



# PINNACLES

## National Monument

C A L I F O R N I A

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Pinnacles National Monument is an area rich in colorful rock spires, crags, and other points of sharp relief rising in elevations of less than 1,000 feet to 3,287 feet at top of Chalone Peak. Wildlife abounds in the area and more than 200 species of wild flowers find their natural habitat within the Monument. It is part of the National Park System, 169 areas in all, owned by the people of the United States and administered for them by the National Park Service of the Department of the Interior. In these the scenery and objects of historic, prehistoric, and scientific interest are carefully preserved and displayed for public enjoyment.

This area is unique in that spirelike crags of volcanic origin rise more than 1,200 feet above the floors of the several canyons. This rugged landmark reportedly attracted Capt. George Vancouver in 1794 while he was exploring the interior from Monterey Bay, where his ships were anchored. David Starr Jordan visited the area frequently and was instrumental in its selection as a national monument. Tiburcio Vasquez, a daring and notorious bandit, is credited with finding refuge among the caves and crags of Pinnacles in the latter part of the nineteenth century before being finally brought to justice.

Pinnacles National Monument was first set aside January 16, 1908, by President Theodore Roosevelt, and subsequently enlarged until it now comprises approximately 14,500 acres.

### The Geologic Story

This rugged area, about two square miles in extent, is wholly different from the surrounding country, which consists of the smooth ridges and valleys of the coast ranges. The Pinnacles are volcanic rocks, and they mark a spot that roared with explosive eruptions in Tertiary time, some 30 million years ago. In the meantime, the weather and erosion have removed the numerous craters and about two-thirds of the volcanic mountain they had built. In the worn-down base the geologist still finds five old vents through which explosive eruptions threw the viscous lava and broken stone high into the air and loaded the steep slopes of the volcano with accumulations many thousands of feet in thickness.

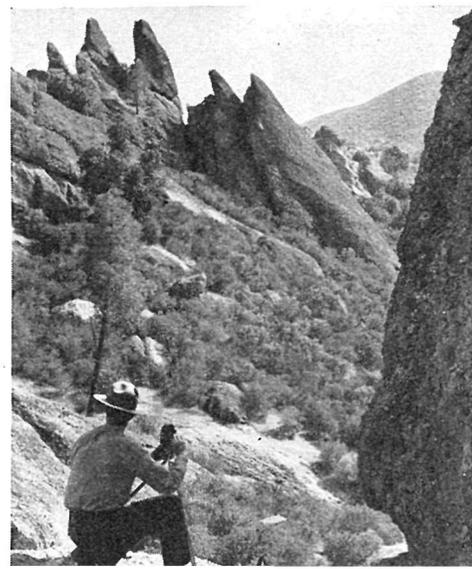
The narrow canyons in these materials also are attractive, particularly where they have been covered by huge blocks of rock from the cliffs and thus converted into peculiar caves. Most visitors take the cave trail in Bear Gulch. The rock over the Big Room in this cave measures 55 feet wide, 86 feet high, and 173 feet long, and its weight is estimated between 50,000 and 60,000 tons. Many also take the more difficult and adventurous trail through the cave at Old Pinnacles. The colors of the rocks include a wide range of shades in gray, brown, pink, red, and green; and these are further enhanced by brilliantly colored lichens.

Stone blocks 10 feet in diameter were shot forth by the escaping steam and hot gases, but the violence broke most of them into fragments only a few inches thick. Liquid lava was sprayed into the air and fell as fine dust, the so-called volcanic ash, in which the broken fragments are embedded. The mixture is known to the geologist as volcanic breccia. Among the fragmental layers are also beds of solid lava, showing that quiet flows sometimes alternated with the explosive eruptions.

These vast accumulations have been removed from the summit area, and Chalone Creek has swept them all away from the eastern flank of the old volcano. Beds many thousands of feet in thickness that still remain from the old western slope have been carved into the scenic pinnacles, cliffs, caves, and canyons. The central core of the volcano beneath this fragmental material is found to be solid lava, indicating the quiet nature of the earlier eruptions. The lava rose through north-south fissures some 5 miles long, but it was a stiff, viscous mass that did not flow freely. Consequently, it swelled up into a long domelike mountain and cooled in that form. Afterward it was buried under the immense accumulations produced by the violent eruptions.

If a valley like that of Chalone Creek had been cut along the west side, the remaining fragmental accumulations would have been removed, and there would be no picturesque pinnacles. On the other hand, if the eroded materials could be replaced, the restored volcano would be an outstanding peak of the coast ranges, comparable with those of 8,000 feet and higher in the Ventura region today.

Formations west of Bear Gulch



Several conditions have helped to preserve an important remnant of the volcanic mass. In the semiarid climate the rate of erosion is less rapid than it was during long humid periods in its earlier history. The climate helps also in another way. Moisture enters the pores of the rocks during the rains and later evaporates from the surface, where it deposits silica and other mineral matter which it dissolves from the volcanic ash and lava fragments. This hardens the surface of the rock and protects the softer materials within. Where the crust breaks away the rock crumbles rapidly, and cavities several feet in diameter have been hollowed out, some of which may be seen along the trails.

Faulting likewise has protected the formation on the old west slope. A north-south belt 2 to 3 miles wide, which has sunk down along fissures at the east and west sides, now holds all that is left of the volcanic materials. They have been swept away completely from the areas of granite bedrock to the east and the west, but the granite bulwarks delay erosion and thus protect and preserve the sunken area between. This belt sank more at the west than at the east, so the layers of fragmental

East entrance to Monument



materials are steeper now than they were originally on the west slope of the volcano. The strong westerly dip appears at many places. It is particularly prominent along the switchback trail that leads up from the tunnel to the summit.

Vertical cracks that were formed by the movements also are prominent, and they have largely aided and guided the erosion that shaped and separated the pinnacles. Unequal hardness of the beds also has produced odd forms, especially where a soft layer has crumbled and left a great block like a head perched on a narrow neck.

Both the lava core of the volcano and the fragmental materials that came up through the numerous craters are composed mainly of rhyolite, a lava that is closely related to granite. If it had cooled slowly beneath the surface it would have formed granite. Smaller amounts of black basaltic lava flowed occasionally and also some intermediate varieties.

### Wildlife

The lower slopes of the monument are thickly covered with a dense mantle of brush, which is mostly chamise. Interspersed with this brush are scattered stands

of digger pine, which is gradually spreading and some day may comprise an extensive forest cover. In the canyons and ravines are shady groves of live oaks. Chamise is important in furnishing food and protection for the monument's wildlife, and the digger pines afford safe roosting places for many of the larger birds.

Deer are common in the monument, as are also raccoons, gray foxes, ground squirrels, cottontails, and wood rats. Less frequently seen are coyotes and bobcats.

Pinnacles National Monument is notable for the variety and interest of its birdlife. Approximately 64 species have been observed. Rarest and most spectacular is the duck hawk. Its close cousin, the prairie falcon, is more common. The golden eagle is also present, but most in evidence of the monument's large birds is the turkey vulture. In the summer visitors may see in the vicinity of the high clips the white-throated swift and his companions in flight, the violet-green swallow, the tree swallow, and the cliff swallow. Other birds frequently encountered are the raven, sparrow hawk, black phoebe, the California woodpecker, the California linnet, the

Camel Rock from Caves Trail



mourning dove, the California jay, the rock wren, the western bluebird, and, in winter, the white-crowned and the golden crowned sparrow.

#### How to Reach the Monument

The monument is open all year. It is just off California State Highway No. 25, about 35 miles south of Hollister and the same distance north of King City. In approaching the monument from the north, leave U. S. Highway No. 101 about 2 miles south of Gilroy; from the south, at King City. In approaching the monument from the San Joaquin Valley the best route is over Pacheco Pass, State Highway No. 152. All roads are paved.

There is an annual automobile license fee of 50 cents a car, payable at the checking station upon first entrance into the monument.

#### Camp and Picnic Facilities

The National Park Service maintains attractive camp and picnic facilities in the headquarters area. These facilities are available without charge and include suitable tent or trailer space with table, fire-place, piped spring water, comfort stations.

#### Lodge and Cabins

Refreshments, meals, souvenirs, and modern cabins with showers and toilets are available at Pinnacles Lodge in the headquarters area on the east side of the monument. The services are furnished under contract with the Government. Reasonable prices prevail.

#### Hikes

Hiking is one of the principal activities in the monument. A variety of interesting places are reached by well-defined foot trails. These may include the excellent but somewhat strenuous High Peaks Trail, among the spectacular cliffs and pinnacles,



The Old Pinnacles on Chalone Creek

or the Chalone Peak Trail to the highest point in the monument, 3,287 feet. For shorter but equally interesting hikes the trails in the cave area and Bear Gulch are available. Comfortable walking shoes should be worn for the fullest enjoyment of the trails.

#### Ranger Naturalist Service

During the summer months a ranger naturalist is available to interpret to groups the geologic story and the wildlife within the monument.

#### Administration

Pinnacles National Monument is administered by the National Park Service, United States Department of the Interior. The monument headquarters is located on the east side of the monument. Communications and inquiries should be addressed either to the Custodian, Pinnacles, Calif., or to the Regional Director, National Park Service, 601 Sheldon Building, San Francisco, Calif.

UNITED STATES DEPARTMENT OF THE INTERIOR • J. A. KRUG, *Secretary*  
NATIONAL PARK SERVICE • NEWTON B. DRURY, *Director*

