

Native Planters in Old Hawaii Their Life, Lore, and Environment

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Undoubtedly, when a young *mo'i* succeeded his father, and particularly when the same *kalai-moku* remained in office, loyal chiefs and their families would retain the rights they already possessed, so that with the continuation of a ruling dynasty it is probable that the titular rights of most of the *ali'i* families were relatively stable, except in cases of disloyalty, alienation of affections of the supreme chief (Fornander, 1880, Vol. 2, pp. 170-171), intrigue, or incompetence. There are many large holdings, for example, on the island of Hawaii which were traditional family seats for generations. Obviously, however, the death of a *mo'i* must have been a time of extreme unrest and tension among the *ali'i* and the people under them, and a crucial moment for the young *mo'i* and his *kalai-moku*, a time and event pregnant with danger of war. It followed immediately upon the period of orgiastic abandonment of discipline and the natural order of living that greeted the decease and prevailed during the funerary obsequies of a *mo'i*.

ISLAND DIVISIONS OR CHIEFDOMS

The major division of the island (*moku*) into separate chiefdoms (later termed districts), and the designations given them and their subdivisions, are both regarded as having taken place in a very ancient period of Hawaiian habitation. According to legendary lore this is attributed to Umi-a-Liloa (Kamakau, 1961, p. 19), the celebrated warrior son of the High Chief (*ali'i nui kapu*, or sacred chief) Liloa. Umi it was who is said to have first made a complete conquest of the island of Hawaii bringing all lesser chiefs under his dominion, and through his procreative powers becoming almost literally "the ancestor of all the people." It was Umi's son Keawe-nui-a-Umi to whom is attributed the origin of the custom of redistribution of lands, recorded by Fornander. Kamakau details as the most notable of the great Umi's political decrees the separation of the people into several social strata (*papa*), from the chiefly class (*papa ali'i*), warriors (*koa*), those skilled in the affairs of the land (*po'e akamai o ka aina*), through various other classes of skilled artisans (*po'e pale ike*), each thereafter applying himself to his own task. "So it was with the governors and the head men who watched over the *'okana*, *ahupua'a* and *'ili aina* land sections." Umi's renown, which extended to the other islands even as far as Kauai, was such that presumably his system, although originating on Hawaii, was copied and spread throughout the archipelago. (This probably accounts for a certain diversity in terms, discussed below.)

It is apparent from the above quotation that in Umi's day the island of Hawaii was divided first into large districts called *'okana*. *'Okana* is derived from the verb *'oki*, "to cut," with the participial suffix *ana*. Hence the island itself was "cut" into sections, as it had been "cut off" or detached in its formation, to become a *moku*. David Malo (1903, p. 37), writing of land divisions on his native Hawaii, uses the term *moku-o-loko*, or interior (*loko*)

division, as a local term for the major division or district. In later colloquial use it seems that the descriptive part of the term *o loko* has been dropped off, resulting in considerable confusion over the reference to both "island" and "island division" as *moku*, on Hawaii.

Further confusion in terms arises from the fact that Malo equates *moku-o-loko* with *'apana* and not with *'okana*. This major division (*'apana* meaning a piece), such "as Kona on Hawaii or Hana on Maui," when further subdivided into sections may, he says, be termed either *'okana* or *kalana*. This contradicts both the Kamakau list of terms quoted above and the text used by Andrews and Parker (1922) in defining the word *'okana*, as follows: "O Kona a o Kohala a me Hamakua, akolu *'okana*," the three *'okana* or districts of Hawaii. The Andrews-Parker dictionary also states that *kalana* is a synonym for *'okana*, "in some places," probably meaning that in some places where *'okana* is not used for the large subdivisions of the island, the term *kalana* is. But Malo's interpretation of *'okana* is followed by Alexander (1891, p. 105): "On Maui there are some subdistricts [note *subdistricts*] called *okanas*, of which there were five in Hana district, while Lahaina is termed a *kalana*." On Hawaii, according to Lyons (1875, p. 119), a surveyor, Ola'a and Waimea, both of them inland land sections of considerable area but yet not comparable to *'okana* such as Kohala or Kona, were termed *kalana*. In an article in the newspaper *Ku'oko'a* of April 28, 1922, translated by Mrs. Pukui, the subdistricts Kalamaula and Pala'au on Molokai are referred to as *kalana*.

The word *kala* means "to loosen" or "to release," and with the nominal suffix *na* added, the term would mean a thing loosened or released. It may be that the land divisions so termed were "released" from the *'okana* of which they had been a part at the time of the original sectioning of the islands by the *mo'i* and then given as separate domains to *ali'i* of first rank, thereafter remaining autonomous heritages.

It seems clear from the above that *kalana* is not the equivalent of *'okana* in general usage but in particular localities refers to large subsections of *'okana*. It is an exceptional term for major sections. Lyons (1875, p. 119) specifically states that the *kalana* of Lahaina on Maui, and Ola'a and Waimea on Hawaii belonged to no *moku* (= *'okana* or *moku-o-loko*).

Occasionally we run across the term *'apana*. This could not have been a general term, for it is rarely met with. In Pukui and Elbert (1957) these meanings are given for *'apana*: land division, lot, district.

In the story of Laiekawai (Beckwith, 1919), whose locale was Oahu, we read in Chapter I: "This tale was told at Laie, Ko'olau. . . . Now Kahauokapaka was chief over two districts (*na 'okana elua*), Ko'olauloa and Ko'olau-poko and he had great authority over these districts (*'okana*)." Incidentally, when Malo (1903, p. 37) wrote that a "subdivision within the *'okana* is the *poko*," he was not referring to a land-division term but to a descriptive adjective; thus on Oahu, Ko'olau Poko or "Short Ko'olau" is contrasted with

Ko'olau Loa, or "Long Ko'olau" mentioned above; and on Maui, similarly, there are lands known as Hamakua Poko and Hamakua Loa.

AHUPUA'A

The *moku-o-loko*, or *'okana*, were subdivided into *ahupua'a*, the chief political subdivision, for the purpose of taxation, and each of these sections was subject to a lower chief who was known as the *ali'i 'ai ahupua'a* or "chief who eats the *ahupua'a*." The term *ahupua'a* arose out of the fact that the seaward boundary of each such district was marked by an altar (*ahu*) on which a sculptured wooden head of a pig (*pua'a*) was placed at the time of the collecting of harvest offerings for the rain god and tribute for his earthly representative, the *mo'i*, during the *Makahiki* festival. The title to an *ahupua'a* was not hereditary; these subdivisions were allocated and reallocated to loyal supporters by the chief of the *moku* at the time of his accession. Proprietorship of an *ahupua'a* gave the right to collect taxes from that area. Actually, from the point of view of the *maka'ainana* on the land, the system was one of share cropping rather than taxation, and this sharing between chief and tenant was comprehensive and reciprocal in benefits. It also assured subsistence shares in food, fish, firewood, house timbers, thatch, and the like, to the lesser landholder—the planter.

With the exception of the stone altars erected for tax purposes near the seaward ends of the *ahupua'a* boundaries, there were no artificial demarcations of the limits of the larger land divisions. Topographical and other natural features—ridges, outcropping rocks, a stream channel, sometimes a tree—would give the lines and angles of defined areas. There was no conventional emblem of title in Hawaii comparable to the erect stones marking angles of individual holdings in Tahiti. Only in the case of patches of cultivated land were boundaries artificial, and here it was not a matter of convention, but of accident. Irrigated patches were inevitably demarked by either ditches or streams, or the earth or stone embankments of terraces; and the strips (*mo'o*) of dry arable land planted in dry taro or sweet potato were generally bounded by little ridges (*iwi*) of stone thrown up out of the fields.

The typical *ahupua'a* ran like a wedge from sea to mountains. As Lyons (1875, p. 111) well puts it, the central idea of land division in the Hawaiian Islands was "radial," running from the seashore up into the mountains, thus including fishing rights, cultivable lands, upland timber and planting zones, and areas of valuable bird-catching privileges in the higher mountains. On Hawaii the great mountain of Mauna Loa (elevation 13,680 ft.) "is shared by three great lands, Kapapala and Kahuku from Kau, and Humuula from Hilo. Possibly Keauhou from Kona may yet be proved to have had a fourth share."² He writes also of the "sharp spur projecting into the east side of

Haleakala crater [island of Maui], a rock called the 'Pohaku oki aina,'—land-dividing rock, to which the large lands [of this area] came as a centre."

Each *ahupua'a* had definitely fixed (usually natural) boundaries and each had its specific name—as for example on the windward side of Oahu the three adjacent *ahupua'a* of Ka'a'awa, Kahana, and Punalu'u. The boundaries in this case are readily definable, as each *ahupua'a* consists mainly of a broad stream valley running down from the Ko'olau ridge to bay or seashore, marked off each from each by transverse ridges. Colloquially (rather than in legalistic terms) the strip of beach land, with its fishing rights, was known as an *ipu kai* (meat bowl) and the upland plot for cultivation was the *umeke 'ai* (*poi* container hung in a net). These terms referred to the smaller division next described.

'ILI

Probably the most permanent units of land were the sections of the *ahupua'a* termed *'ili* (strips) or *'ili 'aina*. These were portions of *ahupua'a* land allotted to the families which lived on them and cultivated them, in distinction to *ali'i* who were overseers or higher chiefs. It seems likely that the right to continue to use and to cultivate *'ili* stayed with the *'ohana* (extended families) dwelling thereon, regardless of any transfer of title to the *ahupua'a* in which they were located. The *'ili* was essentially a land division, whereas the *ahupua'a* was a tax unit. In October, when taxes were collected, the people put their gifts on an altar or heap (*ahu*) of stones at the boundary of the land division. (See Part Four and description of *Makahiki*.)

An *'ili* that was all in one piece was termed an *'ili pa'a* or complete *'ili*. Some *'ili* consisted of separate pieces, near the sea and in the uplands; such were called *'ili lele* or "jump strips." Some *'ili* permanently belonged to families; these were termed *'ili ku pono*, strips (*'ili*) standing (*ku*) in their own right (*pono*). The *'ili ku pono* were never subject to transfer at the time of reallocation of landed chiefdoms, as the *'ili o ka ahupua'a* (*'ili*-belonging-to-the-*ahupua'a*) might be. The *'ili ku pono*, of all divisions and varieties of land rights, seems to have carried the only form of title that was permanent. It is noteworthy, however, that every *'ili*, of whatever type, had its own individual title, transitory or otherwise, and was carefully marked as to boundary. At the time of the government survey made before the land grants (Great *Mahele*) of 1848, it was found that in every community there were individuals who were versed in the local lore of land boundaries, rights, and history.

According to Alexander (1891, pp. 106-107), on Oahu there were *'ili* that were independent of any *ahupua'a*. This was the case of *'ili* in an area now encompassed by the downtown part of Honolulu, the capital city. Honolulu meant "sheltered bay," and the sheltered arable land near by. It was not a major district, but originally a small locality known until the time of Kamehameha's conquest as Kou, after the chiefly proprietor of that name.

² Mrs. Pukui says that Humu'ula was in the *'okana* of Waimea, not of Hilo.

Oahu is notable for a variety of 'ili *lele* (often referred to merely as *lele*, jumps). Alexander cites, for example, a beach plot in Kaka'ako, taro plots near the spring (Punahou), and a forest patch on the steep slope above Manoa Valley all as one 'ili *lele*. Another example is the 'ili of Kewalo, which had taro land in Pauoa Valley (between Manoa and Nu'uauu), part of the *kula* slope of Pu'uwaena (Punchbowl Hill) and the plain below it, and a coastal strip adjoining Waikiki. A glance at a map is sufficient to show the disparate nature of these holdings. Among many other instances, the fact is cited that in the *ahupua'a* of Kalihi and also in a major land division, the 'apana o 'Ewa, there were 'ili which included as many as eight to ten *lele*.

Lyons (1875, p. 119) makes mention of several 'ili *ku pono* on the island of Hawaii that were dedicated to the war god Ka'ili, and others which were places of refuge. These were not only tax-free but exempt from even the slight tribute of work usually required of other 'ili *ku pono* proprietors by their superior chief. Ka'ahumanu, favorite wife of Kamehameha the Great, possessed 'ili of this sort also, in Waikiki.

Mo'o

Long strips of arable land within an 'ili were called *mo'o* (strips) or *mo'o 'aina*. We judge it to be primarily associated with wet-taro planting in valley bottoms where strips of *lo'i* extend along the streams and ditches, although dry-taro and sweet-potato plantings were also termed *mo'o*. *Mo'o 'ai*, however, specifically refers to a strip where taro was planted; and a long row of *lo'i* is spoken of as *mo'o kuapapa lo'i*. It was the practice of planters to give individual names to their *mo'o 'aina*.

OTHER TERMS WITH REFERENCE TO LAND USAGE

The following terms are descriptive rather than divisional.

Pauku 'aina were parcels of land where wet taro was grown, but smaller in area than *mo'o*. The word *pauku* means a "piece cut off."

Lo'i was the term for a single irrigated taro flat.

Kuauna were the banks of the taro flats, upon which banana and sugar cane were planted. The term is derived from the fact that the banks were made solid when built by beating with the butt ends of coconut leaf stems (*ku'au*). *Kuaio*, *ika* and *kaika* were synonymous with *kuauna*.

According to Malo (1903, p. 271) "on the *kula* lands the farms of the *ali'i* were called *koele*, *hakuone*, or *kuakua*, those of the people, *mahina 'ai*."

Kihapai was the piece of land (other than *lo'i*) cultivated by a tenant—that is, his plantation. The *kihapai* comprised the plots within the 'ili that a family of planters cultivated for their own use, as distinguished from the *koele* and *haku one* cultivated for the *ali'i* and the *konohiki*, respectively, and which are

discussed later in this section. It is not a term referring to area or right, however, but is simply a designation equivalent to "farm" or "plantation." Lyons defines it as "a dry land patch demarked by ridges of small stones, earth or weeds."

Iwi (bone) or *iwi kuamo'o* (backbone) was the term applied to the line of rocks and refuse thrown up along the side of *mo'o 'aina*, or *kihapai* in clearing. These *iwi* or *iwi 'aina* demarked the boundaries of plantations and arable holdings, and hence were also called *palena*, or bounds. They were not mere rubbish heaps, but, for example on Hawaii, served for planting sugar cane round about the field of dry taro in upland Kona, Ka'u, and Kohala. Where these *palena* ran along the border of the *ahupua'a* they sometimes became subjects of dispute between proprietors, and were fought over and moved. In upland Kona they may be seen today buried in woods or occasionally bounding taro plantations still utilized. On windward Oahu, and on Maunaloa hillsides on Molokai, *iwi 'aina* separating one-time sweet-potato patches may still be seen, dry lines of stones descending with the slope. Similar ones are to be recognized on Lanai.

There are various terms referring to types of clearings used on the island of Hawaii for planting dry taro. In general, clearings made in the midst of the forests from Hilo district to Kona are referred to as *waena*, meaning "in the midst."

Pa'eli, literally meaning an enclosed place (*pa*) where a planter digs holes ('eli), applied to taro plantings on dry lava slopes such as those of coastal Kona and parts of Ka'u, where each taro was planted in a hole excavated in the crumbling lava.

On the windward slopes of Hamakua, Hawaii, there were vast groves of candlenut trees before the forests were razed to make way for the sugar-cane fields that now cover the slopes. There, in enclosed clearings (*pa*) in the candlenut (*kukui*) groves of the lower forest zone, taro was cultivated in the old days. These were known as *pa kukui*. Taro flourished in these patches with great luxuriance, it is said, fertilized by the decaying leaves, trunks, and branches of the felled trees.

In *pa pulupulu*, where there were fern-tree (*pulupulu*) forests at relatively low altitudes, as in Hilo and Puna districts on the island of Hawaii, the fern trunks were toppled over. The holes made by the removal of the bulbous bases were suited to planting taros without further excavation. Presumably the discarded trunks, with the starchy core removed for use as food for men or feed for hogs, were heaped around the clearing, making an enclosure (*pa*).

Mahina 'ai, a contraction of *mahi ana i ka 'ai* (cultivation of food), is not a land-division term, but merely designated land under cultivation, specifically taro, for 'ai in this sense appears to refer particularly to taro, "the food," or staple. Apparently *mahina 'ai* also referred to dry-taro cultivation as well as wet.

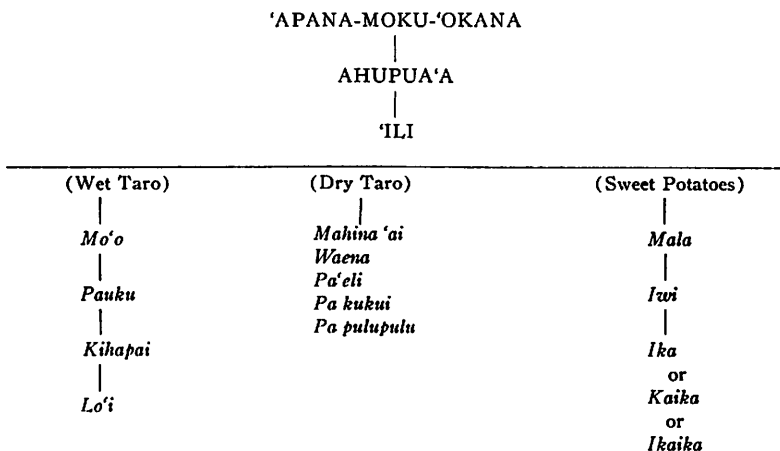
Pawa, which may mean either an open expanse or a period of time, was a term used for "open ground under cultivation," having the same general meaning as *mahina 'ai*, above, and *mala*, described below.

Kuakua, meaning section (applied also to a section of fishnet), referred to small sections of arable land, but was not as specific a designation for a subdivision as *'ili*, *mo'o*, and *pauku*.

The words *au* and *kaha* were descriptive. When applied to lands, *au* referred to all places where taro was cultivated, and *kaha* to those places where it could not be (MacCaughy and Emerson, 1913, Vol. 10, p. 375).

Mala specifically referred to a field or patch in which sweet potatoes were planted, or that was used for this purpose. Stone lines thrown up along the sides of the *mala* were termed *iwi*, as in the case of taro plantation boundaries; whereas *ika* referred to the bounds marked along the edges of a plot where grass and weeds were thrown out. *Kaika*, a term that refers here to a cultivated piece of land, may be a shortening of *ikaika*, meaning a planting ground marked with a number of *ika* between patches.

The accompanying diagram will indicate concisely the relationship of the land subdivisions and terms.



We have not as yet dealt with two important land terms: that for the parcel reserved by the chief for his own purposes, *koele*; and that set aside by the *konohiki*, or land supervisor, for his own use, the *haku one*. Neither term applies properly to a subdivision, but to a reserved plot.

Koele was a term applied to both wet and dry land areas of cultivation within an *'ili* that the *ali'i* reserved for his own use, requiring the proprietor of the *'ili* to work it. These were named. In the days of the Monarchy they

came to be called *po-a-lima* ("fifth day") patches, because tenants were required to work on them on Fridays. The *koele* title was not like the *'ili kupo*, for it was merely a piece of land arrogated to his own use by the *ali'i* of the *ahupua'a* or *'okana* during the period of his proprietorship. On Oahu there are *lo'i* sections in Waialua that are marked as *koele*; while on Hawaii, in Waimea, there is a hillside above Kamuela town upon which dry taro was planted that was known as *ke koele a ke ali'i Kaha'anapilo*, the *koele* of the *ali'i* Kaha'anapilo.

Haku one was applied to a small land section similar in a way to *koele*. It was a piece set aside for the *ali'i* to be made use of, not by the *ali'i* himself, but by his *konohiki* or land supervisor. As in the case of the *koele*, the tenant was required to work the land and harvest the crop for the *konohiki* (Malo, 1903, note, p. 39).

STATUS OF LANDLORDS

In the order of status appertaining to land rights, the *moku* (island or island-section) was "eaten"; that is, its produce was pre-empted by the *ali'i-'ai-moku*, and the *ahupua'a* by the *ali'i-'ai-ahupua'a*. There was no term *ali'i-'ai-'ili*. The *'ili*, largest subdivision within the smallest division of *ali'i* feudalism (the *ahupua'a*), was essentially a family (*'ohana*) holding. Now the head of the *'ohana* family group was termed *haku*. We therefore infer that one of the terms applied to one grade of land supervision, *haku aina*, was synonymous with *haku 'ohana*; in other words, that the *haku* (master) of the family served as *haku* of the family's land. This land, the *'ili*, was the apportionment granted by the chief of the *ahupua'a* to a family or *'ohana* group amongst the lesser *ali'i* and the commoners. Within the *'ili* the gardens and individual plantations, described by the various terms defined above (*mo'o*, *mahina 'ai*, *mala*, and so on) in accordance with size, nature and use, were the allotments belonging to households which comprised the dispersed family or *'ohana*.

KULEANA AFTER THE GREAT MAHELE

Now we come to the consideration of a land term which, in its modern usage, dates from the mid-19th century of the Monarchy and specifically to the processes of the Great *Mahele* of 1848, the peaceful yet revolutionary episode of the partition and distribution of feudal lands discussed at the beginning of this section. The term is *kuleana*, which now means a plot of land acquired "in fee simple" by its former tenant.

Kuleana in old usage meant a portion or share of a thing or enterprise. It was chosen as the legal term applicable to the claims filed by tenants who sought permanent title to parcels of land then being allotted under the law of 1848. The word in old Hawaiian also meant a man's rights, affairs, interests, being derived from the adjective *kulea* meaning competent, successful.

It was to the competent planters, formerly merely tenants, that title in fee simple was given during the *Mahele* to the lands they were then cultivating for their own use; thus the titles and land involved were termed *kuleana*—the planter's property or competence. Because of its fairly recent adoption as a definitive legal term, *kuleana* is generally regarded as not having applied to land in ancient use.

The *kuleana* plot to which title was granted in fee simple was never an 'ili or *koale* over which *ali'i* had, and retained, rights of proprietorship; but a *kuleana* once granted was entirely independent of the *ahupua'a* or 'ili *ku'pono* within which it might be situated. It is probable that, in the old nomenclature, *kuleana* would be found in most instances to correspond with single or combined *pauku* (parcels of land smaller than *mo'o*) in wet-taro regions and to *kihapai* (plots reserved to the tenant) in dry-taro regions. However, a difference would exist in that the *kuleana* title included not only the planted land but house sites, and also adjoining ground that belonged with the plantation by reason of surrounding it, or being used for growing paper mulberry, or other purposes. The *kuleana* were defined, surveyed, and measured during the *Mahele* by configuration (Lyons, 1875, p. 136), not by map survey.

OTHER LAND AREAS

It will be useful at this point to discuss the terms used for various other areas or regions which comprised the Hawaiian planter's environment. These will be geographical rather than having to do strictly with habitation or cultivation as such, although each term inevitably had relevance to both the latter.

KO KAHA KAI

The land area with which the Polynesian migrant first became familiar was of necessity that along shore, wherever his voyaging canoe made its land-fall. This area he termed *ko kaha kai* (place [land] by the sea). This might comprise a broad sandy beach and the flats above it, or the more rugged shore of cove or harbor with its rocky terrain—in fact many and varied descriptions might fit, according to locale.

Kaha was a special term applied to areas facing the shore but not favorable for planting. *Kekaha* in Kona, Hawaii, was one so named, and *Kekaha* on Kauai another. The *ko kaha kai* was not without its own verdure of a sort, however. In fact the terrain just above the sandy stretches (*pu'eone*) was often called 'ilima, because of the low-growing, gray-foliaged, golden-flowering 'ilima bushes found in abundance there. *Pohuehue*, the beach morning-glory, also had its natural habitation there, along with 'auhuhu, whose leaves yielded a juice used to stupefy fish for ready catching in the inlets and sea pools. In fact most of the varied low growth of the *ko kaha kai* found use in the planter's or fisher's economy.

KULA LANDS

Next above were the plains or sloping lands (*kula*), those to seaward being termed *ko kula kai* and those toward the mountains *ko kula uka* (*uka*, inland or upland). Here were the great stretches of waving *pili* grass, which was used to make the thick rain-repellent thatch for dwellings (*hale*). Before cultivation took over the area, the carpeting grass was interspersed with vines (such as the *koali*, morning-glory) and many shrubs, all of which found practical uses by the immigrant folk. There were also a few stunted trees. On the *ko kula uka*, the upland slopes, were found the native ginger and other flowering plants, medicinal herbs, and thick-growing clumps of shrubs. Here too the great variety of trees attained to greater height, and their wood became the source of valuable materials for many necessities of life.

This word *kula*, used by Hawaiians for sloping land between mountain and sea, really meant plain or sloping land without trees. (In Tonga and Samoa *tura* means bald.) There is a large land area in the southerly *kula* slopes of East Maui that is named Honua-'ula (Red-earth). Typically, on all the islands the *kula* lands are covered with red soil, both on leeward and windward coasts. This is the soil in which sugar cane and pineapples flourish today. It is soil in which sweet potatoes grow well. (In contrast, dark soil, rich in humus washed down from the forests, is what wet taro requires.) Some *kula* lands, such as those of southern and eastern Hawaii and the southern slopes of Haleakala on Maui, were covered with lava or soil evolved from the dust of recent volcanic eruptions.

The red soil is oldest geologically, having evolved from decomposed basalt oxidized by sun, rain, and air. Next in age is the humus of valley bottoms. Most recent is decomposed lava, such as is typical of Kona, Ka'u, Hilo, and Puna on Hawaii, and of some areas on the southern slope of Haleakala on East Maui.

KAHAWAI

In terms of use, from the Hawaiian planter's point of view it was the area beyond or intersecting the *kula* lands that was of prime importance in dictating his habitation and his favored type of subsistence. This was the *kahawai*, "the place [having] fresh water"—in other words, the valley stretching down from the forested uplands, carved out and made rich in humus by its flowing stream. Here he could find (or make) level plots for taro terraces, diverting stream water by means of 'auwai (ditches) into the *lo'i*, or descending series of *lo'i*, until from below the whole of the visible valley afforded a scene of lush green cultivation amidst fresh water glinting in the sun. The planter might have his main dwelling here, or he might dwell below and maintain here only a shelter to use during periods of intensive cultivation in the *kahawai*. Here also was a source of many of his living needs and luxuries,

from medicinal herbs to flowers for decorative garlands, and with a wide range in between.

Two other descriptive terms applied to land areas, one belonging to the *kahawai* and one not. The first was *pahe'e*, meaning a wet, soft, or slippery area; and the other was *apa'a*, meaning arid or dry. From its derivative (*pa'a*) meaning firmly bound, the latter became a term of affection for land long lived upon.

WAO

Wao means the wild—a place distant and not often penetrated by man. The *wao la'au* is the inland forested region, often a veritable jungle, which surmounts the upland *kula* slopes on every major island of the chain, reaching up to very high elevations especially on Kauai, Maui, and Hawaii. The Hawaiians recognized and named many divisions or aspects of the *wao*: first, the *wao kanaka*, the reaches most accessible, and most valuable, to man (*kanaka*); and above that, denser and at higher elevations, the *wao akua*, forest of the gods, remote, awesome, seldom penetrated, source of supernatural influences, both evil and beneficent. The *wao kele*, or *wao ma'u kele*, was the rain forest. Here grew giant trees and tree ferns (*'ama'u*) under almost perpetual cloud and rain.

The *wao kanaka* and the *wao la'au* provided man with the hard wood of the *koa* for spears, utensils, and logs for boat hulls; pandanus leaves (*lau hala*) for thatch and mats; bark of the *mamaki* tree for making *tapa* cloth; candlenuts (*kukui*) for oil and lights; wild yams and roots for famine time; sandalwood, prized when shaved or ground as a sweet scent for bedding and stored garments. These and innumerable other materials were sought and found and worked by man in or from the *wao*.

KUAHIWI

The term for mountain or mountain range—a mountainous region—is *kuahiwi* (backbone). *Kuamauna* is the mountain top, and *kualono* the high reaches just below it. *Mauna* is the term for a specific mountain mass, and may have a descriptive designation following, as Mauna Kea (White Mountain) Mauna Loa (Long Mountain); *pali* denotes a precipice and *pu'u* means hill. The term *mauka* is directional, and means toward the mountains or uplands, or merely inland.

THE ENVELOPING SEA

As much a part of his natural environment as the land on which he dwelt was the sea from which he drew much of his sustenance and on which he voyaged. The Hawaiian planter had names for the near and far reaches of the sea by which his *'aina*, his homeland, was bordered or surrounded. *Pu'eone*

(heaps [of] sand) was the sandy edge of the sea, inshore dunes, or outer sand bar. *Po'ina nalu* or *kai po'i* (sea-breaking) was the point farther out where the wave breaks (*nalu*, wave). *Kai kohola* was the shallow sea inside the reef, the lagoon. *Kai pualena* was the yellowish sea, presumably where streams flow in and roil the waters. *Kai ele* was the dark sea, *kai uli* the deep-blue sea, and *kai-popolohua-mea-a-Kane* (the purplish-blue reddish-brown sea of Kane) designated the far reaches of the immeasurable sea (*Hoku o Hawaii*, September 21, 1917).

Hawaiian descriptive imagery was poetic; and in songs celebrating the natural features or beauties of a given homeland, the delicate nuance of color in landscape, seascape, or cloud was remarked upon. A striking example of this with relation to mists, rain, and sea billows may be seen in the prayer to Ku-of-the-long-cloud, in the section on the sweet potato. Even in common speech these descriptive shadings were applied as precisely as those for the varieties of plants or fish or the semilegalistic divisioning of arable land for practical use. The terms listed above by no means exhaust the many that were in wide use.

WATER

As in the definition of the Hawaiian terms for land, the true old native Polynesian conceptions relative to water may best be brought into focus by studying the words that apply to water.

Wai is fresh water. *Puna* is a spring, or *puna wai*, fresh-water spring. *Wai puna* is spring water. *Kaha wai* is a stream or river (*kaha* meaning place), and the same applies to the ravine, gulch, or valley cut by the stream, or which contains the stream. The artificial diversion of "a flow" of fresh water by means of a ditch or channel, for purposes of domestic use and irrigation, is *'auwai* (*au* meaning a flow or current). A fresh-water pond or lake, whether filled by surface drainage, a spring or springs, stream or ditch water, is *loko wai*, or commonly just *loko* (meaning inside, within).

Water, which gave life to food plants as well as to all vegetation, symbolized bounty for the Hawaiian gardener for it irrigated his staff of life—taro. Therefore, the word for water reduplicated meant wealth in general, for a land or a people that had abundant water was wealthy.

The word *waiwai* means wealth, prosperity, ownership, possession. Literally it is "water-water." A Hawaiian farmer who had all the water he needed for growing taro was indeed a prosperous man. Fresh-water fish could be kept in his wet patches, to live and grow among his taros. Bananas, sugar cane, and *wauke* (paper mulberry) could be grown near by. With all this he could exchange gifts with relatives or friends who dwelt along the shore. With fish, taro, and *tapa*-making plants available because of no lack of water, prosperity was indeed his.

In our English parlance we speak of "the law of the land," possibly because our Anglo-Saxon forebears were cultivators of unirrigated land, and the earliest laws had to do with farming and grazing lands. Taro, which grew along streams and later in irrigated areas, was the food staple for Hawaii, and its life and productivity depended primarily upon water. The fundamental conception of property and law was therefore based upon water rights rather than land use and possession. Actually there was no conception of ownership of water or land, but only of the use of water and land.

The word *kanawai*, or law, also tied back to water. *Ka-na-wai* is literally "belonging-to-the-waters." With farms along the water system upon which all depended, a farmer took as much as he required and then closed the inlet so that the next farmer could get his share of water—and so it went until all had the water they needed. This became a fixed thing, the taking of one's share and looking after his neighbors' rights as well, without greed or selfishness.

So a person's right to enjoy his privileges, and conceding the same right to his fellow man, gave the Hawaiians their word for law, *kanawai*, or the equal sharing of water.

IRRIGATION DITCHES ('AUWAI)

The building and maintenance of flooded terraces (*lo'i*) and of the irrigation ditches ('*auwai*) were communal procedures. This type of work would certainly never have been achieved had the old Hawaiians done their farming on an individualistic basis, without the planning and direction of proprietary chiefs (*ali'i*). Presumably, when new land was to be converted into *lo'i*, the preliminary requirement was the opening up of an irrigation ditch to deliver and distribute the water needed.

Ditch construction and cleaning in historic times were directed by the *konoiki*, or supervisor of lands under the *ali'i*. Nakuina (1894, pp. 79-84) wrote an interesting account of ditches which is abstracted here in part, with some slight additions.

Ditches were dug from the lower end upward. The dam (*mano*, literally "source") in the stream bed was a rough wall of stones and clods. The workers were levied from the various land sections to be benefited by the ditch, in proportion to the number of planters involved. A small section could, however, by furnishing many hands for the ditch building, secure larger water rights than a large section furnishing few hands. In other words, a taro planter's share of water was determined by the amount of labor contributed to the construction and maintenance of the ditch, and was not proportional to acreage of *lo'i*.

Water rights of others taking water from the main stream below the dam had to be respected, and no ditch was permitted to divert more than half the flow from a stream. Planters affected saw to it that this rule was adhered to.

Lo'i dependent on a ditch took their share of water in accordance with a

time schedule, from a few hours at a time day or night up to two or three days. The *konoiki* controlling most of the water was "water boss" (*luna wai*). A planter who did not use his whole share of water lost his right to more than was required for ground actually under cultivation. In times of drought the water boss had the right to adjust the sharing of available water to meet exigencies.

The planter whose turn it was to take water inspected the dam with the water boss and repaired and cleared it if necessary. Then, coming down along the ditch, he shut off by means of earth clods or stones the inlets to other *lo'i*, except such as were to have water at the same time, and opened his own.

Small *lo'i* on hillsides were awarded *kulu*, or "drops" (constant trickles), of which they were never deprived unless in time of drought, for the narrow *lo'i* could not retain standing water as did the broad terraces on flat land.

Periodically, at the call of the water boss the ditches were cleared and repaired, and water was withheld from any planter not participating in this work. Neglect of this duty was rare, for without water a man's land would not produce, and if the land lay neglected he was ordered off by the *konoiki*. The planter thereby lost his right to plant his holding, a right generally inherited from ancestors through successive generations. An energetic man who attracted others to live under him could acquire the right to more water (a larger share of the rotation time) by supplying more hands for the ditch work and maintaining more land under steady cultivation.

Shareholders in a dam killed anyone who broke a dam, cramming his dead body into the break. Local armed conflicts sometimes resulted when relatives of the murdered felon sought reprisal. These conflicts were generally settled peaceably and satisfactorily by the *ali'i*.

Taro *lo'i* alone might claim water. Other cultivated plants were regarded as dry-land crops unless there was water to spare, when it might be used for potatoes, bananas, or cane.

CONSECRATION OF A NEW 'AUWAI

The consecration of a new irrigation ditch is described as follows by Emma Nakuina (1894, pp. 83-84).

... When the digging of an '*auwai* was completed to the satisfaction of the *luna* in charge of the work, a day would be set for the building of the dam. This was an occasion for rejoicing and feasting, and was never hurriedly done. The water *kahuna* or priest [of Lono] had to be first consulted in regard to a favorable day, which being settled, the *konoiki* was required to furnish a hog [a form of Kamapua'a, i.e. Lono] large enough to make a good meal to all the workers of the '*auwai*, red fish ('*ahuluhulu*, '*ama'ama* and '*aholehole* [forms of Kamapua'a]), as well as '*awa* root for the use of the priest at the opening ceremonies, *kukui*-nut and *poi* galore. On the appointed day all the workers decked with *leis* of swamp-fern, *kowali* (convolvulus), or yellow and green banana leaves split through the midrib, proceeded to the end of the '*auwai* nearest the spot chosen

for the dam, each one bearing a stick of firewood for the *imu* or oven in which the hog and other articles of food were to be baked. The *imu* was made in the *'auwai* near the point where the water was to enter it; the hog, *lu'au* [also a "form" of Kamapua'a], potatoes and *kalo*, or taro, were placed in it, and while these were cooking, the *'awa* root was chewed or pounded and strained, and the fish *lawalu*-ed (wrapped in *ti* leaves and roasted over coals).

When everything was cooked and in readiness, the water *kahuna* took the head of the hog, the fishes and the bowl of *'awa* juice, and going to the place where the dam was to be built made an offering of these to the water *akua* or god. An invocation would be made and a petition that the local water god or goddess would take the dam and *'auwai* under his or her especial protection, not only sending or causing a good supply of water to fill the stream at all times, so that her votaries might be blessed with good and abundant crops, but also to guard against both drought and floods as being disastrous to the planting interests. At the conclusion of his invocations he would sprinkle a few drops of *'awa* juice in the stream; eat the eyes, ears and snout of the hog, the eyes and gills of the fishes in the name of the local deity, and return to the feast which had been spread on the bank of the new-made *'auwai*, when everyone was free to partake. Everything edible at this feast of consecration had to be consumed either by the people or by their dogs. All the refuse was buried in the *imu*; the dam built in a few minutes, and the water turned into the new *'auwai*, flowing directly over the now submerged *imu*. The younger folks would likely indulge in bathing in the pool formed by the dam, while the older ones with the *konohikis* and invited guests would follow the water through the new-made *'auwai*, and singers of both sexes would chant songs composed in honor of him who had planned and carried out the beneficent undertaking that would be the means of a supply of food for many.

SHARING OF FLOWING WATER

Judge Antonio Perry (1913, pp. 92-93, 95-96), in the extract given below, indicates that water rights and the amount of land that a man had a right to plant were intimately related: "distribution [of water was] in accordance with the acreage planted." In a decision of the Supreme Court of Hawaii we read "a title to a water right is a title to real estate" (Thayer, 1916, p. 770). This is the modern application of the older principle which Perry pointed out. The extract from Perry on ancient usage follows.

To each *hoa'aina* [friend of the land, or cultivator] a share was allotted in accordance with the labor furnished by the recipient. Some *hoa'ainas* contributed merely the labor of their own hands, others that also of their sons or other relatives. It sometimes happened that a small *'ili* [land division] was represented in the work of construction by a larger number of laborers than a large *ahupua'a* and was in consequence assigned a larger share of the water than was awarded to the larger tract. It is easily apparent, however, that this system of assignment in accordance with the labor provided in digging the *'auwais* [ditches] was in its results the equivalent of a system of distribution in accordance with the acreage planted, for each *konohiki* [land supervisor of an *ahupua'a*] and *hoa'aina* would doubtless bestir himself to contribute towards the completion of the enterprise sufficiently to meet the requirements of the land which he desired to till. The old system, particularly in view of the conditions then existing concerning the possession of land, possessed the merit of encouraging industry. One of the causes for dispossession by the King was the failure of the *hoa'aina* to render his plot productive. On the other

hand, if one in the enjoyment of a water right increased his accustomed contribution of labor to the maintenance of the *'auwai* his energy was rewarded by the allotment to him of additional water. By way of illustrating the beneficial operation of the system of distribution just described, it may be noted that in some instances chiefs or those under them contributed labor with reference to the needs not only of the lands then held by them, but also of lands which they hoped to obtain in the near future. Such was the case with the high chief in planning the Paki *'auwai* about to be referred to. And so also these rights or privileges were subject to loss through non-use. A tenant who by his exertions in the digging of the *'auwai* had obtained the right to water sufficient to irrigate all of his land and who subsequently, for an undue period of time, allowed a large part of his land to remain uncultivated, was deprived of all water save that necessary for the cultivated portion.

It may be added at this point that in some ditches not all of the water was used, but after irrigating a few patches the ditch returned the remainder of the water to the stream.

Each large *'auwai* was given the name of the chief or of the land most prominently connected with the undertaking. In the digging of one of the more recent ditches, the Paki *'auwai*, extending from a point above Luakaha to the vicinity of the present cemetery in Nuuanu Valley [Oahu], and so named because the chief Paki planned it and directed its construction, 700 men were employed, 300 being furnished by Paki, 300 by the chief Kehikili and 50 each by Huakini and Dr. Rooke. The work was completed in three days. . . .

A fact made clear by the testimony of many *kama'ainas* [old-timers] in later water controversies is that prior to the *Mahele* [land distribution], under the ancient Hawaiian systems, more elaborate in many *ahupua'as* than in others, disputes concerning water were extremely rare. The aim of the *konohikis* and of all others in authority was to secure equal rights to all and to avoid quarrels. A spirit of mutual dependence and helpfulness prevailed, alike among the high and the low, with respect to the use of water. This laudable condition was doubtless due to several causes. The rainfall was in many localities more abundant, the supply of water larger and the area under cultivation less extensive than at the present time. The desire for wealth, as the term is used today, did not exist. If each had a sufficiency for his simple needs, he was content. The land tenures were so precarious as to be conducive to abstention from unjustifiable or otherwise irritating claims by the tillers of the soil. . . .

The fact that before the *Mahele* "disputes concerning water were extremely rare" undoubtedly also stemmed from the Hawaiian's acceptance of fresh water as sacred. No believing Hawaiian would tamper with or pilfer that which was identified with Kane, the source of life. Great care was taken not to pollute streams. There was a place for bathing (*'au'au*) low down in the stream; a place up farther along the stream for washing utensils or soaking calabashes; still farther up were the dams for *'auwai*; and above the dams was the place where drinking water was taken. A young woman in Kipahulu, Maui, pointed out to Kawena Pukui a few years ago just where these places reserved for different purposes were along the stream.

At Waikapuna in Ka'u, where there were springs instead of a stream, there used to be three springs. That nearest the sea, which was quite brackish, was used for bathing (*'au'au*) and washing clothes (*holoi*); the middle spring was used for washing utensils; and the spring farthest inland from the shore,

which was only mildly brackish, was used for drinking water only. The elders were very strict about anything being thrown into any one of these springs.

STRUCTURE OF AQUEDUCTS

The typical irrigation ditches, large and small, were simply trenches made in the soil, from the dam in the stream to the *lo'i* area. One large ditch carried water for a number of *lo'i* tended by different planters. The *lo'i* adjoined the ditch and there were openings in the side of the ditch to let water into the *lo'i*. These were stopped with a stone or clod of grass and dirt when the water was cut off from a particular *lo'i* or group of *lo'i*.

Where water had to be carried around or along a hillside, on which terraces rose like steps on a steep gradient, the embankment beneath the ditch was often faced with stone part or all the way up. The base of the stone facing was made with large stones carefully fitted, and with smaller stones above. The stones are for the most part stream boulders. The walls slant outward at the base, and beneath the ditch level there is an earth fill. Such ditches are typical of Kalalau Valley on the island of Kauai.

Bennett in 1929 studied two ditches on Kauai that carried water around cliffs. There is one example far up in the Waimea Canyon, where water was carried for about 400 feet around a cliff face that juts out above the Koae Stream. The stonework, as he describes it (W. C. Bennett, 1931, Site 38, p. 110), is in this case "well laid but not fitted," and rises in some places to a height of 20 feet, in others less, according to necessity, the space between the wall and the cliff face being filled in with earth and smaller stones. The top of the wall is finished with special care, with "large flat stones set on an inward slant toward the cliff," each stone overlapping "on the downward grade," and the whole spread over with earth.

The most notable aqueduct built by ancient Hawaiians was the so-called Menehune Ditch on Kauai, whose ancient name was Kiki-a-Ola (Water-lead-of-Ola). It is built around the base of a high cliff which hems in the Waimea River just before it reaches its delta area on the southwest coast of the island, and diverts irrigation water from the river to the series of *lo'i* to seaward of the cliff. These *lo'i* were observed and described by both Cook and Vancouver in the 1770's and 1790's (see Waimea in the section on Kauai, Part Five). W. C. Bennett (1931, Site 26, pp. 105-107) describes the Menehune Ditch in detail.

The problem that the builders of this aqueduct solved successfully was that of constructing a wall against the cliff face and down to the river bed that would remain intact against the force of the river when in flood. They solved the problem by cutting, on all but the inner sides, the large stones—some more than 3 feet long—with which the facing wall was constructed. Thus the wall offered a smooth surface to the river at all levels, while the

stones fitted together with precision at all points of vertical and horizontal contact. In order to make tight joints, a number of stones now visible above the roadway, which has covered much of the old wall, are notched to make them fit where there is a difference in height of the blocks at points of contact. Behind the wall was a fill of dirt and rocks. The part of the old stonework that is still visible runs about 200 feet along the face of the cliff. How long the whole aqueduct was cannot now be determined because of the road built over and against it.

To carry water over a depression two devices were used: large bamboos split in half, with the inside node walls cut out; and long wooden troughs like a canoe hull without bow and stern. *Ha-wai* was the word for such a flume.

WATER RIGHTS

Inalienable title to water rights in relation to land use is a conception that had no place in old Hawaiian thinking. The idea of private ownership of land was likewise unknown until Kamehameha's autocracy, established as a result of the intrusion of foreign concepts, set up the figment of monarchy, a politico-social pattern alien to the Polynesian scene theretofore existing.

Water, whether for irrigation, for drinking, or other domestic purposes, was something that "belonged" to Kane-i-ka-wai-ola (Procreator-in-the-water-of-life), and came through the meteorological agency of Lono-makua the Rain-provider. The *mo'i* (*ali'i nui*, great chief), the ranking aristocrat who was paramount by reason of genealogical primacy, was a living scion of Lono and of Kane, and as such was instrumental in the magico-religious induction of rain and flowing water which gave life to taro and 'uala and other plants, domesticated and wild, and to the earth in which they grew. The paramount chief, born on the soil and hence first-born of the *maka'ainana* of a *moku* (island or district), was a medium in whom was vested divine power and authority. But this investment, which was established ritualistically as well as by genealogical primacy, was instrumental in providing only a channeling of power and authority, not a vested right. The person of the *ali'i nui* was sacred (*kapu*) as though he were a god (*akua*). His power and authority (*mana*) was complete. But this was not equivalent to our European concept of "divine right." The *ali'i nui*, in old Hawaiian thinking and practice, did not exercise personal dominion, but channeled dominion. In other words, he was a trustee. The instances in which an *ali'i nui* was rejected and even killed because of his abuse of his role are sufficient proof that it was not personal authority but trusteeship that established right (*pono*).

Water, then, like sunlight, as a source of life to land and man, was the possession of no man, even the *ali'i nui* or *mo'i*. The right to use it depended entirely upon the use of it. So long as a family lived upon and cultivated land, using a given water source, and continued to contribute its share of the labor

required to maintain that water source, just so long did it maintain its "right" to that water. If the family did not use it, it no longer had a right to claim it.

The freezing of land titles and related irrigation and fishing rights by legalistic procedures and grants in fee simple was wholly a foreign innovation. After this occurred, from the point of view of old Hawaiian principles of land, water, and fishing tenure, the only Hawaiians who maintained land, water, or fishing rights were those who stayed with and continued to use their areas of cultivation, water, and fishing grounds. Those who abandoned and neglected them, leased or sold them, no longer had any rights, namely the continued use and exercise of the right to use.

THE "WATER OF LIFE"

Fresh water as a life-giver was not to the Hawaiians merely a physical element; it had a spiritual connotation. In prayers of thanks and invocations used in offering fruits of the land, and in prayers chanted when planting, and in prayers for rain, the "Water of Life of Kane" is referred to over and over again. Kane—the word means "male" and "husband"—was the embodiment of male procreative energy in fresh water, flowing on or under the earth in springs, in streams and rivers, and falling as rain (and also as sunshine), which gives life to plants. There are many prayers quoted in our section on the *Makahiki* in which "the Water of Life of Kane" is referred to. We also hear occasionally of the "Water of Life" of Kanaloa, of Lono, and of Ku, and even of Hi'iaka, sister of Pele, a healer. Lono was the god of rain and storms, and as such the "father of waters" (Lono-wai-makua). The old priests were inclined to include in their prayers for rain and for fertility the names of the four major deities, Kane, Ku, Lono, and Kanaloa, whose roles, while on the whole distinct, overlapped in many areas of ritualistic and mythological conceptions. The religion of the folk—planters and fishers—was sectarian to some extent; some worshiped Kane, some Ku, some Lono, and some Kanaloa. Regardless of all such distinctions, life-giving waters were sacred.

SPRINGS OPENED BY KANE AND KANALOA

Kane and Kanaloa are said to have come to Hawaii from Kahiki. J. Wai-amau, in his series on *Hoomana Kahiko* (Ancient Beliefs) in *Ku'oko'a*, January 19, 1865, describes them as being addicted to 'awa drinking. They traveled about the islands and sometimes stopped to brew their 'awa at places where there was no water, hence the need to open springs. They first came to Kauai, then to Oahu, then to Kohala on Hawaii, where they lived in the *heiau* named Mo'okini. From Kohala they went to Hamakua, and on to Hilo. Near there, at the cliff named Ka'awali'i (The small 'awa) they prepared to brew 'awa and found there was no water. Kane thrust his spear into the

ground, and water came forth. This spring, which continued to flow, was called "The-Water-of-Kane-and-Kanaloa." Again at Ka Lae (South Point) in Ka'u they needed water for their 'awa, and Kane thrust his spear into a rock, where water flowed out. This spring, continuing to flow, likewise was called "The-Water-of-Kane-and-Kanaloa," although today it is no longer there. They went to Maui, and there at Hamakua needing water for their 'awa, they again opened a spring. This spring, which also continued to flow, was called "Kanaloa's Water."

Here is the story of two springs opened up by Kane and Kanaloa in a valley named 'Ohi'a near Wailua on the windward coast of Maui, as told by Mrs. Annie Kalau (*Ka Nupepa Ku'oko'a*, October 4, 1923):

The name of the valley is 'Ohi'a and in it is a spring belonging to two supernatural beings, Kane and Kanaloa. Here is a short story that the traveller got: While these two were travelling, they came to this place and spent the night with the natives there. They chewed some 'awa, put them into an 'awa bowl (*kanoa*) but had no water for it. The strangers asked the natives for water. They had some but it wasn't clean. So these two supernatural ones walked up to the foot of the hill, and thrust their spears into the ground. Kane thrust his spear down and withdrew it and so did Kanaloa. This was the strange thing about it—Kane's water came with a roar and Kanaloa's with a soft, rippling sound. It was said that Kane was bad tempered and that was why his water rumbled, Kanaloa was gentle and that was why his water sounded softly. These are very refreshing springs as cool as ice water. Much water comes from those two holes, and they supply the taro patches of that valley with water.

On the barren land of southwest Maui there was another spring said to have been opened by Kane and Kanaloa. Probably there were others.

On Oahu, in Kalihi Valley at a place named Puna-wai-o-Kalihi (Spring-water-of-Kalihi) they opened a spring. Others on Oahu attributed to Kane and Kanaloa were at Koko Head, in Waikane Valley, and at Wai'alae. The latter watered *lo'i*.

While in the vicinity of Koko Head on southeastern Oahu, a barren region, the traveling gods arrived at the deeply cliff-embosomed bay of Hanauma. What then took place is given by Green and Pukui (1929, p. 113):

"O Kane! [said Kanaloa] we keep on going and we are dying of hunger! Let us eat." Kane looked about him and saw that there was no water for mixing their refreshment of 'awa drink. He struck the earth with his staff and water gushed forth. . . . They had not gone far [on their waterless way] when Kanaloa wanted to eat again . . . so Kane again struck the earth . . . and water gushed forth . . . and many were the waterholes made by Kane between Hanauma and Laeahi [Leahi].

It is of interest to note that most of these springs are attributed to Kane's action, but to his companion's desire. However, on the completely arid slope above the seashore beyond Kekaha on Kauai is a spring, now referred to as Sacred Spring on modern maps. Near it are the ruins of a shrine dedicated to Kanaloa.

WATER IN ARID PLACES

Kawena Pukui's homeland, Kama'oa on the windswept slope north of South Point in Ka'u, is an arid region. Water for drinking and for watering small patches of sweet potato near houses was collected in big gourds placed in caves where water dripped from the ceiling. This is a region where there is little rain, but there is much dewfall at night in the warm, wet air from the sea whose moisture condenses in early morning hours upon ground cooled by the flow of cold air down the vast slopes of Mauna Loa.

In a Hawaiian newspaper, *Ka Hae Hawaii* of May 23, 1860, translated by Mrs. Pukui, there is a description of a cave recently entered in Keawa'ula, in arid Wai'anae, Oahu. Water was found in the cave and also a gourd, probably formerly used for collecting and carrying water.

Kalokuokamaile, an old and learned Hawaiian at Napo'opo'o in Kona, Hawaii, told us in 1935 that in dry parts of Kona there were springs whose existence was kept secret. One of these, never before known, he discovered when he was a boy. The spring was named Kaloku's Water (*Kaloku wai*) in his honor. At another place, in a gulch between Kealakekua and Ke'ei, there are three springs. These were known only to Kalokuokamaile.

Another "waterless land" in Kona lay in the area called Kekaha, described by John Elemakule in the newspaper *Hoku o Hawaii* of September 3, 1929, translated also by Mrs. Pukui. Hawaiians living there obtained their drinking water from caves, which were numerous thereabouts. To catch water dripping from the ceiling the people made troughs of 'ohi'a, koa, and kukui wood, dubbing them out to a depth of from three to six feet, as though for a canoe hull. Gourd containers and wooden calabashes (bowls) were also used to catch drops from the ceiling of the cave. The interior of these caves was dark, so the Hawaiians used torches made of kukui nuts when collecting their water vessels. As troughs and other containers filled, water was dipped out slowly with a small coconut shell cup and poured into a gourd water bottle, using for a funnel the neck of another bottle gourd, cut off, or a ti leaf folded back on itself. The water was dipped carefully so as not to put sediment into the water bottle. These caves were sacred to Kane, and each was believed to have its guardian spirit. It was believed also that if a menstruating woman entered the cave the water would dry up. Then the evil influence had to be exorcised; a kahuna (priest) was summoned. An offering was made of a small black pig, a white fish (an *aholehole*), some young taro tops, and a small whole 'awa plant. All except the 'awa were cooked in a ground oven, removed, and allowed to cool until evening. The kahuna then took the foods and 'awa to the entrance of the cave, and prayed:

O Kane of the upland, Kane of the lowland,
O Kane of the waters, here is pork.

Here is 'awa, here are the taro leaves,
Here is the white fish.
They are offerings of the upland and of the sea,
Offerings to you, O Kane.
Pardon the fault committed by a human being,
And cleanse the house of the water.
Grant more water in the house,
That man may live to inhabit this waterless place. Amama.

The offerings were then wrapped in ti leaves and laid within the entrance to the cave. The kahuna "set up three bamboos put together as one," a sign (called *puloulou*) that the cave was *kapu*, and grass was piled around this to form a soft heap. The *kapu*, which forbade anyone to enter the cave, continued for ten days, after which the *puloulou* was removed, and the people went in and found the water again flowing.

At Punalu'u in Ka'u on Hawaii men dived in the bay at some distance from the shore for their fresh water, taking down water bottles, stoppered with a finger. When they reached the chill fresh water welling up from a spring at the bottom of the bay, they removed the stoppers so that the water bottles filled. "This was how the people of Punalu'u obtained their drinking water." Punalu'u means "diving spring." Mrs. Pukui says there are many other places where drinking water was obtained in this way.

altitude in rainy seasons. In recent times the flatlands of Pu'u Anahulu, having an elevation of about 2,300 feet, have supported a number of patches planted by Hawaiian cowboys.

KOHALA

The district of Kohala is the northernmost land area of the island of Hawaii. 'Upolu Point, its northwesterly projection, fronts boldly out into Alanuihaha Channel toward the southeastern coast of Maui, and is the nearest point of communication between the two islands. To the south, along Hawaii's western coast, lies Kona; to the east the rough coast of Hamakua District unprotected from the northerly winds and sea. Kohala was the chiefdom of Kamehameha the Great, and from this feudal seat he gradually extended his power to embrace the whole of the island, eventually gaining the suzerainty of all the Hawaiian Islands.

The rugged central area of the district is formed by the mountainous remains (elevation 5,505 feet) of the Kohala dome, the oldest of the island's volcanoes, now long regarded as extinct. The high table land between Mt. Kohala and the vast northern slopes of Mauna Kea, known as Waimea, has one of the finest and most salubrious mountain climates in the Hawaiian Islands, and also offers excellent grazing for cattle. In post-European times it became the seat of the Parker Ranch, one of the largest ranches in the world.

When William Ellis (1825) toured this area in 1823 he reported that the soil was fertile and that vegetation was flourishing. He observed considerable cultivation, such as plantains, sugar cane, and taro, presumably dry taro, growing unusually large around the villages.

North Kohala, in old Hawaiian times, was the wet-taro area, but was intensively cultivated in dry and forest taro, sweet potatoes, bananas, and cane, as well. Landing on the north coast in 1779, King explored the country mountainward. He reports (Cook, 1784, Vol. 3, pp. 106-107):

The country, as far as the eye could reach, seemed fruitful and well inhabited... [three and four miles inland, plantations of taro and potatoes and *wauke*] neatly set out in rows. The walls that separate them are made of the loose burnt stone, which are got in clearing the ground; and being entirely concealed by sugar-canes planted close on each side, make the most beautiful fences that can be conceived. [The exploring party stopped six or seven miles from the sea] at the second hut they found among the plantations... To the left a continuous range of villages, interspersed with groves of coconut trees spreading along the sea-shore; a thick wood behind this; and to the right, an extent of ground laid out in regular and well-cultivated plantations, as far as the eye could reach.

[In a footnote to the above statement King says:] Both the potatoes, and the taro, are here planted four feet from each other. The former are earthed up almost to the top of the stalk, with about half a bushel of light mould; the latter is left bare to the root, and the mould around it is left in the form of a basin, in order to hold the rainwater, as this root requires a certain degree of moisture... indeed, we all remarked that the taro of the Sandwich Islands is the best we had ever tasted.

[Returning out of the forest belt the party again encountered plantations.] As they passed along, they did not observe a single foot of ground, that was capable of improvement, left unplanted; and indeed it appeared, from their account, hardly possible for the country to be cultivated to greater advantage for the purposes of the inhabitants, or made to yield them a larger supply of necessaries for their subsistence. They were surprised to meet with several fields of hay; and on inquiring to what use it was applied, were told, it was designed to cover the young taro grounds, in order to preserve them from being scorched by the sun.

As a wet-taro valley, Pololu on the northeastern coast of Kohala ranked first in that section, having a flatland area, about one mile long and about a third of a mile at its widest point; this area used to be entirely covered by terraces except for the section immediately inland from the seashore which is under very high sand dunes and another portion in the lower valley on the west side which is made up of fishponds and swamp. The upper terraces are now all under *kukui* and guava. *Hau* and guava cover some of the old terraces along the side of the valley, and the central area of the lower valley is now used for pasturing horses. Water formerly used for irrigation has been taken by the Kohala Ditch for sugar plantation purposes. Ellis in 1823 remarked (1825, p. 211):

Pololu is a pleasant village situated in a small cultivated valley, having a fine stream of water flowing down its center, while lofty mountains rise on either side not less than 500 feet high. The houses stand principally on the beach... The face of the country [as seen by persons having ascended out of the valley to the northwest] was as beautiful and fertile, as any they had seen, except Waiakea, and seemed populous, though the houses were scattered over the whole face of the country, and more than three or four seldom appeared together. The streams of water were frequent, and a considerable quantity of ground was cultivated on their banks and in their vicinity.

Kohala was unique in the development of terrace areas on *kula* lands, a mile or more inland, wherever water could be brought from streams or springs. One such area is the group of terraces, now under cane below the old Bond homestead, which was formerly cultivated by Kamehameha I. Another group of terraces, a quarter of a mile above the road in Waiapuka, was, in 1935, still cultivated by a Hawaiian family. Just above this is a large area of old terraces, now under cane, which was cultivated in the latter part of the reign of Kamehameha I by Samuel Parker, founder of the Parker Ranch. This was observed by Ellis and one of his colleagues, the Rev. Asa Thurston, in 1823 (Ellis, 1825, p. 211). This particular group of terraces is especially interesting because it was irrigated by means of a ditch from Nene Stream conducted through a tunnel in the ridge. Williams (1919, pp. 122-123) describes the construction of this tunnel:

The drift through the ridge is only about 200 feet long from entry to discharge, and the depth of the floor of the tunnel below the surface of the ground does not exceed at any point more than twenty feet. From all indications the first work done was the sinking of

no less than nineteen wells or shafts from nine to ten feet apart on a line laid out on the surface of the ground, these shafts or wells are about four feet in diameter, and were sunk to the level of the bed of the stream or a little lower, and after this had been accomplished the tunnel was completed by driving both ways from the bottom of these shafts or wells until they had been all connected and the waterway completed. The material evidence that this was the method adopted in carrying out this work is plainly to be seen on the ground at the present day, and the writer has spent some time in looking over the ground, making measurements and generally examining this remarkable piece of construction.

According to local tradition, in 1935, this tunnel was started by the *Menehune* and completed by Kamehameha I. However, Williams (1919, pp. 125-126), who inquired carefully about the time of building, concludes that the tunnel was excavated by Hawaiians using metal tools and blasting powder between 1823, when Ellis visited Kohala without mentioning the tunnel, and 1849, when the plot was surveyed and the tunnel sketched as it is today. Ellis' failure to mention the tunnel does not prove that it was built after 1823. Polynesians live vividly in the present; probably the natives would not mention the tunnel unless the subject of irrigation or wet taro happened to come up in conversation. Also, if the tunnel were built in the 19th century it is hard to understand why the Hawaiians in Kohala only two generations later should have forgotten all details about its construction and have built around it a *Menehune* tradition. In general, old Hawaiians born and bred in a particular locality are well informed about events occurring during the lifetimes of their parents and grandparents. At Waiapuka, Williams was told that *Menehune* built the tunnel, and we were told that they started it. To us the fact that the land is named Waiapuka (Water-from-hole) implies antiquity. The ancient Hawaiians could have built it without metal, for it lies through soft lava. It is well known that in ancient times stones of vesicular lava were squared, undoubtedly with dyke-stone adzes at Honaunau and elsewhere on Hawaii; and in Tahiti and the Marquesas, lava and even basalt were commonly cut in making building blocks and images.

East of Pololu is Honokane-nui, which, although a narrow valley, was developed in terraces for about 1.5 miles inland. Honokane-iki and Honokea, which formed the eastern boundary of Kohala, are too narrow for terraces.

Waikama is a small gulch between Niuli'i and Pololu in which there were half a dozen small terraces at the seaward end, in 1935 planted in taro and irrigated from Waikama Stream. At several places in the flat area of the winding gulch, trees indicate the presence of old *kuleana*. These flats, now covered with guava, presumably used to be terraces.

West of Waikama the following gulches were developed in terraces, both seaward and inland wherever topography permitted: Niuli'i, Waikani (mis-pelled Waikane on the U. S. Geological Survey map, 1916), Puwaiole and A'amakao (these two names are in reverse position of the U. S. G. S. map,

1916), Walaohia, Halawa, Wainaea, and Akamoa. Beyond this point the gulches had insufficient water for the development of terraces.

Much dry taro is said to have been grown on the heights above Makapala and Niuli'i. Of Halawa, Ellis wrote in 1823 (1825, p. 213):

A large country in the neighbourhood was divided out into fields of considerable size, which he [Kamehameha I] used to keep in good order and well stocked with potatoes, or other vegetables. One of these was called by his name. He used to cultivate it with his own hands.

Apparently dry taro was planted fairly continuously over the *kula* lands of North Kohala from Pololu to Hawi. This land was formerly grassland, and the ground was prepared for planting taro by burning over the grass and digging in the stubble, allowing it to rot in the ground before planting. A modern Hawaiian taro planter who cultivates terraces near Waiapuka starts his cuttings thus in dry land and then transfers them to his terraces.

Upland forest plantations were developed in the clearings (*waena*) in the forest zone as in Kona.

Kawaihae is the broad shallow bay on the west coast of Kohala which is and was the district's chief seaport. The terrain immediately around it is dry and barren but formerly much dry taro was grown beyond in the lower forest zone, which formerly extended from the Kohala Mountains much farther to seaward over what is now open pasture land. Wet taro was grown also in small pockets of land wherever streams, even intermittent ones, flowed down from the mountains in the wet seasons.

For 1.4 miles along the southern base of Pu'u Hoku'ula, terraces are visible under pasture and house sites, presumably formerly watered by a ditch from Waikoloa Stream. These evidently used to be more or less continuous down to and below Waiaka Stream where the road now crosses. Here in 1935 a Hawaiian planter still cultivated taro in a few terraces irrigated from Waiaka Stream flowing out of the Kohala Mountains. On the Kawaihae side of the road numerous old terrace lines could be seen. There are places in the pasture south of the road that may be traces of old terraces, lines of old walls, or ridges surviving from the era of experimental planting of cane at Waimea.

Between Waikoloa Stream and the Kamuela-Kona highway a few hundred yards beyond Parker Ranch store there are flats, some of which were evidently terraces irrigated by ditches taking water from the large ditch which used to tap Waikoloa Stream just below the junction of the Kona and Kawaihae roads. This large ditch does not look old and presumably was made when cane was planted below Kamuela. Waikoloa is a sizable stream with constant flow of water which was undoubtedly used for irrigating terraces scattered on the plains southwest of the upland town of Kamuela (meaning Samuel—the town was named for Samuel Parker who started the ranch in Waimea). But a

little over a mile east and west of Kamuela its channel is too deep and the bordering ground is too high and irregular for practicable irrigation by Hawaiian methods. The ground bordering its upper course shows no evidence whatever of leveling and terracing. The same is true of the stream along its course through the pastures below the junction of the Kawaihae and Kohala roads.

Dry taro used to be planted along the lower slopes of the Kohala Mountains on the Waimea side, up the gulches and in the lower forest zones. Dry taro was planted also along the slopes toward Honoka'a, and is said to have been grown on the plains south and west of Kamuela.

The Ellis party (1825, p. 217) made a second trip—

to Waiakoa, Waikala, Pukalani and to Puukapu, 16 or 18 miles from the sea-shore, and the last village in the district of Waimea . . . the soil over which he [Mr. Thurston] had passed, was fertile, well watered, and capable of sustaining many thousand inhabitants. He had numbered 220 houses, and the present population is probably between eleven and twelve hundred.

Menzies (1920, p. 56) in his earlier observations of Waimea (1793) had written:

A little higher up . . . than I had time to penetrate, I saw in the verge of the woods several fine plantations, and my guides took great pains to inform me that the inland country was very fertile and numerously inhabited. Indeed, I could readily believe the truth of these assertions, from the number of people I met loaded with the produce of their plantations and bringing it down to the water side to market, for the consumption was now great, not only by the ship, but by the concourse of people which curiosity had brought into the vicinity of the bay.

The coastal section of Waimea, now called South Kohala, has a number of small bays with sandy shores where fishermen used to live, and where they probably cultivated potatoes in small patches. Anaeho'omalua, Waialua, Honokaope, Kalahuipua'a and Pauoa all have sandy strips along the sea; and there is an area of black cinder in this section where sweet potatoes might be grown in rainy seasons. Puako near the Kona border was a sizable fishing village at one time where there were undoubtedly many sweet-potato patches. The same is true of Kawaihae, which was an important locality in ancient times as is indicated by the great temple of Pu'ukohola.

Describing the west coast of Kohala north of Kawaihae, Ellis (1825, p. 217) writes:

The coast was barren; the rocks volcanic. The inhabitants were all fishermen. Mr. Thurston was informed, that the inhabitants of the plantations, about seven miles in the interior, were far more numerous than those of the sea-shore.

HAMAKUA

Isabella Bird (1964, p. 37) wrote a very interesting description of inhabited gulches along the Hamakua coast as she saw them in 1873. This was

almost a century after the first white contact; there were many more Hawaiian dwellings in these coves and on the sloping lands above them in pre-discovery days.

There was a magnificent coast-line of grey cliffs many hundred feet in height, usually draped with green, but often black, caverned, and fantastic at their bases. Into cracks and caverns the heavy waves surged with a sound like artillery, sending their broad white sheets of foam high up among the ferns and trailers, and drowning for a time the endless baritone of the surf, which is never silent through the summer years. Cascades in numbers took one impulsive leap from the cliffs into the sea, or came thundering down clefts or "gulches," which, widening at their extremities, opened on smooth green lawns, each one of which had its grass house or houses, kalo patch, bananas, and coco palms, so close to the broad Pacific that its spray often frittered itself away over their fan-like leaves. Above the cliffs there were grassy uplands with park-like clumps of the screw-pine, and candle nut, and glades and dells of dazzling green, bright with cataracts, opened up among the dark dense forests which for some thousands of feet girdle Mauna Kea and Mauna Loa, two vast volcanic mountains, whose snow-capped summits gleamed here and there above the clouds, at an altitude of nearly 14,000 feet.

The wet-taro section of the Hamakua coast extended from Honoka'a to Kukuihaele, where there is a succession of small terraces with high retaining walls, watered by Waikoekoe Stream. Several of the upper terraces have been converted into small reservoirs, while the lower ones are still used for raising wet taro.

The greatest wet-taro valley of Hawaii and one of the largest planting areas in the entire group of islands was Waipi'o. This vast, flat valley floor was completely developed in terraces for an area about three miles long and one to 0.75 mile wide. Some artificial fishponds took the place of terraces behind the sand dunes flanking the beach. The two large present-day fishponds west of the bay are said to have been one great terrace in the time of the great *ali'i nui*, Umi-a-Liloa, whose chiefdom this was before he unified all the island. This terrace was called Umilo'i, according to Jenny Saffrey, the most eminent living authority on the local history. The taro planted in Umilo'i by the *ali'i* was *kapu* and was used by the people of the valley only when there was a dearth of food.

Besides the main body of terraces on the flat floor of the valley there were terraces up Hi'ilawe, a side valley; others were beyond the area of flatland in the main valley for several miles up Waipi'o Stream and in the side valleys of Waima, Kuiawa, Alakahi, and Kawainui. In 1935 many more terraces were planted in taro than in 1931, when previously visited. During the era of rice growing the lower flatlands of Waipi'o Valley proper were devoted mainly to rice culture by Chinese. In 1935, perhaps a quarter of the lower valley produced taro; many old terraces served for pasturing horses, and the rest were neglected. The interior sections of the main valley and of the inner valleys were a jungle of guava, *kukui*, and other wild growths.