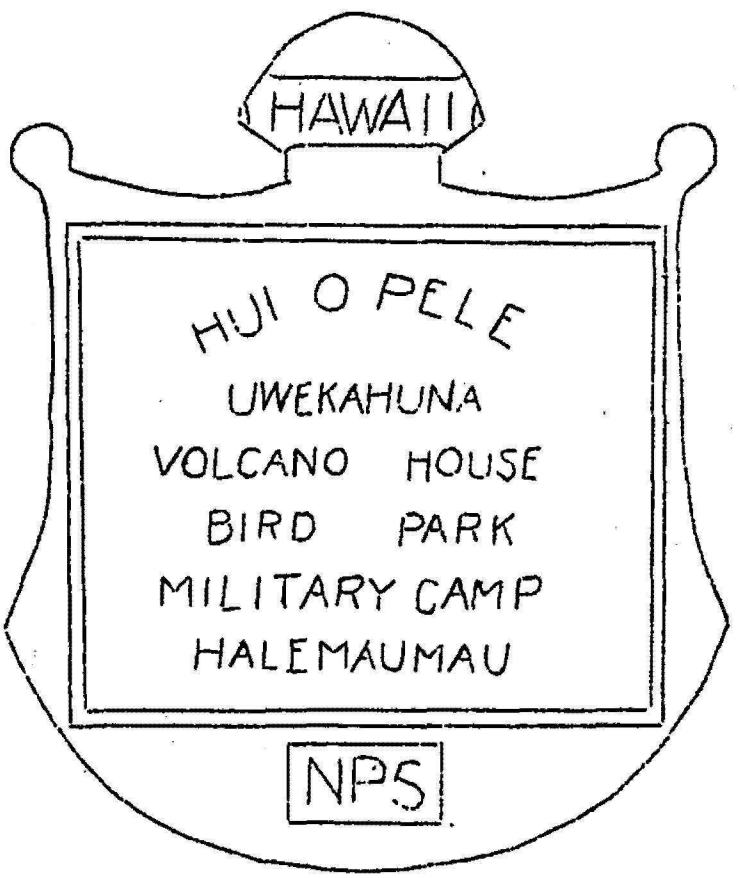
NATURE NOTES

HAWAII NATIONAL PARK



JULY 1931

Vol. I. No. 2.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

HAWAII NATIONAL PARK
NATURE NOTES

Volume I July 1931 Number 2

Nature Notes from Hawaii National Park is a monthly pamphlet edited by the Park Naturalist and distributed to those interested in the natural history of the park. Free copies can be obtained through the office of the Park Superintendent, Hawaii National Park, Hawaii. Anyone desiring to use articles appearing in Nature Notes may do so. Please give credit to the pamphlet and author.

E. P. Leavitt, Superintendent John E. Doerr, Jr., Park Naturalist

TABLE OF CONTENTS

The Cover .. by the Park Naturalist ..... Page 10

Hui O Pele Hawaii ...by the Park Naturalist ..... Page 10

Mythology of the Volcanoes .. by Ranger Brumaghim .. Page 11

Nature Study ... by the Park Naturalist ..... Page 13

Steam Clouds ... by the Park Naturalist ..... Page 15

THE COVER

Those who have visited Hawaii National Park will recognize on the cover of this issue of Nature Notes, the outline of the shield-shaped plaques which have been placed at lookouts, shelters, and other locations in the Park. These plaques - commonly referred to as "Hui O Pele Shields" because the centers of the shields display facsimiles of Hui O Pele Hawaii certificates - are made of wood faced with glass. Under the glass covering and around the central unit, (the Hui O Pele certificate) geographical, historical, scientific, statistical, and regulatory information is arranged. The type of information of each shield is to a certain extent determined by the place at which the plaque is located. Anyone wishing to obtain information while visiting a lookout or shelter may do so by referring to the shield at the particular location.

The names on the cover indicate the locations of some of the shields. Shields are also located at Pauahi Crater, Public Auto Camp Ground, and Pali Hilina.

by the Park Naturalist

HUI O PELE HAWAII

"---------- having visited the Volcano Kilauea, in Hawaii National Park on the Island of Hawaii, Hawaiian Islands, Territory of the United States of America, and having made offering acceptable to Pele, Goddess of Volcanoes, at her fiery palace Halemaumau, which is called House of Everlasting Fire, is entitled to full active life membership in the Hui O Pele Hawaii, and is hereby granted all rights, privileges and benefits appertaining thereto. In testimony thereof we have caused the seal of our Realm to be affixed."

The above is part of the wording on the certificate of membership in the Hui O Pele Hawaii, which means, Society of Pele, Pele being the ancient Hawaiian Goddess of Volcanoes whose dwelling place is in Halemaumau, the fire-pit of Kilauea Volcano.

One legend tells us that the smouldering fire of the volcano is the head of Pele's youngest sister, Kaohelo, whose body was scattered on the slopes of Kilauea and other volcanoes in the Islands. Kaohelo's body may be found today in these regions as the ohelo berry. These berries were one of the propitiatory offerings acceptable to Pele. The fruit served as food for the Goddess, its cool juice relieved the parched condition of Pele's fiery throat.*

In 1824 Queen Kapiolani defied the Goddess Pele by refusing to make the offering of ohelo berries while standing at the very edge of the boiling, raging, molten lava in the throat of Halemaumau. Instead of throwing the berries into the fiery furnace of the volcano, Queen Kapiolani ate them. Her demonstration of courage within the dwelling-

*Reference - Kahele, Jos. K. Story of the Ohelo. Memoirs of the Bernice Pauahi Bishop Museum of Polynesian Ethnology and Natural History, vol. V - Part III, pp 576-582. Bishop Museum Press, 1919.

place of the ancient Goddess, led to the deliverance of her people from dread and superstition. Today the ohelo berries may be eaten with no fear of the "kapu", (sacred restrictions).

Hui O Pele Hawaii has been established to perpetuate the memory of the ancient homage to the Hawaiian Goddess of Volcanoes. The society is the result of a suggestion made by Charles C. Moore of San Francisco, in an address before the Honolulu Ad Club in May 1922. Mr. Moore, President of the Pan-Pacific Exposition in 1915, not only suggested the founding of the society but backed up his suggestion with a contribution of one hundred dollars toward establishing Hui O Pele Hawaii.

Shortly after Mr. Moore's address the Honolulu Ad Club appointed a committee to make plans for the society. Mr. Harold Yost, at that time Assistant Secretary of the Hawaii Tourist Bureau, served as chairman of the committee. Ex-Governor Wallace R. Farrington, the late Lorrin A. Thurston, and L. W. de Vis-Norton were among those who took an active interest in organizing the "Hui". The first certificate was issued in October 1923 to Charles C. Moore of San Francisco, the originator of the "Hui" and its first honorary member. The list of other honorary members includes, Ex-Governor Wallace R. Farrington, Honolulu; the late Lorrin A. Thurston; the late Stephen T. Mather, former Director of the National Park Service; Gilbert Grosvenor, National Geographic Society, Washington, D. C.; Dr. T. A. Jagger, Volcano Observatory, Hawaii National Park; and Thomas Boles, former Superintendent, Hawaii National Park.

Today there are over 12,000 members representing every state and territory of the United States, as well as many other countries in the world. Just recently a visitor from Bolivia, South America, became a member of Hui O Pele Hawaii. The life membership fee of one dollar gives to each member an attractive certificate and recognition pin.

Aside from the nominal cost of operation, the funds of the "Hui" are being used to equip the museum and lecture hall at Uwekahuna Bluff, and build numerous shelters and lookouts in the Park. The members of the Hui O Pele Hawaii Committee whose untiring efforts and active interest in the society are contributing much to the development of Hawaii National Park are, L. W. de Vis-Norton, Honolulu, Chairman; Henry Bredhoff, Honolulu, Treasurer, and E. P. Leavitt, Supt. Hawaii National Park, who serves as Kuhina Nui, (Great Officer).

by the Park Naturalist

MYTHOLOGY OF THE VOLCANOES
(Continued from the June issue of Nature Notes)

Of the fourteen members of the Volcano Family, the Goddess Pele was the most exacting in her demands for sacrificial offerings. When the people from the seashore came to Kilauea to pay homage to the Hawaiian Goddess, they brought fish as an offering to her. If the supply of fish was too small to satisfy Pele's enormous appetite, she would go to the seashore as fire and lava. The fire would kill the fish in the ocean and the lava would fill up the shallow places, thus destroying the fishing places.

When the members of the Volcano Family - representing fire, thunder, lightning, clouds and destruction - were seen outside their usual dwelling places, it was an indication that the Gods and Goddesses were angry because they never left their houses except to receive offerings or execute vengeance.

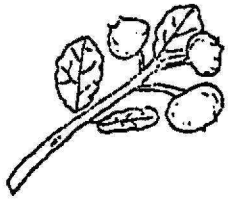
Hogs were also among the offerings acceptable to the Gods. "Na lau, na lau, na lau, na puaa i kiola ia no lakou", meaning "four hundred, four hundred, and four hundred of hogs were thrown to them", is the Hawaiian method of saying that hundreds and hundreds of hogs were given as offering. Both live and cooked animals were thrown into the crater during periods of activity. When making offerings the priests would descend into the depths of the volcanoes; approaching the most fiery parts of the craters, they would cast the gifts upon the molten lava, saying, "Here Pele, is food", specifying the nature of the offerings. After making all the offerings the priests would return to the people standing on the rim of the crater and all join in prayer.

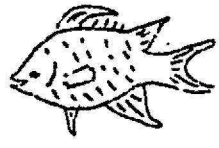
Locks of human hair were also offered to Pele by those who passed through the region of Kilauea. The stories tell us that during the destructive eruptions human beings were sacrificed. No one knows how many human sacrifices were made to Pele. Even before the arrival of the first Christian missionaries on April 4, 1820, Kamehameha the Great had abolished the practice of making human sacrifices to the volcano. Today one may occasionally see small offerings being made to the members of the ancient Hawaiian Volcano Family.

"pau"
(meaning the end)

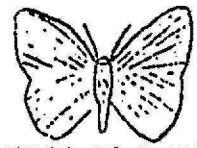
By Ranger E. Brumaghim

(The story of the Mythology of the Volcanoes is from notes given to Ranger E. Brumaghim by grandparents and others. These notes date back to 1788)





NATURE STUDY



Hawaii National Park serves as a school room! During July the University of Hawaii offered for the first time a course in Nature Study in Hawaii National Park. Mr. Theodore C. Zschokke, Extension Forester from the University, was in charge of the group. The group was composed of teachers from various schools in the Islands and students from the University of Hawaii. Assisting Mr. Zschokke was Park Naturalist, John E. Doerr, Jr. and Ranger E. Brumaghim. The Summer Camp, located on the east rim of Kilauea Crater, offered good living and working accommodations, being so situated that a friendly camp atmosphere prevailed.

Every phase of natural science that is possible to observe in the region was included in the work. The group concentrated the major portion of its attention on botanical and geological sciences. The study of the origin and distribution of the Hawaiian flora was particularly interesting to the group.

The fact that the Hawaiian Islands have been formed by volcanic activity during relatively recent Geologic time, and that they are almost 2000 miles from any other land, presents the interesting problem of the origin of the Hawaiian flora. There is no proof that the Islands have ever been less distant from, or a part of any other land mass, hence we must conclude that the great variety of vegetation, a large portion of which is endemic, on the Islands is the result of transportation, cross-pollination, and geographic isolation, together with the morphological and physiological changes resulting from variations in climatic conditions and marked differences in elevations above sea level. The Park is particularly well situated for studying plant ecology. A portion of the Park is in the region of abundant rainfall while in other parts desert conditions prevail. Within the area one may go from sea level to an elevation of 13,675 feet.

Shortly after volcanic eruptions built these islands above sea level, nature's methods of transportation such as wind, ocean currents, and birds began to bring species of plants to the shores of Hawaii. Needless to say, these adventuring species were of the type that adapt themselves to such methods of transportation with the exception of those which may have come attached to driftwood. Man has also been an important agent of transportation. The founders of the Hawaiian race, coming to these islands in their double canoes, no doubt brought many plants with them. Many varieties of plants have been introduced since Captain Cook discovered the Islands in 1778.

Through cross-pollination of the early endemic plants, as well as among the introduced ones, many new species have been produced. The great distances to other land areas have made it difficult for these new species to migrate beyond the Islands. The variations of from 30 to 180 inches of annual rainfall within a distance of less than twenty miles, have played an important part in the changes that plants have undergone in adapting themselves to environment. Variations of temperature from the tropical warmth of coastal regions to the

freezing cold on the tops of the highest mountains have likewise been an important influence in the development of new species.

The nature study class had an excellent opportunity to study and collect numerous plant specimens in the Park. Some members of the class identified and mounted over 100 plants. Most of the individual collections made will be used as laboratory material in the schools in which the members of the class teach. The Park received a mounted specimen of each plant collected. This collection makes a valuable addition to the museum exhibits and reference library.

Of particular interest and value to the group was the lecture given by Dr. H. A. Powers of the United States Geological Survey, on the origin of the soils of the Island of Hawaii. Dr. Powers pointed out the relationship between the rate of soil formation and amount of rainfall in regions of various types of volcanic materials. Four types of volcanic materials were considered, namely; lava having a pahoehoe (smooth) surface, lava having an aa (clinker) surface, lithic ash (broken rock fragments) and glassy ash (formed by the rapid solidification of molten lava thrown into the air). Summarizing his subject, Dr. Powers stated that from the standpoint of origin, the soils of Hawaii are for the most part of two types - volcanic and humic. In regions of abundant rainfall the aa lava breaks up more rapidly into soil because of the porous nature of the surface and the ease with which oxidation takes place. Frequently the surface of an aa flow is altered by oxidation before the flow has completely solidified. The clinker appearance of aa lava is a surface phenomenon. Because of the glassy surface of the pahoehoe flows, soil does not form readily from this type of lava even though rainfall is abundant. Lithic ash breaks up into soil very slowly. Glassy ash decomposes more readily than any other type of volcanic material. Pumice and "Pele's Hair" are examples of glassy ash.

The extensive areas of sugar cane are in regions where glassy ash has fallen. The best soils are found in regions of abundant rainfall where decomposed glassy ash mantles an aa surface. The porous surface of the aa lava serves as an excellent sub-surface reservoir for water which can be obtained by the plant roots. Decomposed glassy ash mantling pahoehoe lava frequently results in a boggy soil because the glassy, impervious character of such lava can not be penetrated by water.

Hawaii National Park being an area of active, dormant and extinct volcanoes, the class room and field studies in geology were confined to the subjects of volcanoes, volcanic products and associated phenomena. Thes subjects were approached through a study of the origin of the earth, the probable nature of the earth's interior, structural trends of the Pacific Ocean region, the formation and classification of the rocks in the area, the weathering of volcanic rocks, and the origin of the Hawaiian Islands. Each member of the class made a collection of rocks in the Park. Some of the students were particularly interested in collecting samples of olivine. Olivine is abundant in several of the flows as well as in the debris thrown out during the explosive eruption in May 1924.

During the month the class visited practically every section of the Park. The following areas proved particularly rich in natural

history material; Bird Park, Kilauea Iki, Mauna Iki, Napau Crater, Kilauea Crater, Kau Desert, Fern Jungle, and Thurston Lava Tube.

At the end of the Napau Crater Trail the group was treated to a "luau", prepared, served and eaten in true Hawaiian style. Ranger E. Brumaghim acting as official chef, spared no effort to make the feast a great success; the quantities of food consumed indicate his ability to prepare a Hawaiian meal and the three lusty cheers given him after the feast expressed the group's appreciation of his efforts.

The month's study closed officially with a trip to the top of Mauna Loa, a trip participated in by Mr. Zschokke and Miss van Loben Sels, with Alec Lancaster acting as guide.

The month was not entirely one of lectures, field trips, mounting specimens and study. "PLEN-N-N-N-N-N-N-N-N-TY FUN" (The longer you hold the "N" the greater the quantity of fun; space does not permit carrying the "N" to sufficient lengths). The nicknames acquired by members of the class are in themselves sufficient evidence that the camp was a happy one. Loads were always lighter and trails always shorter because of some fully appreciated joke and "yarn". The one and only "Yarn Spinner" has promised to spin one or two of his choice ones for a future issue of Nature Notes.

The following people attended the Nature Study class. Edwin K. Lindsey, Mrs. E.E.E.K. Luke, Walter E. Short, of Kohala; Mrs. T. L. Chong, Mrs. S. L. Kong, Miss N. Y. Chong, Miss E. Rickard, Mrs. Margaret F. Brown, of Hilo; Louis M. Worth of Honolulu; and Miss Elizabeth van Loben Sels of Verdon, California.

Those who had the priveledge of working with Mr. Zschokke during the month, sincerely appreciate his untiring efforts and ability to successfully conduct nature study classes. The members of the class, as well as the park staff, are unanimous in the opinion that the month was enjoyable and profitable to all concerned.

by the Park Naturalist

STEAM CLOUDS

Between the hours of 8 AM and 5 PM July 21, 1931, the rain-gage at the Volcano Observatory, on the north rim of Kilauea, recorded a fall of 6.12 inches of rain.* Using this figure the estimate shows that during the nine hour period 437,163,307 gallons - 1,821,513 tons - of water fell in the crater of Kilauea.

Those who were fortunate enough to be in the vicinity of Kilauea late in the afternoon, had the opportunity of seeing a most interesting display of steam rising from Halemaumau and the crater floor. From Uwekahuna Bluff one could see a great column of steam, 3000 feet in diameter, swirling and rolling up from the depths of the fire pit, Halemaumau. Hundreds of pools of water were visible on the floor of Kilauea and equally as many steaming vents sending out soft, white clouds of water vapor. Darkness only added to the phantasy of steam rising from this slumbering volcano.

by the Park Naturalist

* Hawaiian Volcano Observatory, Hawaii National Park.