spot in a lemon grove to the land of make-believe, called Hollywood.

IN THE AIR

AVIATION AS WELL as motion pictures, found the mild climate of the Pacific Coast from Canada to Mexico suited to its needs. However, mere chance had a share in establishing the aviation industry here as it did with motion pictures. In the early twenties when movies were well on the way to big business, aviation was only beginning with a few sheds scattered over the bean fields and truck gardens between the foothills and the ocean. Some of the pioneers of aviation happened to be living in Southern California. They started their small airplane factories near their own homes.

When war was declared in December of 1941, these plants were taken over by the

Government. Walls of buildings were raised and planes rolled off the assembly lines with little more than a roof overhead. This amazing volume of production was accomplished by air-minded pioneers, who a few years before had leveled runways in the bean fields and constructed little planes in sheds at fence corners.

To fly has been man's dream through the ages.

In 1783 Benjamin Franklin was in Paris arranging the peace treaty at the close of the Revolutionary War. Although busy with duties of state, he found time to witness the first ascent of a balloon, inflated with hydrogen. Franklin was both scientist and diplomat. Two months later in a letter to a friend he predicted airborne invasion:

It appears a discovery of great importance may possibly give a new turn to human affairs. Convincing Sovereigns of the folly of wars, may perhaps be one effect of it . . . Five thousand balloons, capable of raising two men each, could not cost more than five ships of the line. And where is the prince who can afford so to cover his country with troops for its defense, as that 10,000 men descending from the clouds might not in many places do an infinite deal of mischief before a force could be brought together to repel them?

The airborne invasions came, as Franklin predicted, but not in balloons. Not content with lighter than air inventions, men began to wonder if a machine heavier than air could be made to fly. For the first time — on December 17, 1903, at Kitty Hawk, North Carolina — a man flew in a gasoline engine plane, and lived to tell the tale.

A chill wind swept the beach at twenty-seven miles an hour. The sky was murky overhead. Orville Wright climbed into the heavier-than-air machine for his first ride. The plane rose but came down again in twelve seconds about a hundred feet from

the starting point. He and his brother, Wilbur, took turns at the controls. Wilbur made the fourth flight, covering 852 feet in 59 seconds before the plane began to pitch like a bucking bronco and drop to the sands along the shore. With this experiment the air age began. Man had learned to fly.

How surprised would Cabrillo be if he could stand today on the deck of his little sailing ship and watch the airplanes flying like huge birds to and from the Los Angeles airport behind the natural harbor which he named, "Bay of Smokes." With the invention of heavier-than-air flying machines man took to the air in a way that Franklin could not foresee when he watched the first balloon ascent in Paris.

Man seems to want to go places with the greatest speed. He once was satisfied with a fleet riding horse or a fast team. In turn, overland travel was by stagecoach with four horses in harness; in railroad trains with steam-driven engines; in automobiles with gasoline motors. Today, fast travel is in the sky. No longer content with conquering air around the earth, man is exploring the realm of outer space. In July 1969, three American astronauts, Neil A. Armstrong, Edwin E. Aldrin, and Michael Collins, made the first trip to explore the moon.

WATER CONTROLS GROWTH OF INDUSTRY

VAST AREAS in the Southwest will probably never be irrigated and will remain sparsely settled. The centers of population are in irrigated country. Water attracted the people, farms, and industry that gradually took over the old ranchos of the early Spanish settlers. As more

factories are built, more people migrate westward to find more jobs, to make their homes, and the need for water increases.

A city in a semi-desert buys a mountain stream and brings it home in an aqueduct. A river fed by melting snows in the high Sierras no longer finds the sea. The normal flow is checked and stored upstream, filling a reservoir. With only puddles here and there, the river bed is a sandy waste. Old mines, deserted towns, winding roads, fossils of dinosaurs, and wonders of nature slip out of sight as lakes spread behind dams in western rivers.

Industry continues to invade the agricultural empire of today's ranchers and farmers. Orange groves are uprooted by bulldozers to use the land for factories, houses, and apartments. Smoke and steam rise above the treetops from a steel mill where the odor of burning coke replaces the scent of orange blossoms. Stubby oil well pumps draw up a sticky, greasy treasure from pools beneath the pastures where cattle once grazed on wild oats. Acres are covered by refineries with mazes of pipe lines in fantastic designs and domes that glisten in the sunlight.

In the swamps, a few long-legged cranes still wade among the rushes as in the days when Jose Dominguez sat on the long veranda of his adobe house to watch the smugglers' ships and the spouting whales. In ox-drawn carts his Indian servants hauled hides and tallow down to the soggy shore. Thus did commerce begin in a mud hole destined to become one of the busy ports of the world.

If the old soldier who came with Portola could sit on his porch today, he would look down upon a lively waterfront where Rattlesnake Island used to be. The spot was

once infested by rattlers washed down from the foothills during the winter rains. Freighters, tankers, and passenger ships would be nosing around the breakwater of this man-made harbor, and heading for the channels dug from the mud flats of his Rancho San Pedro. Noisy trucks would be speeding over the network of highways, streaking through his pastures to and from the Port of Los Angeles. The land of the herder is now an industrial area with storehouses, canneries, factories, docks, and cargo sheds. Today, there would be neither peace nor quiet for the retired leather-jacket on his land grant in the bustling harbor district.

Yet there is still a common bond between the early rancher and the later industrialist — a water problem. For every newcomer, water must be stored, not only for the present but also for the future. Eleven western states have formed a Western States Water Council to study existing and future water projects. How can states with ample rainfall share their surplus water with dry states without depriving their own citizens at any time? How can flood waters in Oregon and Northern California be channeled south to arid lands before the raging torrents wash away houses, fields, and cause damage amounting to millions of dollars? Since the Colorado River does not carry enough water to satisfy demand, what would be the cost of digging a canal to bring water from the Columbia River to the Colorado to increase the flow in that stream? Transporting water all the way from Alaska is a daring topic of conversation. Like the rainmaking gods in the ancient Indian legend, modern engineers are expected to fill the water jars "from the four encircling oceans."