NATIONAL PARKS MAGAZINE

Eruption at Kilauea Iki, Hawaii National Park

January 1960

EDITORIAL COMMENTS

On Dunes and New Year's Resolutions

SOME SAY the Indiana Dunes are doomed. Investigating this contention has led to some interesting facts. Want to hear them?

* * * * * *

An October 31 article in the *Gary* (Indiana) *Post-Tribune* makes it pretty plain how the Midwest Steel (western) portion of the proposed national monument has fared:

Sixty per cent of the company's property has been leveled. The administration building is virtually complete. . . Giant earthmovers scurry across the sandy land, construction men pour concrete for foundations. . . This is Midwest Steel two-and-one half months after its groundbreaking.

How many of us listened carefully last July when Senator Paul Douglas warned in a letter to the editor of the *Washington Post:*

We need support and public interest desperately, because both the National Steel Company (parent organization of Midwest) and Bethlehem Steel Company are moving forward with their customary efficiency, and with hearts as hard as the steel which they produce, towards irremediable destruction of this unique natural area.

* * * * * *

NO ONE had disturbed another 200-acre tract along the shore of Lake Michigan for the past thirty years. It had belonged to the Northern Indiana Public Service Company for that long. Some who enjoyed the natural scenic qualities of the area probably thought it would exist as such forever without any special protection.

Then on October 29, 1959, NIPSCO president Dean H. Mitchell announced that the company was planning a 30-million-dollar electric generating station on the property three miles east of Burns Ditch in Porter County, Indiana. A week later construction began and before local conservation sentiment could be built up to a place where it could be effective, the area, which includes 1500 feet of shoreline and what has been termed "the most beautiful and rugged part of the dunes" was "leveled and cleared of trees," according to a December 6 *Chicago Tribune* article.

In a November telegram to NIPSCO president Mitchell, Senator Ernest Gruening chastised the company for "destroying the Indiana Dunes by current construction activity at the site of the proposed Indiana Dunes national monument." Gruening is author of a compromise bill which would set aside a strip of dune land from Burns Ditch to Dune Acres as a part of the national park system. This is about half the area originally suggested for the monument by Senator Douglas. In his answer to Gruening, Mitchell said:

U. S. Senators and congressmen from Indiana and the governor of the state are on public record favoring industrial development in the Burns Harbor area . . . It is our belief that the location of the new electric generating station is in the public interest and essential to the well being of all the people living here and that it will help to insure the continued growth and development of this state.

We appreciate your unusual interest in our state as senator from Alaska, and welcome this opportunity to inform you about the things we are doing to help insure the economic well being of the people who live here.

* * * * * *

A THIRD aspect of the complicated dunes situation is the proposed deep-water harbor in the Burns Ditch area. As the *Gary Post-Tribune* has commented, "Progress is less apparent on [this] plan."

The Army Corps of Engineers—who in the past have stated that it was not feasible to build such a port in northern Indiana—are making another study of the plan and their results may be announced in January.

The Save-the-Dunes Council and others have proposed Indiana harbor in East Chicago as an alternative to the Burns Ditch location. Chicago architect R. Donald Jaye maintains that such a bi-state harbor extending from Gary to Chicago is the only solution to make the area ready for the tremendous growth and activity the St. Lawrence Seaway will bring.

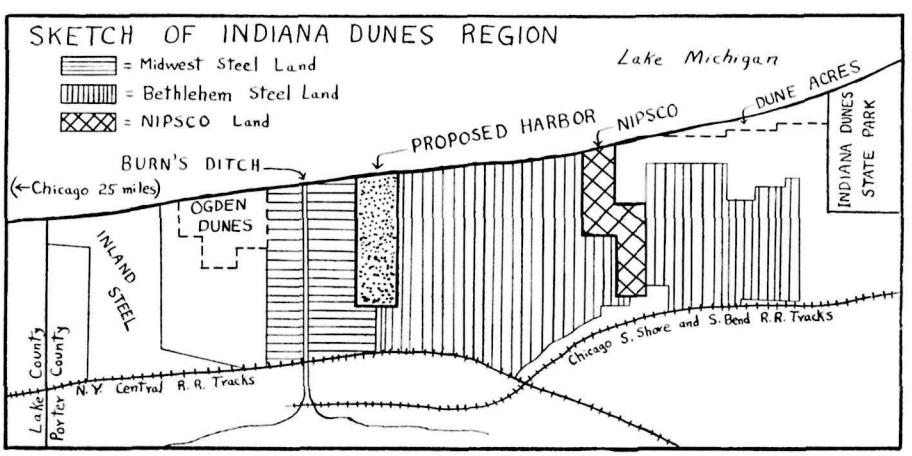
* * * * * *

INDIANA POLITICIANS, many leading officials and business groups continue to attack all proposals for a national monument in the Dunes area. The last Indiana Junior Chamber of Commerce convention went on record as welcoming new industry to the state. To promote the effort, William Beckman, president of the Duneland Junior Chamber of Commerce, has started to sell sand from the dunes. According to the *Chicago Tribune*, Beckman's explanation on each box of sand reads:

Enclosed is a box of virgin sand, disturbed only by the blade of a bulldozer. It is a portion of the sand that Illinois Senator Paul Douglas and his fellow bird watchers are trying to conserve as a bird sanctuary. Too much of the surrounding area is already being used for the birds.

(*Continued on page 19*)

NOTICE: Beginning with this issue, NATIONAL PARKS MAGAZINE will number every page, beginning with the front cover as page 1. So long as we retain our present number of pages, this means that the former "inside front cover" becomes page 2, the former "inside back cover" becomes page 19 and the former back cover becomes page 20.



NATIONAL PARKS MAGAZINE

OFFICIAL PUBLICATION OF THE NATIONAL PARKS ASSOCIATION

JANUARY 1960 Vol. 34, No. 148

Bruce M. Kilgore, Editor

CONTENTS

ON THE COVER

All but one of the twelve fountains found along the original rift in the crater of Kilauea Iki in Hawaii National Park were dying as the photographer took this picture at 8 a.m. on November 15, twelve hours after the start of the eruption. Soon thereafter, this fountain began shooting about 100 feet into the air and within two-weeks, lava from this same cone roared to heights of 1700 feet, topping all previous fountain height records for Hawaiian volcanoes. One of the more spectacular bursts is portrayed on our back cover. A 400-foot lake of lava now covers the spot from which our cover photograph was taken.—Photo by Fred Rackle.

THE NATIONAL PARKS AND YOU

Few people realize that ever since the first national parks and monuments were established, various commercial interests have been trying to invade them for personal gain. The national parks and monuments were not intended for such purposes. They are established as inviolate nature sanctuaries to preserve permanently outstanding examples of the once primeval continent, with no marring of landscapes except for reasonable access by road and trail, and facilities for visitor comfort. The Association, since its founding in 1919, has worked to create an ever-growing informed public on this matter in defense of the parks.

The Board of Trustees urges you to help protect this magnificent national heritage by joining forces with the Association now. As a member you will be kept informed, through NATIONAL PARKS MAGAZINE, on current threats and other park matters.

Dues are $5 annual, $8 supporting, $15 sustaining, $25 contributing, $150 life with no further dues, and $1000 patron with no further dues. Bequests, too, are needed to help carry on this park protection work. Dues and contributions are deductible from your federal taxable income, and bequests are deductible for federal estate tax purposes. As an organization receiving such gifts, the Association is precluded by relevant laws and regulations from advocating or opposing legislation to any substantial extent; insofar as our authors may touch on legislation, they write as individuals. Send your check today, or write for further information, to the National Parks Association, 1300 New Hampshire Avenue, N.W., Washington 6, D.C.

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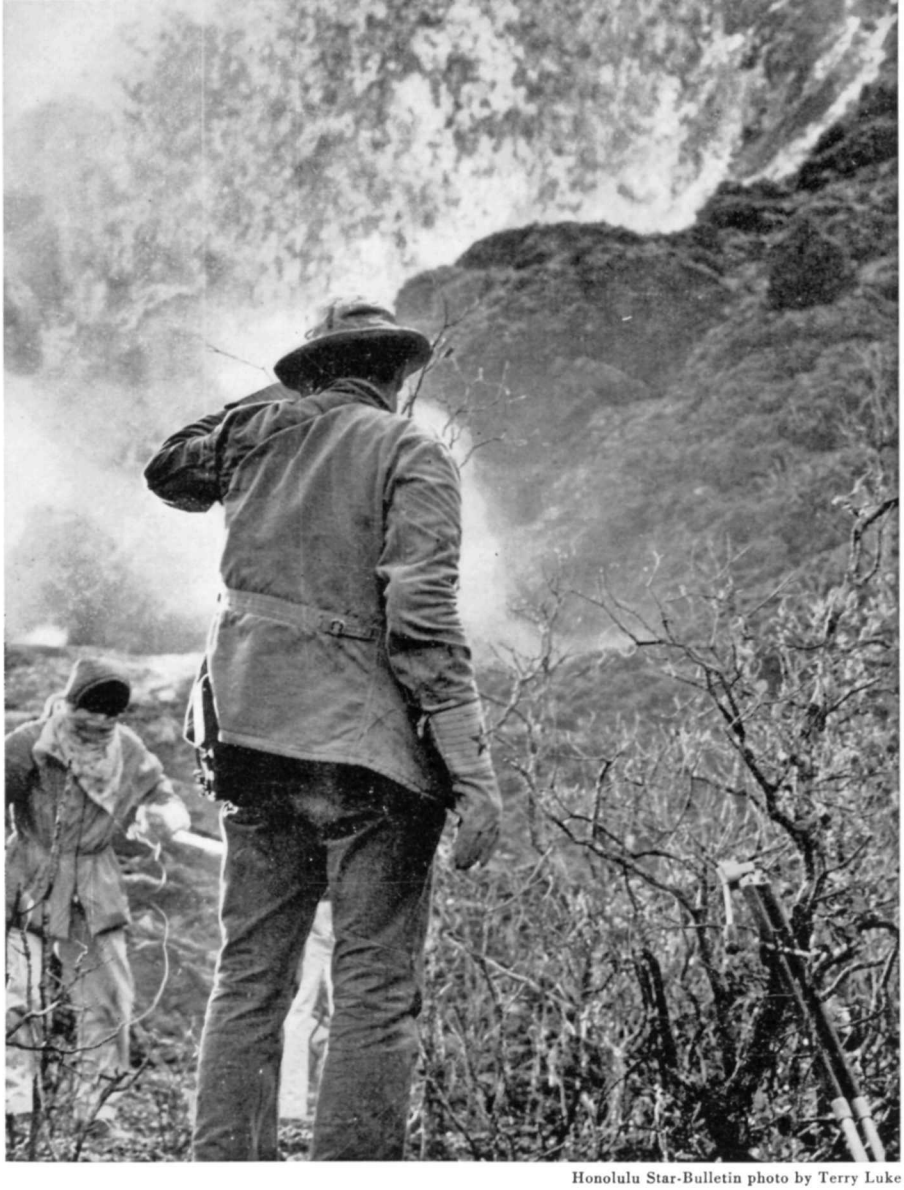

Honolulu Star-Bulletin photo by Terry Luke

LEFT: Two of the men on the mountain, Murata (in asbestos hood) and Eaton, have a close call when a tongue of lava threatens to trap them as they gather samples in Kilauea Iki.

Men on the Mountain

By Eloise Engle

MILLIONS of years ago, when earth had taken on its identifying characteristics of formed continents and vast oceans, long before man roamed over the earth's surface and navigated the seas, a wonderful secret phenomenon was taking place in the cold black depths of the place we now call the Pacific Ocean. It started with a crack in the ocean floor. This rupture, 2000 miles long, began oozing hot liquid rock, bubbling, steaming and solidifying as it cooled, forming broad mounds on the ocean floor. Slowly, over a period of millions of years, these mounds grew into broad submarine mountains which eventually reached the surface of the sea.

Thereafter, a new violent form of activity commenced. Brilliant orange fiery liquid burst into the air piling up layer after layer of crusty black lava and forming islands bounded by great jagged cliffs. The rolling sea of fire pouring out of the mountain top plunged over cliffs and hardened on the shore below. Whipped by trade winds and the roaring surf, and pelted by rains over the years, the lava broke down into particles and became soil.

When man finally came to the island of Hawaii to cultivate the new soil and plants which thrived there, he learned that the volcanoes that had provided his land could be approached with relative safety. As a result, for the past thirty-seven years man has watched and studied from the U.S. Geological Survey's Volcano Observatory perched on the rim of Kilauea crater.

The observatory occupies a small part of the 176,951 acres of living volcanoes, tropical forests and rugged coastlines which Congress established in 1916 as Hawaii National Park. The park includes two separate areas: the Kilauea-Mauna Loa section on the island of Hawaii, and the Haleakala section on the island of Maui. Research and information, maintained by the government, are directed jointly by the observatory volcanologists and national park naturalists.

The volcanologists conduct their studies of geological and volcanic phenomenon in a park setting which includes both living and extinct volcanoes and a variety of plant and animal life. Haleakala, on the island of Maui, is an example of an old volcano in the last state of activity. In the vast stillness of the summit depression is one of the largest craters known. With its floor lying more than 2,500 feet below the high western rim, the area includes over nineteen square miles of crater floor. Here grow rare silversword plants, "pincushions" of long narrow swordlike leaves that gleam in the sun like frosted silver. The flower stalk, often six feet high, produces hundreds of small purple-petaled flowers.

The greater part of the Hawaii National Park however is on the "big" island of Hawaii, where the observa-

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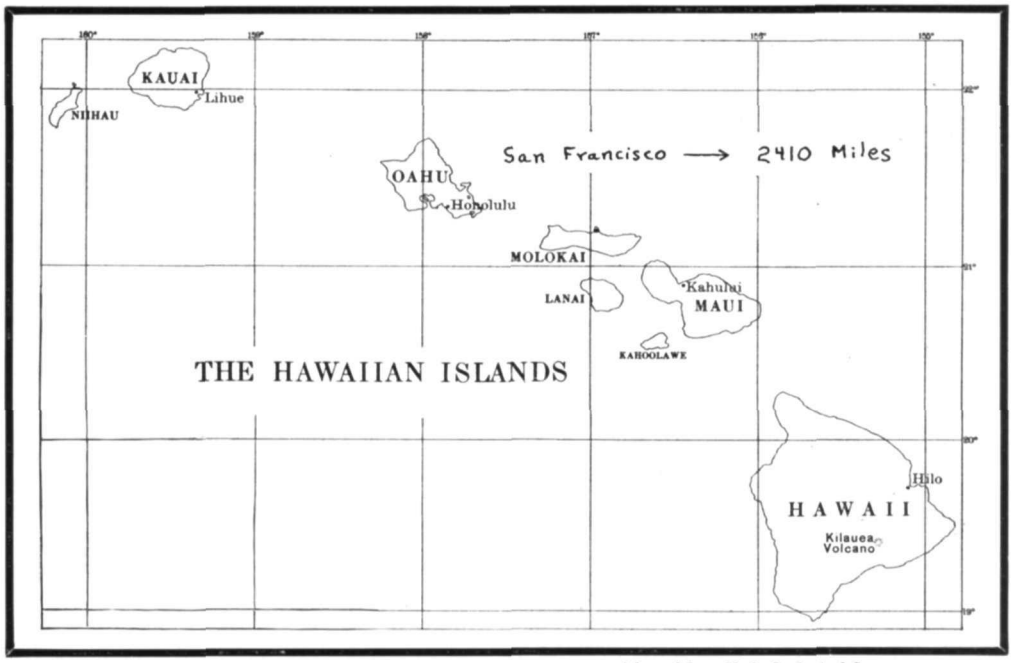
While living in Hawaii where her husband was stationed with the Navy, Mrs. Engle edited the Islands' oldest magazine, "Paradise of the Pacific." Now living in Washington, D. C., Mrs. Engle recalls the unforgettable tropical beauty and dramatic volcanoes through her writing. A free lancer for many years, she has written two juvenile books in addition to many articles and stories for national magazines.

tory is located. In this area you can see much of the unspoiled primitive beauties of the flora and fauna of the islands. There are the awesome lava-encrusted slopes of mountains often snow-capped in winter, coral cliffs, plunging ravines, magnificent Tree Fern-Ohia jungles, weird lava formations in the Kau desert, Ohelo berry bushes, and rare dwarfed plants and flowers. Great strips of lush vegetation called Kipukas, in places where newer flows of lava have not touched, are surrounded by hard black crusts as far as the eye can see. At Bird Park, about forty varieties of trees and countless wild exotic birds add beauty to the tropical sanctuary.

But with all these unusual designs of nature, the park's major interest centers around its spectacular volcanoes. Kilauea Volcano on the "big" island is an elongated low dome built up by countless layers of lava erupted from the central crater and from lines of craters running to the southwest and to the east from the summit. The gentle slope merges with that of Mauna Loa on the west and the north. Within the great crater depression is the huge Halemaumau pit, over which the scientists hover and watch from their observatory on the rim.

Manned by five full-time scientists of the Geological Survey, several scientific aides, part-time workers and administrative employees, the observatory endeavors to learn everything possible about the geochemistry and geophysics of volcanoes. Predictions of the eruptions and the recording of earthquake phenomenon are extremely important phases of the work needed in developing warning systems to avert danger to life and property in volcanic areas. It is interesting to note that the seismographs at Kilauea recorded the recent Montana earthquake near Yellowstone National Park [See *Earth-shaking Events in Yellowstone* in the November 1959 NATIONAL PARKS MAGAZINE] hours before confirming information arrived.

In the 1949 and 1950 eruptions of Mauna Loa, perhaps the greatest since 1859, six major lava flows occurred. A billion tons of lava flowing at a speed of six miles per hour destroyed two dozen buildings and buried more than a mile of highway. In the Puna area where steaming fissures still exist, there are cars half-buried in lava and remains of homes that were swept away. But in spite of all this mass destruction, there were no lives lost as a result of the warning system set up by the men at the observatory.



Adapted from U. S. Geological Survey

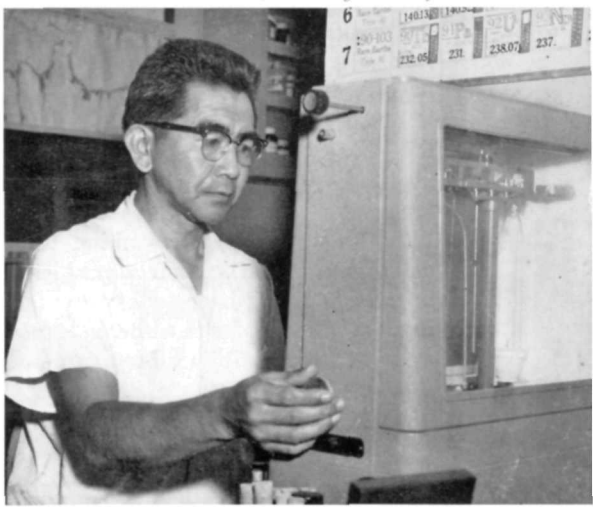
The group maintains seismograph stations all around the island and literally "lives" its work of studying the geology of volcanoes. Collecting and analyzing lavas and gaseous emanations, they systematically study the chemistry of volcanic processes, in order to understand ore-forming fluids. Studies are being made by chemical and spectographic analysis, and isotopic experiments will be made by mass spectrometric techniques. The surveillance is constant as the observers keep careful accounts of the temperatures of lavas and volcanic activities in the crater. They especially watch and report on seismic tremors and surface bulges that may culminate in an eruption.

These bulges are recorded by tiltmeters, instruments most accurately used at night when the temperature is comparatively stable. Because of the widespread area to be checked, observers often undergo great hardship as they make their rounds on cold rainy nights.

Reporting to Geological Survey at the Department of the Interior, the scientists recently noted a rising bulge similar to the one that preceded the 1955 eruption. With its subsidence, however, they decided the dangerous

In the laboratory, Dr. Jack Murata, Director of the Geological Survey's Hawaiian Volcano Observatory, uses a balance to determine chemical composition of volcanic materials gathered.

U. S. Geological Survey



Seismologist Jerry Eaton studies the pattern being registered by the seismograph, which—with the tiltmeter—aids in predicting eruptions.

U. S. Geological Survey

column of rising lava had gone down to a lower depth, possibly because of deep-seated lava moving along the volcano's southwest rift zone.

Shortly thereafter, they reported a swarm of new earthquake tremors beneath Kilauea Crater, originating about thirty-six miles down. To the scientists, this indicated the start of a whole new cycle of activity—hot molten lava would soon be surging upward, bulging in response to forces from below. The seismic disturbances were soon followed by tiltmeter indications of another rise in the ground, alerting the scientists to the renewed possibility of an eruption. Action was not long in coming.

On the 14th of November, Kilauea Volcano shot up a column of glowing lava and rock a hundred feet in the air. Rumbling earth tremors accompanied the mighty eruption. In no time at all, thousands of cars jammed the roads leading to the volcano and curious sightseers walked miles to see the great spectacle. Planes from Honolulu flew photographers and tourists over to see the glowing fountain.

But by the sixth day of activity, the Coney Island aspects suddenly changed. Mighty Kilauea had thrust its column of glowing lava and rock 1,150 feet into the air, striking three planes and cracking their windshields. Spectators were driven away by falling hot ash, and, for a while, volcanologists shook their heads, unable to predict what the 4090-foot volcano would do next. On the eighth day it subsided, quieted, and stopped. In a week, however, the volcano was back in the spotlight, challenging the men on the mountain with a new eruption.

Where and when will the activity end? Volcanologists can predict up to a point. They can study in their living laboratory so they will know more next time. From the knowledge they gather they can construct warning systems, and spare lives. Such work as theirs helps us to appreciate that eruptions are not merely primitive nature on the rampage, but also nature's way of making new land. ■

By coincidence, Mrs. Engle completed her article just as Kilauea Iki was beginning what has turned out to be a long series of eruptions (or phases of an eruption) which are still in progress. The staff of NATIONAL PARKS MAGAZINE *felt it should take advantage of the rare opportunity afforded by this event to present a report on the geological as well as the human interest aspects of a volcanic eruption. The photographs which illustrate Mrs. Engle's story and the text and photographs of the articles which follow are the result. We hope you will find them of interest. We are indebted to the U.S. Geological Survey, the National Park Service, the* Honolulu Star-Bulletin, *and Senators Fong and Long of Hawaii for making information available.*

National Park Service

The observatory is located on the rim of Halemaumau (above), most active of Kilauea's craters. Below, Eaton and seismologist Don Richter shield themselves from 200 degree fumes on Kilauea Iki's new lava lake.

Honolulu Star-Bulletin

This 1926 photo of the destruction of the Hawaiian village of Hoopuloa illustrates the value of warning systems which the volcano observatory is developing.

Tai Sing Loo

Geophysicist Harold Krivoy adjusts a tiltmeter, one of a series of instruments which record the bulges and subsidences in the earth's surface associated with volcanic eruptions.

U. S. Geological Survey

Kilauea Iki Goes Island Building

THE SCIENTISTS and their wives studied the "Fire Pit" intently, watching for the first break in the old lava beds—the first telltale glimmer of liquid rock. They knew an eruption was "imminent."

For the past several months, the seismographic equipment had told of spasmodic tremors beneath the mid-Pacific volcanic island in Hawaii National Park. Tiltmeters indicated bulges in the earth's surface in the Kilauea area. To these trained volcanologists of the U.S. Geological Survey's Volcano Observatory, this meant only one thing. Molten lava was traveling along beneath the earth, "looking" for a crack through which to reach the earth's surface.

At 8:05 p.m. on November 14, 1959 it began to happen, and fast. The spasmodic (irregular) tremors became harmonic (regular) tremors; the lava had found its break. But where were the signs of a surface eruption?

Suddenly to the left of the observers, some two miles away, they saw the pink glow, but not precisely where it had been expected. The fire goddess Pele had chosen Kilauea Iki to the east of the main crater, rather than Halemaumau for this display of temper. The scientists hurried to their automobiles and drove quickly to the rim of Kilauea's smaller brother "Iki" where they were to expend an even greater than usual amount of effort for the next month (and more) observing, studying, taking samples, and making calculations to learn what makes a volcano tick. An awesome sight greeted even these men who were familiar with the ways of volcanoes.

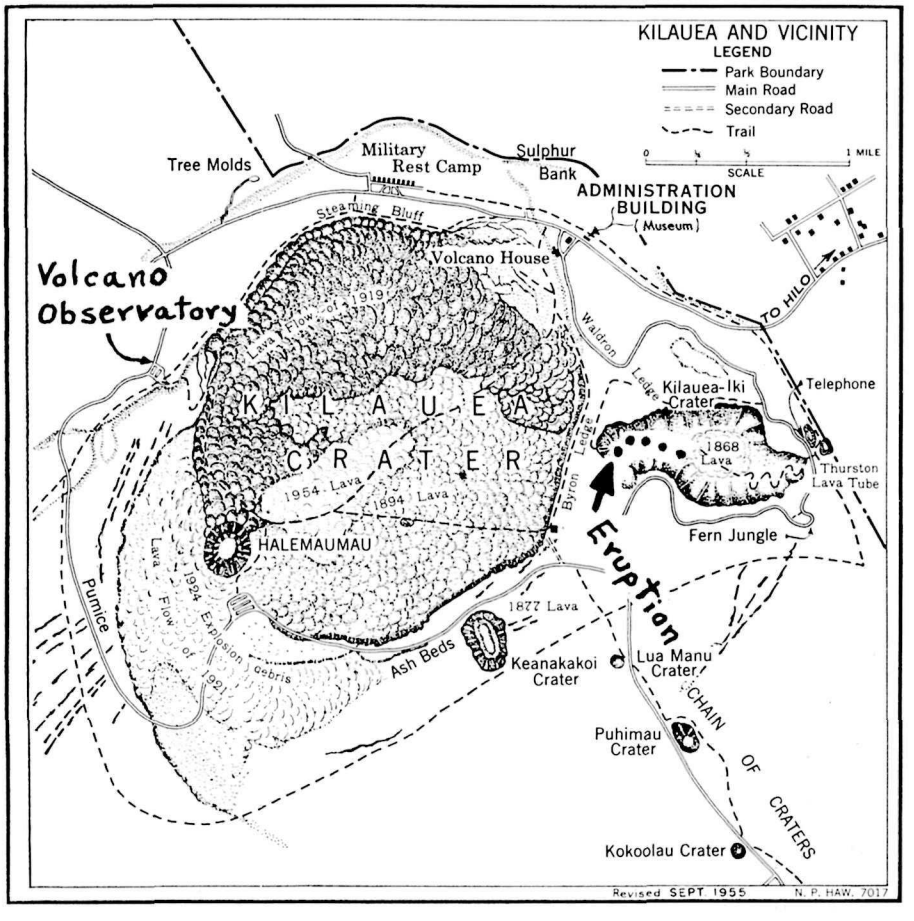
With a tremendous noise which witnesses likened to a cross between a freight train, the surf, and thunder, "fiery red lava was pouring out of a great wound along the side of the crater." This was how Ed Engledow, reporter for the *Honolulu Star-Bulletin*, described it. (Mr. Engledow, who arrived on the scene one-half hour *before* the eruption, had played a hunch—a hunch that when Dr. Jerry P. Eaton, Seismologist for the Volcano Laboratory, said an eruption was "imminent," he knew what he was talking about. This hunch paid off.)

The "wound" was a 300-yard rift in the upper south wall of Kilauea Iki Crater from which twelve fountains of molten rock were gushing. As the flowing lava spilled like a waterfall down the wall of the pit to the floor 400 feet below to form a dazzling eastward flowing river, one old Hawaiian seated beneath an ohia tree on the crater rim was heard to comment, "Surely the Creation must have been like this."

Perhaps he wasn't far from the truth. The viewers from the grandstand seat on Byron's Ledge (see map below) were witnessing more than pyrotechnic beauty; they were seeing first-hand the process by which the eight Hawaiian Islands were formed, and the one by which the Big Island of Hawaii, the youngest of the chain, is still being formed through its two active volcanoes, Mauna Loa and Kilauea.

WITHIN five days after the start of the eruption, Dr. K. J. Murata, scientist in charge of the Volcano Laboratory, was quoted as saying the event was outside the realm of scientific experience and therefore completely unpredictable. Although eleven of the original twelve vents soon stopped, their cumulative activity seemed to lodge itself in the remaining opening. Within the next month the eruption, which some felt would be short-lived, took on a new and spectacular aspect. The fountain of molten rock climbed higher and

Adapted from National Park Service



higher in a series of ten phases during which is rose to 1700 feet, topping known height records for Hawaiian lava fountains. (This one-third mile height is more easily visualized when we compare it to the 1250-foot Empire State Building in New York City, the 555-foot Washington Monument in Washington, D.C., the 605-foot Board of Trade Building in Chicago, or the 464-foot Los Angeles City Hall.) Temperatures of more than 2100 degrees Fahrenheit, the highest ever recorded in a Hawaiian lava flow, were registered by scientific instruments. (Ten times the boiling point of water, this temperature is hot enough to melt aluminum or copper.)

The main bulk of the erupting lava flowed first northwestward to a high-level pond, then eastward to the main floor of the Kilauea Iki pit. (See map on page 7.) Pegs driven into the side of the main pit on November 17, to indicate the rise in level of the ponding lava, disclosed an astonishing rise of 25 feet overnight. By November 21 the pond was 350 feet deep, forming a fiery lake estimated to contain forty million cubic yards of lava. This depth increased to more than 400 feet by early December. If the 600-foot deep Kilauea Iki crater should fill up, it would spill over into the main caldera of Kilauea over the dividing ridge known as Byron's Ledge—a spectacular prospect.

THE DEDICATED scientists who worked day and night for the seven-day span of the first phase of the eruption returned from daily approaches to the volcano with scientifically valuable samples of cinder, lava and gases—and with singed hair, torn clothing and charred shoes. On the third day of the eruption, billowing clouds of sulphur gas had endangered several of these men doing research close to the fountain. (See photograph on page 2.)

Others risking their health and in some cases their lives were the newsmen and photographers who kept the world informed of this history-making event. Our cover photographer, Fred Rackle of Honolulu, was in a press party which on November 21 had driven to a point less than one-quarter of a mile from the volcano mouth on Crater Rim Road. The volcano seemed to be waning early that morning, fighting a losing battle with the 325-foot rising lava lake. Then at 10:42 a.m. it cut loose with a 1000-foot fountain, followed by others culminating in a 1250-foot column of lava at 11:10 a.m. According to a report in the *Honolulu Advertiser*, the press party was driven back by a threatening shower of glowing pumice, and, in the confusion, Mr. Rackle, veteran of five previous Hawaiian volcano eruptions, lost his movie camera over the rim of the crater and into the lake below. The faces of those who watched during the height of the geyser were suddenly reddened by the searing heat as though they had been sunburned.

Outside of a heart attack death which followed one elderly gentleman's hurried efforts to view the spectacular scene, only minor injuries have been reported as a result of the eruption.

At least a part of this record can be credited to safety precautions enforced by National Park Service authorities in Hawaii National Park. Despite some local criticism of their ruling, Acting Superintendent John A. Aubuchon has insisted on adequate distance between visitor viewpoints and the molten-magma fountain. The recent deposit of white-hot volcanic material on a close-in viewpoint to the northeast of the erupting vent bears mute testimony to the wisdom of these restrictions. No damage to the surrounding area and buildings has resulted except occasional forest fires started by the white-hot lava, and the covering of the Chain of Craters Road by the growing cinder cone.

While the twelve-man team of scientists at the volcano observatory in Hawaii is too busy collecting data from the still-active volcano to analyze it comprehensively, Dr. Murata believes there is "good reason to hope that our samplings and experiences here will contribute to the total knowledge of volcanology." Certainly the accurate prediction of the timing of this eruption was a solid success for the team as a whole and for seismologist Jerry Eaton in particular. As one reporter astutely noted, "The blinding fires of Kilauea Iki are illuminating some dark corners of man's knowledge of volcanoes."—*B.M.K.*

HOW'S YOUR VOLCANIC I.Q.?

A Volcanic Vocabulary

Aa—Rough, clinkery-surfaced lava.

Caldera—A large crater formed by the collapse of the central part of a volcano.

Crater—A bowl-shaped depression, typically in the top of a volcanic cone.

Epicenter—Point on the earth's surface over the origin of an earthquake.

Lava—Molten rock that has burst through the earth's surface, and its solidified products.

Magma—Hot liquid rock.

Pahoehoe—Smooth or ropy-surfaced lava.

Rift—A crack in the earth's crust.

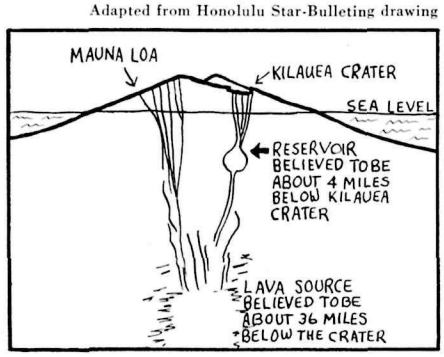
Seismograph—An apparatus to register earthquake tremors.

Tiltmeter—A sensitive instrument recording bulges and subsidence in the earth's surface.

Vent—An opening where volcanic material reaches the surface.

Hawaiian volcanoes are gentle compared with others the world over. Volcanologists explain that Hawaiian lava is more fluid and has, possibly, a lower gas content. So, rather than exploding with great quantities of rock, the lava generally pours forth quietly from its vent, or else spouts in fountains. Some explosive Kilauea eruptions are exceptions.

Adapted from Honolulu Star-Bulleting drawing

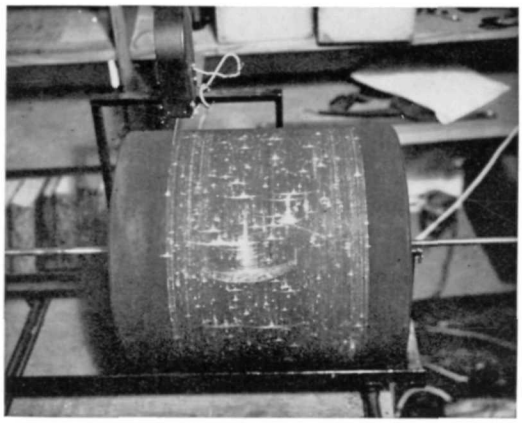


The greater fluidity of Hawaiian lavas leads to high speeds of flow. While most flow at only a few feet an hour, some Hawaiian lavas travel 35 miles an hour.

Largest volcanic claimers of human life were the 1883 eruption of Krakatoa in the Netherlands Indies, when 36,000 persons were killed and sea waves occurred as far away as Cape Horn, and the 1902 eruption of Mount Pelee in the Martiniques, West Indies. That eruption wiped out the city of Saint Pierre, killing 40,000 persons.

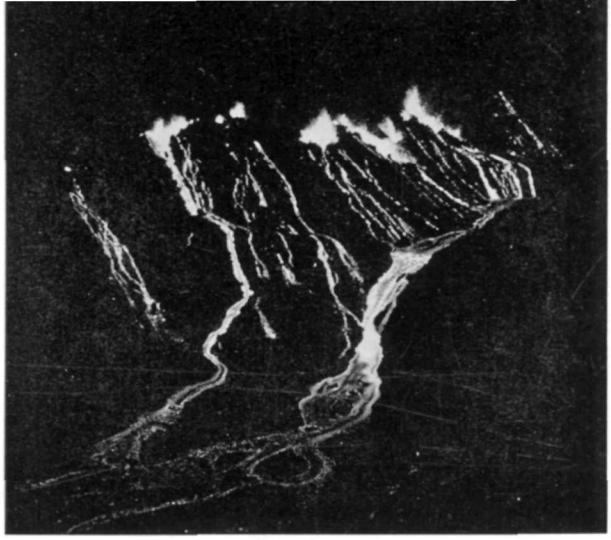
Turbulent Earth

A PICTORIAL



1. This is the seismogram of earthquake activity on November 13, 1959, the day before the eruption. Based on this type of information, Dr. Eaton was able to predict the eruption of Kilauea Iki many hours before the first lava appeared.

National Park Service photo by R. L. Barrel



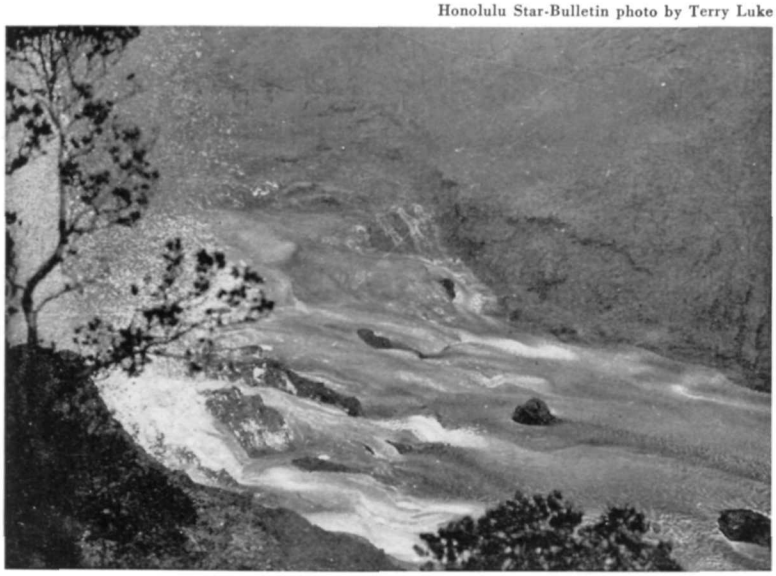
National Park Service photo by W. W. Dunmire

2. Within an hour of the initial outbreak at 8:09 p.m. on November 14, streams of lava were erupting from a half-mile long rift in the wall of the crater.

National Park Service photo by W. W. Dunmire

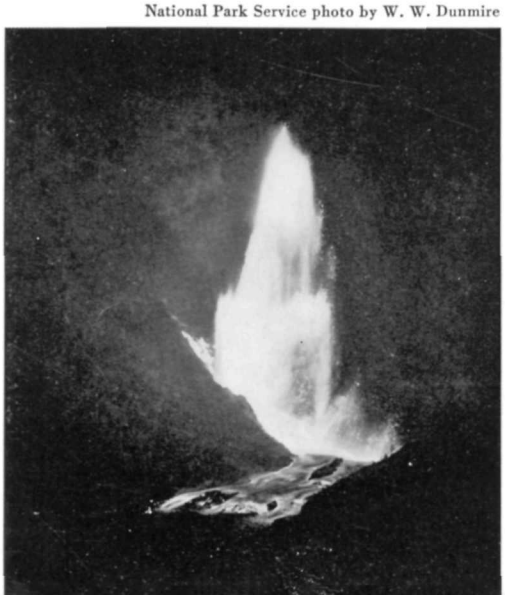
3. Twenty-four hours later, on November 15, tourists watch the single small fountain remaining at the western end of the original rift.

Honolulu Star-Bulletin photo by Terry Luke



● 4. Molten rock looks like a river as it flows toward the new lava lake on November 18. More than ten million cubic yards of lava have cascaded into the crater during the first five days of the eruption.

National Park Service photo by W. W. Dunmire



5. On the evening of ● November 18, the fountain reached a height of 1150 feet. A crowd of 12,000 viewers was forced to flee as the thundering fountain suddenly rose from its former 750-foot height.

6. A 300-foot lava lake was encroaching on the fountain vent on November 20, but the first phase went on to a record-breaking 1250 feet before dying on November 21.

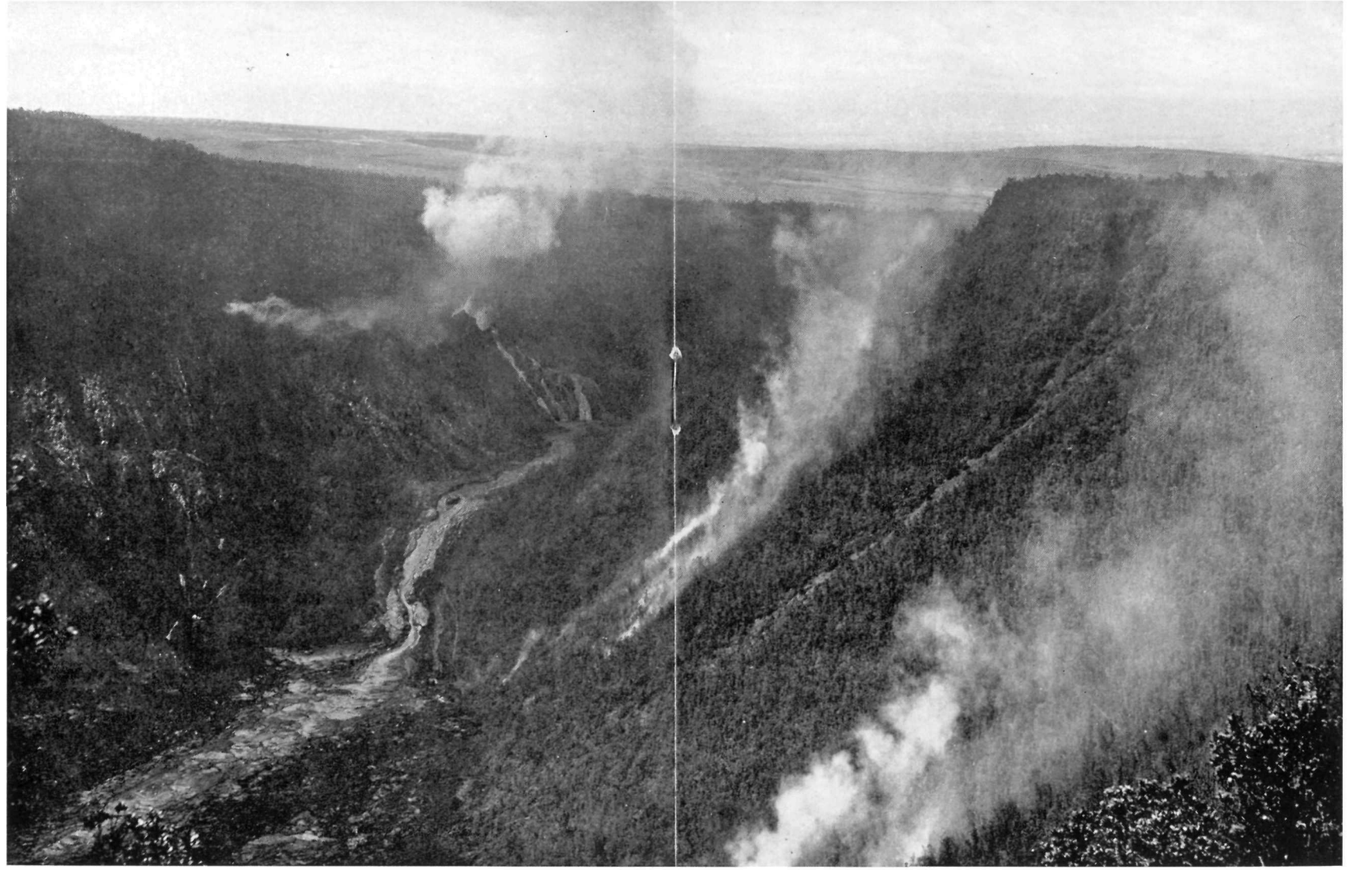
National Park Service photo by W. W. Dunmire

Honolulu Star-Bulletin photo by Warren Roll

The road above, where these scientists stood on November 16, is now covered with several hundred feet of volcanic ash.

U. S. Geological Survey

ABOVE: A 1000-foot fountain adds pumice to the cone which is fast becoming a major topographic feature.



National Park Service photo by W. W. Dunmire

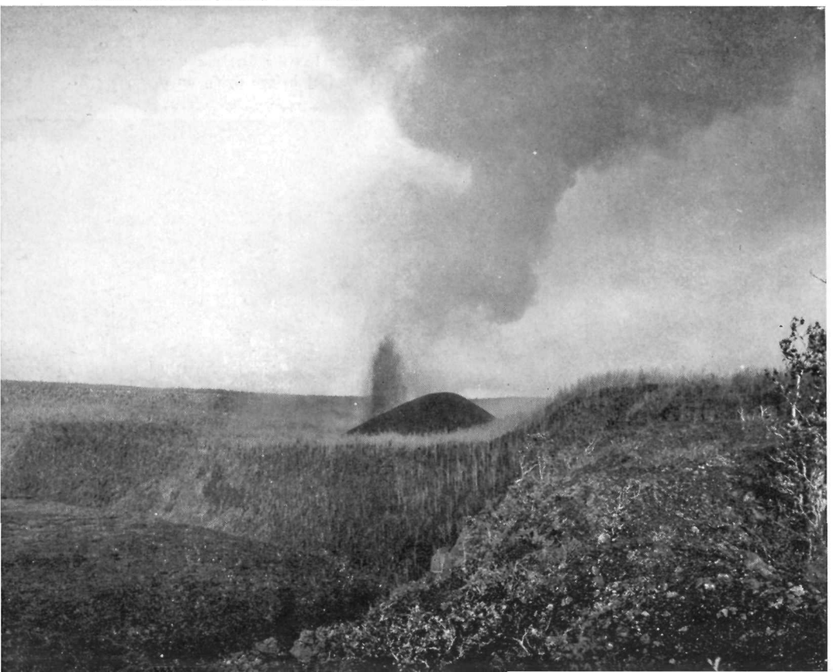
ABOVE: As the rivers of molten lava pour from the fountain (left center) into the floor of the 600-foot deep Kilauea Iki Crater, forest fires sweep up the wall of the crater where the trees have been dehydrated by the molten mass below. Note Byron Ledge and main Kilauea Crater in background.

National Park Service photo by W. W. Dunmire

ABOVE: Eruption watchers at the Kilauea Iki overlook on November 15. News of the eruption starts the traditional Hawaiian rush toward, not away from, the volcano. Within an hour after each eruption is announced, the roads to Hawaii National Park are jammed with cars.

BELOW: Denuded ohia trees are victims of the growing cone of pumice formed during the third phase of the Kilauea Iki eruption. Around-the-crater traffic has been permanently blocked until such time as fire-goddess Pele decides where and when she will permit the building of a new road to replace the lost link.

Honolulu Star-Bulletin photo by Jim Heckman

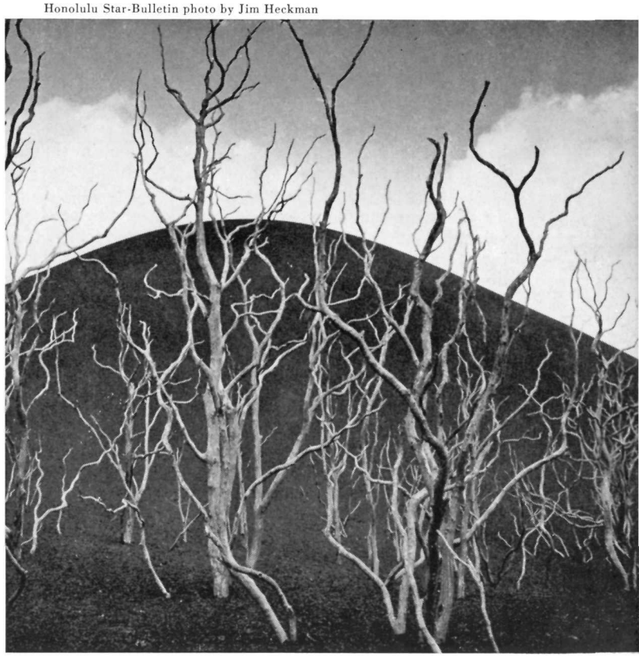


National Park Service photo by W. W. Dunmire

U. S. Geological Survey

AT FAR LEFT: The growing cinder cone rises 200-feet above the vent by November 20th. Byron Ledge in the middle foreground, main Kilauea Crater at lower left.

AT LEFT: From left to right, Eaton, Wayne Ault and Dr. Murata sample hot gases on the first phase cone in Kilauea Iki. Note the gas sampling bulbs and the improvised protection against choking vapors.



Diary of a Volcano

The almost unpredictable around-the-clock changes in activity at Kilauea Iki between November 19 and December 14 were accurately recorded by Dr. K. J. (Jack) Murata in the following excerpts from his letters and telegrams to the Washington office of the Geological Survey. Dr. Murata is Director of the U.S. Geological Survey Volcano Observatory located in the west rim of Kilauea Crater in Hawaii National Park.

November 19: The lava fountain is now attaining heights of 1000 feet and more and is putting out lava at a prodigious rate. Jerry [Eaton] became worried by the rate of increase in the height of the fountain and suggested to park officials that the sightseers be diverted to areas farther removed from Kilauea Iki. The officials concurred, and the vantage points are now two or more miles away from the crater but the magnificent fountain is clearly visible. . .

There is now 150 feet of lava ponded in the main crater of Kilauea Iki, as measured by Don [Richter] at 11 p.m. last night, and the level is rising at a rate of 3.5 feet per hour. Temperatures of 1180 degrees C. (2160 F.) were again obtained this morning by Jerry and Wayne [Ault]. . .

The intense radiation and flying pieces of red hot pumice have started fires on all sides of the crater, but the fires do not get very far in the lush tropical forest.

November 20: The fountain has settled back to an average height of 800 feet, but this reduction must be due to an enlargement of the throat of the vent, because the discharge into the main pond is more voluminous than ever. The pond is rising at an increased rate despite the fact the lava surface has to cover greater and greater areas because of the slope of the crater walls. By tomorrow, we expect the pond to cover the active vent, whereupon the fountain will have to surge up through increasing thickness of molten lava, unless it by chance builds a rampart around itself and escapes being overflooded.

November 21: The lava pond is encroaching on the fire fountain and affecting the manner of discharge of the fountain. First, the damping effect of the pond material has reduced the height of the fountain jets from 1100 feet last night to an average of 700 feet this morning. Second, the fountain material now consists of both red-hot fresh lava and big black clots of older material picked up from the pond and propelled upward by the fresh-lava jet.

Chester [Wentworth] calculates that about 40 million cubic yards of lava have been produced to date. If Kilauea Iki should fill up it will spill over into the main caldera of Kilauea over the dividing ridge known as Byron's Ledge. That would be a sight to see and we are hoping that it will materialize.

Park officials have conferred with Jerry and me several times in regard to routing of traffic and disposition of observation sites as these are affected by the intensity of eruption. They are especially anxious to loosen the jam of cars up here by opening up a road which, however, goes within one block of the vent, and up till now, has been showered periodically by hot blobs of pumice.

November 28: The brief second eruption from the same vent in Kilauea Iki went through the same cycle of behavior as did the first, though in a shorter time. . . . Yesterday morning revealed a remarkable downsinking of the pond surface that had occurred during the night. The entire pond has dropped leaving a fault scarp 20 to 40 feet high. . . Two mechanisms of collapse immediately suggest themselves. One depends on a major quantity of lava running back into the vent; the other merely calls on reduction in volume through degassing and elimination of pore space in the vesicular lava. Don will do precise levelling of the pond surface as soon as it cools sufficiently. He figures that a large flow back into the vent will be revealed by a slope of the pond surface towards the vent, whereas contraction due to compaction of the lava should show maximum downdrop toward the east side where the pond is deepest. . .

Right after the eruption resumed on the 26th Wayne and I went down into Kilauea Iki to collect lava from the first tongue of pahoehoe that began to spread over the cooled crust of the initial eruption. The material was very frothy and sticky. It was easy to push a 10 foot pole right into it. We pulled blobs of lava off the advancing front and immediately fresh material oozed out of the torn surfaces and formed new lobes. It was a good thing we got the samples early because after the pond filled up heat radiation was too intense for close approach.

November 28: *11:50 p.m. wire:* ACTIVITY RENEWED SAME VENT AT 4:45 P.M. FOUNTAIN ATTAINED HEIGHTS OF OVER 1000 FEET WITHIN COUPLE HOURS. MUCH PUMICE AND LITTLE FLOW. TREMOR ONE-THIRD STRONGER THAN HERETOFORE. THIS THING WILL KILL US YET.

November 29: The rapid rise to great heights made us believe yesterday that this third revival would be short-lived, but the continuing activity this morning indicates that such an idea is too naive. At 9:30 this morning a maximum fountain height of 1650 feet was measured by the Park naturalist Bob Barrel. Occasionally, the fountain drops to a few hundred feet, probably choked momentarily by a large slide of pyroclastics back into the throat of the vent. But the fountain soon clears itself and reestablishes jets to 1000 feet and over. The Crater Rim Road leeward of the vent is now buried under 70 feet of pumice and more is accumulating there. The harmonic tremor is larger in amplitude than it has ever been before. Everyone, of course, wants to know how long the eruption will last. It is already clear that this thing cannot be written off as long as even the smallest tremor persists.

November 29: *11:59 p.m. wire:* THIRD PHASE ENDED ABRUPTLY AT 9:50 P. M. MAXIMUM FOUNTAIN HEIGHT 1700 FEET. MUCH LAVA RAN BACK INTO VENT AT END. VERY FEEBLE TREMOR CONTINUING.

December 1: The harmonic tremor has disappeared so the eruption appears to be over. An extraordinary development of pumice accumulated astride the Crater Rim Road and formed a new hill 200 feet high.

Jerry, Harold, and others are going to start making tilt measurements around the net of stations tonight. . . The initial phase of the eruption and the combined second and third phases are both manifested by a pronounced tilting to the northeast and the four-day quiet interval is marked by a relaxation to the southwest.

Professor Shinya Oana on his way back from Yale to Nagoya University saw the third phase of the eruption and drew an interesting analogy between the fire fountaining and geyser action. In both, fluids are propelled upward in jets through generation of a large amount of vapor phase near the surface and a certain amount of the ejected fluid flows back into the vent after the activity stops.

December 5, *9:41 p.m. wire:* FOURTH PHASE ENDED AT 9:20 A.M. AFTER POND LEVEL RAISED 57 FEET IN TOTAL OF 32 HOURS. SUBSEQUENT DRAIN INTO VENT DROPPED LEVEL 35 FEET. THERE MUST BE MAGMA CHAMBER OF SOME SORT. TREMOR CONTINUING.

December 6, *11:58 p.m. wire:* FIFTH PHASE STARTED 2:45 P.M. IF LAVA SHOULD DRAIN BACK INTO VENT AGAIN, ANALOGY TO GEYSERS WILL BECOME VERY STRONG.

December 7: The fifth phase proved to be the shortest so far, ending at 12:23 a.m. after an activity of only 9½ hours. Again a vast amount of lava of the order of 10 million yards flowed back into the vent. Feeble tremors are being recorded from the north vault station. We may be faced with a geyser-like mechanism that will erupt repeatedly over a long period of time. . .

There is a net gain of amount of lava in the pond with each phase of activity. Chester and Don are not finished with their calculations of the output but they have arrived at an approximate value of 55 million cubic yards for the net output to date.

December 8, *1959:* The sixth phase ended at 2:44 a.m. The lava immediately started to drain back into the vent which must be a deep hole because the lava can be seen to disappear over a lip with a steady roar. The rate of drainage of the pond is far faster than the rate of filling. This difference is due to the fact that the lava is erupted as a highly frothy material but drains back as a dense liquid.

It is nearly noon and we are expecting the next phase anytime. The irregular hours are getting us exhausted.

December 9, *1959:* Yesterday saw the end of the 6th phase at 2:44 a.m. and the development of a very brief 7th phase that started at 2:20 p.m. and ended at 8:10 p.m. Don was down at the pond's edge when the 7th phase ended and he was astonished to see that the sinking of the pond level starts the instant the fountain dies. The draining back into the vent was so vigorous that a tremendous whirlpool was generated—a most spectacular sight.

The big question is: "Where does the lava go when it disappears back into the vent?" There appear to be two possibilities. (1) It drains back into some kind of magma chamber where a new charge of gas and hot magma puts it back into an eruptible condition, or (2) it drains down the east rift zone (Chain of Craters) and is permanently lost from the erupting system. I am hoping that the composition of the successively erupted lavas will throw some light on this.

The tremors are barely discernible this morning. We hope that the volcano will rest for a while so that we can ponder over the data that have accumulated.

December 11, *1959:* The period of respite after the 7th phase ended at 3:15 p.m. December 10th when the 8th phase got under way. It was slow in getting started, oozing out a small flow at the beginning.

Each phase has added some pumice to the hill leeward of the vent so that the edifice (about 250 feet high on the bluff) is gradually becoming a major topographic feature of the summit region.

At 3:45 this morning the fountain angled off to the northeast and plastered the opposite wall and bluff with molten lava. Many sightseers have been using this spot and if any had been there at that time, they would have been wiped out. There has been a vociferous minority criticising the Park Service for imposing restrictions on the movement of the public during the violent periods of eruption. One look at that devastated vantage point is enough to convince one of the wisdom of Park Service restrictions.

An outstanding improvement in operations has been made possible by the Park Service setting up a two-way radio system between the Observatory and the Byron Ledge Overlook where a park naturalist is always on duty. Now we can easily correlate the visible activity with the seismographic activity.

December 13, *10:27 p.m. wire:* PHASE NINE OCCURRED TODAY 5:08 A.M. TO 1:40 P.M. SAME VOLUME LAVA ERUPTED AND NOW DRAINING BACK. TEXTURE OF SHALLOW MAGMA CHAMBER OF FIXED SIZE EMERGING. PROBABLY THE SAME STUFF BEING ERUPTED REPEATEDLY. WEAK TREMOR CONTINUING.

December 14, *10:57 p.m. wire:* TENTH PHASE TODAY BETWEEN 7:20 A.M. AND 3:36 P.M.

(Eruption continuing as we go to press.)

FIRST TEN PHASES OF KILAUEA IKI ERUPTION, 1959

Phase number	1	2	3	4	5	6	7	8	9	10
Date phase began	Nov. 14	Nov. 26	Nov. 28	Dec. 4	Dec. 6	Dec. 7	Dec. 8	Dec. 10	Dec. 13	Dec. 14
Duration of phase	7 days	16 hrs.	17 hrs.	32 hrs.	9½ hrs.	11¼ hrs.	6 hrs.	19½ hrs.	8½ hrs.	8¼ hrs.
Number of fountains	12, then 1 on 3d day	1	1	3	1	1	1	1	1	1
Max. height of fountain (in feet)	1250	1000	1700	300	800	600	1400	1100	700	1100
Depth of lava pond (in feet)	350	350	340	385	405	413	411	408		

Conservation News Briefs

Nature Magazines Consolidate

Consolidation of two distinguished publications, *Natural History*, published by the American Museum of Natural History in New York, and *Nature Magazine*, published in Washington by the American Nature Association, will take place in January 1960.

The new magazine will be under the direction of John Purcell, Editor of *Natural History*, and will be published in New York. Richard W. Westwood, President of the American Nature Association and Editor of *Nature Magazine*, will serve as a contributing editor, reporting on developments in the field of conservation as viewed from the nation's capital. Paul Mason Tilden, Assistant Editor of *Nature Magazine*, will be an associate editor of the combined publication.

The American Nature Association was founded in 1922 to stimulate interest in every phase of nature and the outdoors and to further the practical conservation of the great renewable resources of America. *Nature Magazine* was established as the voice of the Association, and its first issue was published in January, 1923.

Through the years the magazine has sought to advance public understanding of the importance of soil, water, forest and wildlife conservation. It has championed the creation and protection of national parks and the establishment of a wilderness system. It has emphasized the importance of the ecological approach to wildlife conservation and widespread appreciation of wildlife values. The Association and the magazine have long urged protection of the environment of our highway system from unsightly commercial development and advertising.

Among the educational activities of the Association have been special grants to Cornell University for graduate fellowships in conservation education; to the National Association of Biology Teachers for studies in the same field; to the International Union for Conservation of Nature for public education. The Association has been deeply involved in the establishment of the Arizona-Sonora Desert Museum near Tucson, Arizona, and has taken an active part in support of many other conservation programs.

March Wilderness Conference

"Problems of Wilderness Management" will be the theme of the Northwest Wilderness Conference sponsored by the Federation of Western Outdoor Clubs in Portland, Oregon on March 26 and 27, 1960. In addition to discussions on power and reclamation withdrawals, air travel, insect and disease control, and fire control, there will be a public session entitled "Back Country Travel School" which will demonstrate preparation for a wilderness trip. The Federation of Western Outdoor Clubs includes representatives of several major mountaineering and hiking clubs.

Lectureship Announced at Albright Testimonial

On December 4, 1959 in Washington, D.C., Horace M. Albright, one of the founders of the national park system, was honored at a testimonial dinner. Leading conservationists as well as businessmen and government administrators gathered to pay tribute to the second Director of the National Park Service.

In connection with the testimonial, the annual Horace M. Albright Lectureship

SEATON DIRECTIVE: "Preserve 'True' Wilderness in Parks"

In a six-point "directive" to Park Service Director Conrad L. Wirth, Secretary of the Interior Fred A. Seaton has instructed the National Park Service to (1) strive for the establishment of new areas necessary to round out the national park system; (2) "see that management keeps clearly in view the importance of preserving true wilderness areas within the (system)" and (3) "keep uppermost in your minds the directive of Congress when establishing the National Park Service in 1916." The directive embodied in a November 21, 1959 letter to Director Conrad L. Wirth, and issued "to guide the future progress of Mission 66" and "to strengthen some of its features," was read by Director Wirth at the closing session of the Service's biennial Visitor Services meeting at Williamsburg, Virginia, in early December.

Beginning with an indication of his strong support for the Mission 66 concept of long-range conservation planning for the national parks, Mr. Seaton emphasized "the necessity of accelerating our efforts" in identification of "what might be termed 'missing links' in the national park system. . . . there is every reason to believe . . . that the next five or ten years constitute critical years if we are to add what we need to our heritage of scenic, historic, and cultural treasures for the use and enjoyment of the greater, and largely urbanized population of the future."

Concluding with the six specific points, Secretary Seaton wrote:

"In the years ahead, these are the directions in which I believe the National Park Service should move:

1. Develop a plan whereby a system of reserve areas may be recognized and protected, not necessarily for immediate use, but as a reservoir from which future generations may draw for needed parks and recreation areas.

2. Strive for the establishment of new national parks, monuments, recreation areas, and historic sites necessary to round out and complete the System and to meet the growing need for such areas at the national level.

3. Complete and put into effect studies, recommendations, and programs which have as their purpose the most efficient use of the Service organization, and the best possible training and career development of its personnel.

4. Strengthen efforts to encourage and assist in the establishment and development of adequate systems of State parks, and other public lands recreational opportunities.

5. See that management keeps clearly in view the importance of preserving true wilderness areas within the National Park System for future generations.

6. Keep uppermost in your minds the directive of the Congress when establishing the National Park Service in 1916: 'to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.'"

on Conservation has been created at the University of California to provide conservation leaders with an opportunity to discuss contemporary issues. One or more active conservationists will be selected each year to deliver lectures which will also be available in print. Hundreds of friends and admirers have already contributed $53,000 to the lectureship fund, and contributions are still being sent to the Regents of the University of California, Berkeley, California.

Wilderness and Longanimity

In an editorial entitled "Longanimity" the Autumn 1959 issue of *The Living Wilderness* points out the need to avoid being unduly disturbed at the delay in efforts "to get established an enduring policy and program for wilderness preservation." As an aid in reassuring conservationists, and perhaps helping them to be more longanimous, it reminds its readers of the recent statement by Senate Interior Committee Chairman James E. Murray in an August 31 letter to Howard Zahniser, executive secretary of the Wilderness Society, assuring conservationists that the Wilderness Bill will be "at the top of the Committee's agenda when Congress meets next January."

Student Trainees

Applications for a summer vacation work-study program in park naturalist, ranger, historian or archaeologist positions are now being accepted by the National Park Service. College students who will have completed one academic year by June 30, 1960 may obtain Announcement 205 by writing Park Service, Washington 25, D.C. no later than March 16, 1960.

Newest Historical Park

Following adjournment of the first session, President Eisenhower signed P. L. 86-321 creating the Minute Man National Historical Park, Massachusetts. The park will include sections of the Lexington-Concord Road used by the Minute Men at the outset of the Revolutionary War to rout the British.

In Memoriam

Aubrey Drury, who died on October 23, 1959, devoted many years to the protection of the vanishing redwoods in California. As administrative secretary of the Save-the-Redwoods League, his efforts to raise funds for the purchase of redwood groves often resulted in the award of an equal amount of state funds to make purchases possible. His work is being perpetuated by those with whom he shared his enthusiasm and dedication to the protection of nature.

The Parks and Congress

86th Congress—Second Session

Unless otherwise indicated, the following bills are pending before the Interior and Insular Affairs Committees of the Senate or House and will probably come up for consideration after Congress convenes on January 6, 1960.

Cape Cod National Seashore Park

S. 2636 (Kennedy and Saltonstall) *H. R. 9050* (Keith) To establish a seashore park in Massachusetts. Would provide new method of park establishment and operation. (1) Each residential landowner is given a minimum guarantee of electing either life occupancy or occupancy for twenty-five years; (2) If a town adopts zoning applicable to all of the property in such town which is included in the Park, and such zoning meets standards defined by the Secretary of the Interior consistent with the bill, all homeowners in such town whose property is in the Park are assured the right to continue to own and occupy their homes without interruption or interference so long as the zoning is kept in force; (3) In order to accommodate possible growth and revenue needs of towns with land in the Park, up to 10% of the total private land in each town which falls within the Park may be set aside in the future for new home building on the condition that such property is subjected to acceptable zoning. Earlier bills *H. R. 49* (Boland) and *H. R. 3050* (O'Neill) do not include such zoning provisions. Field hearings were held on December 9 and 10 in Eastham, Massachusetts.

C & O Canal National Historical Park

H. R. 2331 (Foley) To establish a national historical park in Maryland. Includes amendment which states: "Any portion of the lands and interests in lands comprising the [Park] shall be made available upon Federal statutory authorization for public non-park uses when such uses shall have been found, in consideration of the public interest, to have a greater public necessity than the uses authorized by this Act." Pending in the House after being reported favorably by the Interior and Insular Affairs Committee.

Dinosaur National Monument

S. 160 (Allott) and *H. R. 951* (Saylor) To change the monument to a national park. Allott's bill differs from Saylor's in that it contains the controversial wording providing for investigations of "the suitability of reservoir and canal sites." An Interior report on the Allott bill recommends cutting this wording and substituting the C & O Canal bill amendment wording referred to above.

Great Basin National Park

S. 2664 (Bible and Cannon) To establish a national park in the Snake Range, near Ely, Nevada. Senate Interior Committee hearings were held in December in Ely.

Indiana Dunes National Monument

S. 1001 (Douglas) Authorizes acquisition of up to 5000 acres on the southern shore of Lake Michigan between Ogden Dunes and Dunes Acres for the national monument. Hearings were held last May before the Public Lands Subcommittee. Following a June inspection trip, the Subcommittee voted four to three against reporting the bill.

A compromise bill *S. 2699* was introduced three days before the end of the first session by Senators Gruening and Moss. While—like the Douglas bill—authorizing a total of 5000 acres between Ogden Dunes and Dunes Acres, this legislation eliminates from consideration the Midwest steel property east of Ogden Dunes and one-half mile from the east side of the Bethlehem Steel property, (see map on page 2) thus omitting the proposed harbor site.

Oregon Dunes National Seashore

S. 1526 (Neuberger and Morse) and *H. R. 6260* (Porter) To establish a national seashore in the State of Oregon to consist of two units, not to exceed a total of 35,000 acres in the vicinity of the Siuslaw and Umpqua Rivers. Field hearings were held in Reedsport and Eugene, Oregon in early October.

Point Reyes National Seashore

S. 2428 (Engle) and *H. R. 8358* (Miller) To set aside not over 35,000 acres as a national seashore in Marin County, California.

Seashore Areas

S. 2010 (Neuberger) and *H. R. 7407* (Saylor) Would authorize the Secretary of Interior to select three seashore or lakeshore areas of national significance. Acreage not to exceed 100,000. Provides $15,000,000.

S. 2460 (Murray et al.) and H. R. 8445 (Dingell) To establish ten specific national shoreline recreation areas and for other purposes. (See October 1959 *Parks and Congress.*)

Wilderness Bill

S. 1123 (Humphrey et al.) and *H. R. 1960* (Saylor) Establishes wilderness preservation as a policy of Congress and gives the general public a voice in saying what shall be done with wilderness areas. Extensive hearings have been held both in Washington and the field. Has received favorable reports from Departments of Interior and Agriculture and the Bureau of the Budget—although each proposes some amendments.

Your NPA at Work

1960 SCP PROGRAM

The National Parks Association announces that the Student Conservation Program (SCP) will take place for its fourth summer in both Grand Teton and Olympic National Parks. SCP aims to assist the National Park Service in its work, while at the same time giving each of the 49 carefully selected high school, college and graduate students a chance to broaden his conservation education through actual field experience. Although no salary can be offered, room and board is provided for the students.

From June 30 to August 27 in Grand Teton National Park fourteen college and graduate young men and women will either assist the Park Biologist or serve in the Protective, Engineering and Interpretive Divisions of the park. The students work four days a week, and on the fifth day go on a field trip with one of the seven federal, state and local conservation organizations in the Jackson Hole area. A lecture series will be offered whereby leading conservationists living in the area will share their knowledge with the students. These students will be quartered at the 95 Ranch near Park Headquarters. Their supervisors for the third consecutive summer will be Mr. and Mrs. Albert Nelson, owners of the ranch.

During the same period, three college graduate young men and women with majors in botany, zoology or related subjects, will work as assistants to the staff at the Jackson Hole Biological Research Station on field research problems, in botany, limnology, animal behavior, or alpine, invertebrate or range ecology. Lodging and facilities for cooking will be provided at the Research Station, which is administered by the University of Wyoming under cooperative agreement with the New York Zoological Society. The University of Wyoming has offered to all SCP students in Grand Teton National Park the opportunity of registering for college credit through the Biological Research Station.

In Olympic National Park from June 27 to July 21, and August 1 to August 25 two groups of fifteen high school age boys, age 15 or older, will work and live in the park. They will construct trails and rehabilitate over-used park areas, build shelters and camping facilities for park visitors, and the like. Campfire talks by leading personnel in the conservation field will offer opportunity for discussions on outdoor conservation subjects. Mr. and Mrs. John Dolstad will be the camp and job supervisors for their third consecutive summer. The Dolstads have had considerable experience with youth groups, teaching first aid, mountaineering, and wildlife research.

Providing adequate funds can be raised in time, the Student Conservation Program hopes to expand to include another area. It costs about $60 per week to house, feed and train a student. Thus an additional high school student could be added for about $200 (for their three and one-half week program) and an additional college student for about $500 if this proposed expansion could take place. The program is endorsed and financially supported by over forty foundations, organizations, and garden clubs throughout the country and over 50 individuals. Further information and application forms may be had by writing to the SCP, 1300 New Hampshire Avenue, N. W., Washington 6, D. C.

GREAT BASIN HEARINGS

At the Senate Interior Committee Great Basin National Park hearings in Ely, Nevada on December 7, 1959, Association member Darwin Lambert of Ely, read a statement by Executive Secretary Anthony Wayne Smith—submitted on invitation of Senator Alan Bible of Nevada—indicating that "the Association is of the opinion that the establishment of such a park would be desirable."

Mr. Smith's statement, based in part on conclusions reached through consultations with some of the distinguished biologists and social scientists among its board and general membership, noted the significance of this proposal as involving, "a transfer of lands from the present national forest . . . to a park" and "the elimination of timber harvests, hunting and mining." Commenting on each of these changes in order, the statement indicated the Association's belief that the area proposed as a park is one of the limited few in which the protection of scenery outweighs the importance of timber production.

"With respect to hunting," the statement continued, "it is the position of the Association that a reasonable number of sizable regions in the country should be reserved for a relationship between men and animals based on the friendly observations and association which characterize the national park situation."

Regarding mining in the proposed park region, the Association stated its belief that America "has not yet reached the point with respect to its mineral reserves where all our scenic and outdoor recreational opportunities need to be sacrificed to extraction."

While mentioning the great economic advantage to the general region which establishment of the new park would bring, the Association laid primary emphasis on the importance of the proposed park as a type of landscape and ecology new to the national park system and a region which can contribute greatly to meeting the ever-increasing demand for high quality outdoor recreational opportunities.

In a plea for quick action, Mr. Smith's statement concluded: "There is need for a decision now on protecting this region; if there is too much delay, exploitation for timber production, mining, other commercial uses, and road and facility construction may destroy recreational and scenic resources which can never be replaced."

YOSEMITE NPA GROUP

A five-man NPA Program Group for Yosemite National Park, California, was established in November with Richard Pitman, 1933 107th Avenue, Oakland, California, as chairman succeeding former chairman Charlotte Mauk of Berkeley. Committee members include John G. Hatfield and Eliott Sawyer of Berkeley; Jules M. Eichorn, Atherton; and Frederic R. Gunsky, Mill Valley.

NPA PROGRAM GROUP MANUAL

A thirteen-page Manual for NPA Program groups is being sent to all seven Program Group Chairmen and to the members of their groups. Extra copies of the manual are available to other interested Association members —particularly those interested in forming such a group in their locality.

The Editor's

Bookshelf

AMERICA'S WONDERLANDS, The Scenic National Parks and Monuments of the United States, prepared by the National Geographic Book Service. The National Geographic Society, Washington, D.C., 1959. 512 pp., 466 photographs (390 in color). $11.50.

Because of its very beauty, this excellent compilation of *National Geographic Magazine* color photographs will entice an ever greater number of people to visit the parks, perhaps creating more "population" problems for the National Park Service than any book published since the Service was established in 1916. This cannot be construed as a criticism of the book, but is merely a comment on the problem inherent in preparation of such attractive materials about the parks. When we make an ever-greater number of Americans aware of the natural heritage represented in these matchless areas, we are automatically encouraging more of them to enter the parks—to tramp on the roots of the Sequoia and to ride the roads which now cover glacial polish. We must thus be most careful to incorporate ideals at the same time that we give fleeting impressions of beauty and wonder.

In this respect, the book's photographs and captions fall short in some places. For they fail to make a clear-cut distinction between man-made firefalls and natural waterfalls and between speedboat resort atmosphere and activities more appropriate in national parks. But the average reader surveying the 512 colorful pages will probably consider this fault relatively minor.

After browsing through the abundant photographs and captions, the text seems almost an added attraction. The treatment given each park varies from the too-brief summary of Bryce Canyon and a quick trip up Longs Peak in Rocky Mountain to a relatively complete coverage of Grand Canyon and Yellowstone. Director Wirth's light introduction, mixing a little preservation philosophy with an overall impression of the enjoyment people get from parks, sets a pattern for the much shorter chapters that follow.

Park descriptions by such widely-known naturalists and authors as Frank and John Craighead, Louis Schellbach, Lewis F. Clark, Jack Breed, Don Watson, John M. Kauffmann, Daniel B. Beard, Bradford Washburn, Adolph Murie and Robert F. Griggs, and more than a dozen Geographic staff members give first-person impressions of the authors' trips through the areas—not comprehensive treatments by any means, but enough to whet your appetite for seeing the marvels yourself. Rudolf Flesch would rate these statements high in human interest, although some dedicated national park conservationists will be somewhat disappointed that with all its attractive format it does not embody a bit more philosophy of preservation and wilderness in its text and photo captions.

Two series of paintings by Eugene Kingman, tracing the development of Yosemite Valley, California, and the creation of Crater Lake, Oregon, are particularly valuable to the reader's understanding of national park geology. A variety of maps and diagrams and a fine portfolio of paintings on Everglades Wildlife by Walter A. Weber put the finishing touches on a striking volume.

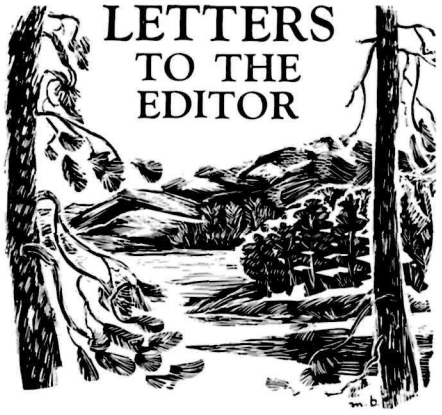
The book is available only from the National Geographic Society, Washington, D.C. For an armchair impression of the magnificence of your national parks —with no problems mentioned—this is the book.—*B.M.K.*

A Quick Glance at . . .

COUNTRY MATTERS, an anthology by Barbara Webster. J. B. Lippincott Co., Philadelphia, 1959. 305 pp. Illustrated. $5.00.—Authors range from St. Francis of Assisi to Thomas Wolfe, from Turgenev and Proust to Edwin Way Teale and Sigurd Olson. The result is a potpourri of observations of nature that is poetic as well as practical, which, after all, is the essence of all "country matters."

GEOLOGY OF THE MOUNT KATMAI AREA, ALASKA, Geological Survey Bulletin 1058-G.—A result of studies made in 1954 to evaluate the geological, biological, botanical, and archaeological features of the monument. $1.00 from Government Printing Office, Wash., D.C.

VOLCANOES OF HAWAII NATIONAL PARK, by Gordon A. MacDonald and Douglass H. Hubbard. Special May 1951 issue of *Hawaii Nature Notes*, published by Hawaii Natural History Association. 43 pp. 20 photos plus maps, charts, diagrams. 50¢.—Good background for understanding current eruption.



Sensitivity and Perception

My sincere congratulations to Philip Ritterbush on the sensitivity and depth of perception contained in his article "The Interpretive Enterprise" in the November issue of NATIONAL PARKS MAGAZINE. He has placed his mental finger on the true problem that confronts all of us who would like to save the wilderness and its flora and fauna when he says "It is futile to maintain a system of parks if the people do not understand what they represent." Let us hope that our people can be educated in time to preserve at least the remnants of their wilderness heritage.

ELI RAPAICH
Lewiston, Idaho

Pays to Protest

I herewith renew my membership in the National Parks Association for the privilege of protesting your editorial policy against older people like myself. We being more affluent than some of the younger people pay a larger proportion of the taxes which support the national parks. However, being older, we cannot hike 20 miles through the virgin forests to see the beautiful sights set aside as national parks like young vigorous people, who, incidentally, pay either no taxes or very low ones. We must ride in our cars over roads cut through these forests. But you deplore roads.

I continue to support the Association because only as a member have I any right to protest.

JOSEPH L. GILLSON, President-Elect
American Institute of Mining, Metallurgical and Petroleum Engineers, Inc.
Wilmington, Delaware

• We appreciate your renewing your membership even though you disagree with some of our policies. I do not think that there is necessarily any very great difference between us. We believe fundamentally that good park roads, as distinguished from high-speed highways, should be built in sufficient number to permit people to get into the main points from which access can be had to the parks.

It is true that we believe that one of the main purposes of the establishment of the parks was to preserve a considerable amount of wilderness country in its natural condition. It is not always easy to reconcile the problem of protection on the one hand and accessibility on the other; but we believe that with good will and sufficient recognition of the value of wild country, such a reconciliation is nearly always possible.

—Anthony Wayne Smith
Executive Secretary

Yellowstone Boating

It is with pleasure that I read the editorial "Wilderness on Yellowstone Lake" by Olaus J. Murie in the December issue of NATIONAL PARKS MAGAZINE. I am wholly in agreement with the Yellowstone Park administrators in keeping power boats out of the three southern arms of Yellowstone Lake. They should be commended for this, and I trust they will have 100 per cent public support.

LEO M. WALTHER
Hayward, California

Kennesaw Mountain Park

Had my father lived to learn of the proposed encroachment on Kennesaw Mountain Park by the powers in defense (and our local hysterical Chamber of Commerce), he would have welcomed the chance to join you in fighting it.

JEAN COLE ANDERSON
Marietta, Georgia

Defends Park Fees

I wish to take exception to the letters published in the October 1959 issue concerning entrance fees to national parks. During the vacation season California State Parks are exceedingly crowded with people perfectly willing to pay a fee of $1.00 per night. These are not rich people but common, ordinary people with common, ordinary incomes paying $15.00 for two weeks camping. For all that we obtain in a national park, I would see nothing wrong with a fee of $1.00 per night for camping and a minimum entrance fee of $10.00.

This is 1959, not 1929. Most of the young people today who visit the parks seem to be amply endowed with automobiles and money enough to operate them. They should have no difficulty obtaining sufficient funds for a camping fee.

This whole problem comes down to the fact that people will not take care of something that is obtained for nothing. If people are required to pay a significant sum for the privilege of visiting a national park, a greater portion of them will appreciate their parks.

WESTON L. WEBBER
Santa Cruz, California

Membership Forum

The NATIONAL PARKS MAGAZINE is overlooking a large resource of ideas and experience in the membership. A regular half-page feature of membership opinions on a single problem such as methods of conservation education would be welcomed by all concerned with our parks' problems.

MARCIA LIGHTBODY
Berkeley, California

• What do other readers think?
—Editor.

DUNES AND RESOLUTIONS

(*Continued from page 2*)

In a series of midsummer articles in the *St. Louis Post Dispatch*, the paper's national correspondent Sam B. Armstrong reported at length on what he terms "Big Land Speculation" by "Indiana G.O.P. Politicians" in the Dunes region. A sizable part of the 700-acres of land involved are located near the proposed harbor site in the Burns Ditch area of the Dunes. Options on the acreage have been acquired by the newly-formed St. Lawrence Seaway Corporation, president of which is former Senator William E. Jenner. Jenner, who once termed the Seaway project a threat to private enterprise, has now in Armstrong's words found it "an opportunity for personal enterprise."

Representative John F. Shawley of Michigan City contends that a harbor surrounded by steel company property would not be a public harbor, but rather a private seaport paid for by taxpayers for the benefit of steel companies. Widespread reports indicate that harbor promoters hope to get $35 million in federal funds for construction of the port.

Another prominent former politician who once called the proposed Seaway "a socialistic ditch" is ex-Secretary of the Treasury George Humphrey, now Chairman of the Board of National Steel. Having secured huge Labrador ore deposits, National (through its Midwest subsidiary) is now putting a mill on the sand dunes to use ore imported via the Seaway.

In a report submitted following their June 13–14 visit to the Indiana Dunes area, Senate Interior Committee members Ernest Gruening and Frank E. Moss concluded:

> There is abundant room in the area for both industry and recreational facilities. There will be both if the citizens of Indiana plan for them wisely, resisting the excited exhortations of real estate boomers and speculators.

* * * * * *

BUT, as we have noted earlier, planning is not being done "wisely." In view of these developments, much of the Indiana Dunes *do* appear to be doomed. And in their place is rising the Steel National Park which Herb Graffis described so graphically in his *Chicago Sun Times* editorial:

> . . . formerly known as the Sand Dunes. The giant slag piles are attractive slides for kiddies with asbestos pants. Tourists from the cities revel in the sight of the lovely stacks, roofs and docks that have replaced those big old sand piles, windswept trees and sparkling shores that formerly defiled this area. Please observe the signs—"Do Not Feed the Steel Workers."

Why is this happening? Because conservationists can't always win? Because steel is more important than parks?

No!—simply because of public apathy. Because some conservationists did not follow able leadership in their efforts to salvage the 5,000-acre remnant of scenic shoreline along Indiana's Lake Michigan shore. And because the number of Indiana's citizens who will speak out strongly for natural areas is still far too small.

As we enter this new year, we wonder how many other seashore areas will be lost to industrial development. Let's hope this Indiana Dunes matter has taught us something. Let's turn this defeat into success in saving other seashore areas.

* * *

"This newspaper clipping on a national park matter can't be too important. Certainly NPA already knows about it." . . .

"I disagree with that statement on national parks, but what good will my letter to the editor do?"

This type of "Charlie-will-do-it" thinking occasionally results in the National Parks Association's missing a chance to help in specific park matters. More importantly we sometimes lack insight into what local editors are saying and readers are reading in all parts of America about controversial park matters.

So how about adding two items to your list of New Year's resolutions:

(1) *I will not pass up the opportunity to keep my fellow Association members informed by forwarding news and editorial clippings on park matters to the national office;*

(2) *I will write four letters to the editors of newspapers and magazines I read during 1960 expressing my* personal *views for or against proposals affecting natural areas, particularly in my state.*

—B.M.K.

John Nelson Studios

Midwest Steel lays the foundation for its new mill in the dunes area along Indiana's Lake Michigan shore. (Burns Ditch in foreground.)

Our special thanks go to Association members Jean and Jerry Stolp of Kailua, Hawaii who supplied us with the group of slides from which Mr. Rackle's front cover photograph was selected. In addition, they airmailed us copies of the *Honolulu Star-Bulletin's* excellent coverage of the eruption activity during the volcano's first two hectic weeks. Such aid is much appreciated by the editorial staff of NATIONAL PARKS MAGAZINE. We hope others may take a hint from this. It's your magazine!—*Editor.*

BACK COVER: This November 18, 1959 photograph from Byron's Ledge lookout shows plumes of molten rock rising hundreds of feet into the air from Hawaii's Kilauea Iki Crater.—*Honolulu Star-Bulletin* photo by Warren Roll.