

Excerpt from

Geologic Trips  
San Francisco and the Bay Area

by Ted Konigsmark

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# A GEOLOGIC VIEW OF SAN FRANCISCO

For a spectacular view of San Francisco, go to Battery 129 in the Marin Headlands west of the Golden Gate Bridge. To the west is the open Pacific. To the south is the San Francisco Peninsula, with steep sea cliffs from Cliff House through Lands End to Fort Point at the south end of the Golden Gate Bridge. Beyond the Golden Gate Bridge you can see the many hills of downtown San Francisco dotted with buildings and houses. San Francisco Bay broadens out to the east of the Golden Gate, holding Alcatraz Island and Angel Island in its outstretched hand. To the southeast, the Bay Bridge steps across San Francisco Bay to Oakland, and the Berkeley Hills and Oakland Hills lie in the background. Beneath you are the majestic cliffs and small bays that are characteristic of the Marin Headlands, with assorted red, green, and yellow rocks.

This landscape didn't just happen. It's the product of geological processes that have been going on for nearly two hundred million years. The land is made up of a number of different types of rocks, and these rocks have been shaped by earth movements and erosional processes to form the landscape that you now see. During the geologic trips in and around San Francisco, you will discover why these rocks now form the hills, bays, islands, and peninsulas of the Bay Area.

The rocks that underlie San Francisco are referred to by geologists as the *Franciscan* rocks. Like the residents of San Francisco, some of the Franciscan rocks have traveled thousands of miles across the Pacific, whereas others are homegrown. Some are common rocks, and others are very unusual or have undergone such drastic changes that their original character is unknown.

Although the Franciscan rocks are varied, they do have one thing in common. They all met and were squeezed together in the Franciscan subduction zone. This subduction zone resulted from a long, slow, grinding collision between two giant plates that once covered a major part of the earth's surface. The Coast Ranges of California are formed from the wreckage of this collision. San Francisco lies in the middle of this wreckage and is an excellent place to poke around and do a postmortem on the collision.