The Polynesians showed a remarkable ability to use indigenous plants throughout their island homes. Early European explorers were deeply impressed with Polynesian agricultural plants, and indeed the ill-fated expedition of H.M.S. Bounty to Tahiti was launched to collect a Polynesian tree-crop, Artocarpus altilis (Moraceae) or breadfruit, for use in the Caribbean. Roggeveen was very impressed with the technological skill displayed in the construction of the Samoan oceangoing vessels he encountered, since these boats "were not hollowed-out trees, but made of planks and inner timbers and very neatly joined together, so that we supposed that they must have some tools of iron" (Roggeveen 1771–1772, 151).

Ornamented bark cloth, collected from various islands, was made into books by some of the enterprising crew of Cook's voyages and sold at a premium in London. Few European expeditions returned without at least some of their crew being tattooed by Polynesian artists working with ink made from the kukuí tree, Aleurites moluccana. And the intricate Maori meeting houses, ornamented with beautifully carved timbers and woven panels, captured the imagination of European architects. Yet one of the uses of plants by Polynesians merited scant mention by the first European visitors, even though paradoxically it is regarded by many modern Polynesians as the most impressive use of plants by their ancestors. This is Polynesian herbal medicine.

The practice of Polynesian herbal medicine continues today throughout Polynesia, despite subtle and occasionally overt discouragement from island governments, educational institutions, and medical establishments. Practicing Polynesian herbalists can be found not only throughout the islands, but also in expatriate populations of Polynesians living in Auckland, Sydney, Honolulu, San Francisco, and Los Angeles.

Studies of Polynesian herbal medicine as it is practiced today raise a number of intriguing questions. What were the historical antecedents of Polynesian herbal medicine? Is Polynesian herbalism a tradition beginning long before European
contact, or is it, as some have suggested, much like Christianity—a European introduction that has subsequently been embraced by the Polynesians? Does Polynesian herbal medicine have an empirical basis, or is it solely rooted in the legends and animism of former years? Does Polynesian herbal medicine constitute a consistent body of theory and practice throughout Oceania, or does it differ greatly from island to island? What are the intrinsic differences between Western and Polynesian medicine, and must these disparate traditions be unavoidably and unalterably in conflict? And finally, what is the efficacy of Polynesian herbal medicine? Do sick people treated by it get better, and if so, why?

Ethnomedicine

To approach these questions, it is first necessary to view Polynesian herbal medicine within the broader context of ethnomedicine. Nearly all cultures, including Western culture, have developed ways of dealing with disease and treating the sick. While these traditions differ dramatically, there are three features that unite them. All ethnomedical traditions have (1) a collection of cosmological beliefs that attempt to explain the cause, nature, etiology, and treatment of disease; (2) a group of substances or compounds, usually derived from plants, which are believed to be efficacious in treating the sick; and (3) a health care delivery system, or cultural context in which various treatments are provided to the sick and afflicted.

All three of these features differ from culture to culture, but are so deeply embedded within a culture that it is sometimes difficult for members of a particular culture to even conceive of any different way of viewing these three different features of ethnomedicine. For example, modern Western cultures teach that (3), most infectious disease is caused by microorganisms that have invaded the body. They believe that unless the body’s immune system is successful in overcoming this microbial challenge, it may be necessary (2) for the sick person to take, either orally or by injection, antibiotic substances usually derived originally from molds or other lower plants, but sometimes produced synthetically. In Western cultures, these substances are (3) provided on the advice of a physician, frequently dressed in white clothing, who is paid both money and cultural respect for his or her services.

Few Western people would feel comfortable being treated by Navajo healers, yet to Navajo culture, Western medicine is equally alien. To the Navajos many diseases (1) are caused by disharmony between the sick person and nature, possibly as the result of violating a cultural prohibition, such as entering the hogan of a dead person in the wrong fashion. In such cases it may be necessary (3) for the person to ingest medicinal plants and undergo ritual purges, possibly in combination with a sweat bath. The treatment is guided (3) by a healer, who sings traditional songs with the afflicted person’s kin, while making a sand painting that is later destroyed, taking with it the vestiges of the disease.

Polynesian ethnomedicine also differs significantly from Western medicine, yet appears to its adherents as a logical and sensible way of treating the sick, as do indeed most ethnomedical traditions appear to those who rely upon them. As
Reid pointed out in her seminal study of ethnomedicine in North Arnhem land, Australia, “Yolngu beliefs about causality in illness are not illogical superstitions. Sickness, sorcery and social events are linked in a logical structure which is comparable to a Western scientific theory” (Reid 1943, xx).

In this sense, Polynesian ethnomedicine can be seen as a scientific paradigm (see Kuhn 1962). A paradigm, according to Kuhn, is a model of theory and application “from which springs particular coherent traditions of scientific research” (Kuhn 1962, 19). A paradigm is therefore a way of viewing the world so that scientists who share a paradigm are “committed to the same rules and standards for scientific practice” (Kuhn 1962, 11). Examples of different paradigms include Copernican astronomy, Newtonian mechanics, or Aristotelian dynamics. Such paradigms, when viewed from within, have logical consistency, reasonable fit of theory to observed data, and offer the means and hope to solve questions of interest.

One of the major triumphs of historians of science in recent years has been to explain previous scientific paradigms from within the context of the paradigms; that is to say, historians of science now attempt to explain previous modes of science on the basis of the world views, questions, methods, and approaches that seemed reasonable at the time of their practitioners. By so doing, historians of science have forced us to expand our definition of what science is. Simply put, we ought broadly define science as the attempt to systematize observations about the world, ask meaningful questions about those observations, and make predictions based on those observations.

Since ethnobotany is a branch of ethnoscientific it is task is to explore indigenous approaches to plants within indigenous paradigms. Can Polynesian healers therefore be considered in some sense scientist? In the schemes of Kuhn (1962) and Feyerabend (1978) they can, for Polynesian healers have developed a systematized group of observations about the world, they have theories explaining these observations, and their theories have predictive value about future events.

To facilitate discussion of Polynesian ethnopharmacology, I will examine Polynesian ethnomedicine in terms of the three broad ethnomedical categories that I have outlined. I will: (1) explore Polynesian explanations for disease causation, etiology, and treatment, (2) describe the Polynesian repertoire of plant-derived substances believed to be efficacious in healing, and, (3) seek to explain the distinctive patterns of traditional health care delivery systems in Polynesia, I will then conclude with a few thoughts on the origin of Polynesian herbalism.

Polynesian Theories of Disease Causation

In Polynesian cultures, much more than in European cultures, an individual is part of a highly defined and important social context. An individual is deeply identified within a kinship network consisting of departed ancestor and current, extended family groups descended from a single ancestor, or extended family groups entered into by marriage or tied together by other bonds of consanguinity. In contrast to modern Western societies where individuals are frequently
isolated from their extended families and where even nuclear families are increasingly ephemeral in nature, the ‘iga,’ or extended kinship group of Polynesians, is extremely important, and extends far beyond household units to encompass entire clans and village or multivillage units.

Many of the ambiguities of social life found in European cultures are absent in Polynesia because of the precise hierarchical structure that is the warp and woof upon which the Polynesian cultural fabric is woven. Polynesian rhetoric, ceremonial activities, political structures, and village life constantly reinforce and confirm the hierarchical social structure. For example, on ceremonial occasions, kava (a water-based infusion of the rhizome of Piper methysticum [Piperaceae]) (see Lebot’s chapter, this volume) is distributed to the assembled chiefs in decreasing order of rank. Even among children, a strict hierarchy based on age occurs. As Kirch argues (this volume) and to which I have alluded (Cox 1980a), this hierarchical structure of Polynesian societies may have been culturally adaptive in that it allowed communal control of crucial resources during time of scarcity or famine. But regardless of its genesis, the hierarchical nature of Polynesian societies has directly influenced patterns of illness and healing.

This highly articulated cultural structure places many duties and responsibilities upon its participants. Membership within a kinship group carries with it responsibilities to both the living and the dead, and an individual’s responsibilities to the village and chieftain in which he or she resides as well. In Polynesian belief, violation of these responsibilities may result in illness.

Thus, in contrast to Western theories of disease causation, Polynesians believe that abrogation of familial responsibilities as well as interpersonal hostility may result in illness. To Tongan, healers, taumata (healthiness) depends on how well an individual meets his or her familial and social responsibilities (George, 1989). Covert or direct hostility against unrelated individuals may also result in illness (Sato, 1989). These diseases are serious diseases whose symptoms resemble osteomyelitis, is said to occur in individuals who have given offense to a resident of the local village. However, unlike some Melanesians, who believe that sorcerers may deliberately cause disease (Syerner 1941), Polynesians generally believe that such ailments are not caused as retribution by living individuals, but are the natural consequence of straining the social fabric or violating tapu. Even in Tuvalu, where some illness is attributed to the use of sorcery, such illness is equated with result from inappropriate use of magical powers (Chambers and Chambers 1985).

Polynesian healers also believe that illness may occur without the agency of supernatural forces in individuals who harbor hostile thoughts, for the simple reason that such individuals estrange themselves from their familial and social bonds. Being alone and without companionship of friends or family, either as the result of irresponsible behavior, or by something as simple as traveling alone to the forest, is not viewed as a healthy circumstance by Polynesians. Neither is living in strained familial or social environments. As a result, Polynesian healers are very sensitive to circumstances that may have induced a sense of isolation in a sick individual and frequently seek to resolve such difficulties by reducing tensions and reintroducing the sick individual into his or her normal social context. This is a very different approach than that of Western medicine which frequently removes
sick individuals from their normal social context, and places them in a completely new environment, such as a hospital, that has completely different hierarchy and novel patterns of social interaction.

The attempt by Polynesian healers to reintroduce a sick individual to a normal social context can be seen by the way in which Samoan healers treat the disease called mua. An adolescent girl who becomes increasingly estranged from her family may eventually manifest the symptoms of mua: a psychological malady characterized by near autistic withdrawal from all social interaction, inability to speak, and in severe cases partial paralysis. All these symptoms mimic those of spiritual possession, but there is a subtle difference: a possessed person is not aware of his or her identity, but a person with mua remains aware of their own identity (Kinch 1943b). Samoan techniques in dealing with mua differ somewhat from healer to healer, but all approaches have a similar objective: reduction of the familial tensions that led to mua in the first place. As several healers have commented to me, they do not regard mua as a genuine case of spiritual possession, but rather the result of a strained familial environment. Thus, healers usually initiate a rather elaborate treatment with incantations and seemingly ritual gestures quite uncharacteristic of other Samoan medical practices (but see Moye 1974). This treatment insistently culminates in the afflicted person speaking in a slow and sonorous voice about perceived inequities in the familial structure. Since family members believe the person speaking in such a manner to be spiritually possessed, his or her utterances are regarded as privileged speech not subject to censure. After the possessed person delivers a long and frequently harsh discourse, the “spirit” usually leaves the afflicted person, who is then “cured.”

Other supernatural agents that may cause illness in Polynesian cultures include spirits, aitu or aitu, which Feinberg (1979) appropriately glosses as “spooks.” Ellis reported in Hawai‘i that healers who successfully treated spiritual possession gained a good deal of respect, such as Oroepoa and Makaumiaiona, “who were deemed alive after death, particularly because they were frequently successful in driving away the evil spirits by which the people were afflicted and threatened with” (Ellis 1826; Chun 1876). Spooks occur in the forest or in lonely places at night, and may cause disease or even possession in the unwary. Disease caused in Polynesia have received a great deal of attention by cultural anthropologists, and, interestingly, by the early Christian missionaries (for reasons discussed below), but such diseases and possessions are relatively infrequent among modern Polynesians.

Improper diet is also seen by Polynesian healers as an important cause of disease. Much time is spent by Polynesian healers in counselling patients, particularly pregnant women, about diet. In Samoa, healers frequently counsel individuals to avoid fatty, sweet, or refrigerated foods. Special foods, such as swiwi (a porridge made from Manihot esculenta [Euphorbiaceae] tubers), Spinifex ducis (Acaena ducis) fruits, and coconut milk are given to mothers immediately after childbirth. Polynesian herbal treatments frequently include dietary restrictions for the afflicted person.

Healers also name inadequate hygiene as a cause of disease. High standards of personal cleanliness in most Polynesian societies merit comment by early European visitors to Polynesia.
Other sources of disease in Polynesian ethnomedicine include organic trauma, such as breaking a leg or stepping on a sea urchin. In addition, most modern Polynesian healers believe in some form of the germ theory of disease causation. As a result, Polynesian healers do not see their beliefs and treatments as being inimicable to Western medicine. Most have a pluralistic view, believing that some diseases are best treated by Western medicine while others would most quickly be resolved by traditional remedies. Both Parsons (1985) and George (1989) record distinct partitioning of diseases by Tongan healers into mahaki (gusa'upaga) (Western diseases) or mahaki (fakutonga) (Tongan diseases); the choice of Western or Tongan therapy is determined by the disease category.

These different views of disease causation, however, compound the problem of relating Polynesian disease categories to Western categories. As a result, there are probably few linguistically competent ethnobiologists who have not agonized over the translation of indigenous disease categories into Western terms. Pharmacognosists and physicians properly expect us to translate into terms they understand the disease for which Psychotria insularum (Rubiaceae) is used. And yet I find myself as speechless in communicating the realities of the disease oso fa puni moa in Western terms as do my bilingual Samoan friends. This situation is particularly frustrating for ethnobotanists, as the frequent agreement between Polynesians and trained botanists on the limits and identities of plant species is extraordinary, yet there is frequently little correspondence between Polynesian and Western disease categories.

Some general patterns do, however, appear in the construction of Polynesian disease categories: (1) Polynesian diseases are usually labelled with a binomial composed of a generic term with a specific modifier; (2) classification rules uniting genera are unknown to informants; (3) disease categories above the generic level are not used; and (4) Polynesian disease taxonomies consist of unrelated generic terms of differing degrees of articulation.

As an example, the disease category iti is used throughout Polynesia. Several binomials for iti disease in Tahiti and Samoa are illustrated in Table 1. In both places, iti includes disease of childhood although some adult ailments are also included. What is striking here is the use of the same generic term with completely different specific modifiers between the islands. Healers are not able to delineate the specific reasons why all these disparate ailments are included within the iti category, nor are they able to describe how this category relates to other categories. This and similar examples throughout Polynesia suggest the possible existence of a proto-Polynesian disease classification system that through the years has been modified with concurrent loss of connections between different generic terms.

There are at least seven different ways in which generic-level terms for disease categories originate, as shown by an analysis of Samoan disease terms (Table 2). Aute, for example, is the word for worms and means "worms," the disease taking it name from the cause. Ate or "liver" and fete or "swollen" provide an anatomical origin for a disease name, while malaga umex is morphological, referring to the shape of certain head ulcerations. New mothers are vulnerable to hiite gau while fefefe summons the vision of an octopus crawling inside one's intestines. Lepela is a transliteration of the Western term "leprosy;" while lafai is an irreducible moneme for ringworm.
Table 1. Ile Disease Types in Samoa and Tahiti

<table>
<thead>
<tr>
<th>Name</th>
<th>Source</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>ia 'a'u</td>
<td>Samoa</td>
<td>red eyes, fever</td>
</tr>
<tr>
<td>ia 'a'u tama</td>
<td>Samoa</td>
<td>birthmarks</td>
</tr>
<tr>
<td>ia 'a'it</td>
<td>Samoa</td>
<td>inflammation of buttocks</td>
</tr>
<tr>
<td>ia 'a'at</td>
<td>Samoa</td>
<td>unexplained crying</td>
</tr>
<tr>
<td>i'a miti</td>
<td>Tahiti</td>
<td>morning fever</td>
</tr>
<tr>
<td>ia va'a'a</td>
<td>Tahiti</td>
<td>pain on one side of face</td>
</tr>
<tr>
<td>ia lhiure</td>
<td>Tahiti</td>
<td>inflammation of urthra</td>
</tr>
<tr>
<td>ia 'ui</td>
<td>Tahiti</td>
<td>pus from ears</td>
</tr>
<tr>
<td>ia 'a'ite</td>
<td>Tahiti</td>
<td>painful lips</td>
</tr>
<tr>
<td>ia noa'a</td>
<td>Tahiti</td>
<td>darkened lips</td>
</tr>
</tbody>
</table>

Tahitian data from Hooper 1985.

Table 2. Examples of Samoan Disease Categories

<table>
<thead>
<tr>
<th>Type</th>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal</td>
<td>ia'eatu</td>
<td>worms</td>
</tr>
<tr>
<td>Anatomical</td>
<td>ate fuipe</td>
<td>swollen liver</td>
</tr>
<tr>
<td>Morphological</td>
<td>malaga suvite</td>
<td>bowel scabs</td>
</tr>
<tr>
<td>Personal</td>
<td>ualite gas</td>
<td>sick mother</td>
</tr>
<tr>
<td>Symbolical</td>
<td>fee'a'e</td>
<td>octopus</td>
</tr>
<tr>
<td>Foreign</td>
<td>ilepiu</td>
<td>impetigo</td>
</tr>
<tr>
<td>Predicudable</td>
<td>ile'</td>
<td>ringworm</td>
</tr>
</tbody>
</table>

Polynesian Pharmacological Materials

Upon diagnosis of a sickmen, Polynesian healers have different sorts of therapies available, including therapeutic massage, physical therapy, and dietary and family counselling. However, in many cases the healer will decide to employ remedies prepared from natural products. Polynesian ethnomedicine relies almost exclusively upon preparations from vascular plants even though many marine invertebrates and some fish species are known to be pharmacologically active. However in Hawaii, some species of the algal genus Ulva were used medically (Neal 1934).

The choice of plants to be used is constrained by the healer's personal repertoire of medicinal species. Several factors influence this repertoire. First, the composition of the local flora will influence a healer's familiarity with particular species, although some healers know and use medicinal plants found in areas distant to their home village. Consequently, there is a small but significant traffic in medicinal plants within and between islands. For example, fa safari or Tongan healers in Nuku'alofa on the island of Tongatapu, use many medicinal plants.
carried from the neighboring island of ‘Eua by family members and friends. In many Polynesian markets a few common herbal remedies such as leitu (dried and powdered rhizomes of Curcuma longa) can be purchased.

Second, knowledge systems concerning medicinal plants are strongly family-based, and (particularly in Samoa) are frequently matrilineal. Thus ethnopharmacopoeias vary somewhat from healer to healer, based on the healer’s familial affiliations and training.

Finally, Polynesian healers frequently have a sense of ownership of certain herbal formulations which approximates Western concepts of intellectual property rights as codified by copyright and patent law. However, where Western law seeks principally to protect financial benefits derived from intellectual property, Polynesian healers primarily seek to preserve efficacy of their herbal remedies. Thus, even though one healer may know the remedy used by another healer, he or she will not use the other healer’s sui or remedy, not only out of a sense of propriety, but also because he or she knows that unauthorized use will not be efficacious in healing the sick. As Hooper found in Tahiti:

Ra‘u [herbal remedies], however, are regarded as personal property. Even though the prescription may be a simple one, learned and committed to memory within a matter of minutes, it remains the property of an owner . . . and should not be made except under his or her direction. Failure to do so is widely believed to result in that medicine being ma‘u ‘spoiled’ and rendered ineffectual (Hooper 1985: 170; see also Hooper 1978).

In Tonga, George (1989) described a procedure called fanofano‘i in which a healer bestows authority on an apprentice to prepare his or her remedies. Feinberg (1979) mentions a similar bestowal of “proprietary rights” to an herbal remedy in Anuta. Yet the authority to prepare a remedy does not imply that the healer claims ownership of the plants from which the remedy is formulated. Most Polynesian healers believe that the plants they use are in their medicine are a gift of God. As Samoan healer Epenesa Maulago told me:

E tautu ona e manata a le‘i sau le paia i Samoa sa le naua tagata Samoa foma‘i, fa‘ema‘i, lui o‘ona, ma le avavano e fa‘a tipiga. Pau lava le mea sa maua tagata o le‘i le vao sa alofa mai e le Atua.

You should remember before Europeans came to Samoa that Samoans did not have doctors, hospitals, antibiotic shots, or the ability to perform surgery. All that the people had was the plants in the forest that God had given them.

As I will later suggest, this belief, although expressed in Christian terms, may date from pre-European contact times since it occurs in different islands and among healers from a variety of religious persuasions.

In contrast to Chinese or Japanese herbal medicine, Polynesian herbal remedies are almost always formulated from fresh, rather than dry, plant materials. Healers are very specific as to the particular part of the plant used in formulation. As a result, Polynesian healers converse using a rich botanical ter-
Polynesian ethnobotanies are equally impressive, with the total. Polynesian ethnopharmacopeia probably being in excess of 500 species. This large number of species is partially due to the tremendous ecological diversity and the high rates of plant endemism of islands colonized by the Polynesians.

In a review of the literature, Zepernick (1972) found that 427 plant species from over 200 genera had been reported as being used in Polynesian medicine. Comparing these species to the pharmacopeias of other geographical areas, Zepernick reported that 55 of these species were official in Western medicine. 1 was used in European folk medicine, 16 were used in Chinese and Tibetan folk medicine, and 72 were used in Malayan folk medicine (excluding Fiji). Thus, according to Zepernick's data, 66 percent of the Polynesian ethnopharmacopeia is used for medicine only in Polynesia (Fig. 1). This, Zepernick believed, suggests that Polynesian herbal medicine is a heritage from pre-European times. I will discuss a bit later in this essay Zepernick's hypothesis.

Although a few Polynesian healers indicate that they choose plants for their formulations based on dreams or other spiritual phenomena, the majority use only those in whose use they were instructed by their mentor during their apprenticeship. As a result, Polynesian herbal medicine is a strongly conservative tradition, with very little experimentation with new plants occurring. Polynesian healers claim that their choice of plants used in formulations is therefore ultimately based on efficacy, rather than on other considerations such as the Doctrine of Signatures (the utility of a plant can be deduced from its appearance) as developed in Western folk medicine.

Polynesian Medicinal Plants

% Species Used in Other Cultures

- 85% Used in Polynesia
- 17% Used in Western Medicine
- 4% Used in China & Tibet
- 10% Used in Melanesia

427 species total

Data from Zepernick 1972

Figure 1. Polynesian Medicinal Plants
There are scientific reasons to believe that the plants used in Polynesian medicine may indeed be efficacious in treating disease. A recent survey of 74 plant species used in Samoan herbal medicine showed that 86 percent demonstrated pharmacological activity in either a broad *in vitro* or *in vivo* screen (Cox et al. 1989). The pharmacological activity of the Samoan ethnomedicinal flora can also be inferred from different screening techniques. Norton et al. (1973) tested 24 of the same species for pharmacological activity; 63 percent were found to produce significant hypotensive effects in rats.

Plant families prominent in Polynesian healing (based on number of different species used) include Leguminosae, Euphorbiaceae, Poaceae, Compositae, Rubiaceae, Gramineae, Verbenaceae, and Myrtaceae. Examples of individual species that are used widely for medicine throughout Polynesia include *Aleurites moluccana* (Euphorbiaceae), *Artocarpus altilis* (Moraceae), *Calophyllum inophyllum* (Guttiferae), *Casuarina equisetifolia* (Casuarinaceae), *Cocos nucifera* (Palmae), *Colocasia esculenta* (Araceae), *Curcuma longa* (Zingiberaceae), *Gardenia taitensis* (Rubiaceae), *Hibiscus tiliaceus* (Malvaceae), *Morinda citrifolia* (Rubiaceae), *Pandanus tectorius* (Pandanaceae), *Piper methysticum* (Piperaceae), *Porma taitensis* (Verbenaceae), *Solanium nigra* (Solanaceae), *Syzygium malaccense* (Myrtaceae), *Thespesia populnea* (Malvaceae), and *Zingiber zerumbet* (Zingiberaceae).

Specific botanical details of plants used in Polynesian ethnomedicine will appear in an upcoming survey of Polynesian herbal medicine by Whistler as well as in my intensive analysis of Samoan herbal medicine, *Samoan Ethnomedicine: O Le Faiga Vai Samoa*. To give an indication of the amount of (or lack of) ethnomedical and pharmacological information known about some of these common Polynesian medicinal plants, brief synopses are given of three species. The pharmacological activity of the first species, *Aleurites moluccana*, has been somewhat investigated, while the second species, *Zingiber zerumbet*, has received only cursory attention, and the third species, *Gardenia taitensis*, has not been studied by all Western pharmacologists and chemists.

*Aleurites moluccana* (L.) Willd. (Euphorbiaceae)

This large tree of secondary forests was introduced throughout Polynesia during the early Polynesian voyages of discovery (see Whistler, this volume). It has different names in the different Polynesian groups—in Hawaii it is called *kakui*; in Tahiti, Rurutu, and Rimatara *tuaui*; in Tonga, Makatea, Uvea, Futuna, *'tubuai*, and Nuku *tubui*; in Mangareva, *rama*; in the Marquesas, *lama*; and in Samoa it is called *lama*. The Polynesian roots of all these words mean "light" because, as its English name implies, the candlenut tree was used in ancient times to provide light. The oil derived from the nut was burned by the Hawaiians in stone lamps. In Samoa, the nuts were strung together on the midribs of coconuts and would give light all night to a darkened hut. In fact, the word for nighttime fishing in Samoa is *lama*, because candlenut torches were used in the canoes to provide illumination for spear fishermen.

In Samoa the oil is used in ointments and as a mild purgative. In Tahiti, a water infusion of a mixture of plants including the seeds of *A. moluccana* is given to
a child to drink as a remedy for urethritis. A boiled extraction of a mixture of plants, including the grated bark of *A. melicoccaea*, is bathed in daily for hemorrhoids (Grepin and Grepin 1984). In the Cook Islands, a medicine made from the crushed seeds, formulated with grated limestone, is used in a massage for *hui*—an ear infection oozing pus—and *nui kai nero*—severe headache, sometimes with nausea and high temperature (possibly meningitis) (Whistler 1983). In Tahiti the nuts are used in medicines for the same ailment (Whistler 1985). In Hawaii the leaves were used for poultices for deep contusions and swellings (Handy et al. 1934).

*Aleurites moluccana* is used medicinally in regions outside of Polynesia as well. In New Guinea the oil is used as a contraceptive (Holdsworth 1977). In Indonesia the bark is used to treat dysentery and tansih (De Clercq 1927). In Malaysia the pulped kernels or boiled leaves were applied to treat headaches, ulcers, and swollen joints (Burkill and Haniff 1920). In the Philippines the fresh leaves are used as a treatment for rheumatism and the seeds are considered mildly purgative (Guerrero 1921; Quisumbing 1951). However, Soriano (1940) reported that they must be used in small doses, as accidents have occurred in their use as a treatment for cholera. The fresh, oiled leaves are indicated as a treatment for rheumatism. Fruits, thrown into rivers, are said to stupefy fish.

As with many other Polynesian medicinal plants, *A. melicoccaea* has other uses as well. An indelible dye made from the seeds is used to color mats and bark cloth, and was used in tattooing. The beautiful, polished seeds are strung together throughout Polynesia to make lovely leis. The candlenut trees themselves are beautiful and strong, with fragrant white flowers. Indeed, their scientific name, *Aleurites*, is the Greek word for "floury." Today, the candlenut tree is the state tree of Hawaii because of the multiplicity of its uses to the ancient Hawaiians for light, fuel, medicine, dye, and ornament, as well as the distinctive beauty of its light-green foliage which embellishes many of the slopes of our beloved mountains" (Neal 1965, 506).

Broad pharmacological screens show *A. melicoccaea* to be pharmacologically active (Cox et al. 1989). Chemical analyses indicate a variety of active compounds (Duke 1985). Contact with the latex can cause acute dermatitis, as part of the tree contains a sapoquin and phytoxin. Symptoms from eating the seeds are severe stomach pain, vomiting, diarrhea, debility, slowed breathing, poor reflexes, and possibly death. Toxic components include quecritin, rutin, and sapoquin (Duke 1985). The oil cake, containing approximately 46.2 percent protein, 44 percent P2O5, and 2.0 percent K2O, is said to be poisonous. A toxic albumin and HCN have been suggested. Extracts from the dried seeds exhibit antitumor activity in the P388 mouse leukemia cell line (Ferrigni et al. 1982). Several different triterpenes and steroids have been isolated from *A. melicoccaea* seeds, and currently the oil from the seeds is being commercially extracted and used in the cosmetic and natural pharmaceutical industries.

*Zingiber zerumbet* (L.) Smith. (*Zingiberaceae*)

*Zingiber zerumbet* is a small, perennial, herbaceous plant with fragrant inflorescences borne terminally on leafless shoots arising directly from the subter-
raneean rhizome. Within the succulent inflorescence, numerous delicate, white flowers are borne in the axils of red bracts. In Samoa, it is called 'ane puʻi; in Hawaii, 'muʻupuʻi; in the Marquesas, tokupuʻi; in Raivavae, opuʻi; in Tahiti, rea moru; in the Cook Islands, kopi tenua; and in Tonga, ʻangaʻanga. The fluid from the inflorescence has been traditionally used throughout Polynesia as a hair balm; this use continues in modern-day Samoa.

In Tonga, the rhizomes of Z. zeylanica are used for a variety of ailments of the mouth, including pala ngatu (sore of the mouth), pala fistia (oral thrush), kiʻicelou nifo (swollen gums) (Bloomfield 1966; George 1989), and for kapu (internal blockage) (Singh et al. 1984; George 1989), while the grated bark was used in an infusion to treat infertility (Singh et al. 1984). In Samoa, it is formulated with the macerated stems of Homalanthus angustifolius to treat tulua (abdominal distress). In the Cook Islands, the rhizome is used internally or rubbed onto hemorrhoids and prolapsed rectums (Whistler 1983). In Fiji (Singh et al. 1984) and Hawaii (Oliveros and Cantoria 1982) the rhizome was used in an oral infusion for coughs and colds.

The rhizome of Z. zeylanica was also used medicinally in other parts of Oceania and southeast Asia. Stopp (1942) reported that the rhizome is used in New Guinea for burns or cuts and for toothache. In Indonesia, the rhizomes are considered as a stimulant to the mucous membrane of the stomach and bowels, and to externally relieve pain (Van Steenis 1953), while in the Philippines, the pulverized rhizome is administered as antidiarrheic (Guerrero 1921). In the Philippines a decoction is given to treat asthma, and applied as an embozoation for rheumatism (Quaumbing 1951). In Indo-China the rhizome, macerated in alcohol, is regarded as a tonic, stimulant, and depurant, and is administered for postpartum illness; the rhizome is also applied to the head of children in convulsions (Menaut 1929) and to the head and stomach of feverish children; it also is a component in suppositories to treat constipation of babies (Vidal 1959). In China, the rhizome pounded with other spices is ingested to relieve stomachache (How et al. 1956).

Pharmacological analyses of extracts of Z. zeylanica show the rhizomes to be cytotoxic (Mathes et al. 1980) and antibacterial but not mutagenic (Ungursengie et al. 1982). A number of non-terpenes and sesquiterpenes have been isolated from the rhizomes (Mathes et al. 1980; Oliveros and Cantoria 1982).

**Gardenia taitensis** de Candolle (Rubiaceae)

*Gardenia taitensis* is a large shrub or small tree with pleasant-scented, pale white flowers and dark green foliage. In Tahiti, Hawaii, the Marquesas, and the Cook Islands it is called tane, while in Tonga it is called *siale tongo*, and in Samoa it is called *pua samoa*. The flowers are used to scent coconut oil throughout the Pacific.

In Samoa, it has numerous uses. The sterile fluid from unopened flowers is used to treat eye infections. The leaves are used to treat *mumu tatau* (high fevers and paralysis of limbs in infants) while the bark is used for *ila faʻau tama* (birthmarks). Kramer (1903) also recorded that the leaves were used to regulate menstruation.

*Gardenia taitensis* is used medicinally throughout Polynesia. In Tubuai, the
floral buds are used to treat inflammation of the urogenital tract, and the meristems are used to treat inflammation of the urogenital tract and testicular swelling due to gonorrhea, as well as pain or irritation in the chest (Zepnick 1972). In Tahiti the floral buds are used to treat abscesses, and an infusion of the flowers is used for certain headaches. In Niue the roots are used to treat headache (Yuncker 1943). In Tonga, bark infusions are used to treat morning sickness in pregnant women and hallucinations (Weiner 1971). It is also used medicinally in Tokelau (Whitaker 1988). Despite indications of its usefulness, no pharmacological or phytochemical analyses have been made of this species.

Similar analyses could be provided for many other medicinal plants, some of which show promise of yielding new and important pharmaceutical compounds. An example is Homalanthus acuminatus (Euphorbiaceae) in Samoa, which has yielded a phorbol ester that exhibits anti-AIDS activity in vitro (Gustafson et al. 1990).

Although Polynesian herbal remedies may one day yield new pharmaceutical compounds to Western medicine, in a traditional context they usually are administered internally as water or oil infusions, or externally through massage with coconut oil. Some remedies are administered as eye, nose, or ear drops or introduced into the vagina, while others are inhaled in steam baths, or in the smoke from their combustion. In some remedies for infants, smoke from the combustion of the plant is actually blown onto the afflicted area.

Although some Polynesian medicinal plants are used singly, it is much more common for them to be administered as mixtures. The precise formulations, often known as t'ai or a cognate, are considered proprietary information. Transcriptions of such formulations appear in Kramer (1903), Hooper (1978, 1985), George (1989), and Cox (1990). Formulations tend to be quite precise on the details of the plants and plant parts to be used. As an example, I here reproduce a remedy told to me by healer Leledi Silla, of Falealupu village, Savaii, Western Samoa:

Vai a Tamaiti Mama'i

'O le matafai, lau
nonu, moemoyleasea;
e faia soa ia lau
nonu ma lau matafai
a laatele lau
seasa. Tāhā le malū
ona sui lea i se
u'u. Aua le tele le
u'u. Ona fusi lea i
se le ma
faa'olo'i i ai le
vai i le mata o le
ma'i. Aua ne'i mofo
to'atai. E a'oāa
fo'i i le sila'ilagi
e fusi ai ta'ele i
le sani. Aua le aitu
to'atai. O le lau
nonu lau u'umi ona

Remedy for Sick Children

Use Psychotria insularum, Morinda citrifolia, and very young leaves of Syzygium coriocarpum; use the M. citrifolia leaves and the P. insularum leaves in pairs, but use many more of the S. coriocarpum leaves. Pound them until soft and then add them to some coconut oil. Don't use a lot of oil. Wrap them in a cloth and drape the remedy onto the head of the sore. Don't leave the patient alone. This remedy is also useful for boils by wrapping it on [like a plaster] and bathing in the sea. Don't let them go alone. The S. coriocarpum to use is
Cultural Context of Polynesian Herbal Medicine

In Polynesia there are two domains of healing knowledge. There is a general domain, shared by most individuals, of simple remedies for common maladies. For example, many people working in gardens will use a natural astringent, such as the leaves of Mikania micrantha, to treat superficial wounds, and most mothers know of a few herbal remedies, such as an infusion of Pseudium gutatus (Myrtaceae) to treat diarrhea in infants. But within Polynesian societies there are individuals with specialized and extensive knowledge of herbal medicine. Such healers are called fa'afola (in Tonga and Futuna), nafaga, tokungo, fa'uaga, and fehu'a in Tuvalu, Aotearoa, Rarotonga, and Tahiti, respectively; and kehun in Hawaii. Although most do not accept payment for their services (see Parsons 1985 for a summary of healing practices in the Pacific), such individuals are highly valued members of their societies.

The importance of healers in Polynesian societies can be illustrated by examining their role in Samoa. There, healers are called faga, although four specialities occur:

1. Faga gau (bone-setters) deal with sprains, muscle tears, and broken bones. They are almost always men and are in high demand throughout Samoa, particularly in areas where Western remedies are not available.
2. Fa'amase sea midwives and are always women. Although I do not have detailed statistics, it would be safe to say that they deliver the majority of children born outside the town area (see Kinloch 1985a).
3. Faga o are healers who use massage in therapy. Although most Samoans know some therapeutic massage techniques, they frequently seek the specialized skills of faga.
4. Taumata are herbalists who provide treatment from a pharmacopoeia of nearly 150 species of flowering plants. This is perhaps the most important of the four healing specialties.

Before the introduction of Christianity in 1830, an additional specialty could be found. Taumata or "ghost doctors" dealt with spiritual afflictions (Stair 1897). Some Samoan herbalists still occasionally use "ghost remedies" (tui aitu).

Except for faga gau (bone setters) who are usually men, the majority of Samoan healers are women. Partially as a result, Samoan ethnomedicine is matrilineal in character. A practicing healer usually first learns her skills by apprenticing with her mother. Sometimes, though, a healer may choose an unrelated girl as an apprentice if the girl shows a particular interest in healing. The apprenticeships are lengthy, often lasting up to seven years, but very informal in nature. Usually a healer will pick a particular daughter to assist in locating plants, preparing the formulations, or administering the treatment. As the daughter progresses in her apprenticeship, her knowledge of diagnostic tech-
niques and herbal remedies continues to grow (Co. 1990).

The skills of a completely qualified isisite are impressive. A healer usually
can diagnose over 200 diseases that she treats with a repertoire of over 120
medicinal plants in 150 formulations. Not only must extensive diagnostic and
therapeutic protocols be memorized, but a healer must also assume the role of
physician, pharmacist, pharmaceutical manufacturing firm, and botanical
explorer. Since only fresh preparations are used in Samoan ethnopharmacology, a
healer must make frequent journeys into the forest to search for needed medicinal
plants. Formerly, some healers even climbed the interior volcanoes of Savaii to
mine sulfur for use in antitungal remedies. Given the length and difficulty of the
apprenticeship and the tremendous responsibilities of a Samoan healer, the lack of
compensation or overt cultural recognition for healers is striking. Samoan healers routinely refuse all compensa-
tion for their efforts. Healers believe that the plants they use are a gift of God. They
fear that if they were to accept payment for their services their remedies would cease to work. Particularly noticeable in the highly stratified Samoan society is the
complete absence of respect terms or considerations for healers. Thus, when a
village diverts a cooked pig, the pig go to the high chiefs, the isisite are given to the
village creators, the head is presented to the uncivilized men, and so forth, but no portion
is reserved for the healer.

Healers participate in the aspects of village life that their regular status (such
as being the wife of a high chief) would ordinarily afford them. Since they receive
no payment from their vocation, most healers support themselves (as do most
Samoans) through traditional subsistence agriculture and reef foraging. Truly,
Samoan ethnopharmacology is a labor of love.

Polynesian healers can be found even in expatriate populations far from their
island homes. Samoan healers, for example, can be found in Auckland, Honolulu,
Los Angeles, and San Francisco. Practicing herbal remedies far from their plant
sources obviously creates some difficulty in obtaining ethnobotanical materials,
but the frequent air travel of modern Polynesians tends to alleviate this problem.
As a Samoan healer residing in Honolulu told me,

There really isn’t much of a problem. If need a plant indigenous to Samoa,
I merely telephone my family in Samoa. They send a kid out in the forest to
find the plant and then ask somebody at the airport (in Samoa) to slip it in
their bag. I get it the next morning.

Polynesian herbalism in general is suffering a decline. Indeed, with the
increasing Westernization of Polynesia, most of the plant lore discussed in this
book is rapidly disappearing. Ethnopharmacology appears to be particularly
vulnerable. Training in Polynesian ethnopharmacology is lengthy and offers little
prospect of financial reward to young people in the increasingly monetized cul-
tures of Polynesia. Western educational systems do little to affirm the value of
traditional knowledge systems and overt hostility from Western medical prac-
titioners may have also deterred some from learning or practicing Polynesian
herbal medicine.

Yet a few foresighted programs, such as collaborations between Western psy-
chiatrists and traditional healers in the treatment of expatriate Polynesians in New
Zealand (Kinloch 1985b), promise to utilize traditional healing knowledge in modern contexts. Other signs of cooperation emerge, particularly since the World Health Organization (WHO) began emphasizing the use of traditional medicine in the primary health care schemes of developing countries. Partially as a result of this WHO initiative, the Western Samoan government has provided short courses in Western medical practices to traditional midwives (Kinloch 1985a). The study of traditional Polynesian plant remedies with the tools of modern pharmacology and structural chemistry promises to provide scientific confirmation of the pharmacological activity of many Polynesian medicinal plants (Cox et al. 1989).

**Origins of Polynesian Herbalism**

Many Pacific anthropologists assume that Polynesian herbal medicine did not exist prior to European contact. In making this assertion they are on firm scholastic ground, because the earliest written accounts, particularly those by missionaries, appear to discount the existence of Polynesian herbalism. Thus, to argue that Polynesian herbalism was practiced in precontact times requires an explanation of not only the silence of the early Christian missionaries on Polynesian herbalism, but also of their denigration of Polynesian ethnomedicine in general. In addition to explaining missionary accounts, any argument for the existence of precontact Polynesian ethnopharmacology should also include positive evidence for its practice. These two requirements make it difficult to argue for precontact Polynesian herbalism, yet I suggest that a careful consideration of the evidence indicates that Polynesian herbal medicine existed long before any European first set foot in Polynesia.

The question of antecedents to Polynesian ethnopharmacology is not merely of anthropological interest. The indigenous pharmacopoeia of Polynesia would be of much greater interest to Western medicine if Polynesian ethnopharmacology proved to be of prehistoric invention and if this tradition proved to be conservative, in the sense that the same plant taxa had been used for generations.

Why then did early missionaries discount the existence of Polynesian herbal medicine? For example, John Stair, a missionary in Samoa from 1838 to 1845, dismissed the possibility of an indigenous ethnopharmacological tradition while emphasizing native beliefs in sorcery and witchcraft:

> Although they had much sickness, their remedies were few, and at the most part unreliable, notwithstanding the fact that the flora of the group included many medicinal plants and herbs of much value. In case of sickness, where the family could afford it, recourse was had to sorcery. The Taulaimo, or anchor of the god, was summoned that he might intercede with the particular deity he represented to help them in their calamity ...

> Of native doctors, strictly speaking, the best obtainable were the Tongan doctors, many of whom were found on Samoa. These men had a much better knowledge of the native herbs and plants than the Samoans themselves. Still there were many Samoans who followed this particular employment (Stair 1897, 164-165).
Missing from Stair's account is a description of "the many Samoans who followed this particular employment." Who were they, what plants did they use, and how did they use them? Stair is silent on these points of disinterested interest to an ethnobotanist. Yet, conversely, Stair's subsequent account of Samoan spiritualism is replete with detail. Why would Stair and other missionaries gloss over the existence of Polynesian herbalism yet detail the practices of "sorcery"? I suggest his and other missionary accounts are lacking in details on Polynesian herbalism because (1) spirit possessions and religious healings were of high saliency to the early missionaries, and (2) the missionaries usually lacked the botanical experience and linguistic ability to deal with a difficult topic such as indigenous herbal traditions.

The early missionaries viewed their proselytizing efforts as direct warfare against Satan and were looking for evidences of Satanic power and mischief. Certain Polynesian cultural practices, such as propitiation to pagan deities on behalf of sick persons or possession by evil spirits, were of high saliency to the Christian missionaries since these events had direct bearing on the evangelical vocation. It should be of no surprise, then, that the missionaries paid a good deal of attention to any healing practices involving the supernatural and ignored the indigenous pharmacopoeia. The use of medicinal plants had little bearing on the Christian profession, and thus was of low saliency to the missionaries.

When early European visitors did find evidence of herbalism, they discounted it and suggested that it had been learned from other quarters. Stair (1897) and Turner (1861) both suggested that Samoan knowledge of medicinal plants come from Tongans or Hawaiians resident in Samoa. However, Ellis (1826) in Hawaii, discovered the existence of Hawaiian herbalism and William Martineer (1817) in Tonga asserted that all Tongan herbalism came from Fiji. It seems that each missionary sincerely believed that his own group of Polynesians was too savage to have invented its own ethnomedical tradition.

For example, Stair's view of Samoan medicine relying on the supernatural while lacking a significant ethnopharmaceutical tradition, was perhaps influenced by his own personal experience with "sorcery" or evil spirits. He discussed at length (Stair 1897, 260-270) the actions of evil spirits in his Samoan residence, as evidenced by noises in the hallway, unexplained crashes at the front door, bells mysteriously ringing, horns bombing the roof in the middle of the night, and so forth, quoting Ephesians 6:12:

> For we wrestle not against flesh and blood, but against principalities, against powers, against the rulers of the darkness of this world, against spiritual wickedness in high places.

The possession of a heathen nation by evil spirits was precisely what the missionaries had expected to encounter. They did not expect to encounter a highly sophisticated society with a complex and intricate system of herbal medicine, nor did they look for one.

Some missionaries may have had an additional reason for ignoring or denigrating indigenous herbal medicine. To increase interest in his missionary labors, and as a humanitarian gesture, Turner began to manufacture and dispense to Samoans his own medicinal powders and preparations:
Whether I would or not, I was obliged to turn out "Graham's Domestic Medicine" and become head doctor of the district. Day after day I had twenty, thirty, or fifty calls for advice and medicine. I appointed an hour, morning and afternoon, for the purpose; and, by making a small charge of something useful to the servants, such as a hank of cinet [sic], or a few tallow roots, for a dose of medicine, I was able to keep the rush and inconvenience within bounds (Turner 1861, 113).

The practice of dispensing medicines spread among the missionaries and was widespread in 1866, as documented by Thomas Trood, whose father was British Consul in Apia:

In those days the missionaries, as far as they knew, supplied the public with medical comforts and medical advice. . . . The missionaries gave out liberally many other medicines besides salts, properly insisting on the natives making a fit return in fevils and vegetables, &c., but not cash (Trood 1912, 65).

Eventually this practice met with disfavor among visiting Europeans. For example, A. B. Steinberger, who visited Samoa a decade later wrote:

The missionaries dispense medicine to their people. This is a grave error. Excepting Dr. Turner, of Apia, none are regularly-trained physicians. They adhere to the old school of practice, and ignorantly dispense blue-mass, gray powder, calomel, and other preparations of mercury, while Dover's powders, redophyllum, preparations of arsenic, &c., are freely given. I foresee in this reckless issuance of drugs no little mischief in the future, as mercurial diseases must certainly develop themselves unless it is abandoned (Steinberger 1876, 33).

If, as I argue, the Polynesians did have consistent systems of ethnopharmacology, why did they embrace the medicines introduced by the missionaries? Simply because European contact introduced far more than religious changes into Polynesian culture; it also introduced highly virulent diseases. Polynesians died by the thousands from introduced diseases. In New Zealand the Maoris told stories of a pakeha disease, rau-rau, that spread through the North Island, killing many thousands (Crosby 1987). In Hawaii, thousands died from a disease they called ohau. Sadly, the introduced diseases demonstrated not the deficiency of Polynesian herbalism, but rather the deficiency of Polynesian immune systems, long-isolated from the diseases and plagues of Europe.

The early missionaries did not have the botanical training or linguistic ability to investigate indigenous medicinal plant uses. It is interesting that very few Polynesian names for forest plants are found in missionary accounts. Is this evidence that Polynesian plant names and ethnothernonomies were also a post-European development? It is interesting that as soon as botanically trained observers arrived in Polynesia, accounts began to appear of Polynesian herbal medicine. Thomas Powell, a Fellow of the Linnean Society of London, published a list of Samoan plants in 1868. Seventeen of these he noted as having pharmacological value (Powell 1868). Franz Reinecke, together with Augustin Kramer (1903), published extensive lists of Samoan medicinal plants. I therefore suggest that the relative paucity of accounts of Polynesian herbalism by early mis-
tinations should be viewed as an artifact of their training as well as their expectations and should not be seen as evidence that Polynesian ethnopharmacology did not exist at all.

Is there any positive evidence for the existence of Polynesian herbal medicine in precontact times? Unfortunately, since Polynesian pharmaceuticals are generally formulated from soft plant tissues, its practice leaves few material remains that could be used in an archaeological sense to verify its existence. Perhaps the only durable goods its practice requires are the pounding stones and blocks used to macerate the plants, yet even their presence yields few clues since they are also used to pound kava or taro.

However, I suggest that the practice of Polynesian herbal medicine in precontact times can be deduced from ethnohistorical evidence. First, the large similarities between methods of medicinal plant preparation, usage, and delivery systems between different Polynesian groups are striking. Why should healers in Tonga, Samoa, and Tahiti use similar words for plant remedies and have similar concepts of plant ownership protecting not proprietary rights (as in Europe) but the efficacy of the remedy? Second, why would remedies differ from family to family, with some families being known as always producing prized healers? Would not a European-introduced tradition have been diffused throughout the society? Third, why do Polynesians themselves believe their herbal traditions to be indigenous? I have yet to meet a healer anywhere in Polynesia who believes that Polynesian herbalism is an introduced tradition. Ethnohistorical accounts are quite detailed as to introductions of plants and plant technologies from other areas (e.g., the fine mats came from this island, kava came from that). More recent events, such as the introduction of new toxicic plants by Polynesian missionaries to Melanesia (Cox 1979), are recounted in Polynesian oral traditions. Why would herbal medicine be universally claimed as an indigenous tradition if it was not?

Fourth, the number of plant species in the Polynesian ethnopharmacopoeia that are indigenous to Polynesia is striking. Zeppelin’s data (Fig. 1) indicate the 66 percent of the medicinal plants used in Polynesia were not used for medicine anywhere else. How could the early European missionaries and explorers have taught the Polynesians how to use such plants?

We know from ethnobotanical studies in other parts of the world that nearly every culture known has developed an ethnopharmaceutical tradition and a repertoire of medicinal plants. Why should the Polynesians be any different?

I argue that Polynesian herbalism was an important component of early Polynesian cultures and that there is some evidence that it perhaps descended from an earlier tradition brought by the first Polynesians to their new homelands. Surely people bright enough to discover plant fish poisons (Cox 1979), selectively choose kava cultivars for their specific pharmacological activity (see Lebot, this volume), and develop anaerobic fermentation into a major scheme for food preservation during times of warfare and famine (Cox 1980a, 1980b) were also clever enough to discover the plants in their local floras that could be used in medicine. The wealth of ethnopharmacological information that the Polynesians have to bequest us may not only eventually alter opinions about their ability to discover and use the indigenous plants of their island environments, but may also ultimately enrich the pharmacopoeias of Western medicine.
Literature Cited


