# Native Planters

## In Old Hawaii

## Their Life, Lore, and Environment

E. S. CRAIGHILL HANDY AND ELIZABETH GREEN HANDY

WITH THE COLLABORATION OF MARY KAWENA PUKUI

NATIVE PLANTERS IN OLD HAWAII

# Native Planters in Old Hawaii

## Their Life, Lore, and Environment

E.S. CRAIGHILL HANDY and ELIZABETH GREEN HANDY

*With the Collaboration of*

MARY KAWENA PUKUI

BERNICE P. BISHOP MUSEUM BULLETIN 233

*Bishop Museum Press, Honolulu, Hawaii*

*1972*

*Reprinting of this book was made possible through partial support by a grant from the Institute of Museum Services, a Federal agency in the Department of Health, Education, and Welfare, which offers operating and program support to the nation's museums. The Trustees of Bishop Museum wish to express their gratitude to the Institute for its support.*

*International Standard Book Number 0-910240-11-6*
*Library of Congress Catalog Card No. 78-119560*
*Copyright © 1972 by Bernice Pauahi Bishop Museum*
*All Rights Reserved*
*Second printing 1978*
*Third printing 1991*

*Printed in the United States of America*

## FOREWORD

THE HAWAIIAN PLANTER, VOLUME I, published in 1940, was essentially an attempt to appraise the old native horticulture of the Hawaiian Islands as it existed prior to the introduction of Euro-American plants. In such detail as was feasible in the 1930's when the study was made, the plants raised by Hawaiians, the types of locality and areas in which they were planted, the differentiation of varieties, methods of cultivation, and uses of the plants were studied.

It was shown that the older generation of country natives still had an extraordinarily intimate and thorough knowledge of the many varieties of taro, sweet potato, sugar cane, and banana still cultivated, and that, in their selection of plants and methods of cultivation, they practiced what I believe most agriculturalists would agree was definitely an advanced art of gardening.

Although some plantations were quite extensive, the manual procedures characteristic of all the operations were those of a people who were gardeners rather than farmers. Farming as we understand it involves the cultivation of fields with the aid of domesticated animals or mechanical equivalents, pasturing, seeding, harvesting and storing in quantity. There was no use of domesticated animals in Hawaii because the natives prior to discovery possessed none capable of being harnessed for work. There was no harvesting or storage of foods in quantity, but rather what was to be eaten immediately was picked day by day. The operations of the Hawaiian planter involved an intimate firsthand relationship to the plants and to soil and water comparable to that of a modern flower or vegetable gardener. Compared with gardening, the operations of a farmer may be said to be "once removed" from plants, soil, and water.

By reason of the native's intimacy with plants, soil, and water in his gardening operations, his pattern of culture reflects more directly his planting interests than does the culture of a farming people. For example, as will be shown later, in mythology the origin of mankind is identified with that of taro; and the growth and relationships of the human family are described in terms derived from the culture of taro.

One of the primary reasons for the decision in 1930 to study the Hawaiian as a planter was the realization that in this frame of reference a new comprehension of the very foundation of native culture, lore, mentality, and temperament might be formulated. Studies of political and social conventions, of

material culture, of language, lore, and religion, dancing, the graphic arts, games and sports, war, society, and other phases of the native culture fill many volumes. But these are all external phases of the native civilization, and none represents the true fundamentals of life as lived by Hawaiians.

Two aspects of life as lived by any people are really fundamental: (1) breeding and interpersonal relationship; and (2) feeding and relationship to earth, environment, and natural resources. The externals of culture that have been so thoroughly recorded are the expressions of the native mind and temperament. In planting and fishing, and in having offspring and family relationship, we observe the formative processes which produce the mind and temperament and their products, which in turn are the externals of culture. In *The Hawaiian Planter* and in the study entitled *The Polynesian Family System in Ka-'u, Hawai'i* (1958), and also in the present volume, we have attempted to describe these two basic aspects of native culture.

It is generally assumed that an oceanic people such as the Hawaiians lived mainly by fishing. Actually fishing occupied a very small part of the time and interest of the majority of Hawaiians. For every fisherman's house along the coasts there were hundreds of homesteads of planters in the valleys and on the slopes and plains between the shore and forest. The Hawaiians, more than any of the other Polynesians, were a people whose means of livelihood, whose work and interests, were centered in the cultivation of the soil. The planter and his life furnish us with the key to his culture.

It was the practice of systematic agriculture more than anything else that produced qualities of character in the Hawaiian common people that differed markedly from those typical of other Polynesians. The common people of Hawaii were a peace-loving people. The glorification of fighting prowess existed only amongst the chiefs of Hawaii, whereas amongst the Marquesan and Maori tribesmen every man thought more of fighting than of subsistence. Prestige, status, and village politics engrossed the ruling caste of *ali'i* in Samoa. The hospitality of the Hawaiians toward the first white men who visited their shores was in marked contrast to the avarice of the Samoans in like circumstance. In Hawaii the labor and responsibility of systematic cultivation of taro, which entailed routine and regular work, much of it hard work, produced a physique and a temperament which found uncongenial the disruptive climate of vendetta which was characteristic of the tribalism of the Marquesas, Cook Islands, and New Zealand.

Boys were raised to be farmers rather than fighters. When a boy child was weaned, he was dedicated to the god of agriculture and peace.

The planter's labors on the land and his identification with it were other factors that made the native countryman prefer peace and prosperity to the ravages and excitements of fighting. In their practice of agriculture the ancient planters had transformed the face of their land by converting flatlands and gentle slopes to terraced areas where water was brought for irrigation by

means of ditches from mountain streams. The making of terraces and ditches and their maintenance, and the regulation of water, entailed much cooperative and communal labor organized under land supervisors, or *konohiki*, who represented the landlord. In all the Polynesian islands there was some organized work and some direction in canoe building, house construction, fishing, preparation of food on a large scale for feasts, in war making, and other communal activities. But there was nowhere the continuous organized enterprise comparable to that which was essential to the systematic gardening operations of Hawaii.

The nature of the terrain and the requirements of farming favored the dispersal of homesteads rather than the development of compact villages such as existed in New Zealand and Samoa. And it was because wars were rare that isolated homesteads were safe to live in. If fighting had been as frequent and as common as it was in New Zealand, the Marquesas, and Samoa, Hawaiians would have been compelled likewise to live in compact villages for the sake of safety. There were villages only where the aggregation of houses around good fishing localities along the shore induced propinquity, or where the availability of fresh water was limited.

The settlements at Waikiki on the island of Oahu, and Kailua on Hawaii, were examples of fishing villages. In Ka'u on the island of Hawaii, the compact settlements at Waiohinu and Punalu'u existed because of availability of fresh water in dry terrain. Typically, however, Hawaiian homes were scattered through the areas cultivated from forest to sea. Not only was the character of the people and their culture determined by their planting economy, but also by their demography.

We wish in particular to acknowledge the financial aid of the McInerny Foundation which enabled us to do field work in Ka'u, Hawaii, on Maui, Oahu, and Kauai. To C. Brewer and Company, and Mr. James Beattie, Manager of Hutchinson Plantation at Na'alehu, and Mr. Archibald Johnston of the Plantation staff, we are grateful for hospitality and collaboration. In Ka'u we were aided by Messrs. George Kawaha, William Meinecke, and Fred Hayselden, Mrs. Violet Hansen, and Mrs. Marion Kelly. On Kauai Mrs. Ruth Knudsen Hanner was generous in her hospitality. During the last period of strenuous work to complete the manuscript, Miss Margaret Titcomb's invitation to share her home as her guests was truly a blessing. For typing the manuscript, our thanks go to Mrs. Patience Bacon, Mrs. Sheila Jackson, and Mrs. Mary Judd.

Further, we express our warm appreciation to the editors of Bishop Museum Press, Mrs. Genevieve A. Highland, Editor; and especially to Miss Sadie J. Doyle, Assistant Editor, who has worked with us in the preparation of the manuscript for the printer, and in proofreading.

E. S. Craighill Handy

CONTENTS


PAGE

Part One—Prehistoric Perspectives ..... 1
The Ancient Landfall ..... 3
Early Migrants ..... 8
The Ecological Setting ..... 8
Exploratory and Drift Voyages ..... 10
First Settlement ..... 12
The Native Hawaiian Horticultural Complex ..... 13
The Gods Who Brought the Plants ..... 14
The Effect of Terrain ..... 16
Changes in Natural Environment ..... 17
Basic Patterns of Culture ..... 18
Planters as a Class ..... 19
Terms Connected with Land Culture ..... 20
The Planters' Knowledge ..... 21
Horticultural Skills ..... 21
Pollination ..... 22
Personal Equation Between Planter and Plant ..... 22
Kino Lau: Plant and Animal Forms of Gods ..... 23
Weather Wisdom ..... 23
Engineering and Building Skills ..... 25
The Planters' Crafts and Tools ..... 26
The Months and the Seasons ..... 28
The Seasons ..... 29
The Months of the Year ..... 30
Seasonal Occupations ..... 31
Other Descriptions ..... 33
Divergent Names of Months ..... 37
Phases of the Moon ..... 37
Land ..... 41
Organic Relationship of the People to the Land ..... 42
Generic Terms for Land ..... 43
Island Divisions or Chiefdoms ..... 46
Ahupua'a ..... 48
'Ili ..... 49
Mo'o ..... 50
Other Terms with Reference to Land Usage ..... 50
Status of Landlords ..... 53
Kuleana after the Great Mahele ..... 53

PAGE


Other Land Areas ........ 54
Ko Kaha Kai ........ 54
Kula Lands ........ 55
Kahawai ........ 55
Wao ........ 56
Kuahiwi ........ 56
The Enveloping Sea ........ 56
Water ........ 57
Irrigation Ditches ('Auwai) ........ 58
Consecration of a New 'Auwai ........ 59
Sharing of Flowing Water ........ 60
Structure of Aqueducts ........ 62
Water Rights ........ 63
The "Water of Life" ........ 64
Springs Opened by Kane and Kanaloa ........ 64
Water in Arid Places ........ 66

Part Two—Plants and Animals in the Hawaiian Economy ........ 69
Subsistence Plantings ........ 71
Taro ........ 71
Role and Place in the Culture ........ 74
The Hawaiian Planter and the Staff of Life ........ 77
Lore ........ 79
Mythological Origin of Taro ........ 80
Taro and the God Kane ........ 81
The Plant and Its Cultivation ........ 83
Wild Taro ........ 86
Soil and Planting Methods ........ 88
Wet-Taro Planting ........ 92
Cuttings for Planting ........ 94
Planting ........ 97
Harvesting ........ 101
Dry-Taro Planting ........ 102
Forest Clearings ........ 103
Pa-hala Planting ........ 104
Ha'aheo Planting ........ 105
Planting in Kona ........ 105
Planting on Unforested Kula Land ........ 109
In Kukui Clearings ........ 109
In Fern Forests ........ 110
Uses of Taro ........ 111
Cooking ........ 111
Making Poi ........ 112
Ritual ........ 116
Medicine ........ 116
Implements ........ 117
Digging Sticks ........ 117
Taro Cutters ........ 118
Carrying Poles ........ 118

PAGE

54
54
55
55
56
56
56
57
58
59
60
62
63
64
64
66
69
71
71
74
77
79
80
81
83
86
88
92
94
97
101
102
103
104
105
105
109
109
110
111
111
112
116
116
117
117
118
118

PAGE

Sweet Potato ('Uala) .......... 118
'Uala Culture in Hawaii .......... 124
Terms Applied to 'Uala .......... 125
Wild Varieties .......... 127
Planting and Cultivation .......... 127
Season and Weather .......... 128
Preparation of Soil .......... 128
Irrigation .......... 129
Vine Cuttings .......... 129
Planting .......... 130
Cultivation During Growth .......... 132
Pests .......... 133
Harvesting and Storage .......... 133
Uses .......... 134
Tools .......... 136
Ritual of the 'Uala Planter .......... 136
Lore Behind 'Uala Rituals .......... 142
Tales Told by 'Uala Planters .......... 146
Breadfruit .......... 149
Planting and Cultivation .......... 152
Planting Localities .......... 152
Uses .......... 153
Sayings .......... 155
Banana .......... 155
Native Traditions .......... 156
Probabilities of Introduction .......... 158
Plant Terms and Habit of Growth .......... 160
Planting and Cultivation .......... 161
Seasons of Planting .......... 162
Planting Practices .......... 163
Uses .......... 165
Sayings and Beliefs .......... 166
Coconut .......... 167
Legendary Origins .......... 168
Special Terms .......... 171
Planting and Planting Localities .......... 172
Uses .......... 173
Sayings .......... 175
Tools .......... 175
Yam .......... 176
Cultivated Varieties .......... 178
Planting and Cultivation .......... 179
Planting Localities .......... 180
Niihau .......... 180
Kauai .......... 180
Oahu .......... 181
Molokai and Lanai .......... 181
Maui .......... 182
Hawaii .......... 182

Page


Uses ... 182
Arrowroot ... 183
Sugar Cane ... 183
Terms ... 185
Cultivated Varieties ... 185
Planting and Cultivation ... 186
Uses ... 187
Sayings ... 188
Pineapple ... 188
'Awa ... 189
The Oceanic Spread ... 190
Planting and Cultivation ... 191
General Uses ... 192
Preparation ... 194
Ritual Use ... 195
Prayers and Seances ... 196
Utensils ... 198
Plantings for Practical and Aesthetic Use ... 199
Pandanus ... 199
Famous Groves ... 199
Terms Applied to Pandanus ... 200
General Uses ... 201
Lau Hala Mat Making ... 203
Sayings ... 204
Bamboo ... 205
Famous Groves ... 205
Uses ... 206
Wauke (Paper Mulberry) ... 206
Probable and Legendary Origins ... 207
Planting ... 208
Planting Localities ... 209
Uses ... 210
Gourds ... 212
Descriptive Terms ... 213
Planting and Cultivation ... 215
Uses ... 217
Lono, Gourds, Wind, and Rain ... 218
Stories and Sayings ... 221
Ti ... 222
Ceremonial and Psychic Attributes ... 222
Primary Uses ... 224
Olona ... 225
'Ilima ... 227
'Olena (Turmeric) ... 228
Kukui ... 228
Lore ... 229
Legendary and Historical Distribution ... 230
Terms and Uses ... 231
Kou ... 232

PAGE
182
183
183
185
185
186
187
188
188
189
190
191
192
194
195
196
198
199
199
199
200
201
203
204
205
205
206
206
207
208
209
210
212
213
215
217
218
221
222
222
224
225
227
228
228
229
230
231
232

PAGE

- Hau ... 232
- Hibiscus ... 233
- Wild Plants ... 234
  - Wild Vegetable Foods ... 234
  - Outline of Ornamental and Practical Uses of Wild Plants ... 236
    - Ornamental ... 236
    - Aesthetic ... 237
    - Practical ... 237
  - Therapeutic Uses ... 238
  - Ceremonial Uses ... 240
  - Lore About Wild Plants ... 241
- Animals Raised and Hunted ... 242
  - Dogs ... 242
    - Dogs as Offerings and as Food ... 244
    - The Dog in Mythology ... 246
  - Hogs ... 250
    - Hog Lore ... 251
    - Offerings to Lono ... 253
  - Wild Goats ... 253
- Other Non-Plant Foods ... 254
  - Chickens ... 254
    - Jungle Fowl of Polynesia ... 254
    - Moa and the Pele Migration ... 255
    - Colors, Varieties, and Names ... 255
    - Moa as Ritual Sacrifice ... 256
    - Less Prized as Food ... 256
  - Birds ... 257
    - Birds of the Forest ... 258
    - Sea Birds ... 258
  - Grasshoppers ... 259
  - Fish ... 259
    - Ancient Remainders of Fishponds ... 260
    - Characteristic Construction and Stonework ... 260
    - Stocking the Ponds ... 261
    - Fresh-Water Ponds ... 262
    - Fish Traps ... 263
    - Lore ... 263

Part Three—Demography of the Hawaiian Islands ... 265
- Development of the Demographic Pattern ... 267
  - First Settlers ... 267
  - Demographic Considerations Throughout the Islands ... 269
    - Kauai ... 269
    - Oahu ... 270
    - Maui ... 272
    - Hawaii ... 273
  - Famine ... 273
  - Areas of Dearth ... 274
- Food, Land, Stream, and Sea ... 277
  - Domain Under the Ali'i ... 277

Page


Land, Law, and Water ... 279
Resources Not Fully Utilized ... 280
The Dispersed Community ... 284
Location of Homesteads ... 285
Occupational Contrasts ... 286
The Community of ‘Ohana ... 287
Individuality ... 290
The Farmer's Homestead ... 290
The Common House (Hale Noa) ... 291
The Men's House (Mua) ... 297
Other Functional Structures ... 299
Environmental Adaptation of the Hale ... 300
Family Relationships and Roles in the Kauhale ... 301
Men's Work ... 301
The Woman's Role ... 302
Cooperative Enterprise ... 307
Breeding and Feeding: The Groundwork of Culture ... 309
The Hawaiian Man Primarily a Planter ... 310
The Planter as a Person ... 311
Delights of Planting ... 312
The Planter's Wealth ... 313
Exchange ... 314
The Pule Ipu Rite ... 316
Subincision ... 319
Castes ... 320
Ali‘i ... 320
The Konohiki Class ... 321
The Kahuna Class ... 322
The Maka‘ainana ... 323
The Kauwa ... 324
Maka‘ainana and Ali‘i ... 325

Part Four—The Makahiki Harvest Festival ... 327
The Makahiki and the Rainy Season ... 329
Dating the First Makahiki Festival ... 330
The Meaning of Ka Hiki and Makahiki ... 331
The Festival of Lono, Father-of-Waters ... 331
Lono and Southerly Storms (Kona) ... 333
The Lore of Vulcanism and Rainstorms ... 334
Pele's Domain ... 335
Lono-makua ... 337
The Mythical Rain Cycles ... 338
Domain of Kamapua‘a ... 338
A Kino Lau of Lono ... 339
Epithets Applied to Lono ... 342
Lono in Tahiti and New Zealand ... 345
The Makahiki Rituals ... 346
The Symbol of Lono ... 346
The "Short God" (Akua Poko) ... 349
The Harvest Offering (Ho‘okupu) ... 349

PAGE


279
280
284
285
286
287
290
290
291
297
299
300
301
301
302
307
309
310
311
312
313
314
316
319
320
320
321
322
323
324
325

327
329
330
331
331
333
334
335
337
338
338
339
342
345
346
346
349
349


PAGE


- The Altars of Lono ..... 354
- Feeding by the "King" (Mo'i) ..... 357
- Commemorative Boxing, Games, and Dancing ..... 357
- The Hula in Relation to Planting and Harvest ..... 360
- The Testing of the Mo'i ..... 366
- Kahoali'i ..... 367
- The Net of Maoloha ..... 369
- Lono's Canoe ..... 370
- Similar Maori Customs ..... 370

The Makahiki after Unification of the Islands ..... 371

Captain James Cook Welcomed as Lono ..... 373
- The "Return of Lono" ..... 373
- Notes on King's Description ..... 379
- Death of the "God" ..... 380
- An Interpretation ..... 382

Shrines and Prayers to Promote Abundance ..... 385

Part Five—Descriptions of Areas of Habitation on Each Island ..... 389

The Island of Kauai ..... 391
- Geology ..... 391
- Waimea, the Kauai Type Area ..... 393
- Waimea Canyon Area ..... 394
  - The Backlanders (Kua'aina) ..... 397
  - Forest of the West Canyon Rim Plateau ..... 400
  - Lower Waimea Valley ..... 402
  - Na Kiki-a-'Ola: The "Menehune Ditch" ..... 403
- Waimea Delta ..... 406
- Waimea Village and the Coastal Environs ..... 408
  - Kekaha ..... 409
  - Mana ..... 410
- The Upland Determinant ..... 411
  - Polihale ..... 412
- The Napali Coast ..... 414
- The Northeastern Coast ..... 417
- The Ko'olau ..... 421
- The Moku of Puna ..... 423
- Kona, the South District ..... 427

The Island of Niihau ..... 432

The Island of Oahu ..... 434
- Ko'olau, the Windward Type Area ..... 434
  - Round of the Seasons ..... 437
  - Physiography ..... 442
  - Tradition and Lore ..... 446
- Southward in Ko'olaupoko ..... 452
  - Waiahole (Water-of-the-Ahole-Fish) ..... 452
  - Ka'alaea (The-Ocherous-Earth) ..... 453
  - Waihe'e (Octopus-Water) ..... 453
  - Kahalu'u (Diving-Place) ..... 454
  - He'eia (Washed-Away) ..... 454
  - Kane'ohe ..... 455

P

Kailua
Waimanalo
Ko'olauloa, North of the Type Area
Kaipapa'u
La'ie
Malaekahana and Keana
Kahuku
Waialua, the Sunset Coast
Waimea
Wahiawa
Waialua
Mokule'ia
The Wai'anae Region
'Ewa, the Leeward Type Area
An Ali'i Stronghold
A Famous Taro Variety
Legends
The Kona Coast of Oahu
Moanalua
Kalihi
Kapalama
Nu'uanu
Honolulu
Manoa
Waikiki
Palolo and Eastward
Building of Irrigation Systems on Oahu by Ali'i
The Island of Maui
Geology
Geography
The Alaloa ("Long Road") and Other Trails
Land Division
Lahaina, the Type Area
Early Descriptions
Ka'anapali
Na Wai Eha ("The Four Streams")
Hamakua
The Ko'olau
Hana
Kipahulu
Kaupo
Kahikinui
Honua'ula
Kula
The Islands of Molokai and Lanai
Molokai
Lanai
The Island of Hawaii
Kona

PAGE

457
457
460
460
461
462
462
463
463
464
465
467
467
469
470
471
472
473
474
475
475
475
479
479
480
483
484
485
485
487
489
491
492
492
494
496
498
498
502
507
507
508
508
510
511
511
520
520
522

PAGE

Kohala ..... 528
Hamakua ..... 532
Hilo ..... 538
Puna ..... 539
Ka'u, the Type Area ..... 543
  Geology ..... 543
  Prehistoric Perspective ..... 545
  The Colonists Land ..... 547
  Their Subsistence Economy ..... 547
  The Endemic Wilderness Retreats ..... 548
  The Original Endemic Flora ..... 549
  Endemic Birds ..... 553
  Postdiscovery Descriptions of the Area ..... 553
  The Terrain ..... 555
  Environmental Determinants ..... 556
  Geographical Determinism and the Potency of Heritage ..... 558
  The Climate ..... 559
    Manuka ..... 560
    Kahuku ..... 560
    Pakini ..... 561
    Kama'oa ..... 561
    Wai-o-'Ahu-kini ..... 561
    Ka Lae ..... 562
    Ka'alu'alu ..... 562
    Waikapuna ..... 563
    Waiohinu ..... 563
    Na'alehu ..... 563
    Honu'apo ..... 563
    Ninole ..... 564
    Punalu'u ..... 564
    Hilea ..... 564
    Kilauea Volcano ..... 564
  Organic Relationship of the People to the Land ..... 565
  The Cataclysm of 1868 ..... 566
  Ka'u Areas of Habitation Described ..... 568
    Manuka ..... 569
    Kahuku ..... 571
    Ka Lae (South Point) ..... 572
    Wai-o-'Ahu-kini ..... 575
    Pakini and Kama'oa ..... 578
    Kiolaka'a to Waiohinu ..... 584
    Waiohinu ..... 586
    Punawai-o-Ha'ao ..... 589
    Ka'alu'alu ..... 593
    Na'alehu ..... 595
    Waikapuna ..... 598
    Pa'ula ..... 600
    Honu'apo ..... 604
    Ninole ..... 605

PAGE

Punalu'u ..... 608
Hilea ..... 610
Kapapala ..... 613
Keauhou ..... 614
Kilauea ..... 615
Kamapua'a and Pele: Rainstorm and Verdure versus Vulcanism ..... 618

Appendix ..... 623
Plant Identifications ..... 625
Bird Identifications ..... 627
Fish Identifications ..... 628
Shellfish Identifications ..... 629
Mammal Identifications ..... 629

Bibliography ..... 631

(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 *konohiki,* 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 *konohiki* 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 *konohiki*. 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 *konohiki* 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 Koaie 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. Waiamau, 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-embrasured 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 women 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.