NATIONAL GEOGRAPHIC SOCIETY GILBERT M. GROSVENOR, PRESIDENT AND CHAIRMAN WILLIAM L. ALLEN, EDITOR, NATIONAL GEOGRAPHIC MAGAZINE JOHN F. SHUPE, CHIEF CARTOGRAPHER Washington, D.C., September 1995 One of more than 50 species of cus brightens Oahu's honevcreepers endemic to Hawaii, the 'i'iwi bears brilliant feathers that once dorned the cloaks of Hawaiian royalty med for its cylindrica

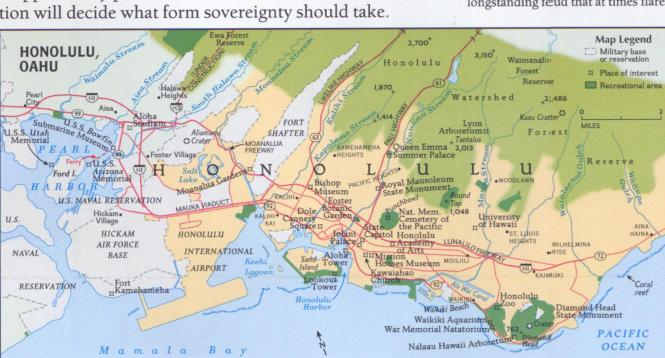
pines, the slate pencil

REDISCOVERING

Molten Earth to Modern Cities

URED BY IMAGES of gilded beaches, plush golf courses, and fantasy resorts, nearly seven million visitors a year come to Hawaii for a dose of its soothing tropical therapy. Yet there's more here than big surf and swaying palm trees. Though only slightly larger than Connecticut, the state encompasses an array of landscapes from steaming lava fields to snow-crowned peaks. Beyond the resort-strewn coast the land is resonant with history and rich in endemic flora and fauna, harboring at least 8,800 kinds of plants and animals found nowhere else on earth.

This natural diversity is mirrored in the kaleidoscopic makeup of Hawaii's 1.2 million people, less than 20 percent of whom claim Hawaiian ancestry. Yet despite the welter of foreign influences, native culture is experiencing a renaissance: A growing grassroots movement is seeking some form of sovereignty for native Hawaiians. If approved by plebiscite, a state constitutional convention will decide what form sovereignty should take.



into violence. Distressed to find grog shops and brothels lining Lahaina's streets, the clergymen persuaded the Hawaiian governor of Maui to outlaw "ardent spirits" and forbid island women to visit ships. Outraged by the new strictures, whalers rioted. The conflict reached a crescendo in 1827 when Wo Hing Temple less inhibited Honolulu

Historic Lahaina

Steeped in history and the nautical flavor of a 19th-century Hawaiian seaport, the town of Lahaina on Maui's western shore has been reincarnated in several forms over the past two centuries. Lahaina served as capital of the Kingdom of Hawaii from 1837 to 1845. Whalers and missionaries had arrived in the 1820s, setting the stage for a longstanding feud that at times flared

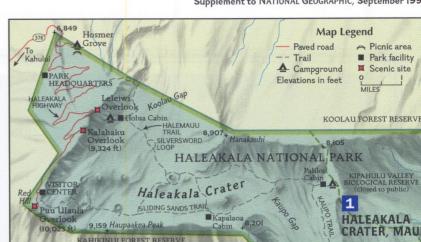
incensed seamen whistled cannonballs at the mission house before sailing for With the decline of American whaling in the late 1800s, a rollicking era came to a close, and Lahaina faded into a drowsy sugar town. Reawakened during the 1960s by resort development and a surge in tourism, the seaside village has taken pains to preserve its past. Today nearly the entire town is a national historic landmark. Though chockablock with restaurants and trendy shops, the old, authentic

Lahaina shines through at places like the Baldwin Home Museum, the restored homestead of medical missionary Dwight Baldwin, and aboard the Carthaginian II, a floating museum dedicated to whaling. From December through May, whale-watching excursions depart Lahaina harbor.

Honolulu's Cultural Cauldron

Home to nearly a third of the state's population, Honolulu is the place to behold the human face of modern Hawaii. More than 60 percent of the state's citizens are of Asian or Pacific Island ancestry, and visitors strolling the streets of this casual, cosmopolitan metropolis overhear conversations in Japanese and Chinese as well as English. Menus reflect an ethnic smorgasbord: Even McDonald's restaurants offer Oriental

noodles and spicy Portuguese sausage. Yet Honolulu also preserves Hawaii's Polynesian heritage. Stately Iolani Palace, capital of the last Hawaiian monarchs and the only royal palace on U.S. soil, has been carefully restored. The Bishop Museum houses the world's largest collection of Hawaiian artifacts.



NA PALICOAST STATE PARK

HALEAKALA CRATER

1 A basin big enough to hold Manhattan tops the list of attractions at Haleakala National Park (above) on Maui. Misnamed a crater, the 12,160-acre, 2,720-foot-deep bowl formed as erosion ate away the mountain, joining two valleys. The depression's lunar landscape contrasts sharply with the lush rain forest seen elsewhere in this 28,655-acre park.

KAUAI STATE PARKS

2 Jaw-dropping scenery embellishes a trio of parks on Kauai (left). Waimea Canyon, often described as the Grand Canyon of the Pacific, reveals the island's lava-layered basement. By contrast, Kokee State Park affords rooftop views. At Na Pali Coast State Park, knifeedged pali (cliffs) tower 2,000 feet above a remote stretch of shore

KILAUEA CALDERA

3 Nicknamed the "drive-in volcano" because of easy access and relative safety, Kilauea simmers inside Hawaii Volcanoes National Park (below) on the island of Hawaii. Crater Rim Drive runs 11 miles around the caldera, an oval depression measuring 2.5 by 2 miles. Kilauea has drawn more than 24 million visitors since its latest, ongoing eruption began



norklers with its sta **FORT ELIZABETH** HANALEI VALLEY plantation started here in Built in 1816 as a result 1842. A more recent crop: Ancient Hawaiians built Exploring Hawaii's Heritage of a short-lived alliance Hollywood films with parairrigation works and grew between the Russian American Company and ple—in this valley. The South Pacific, King Kong, Kauai's King Kaumuali'i, slands' first large coffee this star-shaped fort, now in ruins, blended Russian CALDERA KAHANA VALLEY Fewer than 300 people STATE PARK **KALAUPAPA NATIONAL** mostly pure-blooded KAUAI Under Hawaii"s traditional Hawaiians, live on this pri land system, pie-shaped Beginning in 1866, lepros vately owned island and **MENEHUNE DITCH** parcels called ahupua'a enclave of native culture **OLD LUTHERAN CHURCH** Residents speak Hawaiian antined on this remote Hawaiian legends as the **ROYAL MAUSOLEUM** pokes in a wheel. This tend livestock, and craft The ornate altar inside peninsula accessible onl intricate shell leis sold by Lihue's century-old churc by foot, mule, boat, or monarchs who ruled the passes one of the 20 or so is reminiscent of the the inch on other islands. gation ditch in a single intact ahupua'a in the state German baroque style Kingdom of Hawaii in the night. Skeptics point out 19th century are interred Between 1883 and 1897 that a similar Tahitian word LAHAINALUNA HIGH some 900 Germans came to work Kauai's sugar SCHOOL During the California gold rush, wealthy San Francis-HOOLEHUA cans sent their children to **GROVE FARM HOMESTEAD** Set aside as reparation for Former plantation home of land taken from native Ha-Lahainaluna, the oldest the Wilcox family reflects the school west of the Rockies. HALEAKALA wealth of the islands' sugar of more than 30 Hawaiian rather than back East Double-hulled canoes **OBSERVATORIES** barons. Hawaii's sugar prohomelands scattered through hostile Indian lashed together with From this clutch of obserduction peaked in 1968 at across five islands vatories nearly two miles 22.5 billion pounds. rigged with sails of WAIKIKI plaited leaves delivered the sun, track satellites A bronze statue honors MOLOKAI and study earth's geo-Olympic gold medalist Hawaii 1,400 to 1,700 physical activities. swimmer Duke Kahana-DIAMOND HEAD moku, who in 1912 dem **PICTOGRAPHS** Grateful to his war god, onstrated surfing in Using red pigment on a Kamehameha the Great southern California on HALEAKALA Kaunakakai. offered human sacrifices his 22-foot-long board. Kalohi Chany NATIONAL Hawaiian artists depicted here following a decisive human figures, dogs, victory over rival chiefs in attended his funeral or pigs, fish, and birds. 1795. Calcite crystals Waikiki Beach in 1968. found by British sailors in LANAI Charting the 1825 and mistaken for dia-LANAI monds gave this famous James Dole bought this issland in 1922 and planted Course of Change PIILANIHALE HEIAU the world's largest pineapple plantation. Today pine temple is thought to have apple production has Without compass or chart, guided solely Sailing from the Society Islands to been the largest in the been replaced by resort KAHOOLAWE by their senses and their keen knowledge North America, English navigator Capt. **VOYAGES OF DISCOVERY** development. MAUI of stars, currents, winds, and the flight James Cook happened upon a group of AMERICA LAPAKAHI STATE KAHOOLAWE islands in January 1778 "which the of birds, Polynesian mariners became HIKIAU HEIAU Commandeered during HISTORICAL PARK masters of a realm spanning 14 million natives call O'why'he." It was a fateful NORTH PACIFIC OCEAN **KEALAIKAHIKI CHANNEL** World War II for use as **PARKER RANCH** The ruins of an ancient square miles of ocean stippled with encounter. In the next 75 years foreign The name of this channel this sacred site during a a bombing range, this Hawaiian fishing village Beginning with just two islands. In more than ten centuries of means "the way to Tahiti, 28,800-acre island was religious festival in 1779. ships would deliver missionaries seeking are preserved in this 262acres in the early 1800s, Capt. James Cook was fueling speculation that returned to the state John Palmer Parker and his acre park. souls and whalers seeking fortunes. The seafaring they ventured from Samoa to received as a god. Within a in 1994. heirs built a 210,000-acre the Marquesas Islands, then struck out white man's diseases would wither the round-trip voyages to the spread that is now the third population of native Hawaiians from the Society Islands a thousand tality was discovered, and in all directions: southwest as far as largest privately owned he was slain in a skirmish ranch in the United States New Zealand, southeast to Easter Island, 300,000 estimated by Cook to barely and north to the Pacific's farthest out-71,000 counted during the 1853 census. Laws passed in 1850 allowing foreign-MICRONESIA post, Hawaii. Departing the Marquesas 1,400 to ers to own land and import contract Christmas I. 1,700 years ago, Hawaii's first inhabitlaborers ushered in an era of immigra-**PUUHONUA O HONAUNAU NATIONAL** ants arrived in double-hulled canoes lad- tion and plantation agriculture that HISTORICAL PARK en with staples that included breadfruit, transformed both Hawaii's landscape Taboo violators could sweet potatoes, pigs, fowl, and barkless and its people. By 1893 American sugar dogs bred for food. barons wielded such power that they ing to this sacred sanctuary, now restored. The first Hawaiians built a highly deposed the Hawaiian monarch in a near-bloodless coup. Seven years later stratified society that reached its apex Hawaii became a U.S. territory. Stateunder Kamehameha the Great, the famed warrior-king who consolidated hood was gained in 1959, following a HAWAII the islands' warring, feudal-like chiefmassive influx of Americans during PACIFIC World War II. With the coming of jumdoms into a single monarchy in 1810. **Map Legend** Polynesian Hawaii's golden era would be bo jets during the 1960s, the nation's Cook's 1777-79 voyage **PUUKOHOLA HEIAU NATIONAL HISTORIC SITE** NEW ZEALAND newest state became one of the globe's shortlived, however, for an invasion of In 1791 Kamehameha the rival as a human sacrifice MILES SCALE AT THE EQUATOR outsiders had already begun. favorite vacation getaways. Great invoked the blessing Within four years Kamehaof the war god Ku by buildmeha had conquered every island except Kauai.

Islands Under Construction

OAHU'S ODYSSEY Three million years ago: Oahu's

volcanic ancestors are centered over a plume of magma, or hot spot, that fuels island-making eruptions. Koolau, which only recently breached the sea's surface, will grow into a massive, elongated monolith similar in profile to a warrior's shield—the so-called shield volcano typical of the Hawaiian chain. Waianae, already a million years old, will soon cease erupting. Both islands are being borne northwestward on the Pacific plate at about 53 miles per million years.

Two million years ago: Arriving at the trailing edge of the hot spot, Koolau remains active, but Waianae has long since run out of steam. Slumping has lopped off much of its western side and streams carve its slopes. Lava from the younger volcano has filled the gulf between the mountains, forming a single island. Repeated outpourings of magma into a cliff-rimmed basin, or caldera.



Today: Now 220 miles from its birtholace, modern-day Oahu is beyond the reach of the furnace that powered its now extinct volcanoes. Yet violent eruptions remain a possibility elsewhere on the island. Following a long period of quiescence, some 40 secondary eruptions have occurred during the past 600,000 years. Many of Oahu's most distinctive landmarks, including Diamond Head and Punchbowl crater, were formed by these latter-day eruptions.

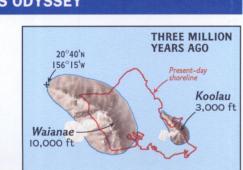
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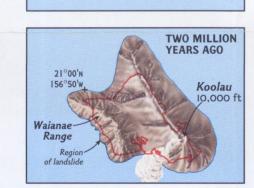
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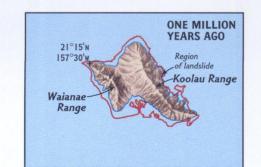
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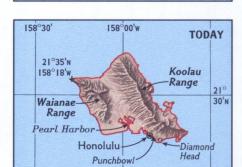
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Hawaii's Fiery Wellspring

Deep beneath the island of Hawaii seethes a volcano-making machine geologists call a hot spot. Over the past 44 million years it has churned out 82 volcanoes that today form the Hawaiian Ridge.

Hawaii, the archipelago's youngest island, is still under construction. Two of the world's most active volcanoes-Kilauea and Mauna Loa-frequently add new acreage and pave over existing real estate. Twenty miles offshore, a third volcano fired by the same hot spot is giving birth to the chain's next member, Loihi.

The source of raw material for this age-old construction project lies more than 50 miles underground within a layer of the earth's mantle called the asthenosphere. Here, rock kept in a plastic state by heat and pressure continuously rises, cools, and sinksmuch like boiling water convecting in a pot, only at a rate slower than the growth of a human hair. Where rising currents bring up heat from deep within the earth, mantle material melts into pods of magma. Lighter than the surrounding rock, they rise

toward the surface. Until recently the hot spot was depicted as a pipeline conduit. Geologists now believe that when upwelling

KAUAI (5.1 million years old) OAHU (3.7 million years old) MOLOKAI (I.8 million years old) MAUI (O.8 million years old) HAWAII (O.4 million years old) ON THE MOVE As if on a colossal assembly line, the Hawaiian Islands were built in succession over a stationary hot spot. then borne away to the northwest by the tectonic conveyor belt of the OCEANIC CRUST magma strikes the lithosphereearth's rigid rind—it fans out, perhaps as far as 200 miles, a phenomenon called underplating. From there it gradually rises through a honeycomb of fissures and then accumulates in huge magma chambers a few miles below the volcanic summits. When mounting pressure again pushes the magma toward the surface, molten rock may erupt at the summit or move laterally through rifts along the volcanoes' flanks. Unlike temperamental volcanoes that blow their tops, Hawaii's peaks effuse lava in spectacular but relatively

and offering his cousin and

the slumping underwater flanks of Kilauea and Mauna Loa. HAWALL Kilauea's south slope Twenty miles off the southeast As Loihi bulks up, its older coast of Hawaii, an embryonic neighbors have begun falling

THE RISE AND FALL OF VOLCANIC ISLANDS

island named Loihi is growing in womblike darkness. Discovered in 1955, this upstart volcano was for many years presumed to be an ancient, inactive seamount, Then, a swarm of undersea earthquakes during the early 1970s caused scientists to suspect an active volcano was brewing offshore. Seafloor photographs and dredge samples collected a decade later removed all doubt. Today the burgeoning seamount is recognized as the youngest volcano in the Hawaiian chain. Measuring 16 miles long and 8 miles wide, the infant Loihi must grow another 3,180 feet before it will emerge from the

waves-60,000 years from now.

apart, "The entire south flank of Kilauea is peeling off into the sea." says geologist John Sinton of the University of Hawaii. Satellite measurements confirm that the flank is creeping seaward several inches a year. In 1975 it lurched 20 feet after being jolted by an earthquake, triggering a local tsunami that miraculously claimed only two lives. A deadlier paroxysm in 1868 swept away entire villages along Hawaii's south coast. Such cataclysms, say scientists, are an integral part of a volcano's evolution.

Sonar imaging reveals

the contours of Loihi and

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SEAFLOOR TO SUMMIT: A PROFILE OF HAWAII

Strung like pearls over 1,600 miles of the mid-Pacific, the Hawaiian Islands are the visible tips of the world's loftiest mountains.

Maro Reef

Hawaii's Mauna Kea, for instance, when measured from its base on the ocean floor to its peak, towers nearly 32,000 feet, overshadowing Mount Everest. Northwestward along

harmless fountains. The ooze builds

accretion rather than creating steep,

huge, rounded mountains by slow

cone-shaped volcanoes typically

forged by violent blasts.

the chain each mountain is progressively older and more timeworn. A few barely break the surface as coral atolls.

FEET 715,000 10.000 5,000 Niihau, Lanai, and Kahoolawe are not shown in this cross-sectional view. KAUAI MOLOKAI MAUI 0.000

For information about available maps call toll free I-800-NGS-LINE or write to National Geographic Society, II45 17th St. N.W., Washington, D.C. 20036-4688.

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