THE FLORA OF NIUE ISLAND

BY
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INTRODUCTION

GEOGRAPHY

Niue Island lies in the south Pacific Ocean between 169°46′ and 169°58′ west longitude and 18°55′ and 19°8′ south latitude.[1] It is approximately 300 miles east of the Tongan islands, 350 miles southeast of Samoa and 580 miles west of Rarotonga. The island is isolated and is surrounded by great ocean depths with no suggestion of any past geological relationship or land connection with other island groups.

Niue is about 11 miles wide and 13 miles long and is 64,028 acres in extent. It is roughly rhomboidal in outline. Alofi and Avatele Bays on the west coast are the only indentations of any size in an otherwise fairly regular 40 miles of coast line. Alofi Bay (pl. 1, *A*), protected by the island from the prevailing winds for the greater part of the year, is now used as a harbor for the few freight and passenger vessels which call. (See map, figure 1.) Anchorage, precarious at best, is made on the outer ledge of the reef. All loading and unloading is done with lighters which reach the jetty through a narrow channel which has been blasted in the reef. When the wind is westerly, as it sometimes is during the months from December to March, it is difficult, sometimes impossible, to effect a landing. The shore line on the east coast is less precipitous than the coast on the west side (pl. 1, *B*).

The island was formed by a series of elevations of an ancient coral reef. At least two elevations of major importance have occurred, judging from the conspicuous benches which surround the island. The older, main part of the island is nearly flat with a slight dip toward the center and has an average elevation of about 65 to 70 meters. The central depression with the somewhat higher outer rim, representing the original reef, suggests that in the beginning the island was probably an atoll.

This original reef was subsequently uniformly elevated to a height of 40 or more meters. The second elevation of importance raised the island an additional 20 meters, with the fringing reef—which had been developed between the first and second elevations—now becoming a prominent bench or terrace extending entirely around the island. The width of this ledge varies, but for the most part it is less than 350 meters wide. The rise from the lower terrace to the upper plateau was originally very steep and remains so in places, but

[1] Data obtained from New Zealand Lands and Survey map from a survey by H. D. M. Haszard in 1903.

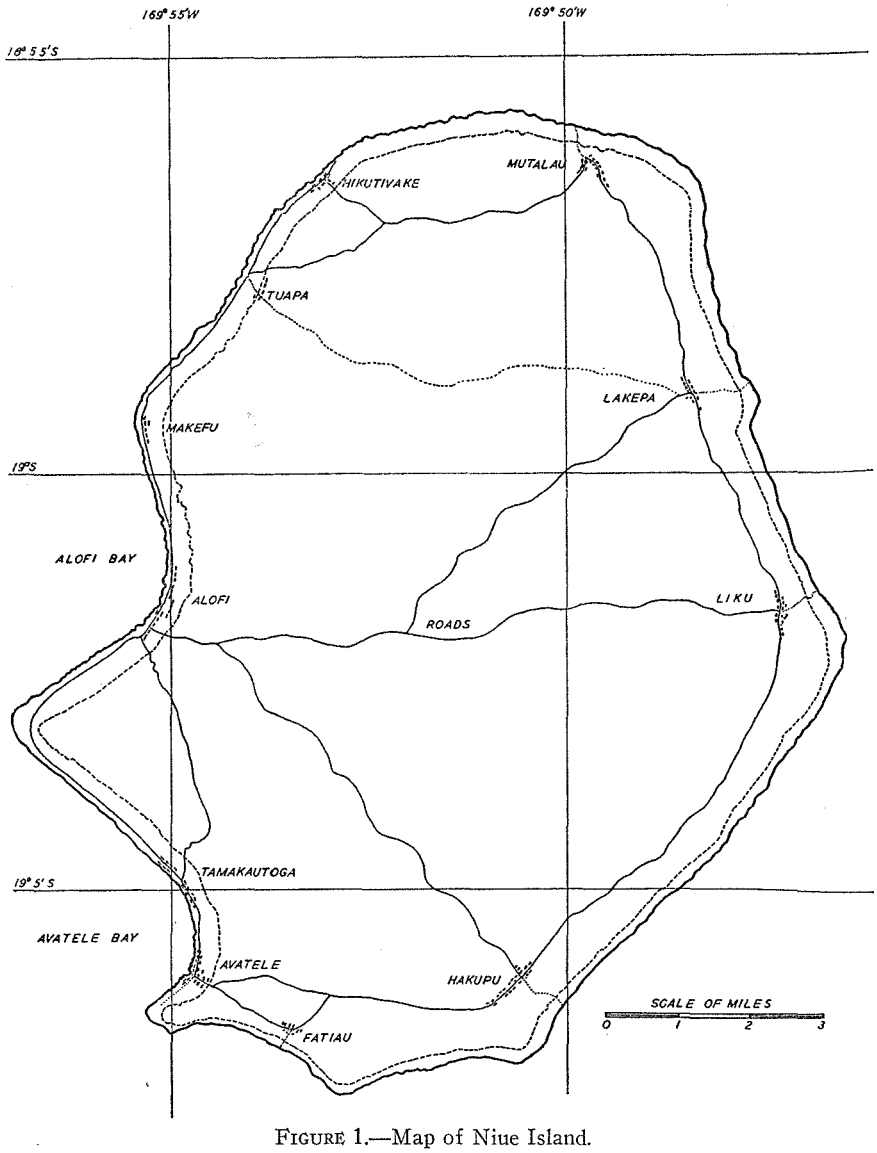

FIGURE 1.—Map of Niue Island.

weathering and plant growth have reduced greatly the ruggedness of the cliff.

The lower terrace ends more or less abruptly at the sea, with precipitous coral cliffs that are considerably eroded by wave action (pl. 2, *A*) and have numerous caves and chasms. A large, spectacular chasm at Matapa (pl. 2, *B*) above the village of Hikutivake and the caves near Mutalau are especially noteworthy. Surrounding the island is a narrow fringing reef, over which at

high tide the waves dash against the rocky shore. Safe and easy access to the sea from the upper terraces is possible in comparatively few places. The only beach is a small one at Avatele.

A road extends entirely around the island. From Alofi, which is the capital and seat of the Resident Commissioner, roads radiate to the principal villages of Lakepa, Liku, and Hakupu on the eastern side. The roads are well constructed, are kept in good repair, and provide a ready means for the transportation of freight and produce by motor vehicles.

Soil

The surface of the island is more or less covered with limestone rocks of various sizes, often fantastically arranged. Deep fissures and caverns and sharp-edged rocks—usually hidden by a dense growth of ferns, vines, and other plants—make walking, except on the roads or trails, exceedingly difficult and often dangerous. The upper plateau shows the effect of the longer period of weathering, but large areas of it are still too rough to allow clearing for plantations and consequently remain in native forest. Except where it has been cleared for roadways or dwellings, the lower terrace is generally rough and rocky and is largely covered with a dense growth of native trees and shrubs.

The soil of the island is two to six inches deep. Below this surface soil on the upper plateau, are two types of subsoil. One known as makatea, is a pure deposit of decomposed limestone, white and granular in character, which extends in places to a depth of ten or more feet (pl. 3, *A*). This makatea, which alone will not support crop plants, is excavated and used as a surfacing material for the roads where it forms a hard, concrete-like covering. The other type of subsoil is of a different consistency and is red in color. This red soil occurs in pockets of the rocks and makatea, and, when incorporated with the top soil, can be used for crops. When wet, it becomes compact much as does the makatea, but it is not as suitable for roads because it pulverizes and becomes dust more readily when dry. Little or no makatea or red soil is found on the lower terrace, and the soil there is a very thin layer.

In clearing the land for crops the natives generally allow the cut plants to dry where they fall and then burn them. Inasmuch as the soil is thin and low in humus content, this procedure which destroys the organic matter as well as soil microorganisms is not good agricultural practice. Plowing or mechanical cultivation is impossible because of the rocks. The crops are planted in the pockets of soil among the rocks, and the only cultivation possible is cutting the weeds back sufficiently to allow the crop plants to mature. Because of the rocky land, plantations are generally less than an acre in size. Consequently, a constant effort must be made to guarantee a sufficient amount of food, espe-

cially during periods of drought. After approximately one year of cropping, the soil must remain uncropped for several years. During the interim, a second-growth (pls. 3, *B;* 4, *A*), composed mostly of ferns and shrubby species occupies the land. After five or more years, the land may again be cultivated for a short time. Thus a large part of the cultivable land of the island is in the process of recovering from cropping. Plantations are rare on the lower terrace, although coconuts grow well there.

Crops and Exports

The principal crop plants are taro, bananas, yams, and sweet potatoes. Many coconuts are planted but the average yield of nuts per tree is not high. The island could profitably support many more trees. Though breadfruit is esteemed by the natives, the trees are scarce, probably because they do not grow so spontaneously or mature so well as they do on more fertile islands.

The chief agricultural exports are bananas, copra, and sweet potatoes, which are sent to New Zealand markets in considerable quantity. The bananas and sweet potatoes, especially, are of high quality and are much sought on the market. Large numbers of excellent baskets, hand made from pandanus and coconut leaves, are also exported. However, bark cloth (*hiapo*) and mats are not so well made as those of Samoa, and few of them are sent from the island.

The amount and value of exports for the year 1938 were as follows:

Export	Amount	Value
copra	395 tons	£3,500
hats	1,043 dozens	483
fungus	3,679 pounds	53
baskets	436 dozens	400
bananas	18,656 cases	6,500
sweet potatoes	318 tons	3,371

The government maintains experimental farms at Fonukula near Alofi and at Falehavaiki near Hakupu village. The introduction of vegetables, fruits and other crop plants of possible value on the island is being attempted with varying success. The methods used on the farms serve as examples for the natives, who, it is hoped, may benefit thereby. At present an attempt is being made to enrich the soil of the island by the wholesale scattering of legume seeds, principally those of *Crotalaria,* and by attempting to teach the natives to conserve the humus and mulch material instead of periodically destroying it by burning.

Climate

The prevailing winds for the greater part of the year blow from east southeast. From December to March or April they sometimes blow from north northwest, and it is during this period that hurricanes occur in this part of the

Pacific. Niue, however, lies at the edge of the hurricane belt and severe blows are infrequent, although winds of high velocity sometimes do considerable damage to coconut, breadfruit, and banana plants.

No data were obtainable regarding the percentage of humidity, but during the rainy season from December to April it may be comparatively high.

The average rainfall for the past 25 years has been 8.50 inches. Most of the rain falls between December and April. Occasional droughts occur, as for example in 1931 (see table 1). Such dry years create serious food shortages. Prolonged periods of dry weather show their effects in the burning of the lower coconut leaves, lessened fruit production, and the wilting of taro and other susceptible plants. The porous soil allows rain water to pass through very rapidly so that periodic rains bring only brief relief. Moderately frequent rainfall is necessary to keep cultivated plants vigorous.

No fresh water in the forms of streams, springs, or wells is known to occur on the island. Until a few years ago, the natives drank the brackish water that drips from the ceilings of caves and the liquid from coconuts. A number of tanks have been installed which catch the rain water from the iron roofs of the larger buildings. Ordinarily these tanks, which are being increased in number, provide enough water for general requirements, but in dry periods, rigid rationing is necessary. Hence, it is impossible to water gardens, irrigate crops, or sprinkle lawns at the times when they most require water.

The hottest part of the year coincides with the rainy season. Temperatures then are fairly high and uncomfortable. Tables 2 and 3 show the temperature ranges for the different months for the past ten years. The highest temperature recorded during that period was 94 degrees and the lowest 54 degrees. The average mean temperature ranges from about 74 degrees for July to 80 degrees during the summer months of January and February. Ideal growing conditions prevail during the rainy season, when the rains are properly spaced and the temperature is high.

History

When man first reached Niue is not known. Some students believe that the island has been inhabited for more than 1,000 years and that the first inhabitants came from Samoa or from Tonga. Whether they arrived as adventuring explorers in search of a new land or were accidentally blown there by unfavorable winds is not known. There is considerable evidence, borne out by historical traditions, that there have been several subsequent migrations to Niue from Tonga. According to tradition, the island was anciently known as Nuku-tuluea and also as Nuku-tutaha. The present name is believed to have been derived from the word *niu* which is the name for the coconut. According to S. Percy Smith, first Resident Commissioner, the natives are basically Polynesian with traces of Melanesian blood.

Table 1.—Monthly Totals of Rainfall, 1930-1940

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1930	6.57	17.72	14.89	1.70	4.33	2.36	1.65	1.83	3.86	9.40	6.38	17.52	88.21
1931	1.68	2.84	8.77	2.88	1.22	1.81	0.58	4.77	3.55	7.30	4.01	3.09	42.50
1932	11.32	16.89	15.18	4.14	1.41	5.22	4.56	4.47	1.44	3.09	6.53	4.54	78.79
1933	7.55	17.04	5.09	2.81	7.41	3.45	11.18	2.80	1.39	5.50	7.38	12.39	83.99
1934	11.26	24.24	29.85	3.11	15.75	1.08	3.35	2.29	3.26	8.23	5.28	6.45	114.15
1935	22.84	2.90	21.17	7.17	4.62	2.01	4.01	6.43	2.25	6.78	12.04	7.55	99.17
1936	5.34	7.91	10.46	9.19	18.47	0.76	12.03	8.20	4.11	2.87	2.19	7.86	90.39
1937	10.61	5.45	8.89	3.80	3.47	1.79	4.44	3.04	2.25	1.44	4.42	4.10	53.70
1938	20.19	12.49	5.22	6.85	4.03	1.96	2.13	0.61	3.15	8.41	7.07	5.31	77.42
1939	13.53	10.84	19.54	13.63	4.81	1.08	3.27	1.18	1.45	6.51	10.62	3.87	90.33
Average	11.09	11.83	13.91	5.53	6.55	2.15	4.82	3.56	2.67	5.95	6.59	7.27	81.93

Table 2.—Highest and Lowest Temperatures Recorded for Any One Day Each Month, 1930-1940

Year	Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Annual records	
	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
1930	92	64	90	60	91	60	87	55	87	56	84	60	84	57	84	58	82	56	88	60	86	65	88	62	92	55
1931	90	68	90	69	88	69	87	67	86	63	84	58	83	58	85	59	86	59	86	59	86	63	88	64	90	58
1932	89	68	90	70	88	68	89	63	88	67	84	60	86	61	87	62	87	58	88	63	87	65	90	71	90	58
1933	90	69	91	69	91	71	90	68	89	62	89	63	88	55	87	59	88	60	91	60	90	64	91	68	91	55
1934	93	69	91	69	94	67	90	62	87	61	88	63	86	56	84	60	89	60	87	64	88	64	89	65	94	56
1935	88	70	92	70	93	69	92	62	89	59	86	60	87	59	87	57	90	61	90	69	90	69	89	65	93	57
1936	92	69	92	64	94	70	91	67	88	68	86	60	86	61	87	60	89	60	87	64	92	61	91	63	94	60
1937	93	65	94	70	94	64	92	61	89	60	87	54	88	59	86.8	57.2	86.4	58.0	88.6	62.0	89.0	62.6	91.0	65.0	94.0	54.0
1938	91.0	68.8	90.0	68.0	90.4	65.4	90.0	64.4	88.2	65.0	88.0	60.2	88.4	60.4	91.4	63.4	90.0	63.6	90.6	62.8	90.6	68.0	91.8	69.0	91.8	60.2
1939	92.0	70.6	93.0	68.8	90.0	70.0	88.0	64.0	89.0	65.4	89.0	58.6	88.0	60.0	88.0	57.6	88.0	58.4	88.6	61.6	88.4	61.6	89.0	62.2	93.0	57.6
Average																										

Table 3.—Mean Monthly Temperatures, 1930-1940

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	mean
1930	78.350	76.840	74.660	72.500	70.110	72.110	72.670	71.500	70.100	73.695	76.270	76.170	73.748
1931	79.210	79.410	79.050	78.720	75.740	73.620	73.145	74.515	74.685	73.900	75.285	76.265	76.129
1932	79.530	79.830	79.130	77.635	77.355	77.920	74.920	74.000	74.170	77.515	77.200	81.050	77.521
1933	80.035	80.480	80.305	80.083	77.650	74.765	71.045	75.655	74.767	76.840	78.600	78.822	77.421
1934	80.830	80.855	79.795	78.480	78.805	76.000	72.465	72.645	74.715	75.180	77.735	78.335	76.903
1935	79.955	81.300	80.385	77.720	75.820	74.885	75.985	74.180	74.150	78.400	79.033	77.595	77.450
1936	80.485	80.600	81.400	79.000	77.000	71.800	74.000	73.125	74.730	76.225	79.170	78.740	77.190
1937	81.715	81.200	78.935	77.500	74.40	71.950	73.340	74.160	74.010	76.430	77.075	78.405	76.600
1938	80.405	80.225	78.640	78.610	77.240	76.585	76.675	76.280	77.530	77.795	77.990	80.490	78.205
1939	80.005	79.840	79.085	78.930	76.335	75.440	76.255	75.195	73.750	74.780	75.985	76.650	76.854
Average	80.052	80.058	79.238	77.918	76.045	74.496	74.050	74.125	74.260	76.076	77.434	78.252	.....

The European credited with first visiting the island is Captain James Cook, who made two landings on the western side of the island on June 20, 1774. His party met with armed and vigorous opposition from the natives, however, and was compelled to withdraw. Of the first landing, Cook (A voyage towards the south pole and around the world . . . 1772-75, 2:3, 1777) states: "We landed with ease in a small creek, and took post on a high rock to prevent a surprise. Here we displayed our colours, and Mr. Forster and his party began to collect plants, etc. The coast was so over-run with woods, bushes, stones, etc. that we could not see forty yards round us." He adds (loc. cit., 2:6), "All the sea-coast, and as far inland as we could see, is wholly covered with trees, shrubs, etc.; amongst which were some cocoa-nut trees; but what the interior parts may produce, we know not. To judge of the whole garment by the skirts, it cannot produce much; for so much as we saw of it consisted wholly of coral rocks, all over-run with woods and bushes. Not a bit of soil was to be seen; the rocks alone supplying the trees with humidity." At the present time a rift in the cliffs near Alofi is pointed out as the probable site of his second landing. Presumably, only a few botanical specimens were obtained by Forster and his assistants. Because of the hostile attitude of the inhabitants, Cook called the island Savage Island, a fact not appreciated by present day Niueans.

A number of missionaries eventually went to the island and converted the natives to Christianity. A line of kings ruled more or less continuously until the island came under the control of New Zealand, shortly after the beginning of the twentieth century.

Vegetation

The vegetation of Niue is composed of native plants; economic plants of aboriginal introduction, such as the coconut, taro, and banana; and plants brought in since the discovery of the island by Europeans. In the last group may be included several weedy species which are now abundant. The white residents are actively engaged in the introduction of many species which, it is hoped, may be grown successfully. Thus, many ornamental as well as food-providing species are being added to the flora of the island. This paper lists 459 different species and varieties of plants which includes all now known to grow on the island. Of this number, between 45 and 50 percent can be considered indigenous. Of the remainder, probably not more than one percent is endemic. Thus, approximately 50 percent of the present flora of Niue is represented by plants either introduced or adventive. A high percentage of the native species are found to be represented by the same or closely related species on the nearby island groups, particularly Tonga and Samoa.

The number of native species is not so large as one finds on volcanic islands with a deep, rich soil and a variety of habitats; but what is lacking in variety

is to some extent made up by the comparative density of the vegetation. As viewed from the sea, the island appears to be completely covered with forest. Much of this growth is found upon closer observation to be groves of coconuts.

The natives utilize all available space for their plantations, removing the trees and thus destroying the native plants. (See pl. 4, *B.*) Comparatively large areas, however, which are entirely too rocky and rough for use in cultivating crop plants, are likely to remain in native forest for a long time.

The island is comparatively low, and, with the exception of the outer, somewhat lower bench, appears quite level. The thin soil of simple coral origin and the complete lack of fresh water in the form of streams or springs are factors producing conditions of considerable uniformity throughout the island. As a result, one finds little variation in plant habitats.

A large percentage of the native species are distributed throughout the island. Some, however, appear to be restricted to the sea cliffs and lower terrace, whereas others, although not limited to this region, are more numerous there than on the upper terrace. Among the more prominent species of these lower levels are the following: *Acrostichum aureum, Fimbristylis cymosa* var. *pycnocephala, Hernandia ovigera, Capparis sandwichiana, Bryophyllum pinnatum, Leucaena glauca, Leucaena insularum, Aleurites moluccana, Colubrina asiatica, Triumfetta procumbens, Thespesia populnea, Calophyllum inophyllum, Pemphis acidula, Barringtonia asiatica, Terminalia Catappa, Planchonella Grayana, Ochrosia parviflora, Cordia subcordata, Messerschmidia argentea, Heliotropium anomalum, Clerodendrum inerme, Bikkia grandiflora, Hedyotis foetida, Gardenia taitensis, Guettarda speciosa,* and *Timonius polygamus.*

The older native forests on the upper terrace contain a number of species, some of which become quite large trees. The layer of vegetation just beneath consists of smaller trees, shrubs and vines, and the forest floor is covered with various ferns and other herbaceous plants if the canopy is not too dense. Climbing to the tops of many of the tallest trees are the conspicuous, vinelike stems of *Flagellaria gigantea* with its large white flower clusters. The following are some of the more common forest species: *Angiopteris commutata, Flagellaria gigantea, Ficus* spp., *Pisonia grandis, Pittosporum Brackenridgei, Adenanthera pavonina, Inocarpus fagiferous, Canarium Harveyi, Dysoxylum Richii, Aglaia samoensis, Baccaurea tahitensis, Macaranga Harveyana, Rhus taitensis, Pometia pinnata, Alphitonia zizyphoides, Elaeocarpus samoensis, Brownlowia* sp., *Eugenia* spp., *Diospyros samoensis,* and *Fagraea Berteriana.*

Practically nothing has been recorded about the plants of the island. Smith (Polynesian Soc., Jour. **11**: 87, 1902) refers to a small number of the plants by their native names, and E. M. Loeb (B. P. Bishop Mus., Bull. **32,** 1926) gives a list of native plant names, including those previously mentioned by

Smith. So far as I know, aside from these brief and wholly inadequate listings, the plant life of the island has been unrecorded. It was for this reason that I visited Niue during January and February of 1940 to collect and study the present flora of the island. This period coincided with the rainy season, but little rain fell, and ideal weather for collecting prevailed during the entire period of the visit. Unfortunately, many of the plants were neither flowering nor fruiting and only sterile specimens could be obtained of these species. Consequently, it is impossible to identify positively some of the specimens.

I was assisted by various natives in the locating and collecting of less common species. Through a compilation of several hundred native names, made from lists prepared by the native constables of each village, a number of obscure species which might otherwise have been overlooked, were located. While it is probable that some species have escaped discovery, I believe that the number omitted must be small and that the present listing fairly represents the plants now on the island. The introduction of additional species of economic importance together with those species which enter as weeds will continue to add to the number.

A complete set of the plants I collected on Niue are in the herbarium at Bishop Museum.

Native Plant Names

Native life is closely associated with and dependent upon the plants of the island. Food, clothing, shelter and medicine originated, at least in former years, from the plants which they cultivated or found growing wild. When their crops of taro, bananas, or other cultivated species failed, they were forced to rely upon the fruit, roots, and other parts of plants ordinarily not considered edible. It is not strange, therefore, that the older generation, at least, is familiar with the virtues and uses of the various species of plants and that they distinguish the species with definite names.

Introduced species often carry with them the names which they had in the land of their origin. Though the spelling may be changed because of differences in language, it is often possible to determine the source of introduced species by a comparison of names. Considerable light is also thrown upon the travels and migrations of the people themselves through a comparison of the names of their introduced plants with those of adjacent islands.

During the past half century or more, Niueans have made many visits to other islands especially Samoa, Tonga, Fiji, the Cook Islands, and New Guinea, and have returned with useful varieties of plants. Frequently the name of the land of their origin has been added to the name of the introduced species, and we find *toga* (Tonga), *niukini* (New Guinea) or *norfoko* (Norfolk Island), forming part of the name of varieties as used in Niue.

If only one variety is recognized, the name is commonly composed of a single word. When two or more varieties are distinguishable, descriptive names, comparable to specific or varietal names in a binomial system, are employed. Some of the more common descriptive names are: *elo,* evil smelling; *manogi,* excellent eating or pleasant smelling; *kula,* red; *tea,* white; *uli,* black; *vao,* of the forest; *papalagi,* foreign, introduced by Europeans; *taane,*[2] male, usually applied to the larger of two varieties; *fifine,* female, usually employed for the smaller of two varieties (these two terms, so far as could be ascertained, are never used to indicate sex in the usual botanical sense); *kai,* edible; *gau,* chewing, as sugar cane is chewed and then ejected; *fotofoto,* thorny; *talatala,* prickly or scabrous; *pekepeke,* rough or warty; *molemole,* smooth; *ku,* short; *tote,* small; *lahi,* large; *maka,* hard; *veliveli,* round; *kona,* bitter or poisonous; *feutu,* on sea cliffs.

The same name is sometimes given to more than one closely related or otherwise similar species, and one species is sometimes given more than one name. Some names may be misspelled or misapplied in this paper, although an effort was made to obtain an agreement in cases of contradiction.

Acknowledgments

I wish to express my appreciation for the appointment as Bishop Museum Fellow in Yale University which enabled me to visit Niue and to collect the plant materials upon which this report is based. Sincere thanks are due Dr. Peter H. Buck, director of Bernice P. Bishop Museum, who placed all of the facilities of the museum at my disposal, made the proper arrangements through the New Zealand Government officials and others for my visit to Niue, and gave valuable advice relative to the work. I am also indebted to the administration of DePauw University for granting a leave-of-absence which made acceptance of the appointment possible.

During my stay in Niue I resided with Captain W. M. Bell, Resident Commissioner, to whom I am deeply indebted for every possible kindness and consideration. He was intensely interested in all phases of the work and assisted in every way possible. Through his hearty cooperation I was able to visit all parts of the island and to have the assistance of the native constables.

Mr. Joseph McMahon-Box, of the island administration and long a resident of the island, gave enthusiastic support to the work. With his knowledge of the native language, he was able to give valuable assistance in obtaining native names for the plants. He also furnished the statistical data shown in the tables on rainfall and temperature. Mrs. McMahon-Box and Mrs. Allen Head, lifelong residents of Niue, also gave information about the native uses of various species of plants. To Ikimouga, a native of Alofi village, I am

[2] In the word *taane* [*tane,* male], the author has used the double vowel to indicate a long *a.*—Editor.

indebted for most of the information about the varieties of taro, bananas, coconuts, and yams. To these, the various village constables, and many others on Niue who gave unstinted assistance, I express my sincerest thanks.

Through the kindness of Miss Lucy M. Cranwell and Mr. Gilbert Archey, director of the Auckland Institute and Museum, I was able to borrow from their herbarium the Niue plants collected by S. Percy Smith. I greatly appreciate the courtesy of this loan, especially during war times when the chances of losing the specimens at sea are greatly increased.

I am deeply indebted to a number of specialists for assistance in the identification of the specimens as well as for the contribution of valuable information concerning them. Miss Marie Neal, botanist at Bishop Museum identified many of the ornamental species and assisted greatly in the preliminary identifications of a large part of the collection. Dr. Harold St. John identified a number of specimens and described a new species of *Acronychia* here included. He also contributed important nomenclatorial data. Dr. F. R. Fosberg identified a considerable number of specimens in several different families, particularly those of the Rubiaceae and Ebenaceae. He also gave me a list of Niue species collected by H. F. Moore and P. H. Metcalf which he discovered in the U. S. National Herbarium, and made many suggestions on nomenclature and citations. Dr. H. W. Rickett checked a number of obscure bibliographical references. Dr. E. D. Merrill and Dr. A. C. Smith were able to identify a number of sterile or otherwise inadequate specimens. Mr. E. B. Bartram identified the mosses, Mr. Hugh O'Neill the sedges, Dr. E. B. Copeland the ferns, Mrs. Agnes Chase the grasses, Dr. L. O. Williams the orchids, including the description of a new species in this paper, Dr. L. H. Bailey the palms, Mr. E. B. Walker, *Flagellaria,* and Mr. E. P. Killip, *Passiflora.* To all these who have helped, I express my thanks.

BRYOPHYTA

MUSCI

Family LEUCOBRYACEAE

Genus **LEUCOBRYUM** Hampe

Leucobryum pentastichum Dozy and Molkenboer, Bryol. Jav. **1**: 16, 1855.

On rotten log in forest 6 miles east of Alofi. Also on tree trunk 3 miles southwest of Lakepa village (10249, 10267).[3] In these two collections, the leaves are often indistinctly seriate, thus approaching *L. scalare* C. Müller.

Distribution: Siam, Java, Borneo, Philippine Islands, Fiji.

[3] Collection numbers are in parentheses.

FAMILY CALYMPERACEAE

Genus **SYRRHOPODON** Schwaegrichen

Syrrhopodon Banksii C. Müller, Bot. Zeitung, 162, 1858.
On trunk of a coconut palm, 2 miles north of Alofi (10269).
Distribution: Solomon Islands, Cook Islands, Fiji, Society Islands, southeastern Polynesia.

FAMILY BRYACEAE

Genus **BRACHYMENIUM** Schwaegrichen

Brachymenium melanothecium (C. Müller) Jaeger, Adumb. 1: 576, 1873-74.
On coral rocks and walls about Alofi, common (9575, 10254, 10255, 10263).
Distribution: southeastern Polynesia, Society Islands, Tonga Islands.

FAMILY RHIZOGONIACEAE

Genus **RHIZOGONIUM** Bridel

Rhizogonium setosum Mitten, Fl. Vit., 384, 1871.
On rotten logs in forests (10248, 10266, 10268).
Distribution: Tahiti, Samoa, Aneityum.

FAMILY ORTHOTRICHACEAE

Genus **MACROMITRIUM** Bridel

Macromitrium Nadeaudi Bescherelle, Soc. Bot. France, Bull. **45**: 64, 1898
On rocks and tree trunks near Alofi (10253, 10270, 10272).
Distribution: Tahiti.

FAMILY RHACOPILACEAE

Genus **RHACOPILUM** Palisot de Beauvois

Rhacopilum cuspidigerum (Schwaegrichen) Mitten, Fl. Vit., 491, 1873.
On rocks near Alofi (10252).
Distribution: Java to Hawaii.

FAMILY SEMATOPHYLLACEAE

Genus **TRICHOSTELEUM** Mitten

Trichosteleum hamatum (Dozy and Molkenboer) Jaeger, Adumb. **2**: 486, 1876-77.
On rotten logs in forest near Alofi (10260).
Distribution: Malaysia to Hawaii.

Genus **TAXITHELIUM** Spruce

Taxithelium tenuisetum (Sullivant) Mitten, Fl. Vit., 397, 1871.

On rotten logs in forest near Alofi (10251, 10262).

Distribution: Samoa.

FAMILY HYPNACEAE

Genus **ECTROPOTHECIUM** Mitten

Ectropothecium adnatum Brotherus, unpublished ms.

On rotten logs, old coconut husks and rocks about Alofi (10261, 10264, 10271).

Distribution: Solomon Islands, Fiji, Samoa.

PTERIDOPHYTA

PSILOPHYTINAE

FAMILY PSILOTACEAE

Genus **PSILOTUM** Swartz

Psilotum nudum (Linnaeus) Grisebach, Syst. Veg. Karaib., 130, 1857.

Terrestrial or epiphytic herb up to 60 or more cm. tall. Stems rising from a stout rhizome, repeatedly dichotomously branched above, angular and longitudinally ribbed. Leaves minute, scale-like, alternate. Spores produced in small, subglobose, axillary sporangia.

Frequent in thickets and forested areas. Native names, *toa vao, fakalagalaga.*

LYCOPODINAE

FAMILY LYCOPODIACEAE

Genus **LYCOPODIUM** Linnaeus

Lycopodium phlegmaria Linnaeus, Spec. Plant., ed. 2, 1564, 1763.

Epiphyte. Stems long and slender, pendulous, more or less dichotomously branched, internodes short. Leaves up to about 15 mm. long, mostly in whorls of 3, ovate-lanceolate, acute, sessile, base subcordate. Sporangia numerous, in the axils of short, bract-like leaves, in terminal, dichotomously branching spikes.

Occasional on tree trunks or logs in forested areas. Native name, *mohemohe.*

The only specimen I have seen of this species was collected by S. P. Smith and is now in the herbarium of the Auckland Museum. It agrees well with Brown's description of his variety *marchionicum* from the Marquesas (B. P. Bishop Mus., Bull. 89: 108, 1931).

FILICINAE

FAMILY OPHIOGLOSSACEAE

Genus **OPHIOGLOSSUM** Linnaeus

Ophioglossum pendulum Linnaeus, Spec. Plant., ed. 2, 1518, 1763.

Epiphyte. Fronds fleshy, ribbon-like, commonly somewhat sickle-shaped, glabrous, entire or infrequently forked; at first erect, later pendent, up to about 1 m. long. Sporangia in spike-like branches which arise from the surface of the sterile part of the frond.

Pendent from logs, tree trunks or soil pockets in rocks in shady forests and thickets (9924); not common. Native name, *pupupupukale*.

FAMILY MARATTIACEAE

Genus **ANGIOPTERIS** Hoffmann

Angiopteris commutata Presl, Suppl. tent. Pterid., 25, 1845.

Terrestrial. Stipes stout, clustered, swollen and with two large, fleshy, scale-like stipules at the base. Blades bipinnate, up to 4.5 or more m. long, gracefully arching from the short, thick stem. Pinnules oblong, sub-sessile, up to 15 or more cm. long, serrulate at the somewhat caudate apex. Sori short, oblong, numerous, forming a submarginal row, each sorus composed of 9 to 12 sporangia.

This is the largest and one of the handsomest species of fern on the island. It grows in a few local areas in dense forest shade (9772). The large leaves are used as a covering for native ovens. Native name, *palatao*.

FAMILY POLYPODIACEAE

Genus **DRYOPTERIS** Adanson

Dryopteris dissecta (Forster) O. Kuntze, Rev. gen. Plant. (2): 812, 1891.

Rhizome short. Stipes up to 30 or more cm. long, dark brown, clustered. Blade pinnate, commonly about as long as the stipe; pinnae lanceolate, up to 15 or more cm. long, deeply pinnatifid to near the midrib. Sori round, in two lines on the lobes of the pinnae.

Frequent on rotten logs in forested areas (9633, 9765).

Dryopteris aff. **Hudsoniana** (Brackenridge) Rosenstock, Fedde Repert. Nov. Spec. 12: 525, 1913.

Rhizomes short. Stipes clustered, yellowish green, with small, scattered pinnae toward base. Blades pinnate; pinnae linear-lanceolate, sharply acuminate, up to 15 or more cm. long, pinnately lobed, lobes rounded. Sori small, round, in two lines on each pinna lobe.

On rotten logs in forest shade (9763).

Dryopteris invisa (Forster) O. Kuntze, Rev. Gen. 2: 813, 1891.

Rhizome creeping. Stipes clustered, brown, up to 30 or more cm. long. Blades pinnate, up to 1 or more m. long. Pinnae linear-lanceolate, sharply and coarsely falcate serrate, up to 15 or more cm. long. Sori round, in rows radiating from midrib.

A common weedy species in clearings and along roadsides (9605, 10036). Native name, *pago*.

Genus **TECTARIA** Cavanilles

Tectaria latifolia (Forster) Copeland, Philadelphia Jour. Sci., C, 2: 410, 1907.

Terrestrial. Rhizome short. Stipes up to 40 or more cm. long. Blade mostly less than 1 m. long, deltoid, pinnatifid above, pinnate below. Pinnae ovate-lanceolate, more or less pinnatifid, acuminate. Sori small, round, irregularly scattered.

In deep shade (10097), not common. Native name, *palapalaveka*.

Genus **ATHYRIUM** Roth

Athyrium species.

Terrestrial. Stipes black, clustered. Blades 1.5-2 m. long, 3-pinnate, the ultimate pinnules commonly 1-2 cm. long, deeply pinnatifid with oblong-obtuse lobes 2-3 mm. long. Sori oblong.

In forest three miles southwest of Lakepa. Native name, *kapihi*.

Genus **ASPLENIUM** Linnaeus

Asplenium laserpitiifolium Lamarck, Encycl. Méth. 2: 310, 1786.

Rhizome short. Stipes clustered, dark, up to 30 or more cm. long. Blades up to about 1 m. long, or commonly less, 3- or 4-pinnate, ultimate divisions mostly 1 cm. or less long, cuneate. Sori oblong, commonly 1 to 3 on each pinnule.

Occasional in forest shade (9634, 9964a). Native name, *kapihi*.

Asplenium Nidus Linnaeus, Spec. Plant., 1079, 1753.

Rhizome short, creeping. Leaves simple, entire, glabrous, subcoriaceous, elongated, swordlike, up to 1 or more m. long and 15 or more cm. wide, forming a rosette-like cluster, midrib prominent. Sori numerous, linear, up to 3 or more cm. long.

This is one of the commonest ferns on the island where it is to be found in damp, forested areas (9590, 10066, 10068). Two varieties are readily recognizable. One, *luku* or *luku fua,* has a green midrib which is triangular as seen in cross-section. The other, *luku la ua,* has a black oval midrib. The young leaves of the *luku* are cooked and eaten by the natives as a vegetable, whereas those of *luku la ua* are not considered edible.

Asplenium schizophyllum Christensen, Index Fil., 131, 1905.

Rhizome short. Stipes clustered, black, brown-scaly toward the base, scales easily deciduous, up to 15 or more mm. long. Blades pinnate, up to 15 or more cm. long. Pinnae toothed, strongly 1-sided, obtuse to acute. Sori linear.

On rotten logs in moist forest (9603). Native name, *kapihi moupi*.

Asplenium schizotrichum Copeland, Univ. Calif. Pub. Bot. 12: 379, 1931.

Rhizome suberect. Stipes dark brown to black, clustered, up to 30 cm. long. Blades pinnate, up to 1 m. long, but commonly shorter. Pinnae toothed, strongly one sided, mostly acute to sharply acuminate, borne mostly above the middle. Sori numerous, linear.

Common on rotten logs in forest shade (9601, 9602). Native name, *kapihi moupi.*

Genus **NEPHROLEPIS** Schott

Nephrolepis biserrata (Swartz) Schott, Gen. Fil., ad. pl. 3, 1834.

Rhizome short, creeping. Stipes up to 30 or more cm. long, clustered. Blade pinnate, up to 2 or more m. long and 30 or more cm. wide, more or less pendent. Pinnae oblong-lanceolate, up to 20 or more cm. long, acute, subsessile, base oblique. Sori round, in two submarginal rows.

Common on rocks and logs in thickets and forested areas (9606, 10147, 10219). Native name, *kohuku taane.*

Nephrolepis hirsutula (Forster) Presl, Tent. Pterid., 79, 1836.

Rhizome creeping. Stipes clustered, brown, scaly. Blades up to 50 or more cm. long, pinnate, rachis densely brown scaly. Pinnae oblong, sessile, up to 4 or more cm. long, obtuse or acutish, serrulate. Sori large, round, submarginal.

A weedy species, abundant in clearings, plantations, and waste areas throughout the island (9587). Native name, *kohuku.*

Genus **PTERIS** Linnaeus

Pteris tripartita Swartz, Jour. Bot. Schrad. 2: 67, (1800) 1801.

Terrestrial. Rhizome short. Stipes up to 60 or more cm. long, smooth. Blade up to 1 or more m. long, 3-parted, each part in turn once or more divided. Pinnae sessile, lanceolate, deeply pinnatifid. Sori forming a continuous row along the margins of the pinnae.

Common in clearings and thickets (9685, 9912). The leaves are used for ornamental purposes and as a cover for native ovens. The roots are used in preparing native medicines. Native names, *kapihi, palatao.*

Genus **ACROSTICHUM** Linnaeus

Acrostichum aureum Linnaeus, Spec. Plant., 1069, 1753.

Rhizome short, erect. Stipes up to 30 or more cm. long, clustered. Blades pinnate, up to 1 or more m. long when well developed. Pinnae oval-ovate to linear-lanceolate, up to 25 cm. long and 4 cm. wide in well-developed specimens, though commonly much smaller, somewhat coriaceous, veins fine, anastomosing. Sori covering the lower surface of terminal pinnae.

Infrequent on exposed rocky cliffs near the sea (10100). Native name, *palatava.*

Genus **HUMATA** Cavanilles

Humata heterophylla (Smith) Desvaux, Prodr. fam. Foug., 323, 1825.

Vinelike, epiphyte with brown, scaly stems. Sterile leaves petiolate, simple, ovate-lanceolate, acuminate, up to 12 or more cm. long. Fertile leaves pinnatifid with rounded lobes. Sori round, marginal.

Climbing on trees in forest shade (9779).

Genus **DAVALLIA** Smith

Davallia solida (Forster) Swartz, Jour. Bot. Schrad. 2: 87, (1800) 1801.

Terrestrial or epiphytic. Rhizome slender, creeping, scaly. Stipes up to 30 or more cm. long, greenish. Blades 30 or more cm. long, deltoid, coriaceous, tripinnatifid. Pinnules oblong-wedgeshaped, toothed. Sori oblong, cuplike at ends of veins.

Frequent. Commonly climbing on the trunks of coconut palms, clambering over rocks, or on the ground in clearings and open forested areas (9657).

Genus **POLYPODIUM** Linnaeus

Polypodium Scolopendria Burmann f., Fl. Indica, 232, 1768.

Rhizome stout, creeping. Stipes up to 30 or more cm. long. Blades up to 40 or more cm. long, simple but deeply and broadly divided to near the midrib into several linear-lanceolate, acute lobes. Sori large, commonly in two rows on the lower surface of the lobes.

A common weed in clearings and in rocky areas (9586). The leaves are used in preparing native medicines. Native name, *mamanu*.

SPERMATOPHYTA

GYMNOSPERMAE

Family CYCADACEAE

Genus **CYCAS** Linnaeus

Cycas circinalis Linnaeus, Spec. Plant., 1188, 1753.

Short-stemmed, palmlike plant with a cluster of pinnately divided leaves at the crown. Leaves up to 1 or more m. long, curved, divisions stiff, glossy, up to 30 cm. long, narrowly linear-lanceolate, somewhat falcate, sharply acute. Inflorescence large, conelike, in center of the crown of leaves.

Introduced ornamental (9877). English name, cycad; native name, *lologo*.

Family ARAUCARIACEAE

Genus **ARAUCARIA** Jussieu

Araucaria excelsa R. Brown, in Aiton, Hort. Kew., ed. 2, **5**: 412, 1813.

Tall, stately tree with excurrent stem and whorled, horizontal to somewhat ascending, fanlike branches. Leaves small, stiff, awl or scale shaped, imbricated. Cones large, woody.

Introduced ornamental (9952, 10247). A few well-grown specimens are growing in Alofi. English name, Norfolk Island pine.

ANGIOSPERMAE

MONOCOTYLEDONEAE

FAMILY PANDANACEAE

Genus **PANDANUS** Linnaeus

Pandanus tectorius Parkinson, Voy. Endeavour, Jour., 46, 1773.

Branching tree up to 5 or more m. tall, with numerous, aerial brace roots. Leaves up to about 2 m. long or somewhat shorter and about 5 cm. wide, apex long, slender, acuminate, margins and midrib armed with short, sharp spines. Fruit subglobose, about 25 cm. thick.

Common on the lower terrace near the sea (10174, 10236). The aerial roots and the fruit may be eaten during periods of food scarcity, and the colored fruit segments make attractive leis. Ribbonlike strips obtained from splitting the sun-dried leaves are used to weave mats, hats, and baskets of which large quantities are exported to New Zealand. Native name, *fa.*

Pandanus tectorius Parkinson variety?

(= *P. odoratissimus* Linnaeus var. *pyriformis* Martelli.)

Tree up to 4 or more m. tall, branching, with few aerial brace roots. Leaves up to about 2 m. long, apex long and slender, margins and midrib armed with strong, sharp, curved teeth. Fruiting heads ovoid or globose, up to about 30 cm. long, orange or red, on peduncles of about the same length.

Frequent on the upper terrace in thickets and cut-over areas, less abundant near the sea (10008, 10009, 10237, 10238). The natives distinguish two or more forms, the more common one, which they claim is native to the island, is called *fa vao,* the other, an introduced form, is called *fa niua.* A third form, which grows on the lower terrace near the sea and which may represent a different variety, is called *fa fi.* The leaves of this variety are strong and are considered excellent for weaving.

Pandanus tectorius Parkinson variety **laevis** (Kunth) Warburg, Pflanzenr. 3 (IV. 9) : 48, 1900.

Small tree up to about 2 m. tall (as observed on Niue). Leaves unarmed, up to 2 or more m. long, tip long, attenuate.

Introduced and planted about dwellings (10007). Not seen in fruit. The long, unarmed leaves are considered by the natives to be superior for weaving. Native name, *fa.*

Pandanus Veitchii Hort., cf. Gard. Chron., 349, 1869.

Low tree (as observed on Niue). Leaves up to 1 or more m. long and 7 cm. wide, margins and midrib armed with short, sharp teeth, center green, margins with broad bands of white.

Introduced ornamental (9860). Not common. Said to be used for weaving. Native name, *fa tea.*

FAMILY GRAMINEAE

Genus **SCHIZOSTACHYUM** Nees

? Schizostachyum glaucifolium (Ruprecht) Munro, Linn. Soc., Trans. 26: 137, 1868.

Stems hollow, up to 2 or more m. tall. Leaf blades linear-oblong, up to 30 cm. long and 3 cm. wide, rounded at base and briefly petiolate, apex long acuminate.

Introduced at the government plantation at Fonukula (9875). Only sterile specimens were seen.

Genus **BAMBUSA** Retzius

Two or three varieties of unidentified bamboo are cultivated on the island, none of which were found in the flowering or fruiting stage (9987, 10193). Native name, *kaho papalagi.*

Genus **ERAGROSTIS** Host

Eragrostis amabilis (Linnaeus) Wight and Arnott, in Hooker and Arnott, Bot. Beechey, 251, 1841.

Small annual grass with erect or abruptly ascending stems up to 25 or more cm. tall. Leaf blades up to about 10 cm. long. Spikelets small, 4-6-flowered, inflorescence branches filiform, spreading to ascending in an open, usually narrowly oblong panicle. Palea ciliate.

A common weed in dooryards and waste areas (9862). English name, love grass.

Genus **ARUNDO** Linnaeus

Arundo Donax Linnaeus, Spec. Plant., 81, 1753.

Stems coarse, clumped, up to 3 or more m. tall, from stout, knotty rootstocks. Leaf blades up to 60 or more cm. long and 5 cm. wide, margins scabrous. Panicle terminal, 30-60 cm. long, hairy, dense.

Common in clearings and second growth (9754). Tightly tied bundles of the stems are used as torches. They are also used for lattices. The ash from burned leaves mixed with coconut oil is considered an excellent remedy for burns. English name, giant reed; native name, *kaho.*

Genus **SPOROBOLUS** R. Brown

Sporobolus elongatus R. Brown, Prodr. Fl. Nov. Holl. 1: 170, 1810.

Stems erect, tufted, slightly flattened, up to 60 or more cm. tall. Leaf blades narrow, commonly with involute margins, sharply acuminate. Spikelets 1-flowered, arranged in a narrow, spike-like panicle up to 20 or more cm. long, interrupted below.

A weedy species in dooryards and waste areas (9936). English name, dropseed grass; native name, *motie hikutaha.*

Genus **ELEUSINE** Gaertner

Eleusine indica (Linnaeus) Gaertner, Fruct. et Semin. Plant. **1**: 8, 1788.

Stems up to 30 or more cm. tall, erect or decumbent and spreading at the base, somewhat flattened, glabrous. Leaf blades up to 20 or more cm. long. Spikes mostly 3-6, whorled, with one arising a short distance below the others.

Common along roadsides and in waste areas (9774). English name, goose grass; native name, *fahitalo.*

Genus **CYNODON** L. C. Richard

Cynodon Dactylon (Linnaeus) Persoon, Syn. Plant. **1**: 85, 1805.

Low, creeping, sod-forming grass, rooting at lower nodes, with flowering stems ascending up to 15 or more cm. tall. Leaf blades short, linear, hairy at the base, somewhat scabrous. Flowering spikes 4 or 5, sometimes purplish, digitate, up to 5 or more cm. long, spikelets imbricate, 1-flowered.

Common as a lawn grass and also along roadsides and in waste areas (10151, 10225). English name, Bermuda grass; native name, *motie molulu.*

Genus **PASPALUM** Linnaeus

Paspalum conjugatum Bergius, Act. Helvet. Phys. Math. **7**: 129, 1762.

Creeping, stoloniferous, hairy at nodes. Flowering stems ascending up to 60 or more cm. tall. Leaf blades linear, acuminate, somewhat hairy especially along margins. Flowers commonly in divaricately two-branched, spike-like racemes, spikelets 2-rowed, ovate, ciliated, imbricated.

A common weed in plantations, along roadsides and in waste areas (10077). English name, sour grass; native name, *motie vailima.*

Paspalum dilatatum Poiret, in Lamarck, Encycl. Méth. **5**: 35, 1804.

Stems stout, tufted, leafy at base, ascending up to 1 or more m. tall. Leaf blades linear, acuminate, up to 15 or more cm. long, somewhat scabrous along margin, ciliate toward base. Racemes mostly 4-6, lax, in a somewhat drooping panicle, up to 8 cm. long, spikelets hairy, ovate, pointed, overlapping.

Occasional in waste areas (9721, 9868). English name, Dallis grass; native name, *hiku nua.*

Paspalum orbiculare Forster f., Fl. Ins. Austr. Prodr. **7**, 1786.

Tufted, erect, glabrous, up to 60 or more cm. tall. Leaf blades linear, slightly scabrous. Spikelets 2-ranked, imbricate, broadly elliptical. Racemes mostly 4-6, spike-like, up to 4 or more cm. long, distantly spaced on axis.

Weed in taro plantations and waste areas (9621, 10165). English name, rice grass.

Paspalum vaginatum Swartz, Prodr. Veg. Ind. Occ., 21, 1788.

Low creeping grass with long horizontal rhizomes. Flowering branches tufted, leafy, up to 60 or more cm. tall. Leaves up to 15 cm. long, conspicuously 2-ranked. Racemes

mostly 2, erect to spreading, mostly about 5 cm. long. Spikelets in two rows, solitary, ovate-lanceolate.

Occasional in waste areas (10210, 10226). English name, sand knot grass; native name, *motie kalalahi.*

Genus **PANICUM** Linnaeus

Panicum purpurascens Raddi, Agrost. Brasil., 47, 1823.

Stems ascending, up to 1.5 m. tall from a creeping or decumbent base, densely hairy at the nodes. Leaf blades up to 30 cm. long, scabrous along the margins, sheath villous. Spikelets about 3 mm. long, elliptic, in a large, racemose-panicle with ascending to spreading branches.

Cultivated as a forage grass (9659). English name, para grass.

Genus **PENNISETUM** L. C. Richard

Pennisteum macrostachyum (Brongniart) Trinius, Acad. Petersb. Mém. VI, 3 (2) : 177, 1835.

Stems up to 1 or more m. tall. Leaf blades red or purplish, up to 30 cm. long and 2.5 cm. wide. Panicle dense, plumose, purplish, spike-like.

Introduced ornamental (9946).

Genus **CENCHRUS** Linnaeus

Cenchrus calyculatus Cavanilles, Icon. Descr. Plant. **5**: 39, pl. 463, 1799.

Stems coarse, long and trailing. Leaf blades up to 50 or more cm. long and 1.5 to 2 cm. wide, apex long and tapering. Spikelets subsessile, bristly, the inner bristles hirsute, in narrow racemes 15 or more cm. long, rachis puberulent.

Occasional in thickets near the sea (9842, 10213).

Cenchrus echinatus Linnaeus, Spec. Plant., 1050, 1753.

Stems decumbent, ascending up to 30 or more cm. tall, branching from below. Leaf blades up to 10 or more cm. long, somewhat scabrous. Fruit bristly, burlike, pubescent, in loose racemes up to about 5 or more cm. long.

An obnoxious weed, common in waste areas and along roadsides (9654). English name, sand-bur; native name, *motie vihilago.*

Genus **MISCANTHUS** Andersson

Miscanthus japonicus (Thunberg) Andersson, Oefers. K. Sv. Vet. Akad. Förhandl., Stockholm **12**: 166, 1856.

Stems tall, tufted, reedlike, up to 3 m. tall. Leaf blades 60 or more cm. long and 2.5 cm. wide, margins scarious. Flowers in plumelike paniculate inflorescences up to 30 or more cm. long.

In cut-over area near Fonukula plantation (10164).

Genus **SACCHARUM** Linnaeus

Saccharum officinarum Linnaeus, Spec. Plant., 54, 1753.

Sugar cane is cultivated to some extent. The stems are chewed and the leaves are used to thatch houses. Native name, *to*. The natives recognize a number of varieties, among them *to fua, to hega, to hiata, to kula, to maka, to iva,* and *to kaho,* which is considered especially adapted for thatching purposes.

Genus **CYMBOPOGON** Sprengel

Cymbopogon nardus (Linnaeus) Rendle, Cat. Afr. Plant. Welwitsch 2 : 155, 1899.

Sterile specimens of what appears to be this species were collected in dooryards (9820). English name, citronella grass; native name, *kamapui.*

Genus **SORGHUM** Moench

Sorghum halepense (Linnaeus) Persoon, Syn. Plant. 1 : 101, 1805.

Stems stout, up to 1 or more m. tall, tufted, glabrous. Leaf blades up to 50 or more cm. long, margins scabrous. Spikelets ovate-lanceolate, appressed-hairy, awned, in racemes which are in loose, pyramidal, paniculate clusters.

Occasional in waste areas and on rocky cliffs near the sea (9723). English name, Johnson grass.

Sorghum vulgare (Linnaeus) Persoon, Syn. Plant. 1 : 101, 1805.

A coarse grass with stems up to 2 or more m. tall. Leaf blades broad. Flowering racemes arranged in terminal panicles.

A widely cultivated species occurring in a number of varieties. Introduced at the government plantation at Fonukula (9878). English name, sorghum.

Genus **ISCHAEMUM** Linnaeus

Ischaemum foliosum Hackel var. **leiophyllum** Hackel, Ridley, Straits Branch Roy. Asiat. Soc., Jour. 45 : 243, 1906.

Stems tufted, ascending up to 30 or more cm. tall. Leaf blades flat, up to 10 cm. long, margins scabrous, sheath hairy. Spikelets hirsute at base, with twisted awns up to 2 cm. long, in compact spikes about 2 cm. long.

On rocky cliff near the sea, not common (9589, 9893).

Genus **CHRYSOPOGON** Trinius

Chrysopogon aciculatus (Retzius) Trinius, Fund. Agrost., 188, 1820.

Stems decumbent, creeping and rooting at the nodes, somewhat turf-forming, flowering stems ascending up to 25 or more cm. tall. Leaf blades short, mostly basal, scabrous along margin. Panicle narrow, up to 5 or more cm. long with ascending, whorled or scattered branches. Spikelets awned.

Common along roadsides and in waste areas (10065). The matured fruit is easily detached and has a barbed callus which works its way into clothing and becomes irritating. Native name, *motie fisi.*

Genus **COIX** Linnaeus

Coix lacryma-jobi Linnaeus, Spec. Plant., 972, 1753.

Stems up to about 1 m. tall, tufted, branching. Leaf blades about 3 cm. broad, lanceolate, up to 30 or more cm. long, cordate and clasping at base, margins scabrate. Fruit ovoid, 8 to 10 mm. long, smooth, grayish white, and shining when mature.

Occasionally planted about dwellings (10207). The fruits are used in the making of necklaces. English name, Job's tears; native name, *tagataga.*

Genus **ZEA** Linnaeus

Zea Mays Linnaeus, Spec. Plant., 971, 1753.

Corn is cultivated to a small extent.

Two sterile specimens of a grasslike plant with leaf blades up to 1 m. long and 10 or more mm. wide and with scabrous margins were collected in dooryards where they were apparently introduced. The specimens appear to be similar and both are sweet smelling. One has the native name of *ahi* and the other *ahi taina.*

Family CYPERACEAE

Genus **CYPERUS** Linnaeus

Cyperus alternifolius Linnaeus, Mantissa Plant., 28, 1767.

Stems tufted, nearly round, more or less ribbed, up to about 1 m. tall, with a cluster of long, spreading, linear involucral leaves up to about 25 cm. long at top, giving an umbrella-like appearance.

Introduced ornamental (9906). English name, umbrella plant.

Cyperus cyperoides (Linnaeus) O. Kuntze, Rev. gen. Plant. 3 (2) : 333, 1898.

Leaves 3-5 mm. wide and up to 15 or more cm. long. Flowering spikes about 1-2 cm. long, several, subtended by several leaflike involucral bracts, umbellately clustered at the top of a stout stem commonly much longer than the leaves.

A common weed along roadsides and in waste areas (9670, 9739). Native name, *motie pako.*

Cyperus Kyllingia Endlicher, Cat. Hort. Acad. Vindob. 1 : 94, 1842.

Leaves narrow, grasslike, up to 30 or more cm. long, on branches ascending from a thickened rhizome. Flowers in small, dense, headlike clusters 1 cm. or less thick, subtended by several leaflike involucral bracts, at the top of stems as long as or longer than the leaves.

A common weed along roadsides and in waste areas (9911).

Cyperus rotundus Linnaeus, Spec. Plant., 45, 1753.

Rhizomes long and creeping. Leaves linear up to 15 cm. long. Flower spikes reddish brown, 10-15 mm. long, subtended by several leaflike involucral bracts, umbellately clustered at top of a stalk up to 20 or more cm. long.

Common dooryard and waste area weed (9939). English name, nut grass.

Genus **FIMBRISTYLIS** Vahl

Fimbristylis cf. **acuminata** Vahl, Enum. Plant. 2 : 285, 1806.

Low, tufted plant with numerous very slender, filiform leaves up to 8 or more cm. long. Flowering spikes on slender stalks up to 15 or more cm. long, compact, bracts imbricate, acute.

In waste ground at Fonukula plantation (9871). Infrequent.

Fimbristylis cymosa R. Brown var. **pycnocephala** (Hillebrand) Kükenthal, B. P. Bishop Mus., Bull. 128 : 20, 1935.

Low, tufted, grasslike plant with more or less rigid, narrow leaves mostly 3-10 cm. long. Flowers in small, rounded, headlike clusters on erect stalks up to 30 cm. long.

On exposed rocky cliffs near the sea (9783).

Family PALMAE

Genus **PHOENIX** Linnaeus

Phoenix dactylifera Linnaeus, Spec. Plant., 1188, 1753.

Stem tall, rough. Leaves quite straight, 2 or more m. long, pinnate, pinnae linear-lanceolate, sharply pointed, up to 45 cm. long. Fruit up to 7 cm. long, fleshy, edible.

Introduced. One small specimen was seen in Hikutivake village (9790). English name, date palm ; native name, *paama.*

Phoenix Roebelenii O'Brien, Gard. Chron. 2 : 475, 758, fig. 68, 1889.

Small palm with stem about 1 m. tall. Leaves graceful, pinnately compound, pinnae narrowly linear-lanceolate, up to 25 or more cm. long, petioles somewhat spiny.

Introduced ornamental (9903).

Genus **EUPRITCHARDIA** O. Kuntze

Eupritchardia pacifica (Seemann and Wendland) O. Kuntze, Rev. Gen. Plant. 3(2) : 323, 1898.

Stems up to 5 or more m. tall and 30 cm. thick. Leaves fan-shaped, plicate, up to about 1 m. long, petioles about as long as the blade. Inflorescence paniculate. Fruit small, black.

A handsome ornamental tree introduced and planted about dwellings (9976). English name, fan palm ; native name, *piu.*

Genus **VEITCHIA** H. Wendland

Veitchia Joannis H. Wendland, in Seemann, Fl. Vit., 271, 1868.

Tree with slender stem up to about 10 m. tall. Leaves 2 to 2.5 m. long, arching, pinnately compound, pinnae nearly 100, lanceolate, up to 50 or more cm. long and 4 cm. wide. Fruit red when young, narrowly ovoid, about 5 cm. long, edible.

Introduced. A well-grown specimen is growing near a dwelling in Alofi (10141, 10179).

Genus **COCOS** Linnaeus

Cocos nucifera Linnaeus, Spec. Plant., 1188, 1753.

Unbranched tree with swollen base and smooth, commonly more or less inclined trunk up to 20 or more m. tall. Leaves clustered at the top, up to 4 or more m. long, pinnate, pinnae firm and coriaceous, oblong-lanceolate, long acuminate. Flowers monoecious, in large clusters. Fruit a large, one-seeded nut enclosed in a thick fibrous husk.

The coconut (*niu*) is common everywhere about the island, and is most important in the lives of the natives. The nut furnishes food and drink as well as the copra of commerce which in normal times is an important item of export. The flesh is eaten raw or is cooked in combination with such foods as taro leaves, bananas, and breadfruit. From the husk is obtained the fibers which are used to make sennit. Oil is obtained from the nuts for the anointing of the body and other uses. The leaves are used as roof thatch and are woven into baskets, coarse mats, and other articles. The Niueans are noted for the manufacture of an excellent panama-like hat from the fibers of the young leaves. The empty nut shells serve as utensils of many uses. The terminal bud is edible and is much relished, but it is rarely eaten as it means the destruction of the tree. It is sometimes called the "million dollar salad."

The following varieties are distinguishable mostly on characteristics of the fruit:

Niu fuaiki: fruit small and numerous.
Niu fualahi: fruit very large. Introduced from Niuafou?
Niu fuefue: fruit elongated. Introduced from Samoa.
Niu gau: fruit small. The husk is edible either raw or cooked.
Niu hiata: fruit greenish brown or yellowish.
Niu hoe monega: fruit very large, up to 25 or more cm. long, with a knob-like projection on one side at the base. Introduced from Samoa.
Niu kula: fruit dark brown.
Niu niukini: fruit small. Introduced from New Guinea.
Niu pulu: fruit very large, up to 40 or more cm. long. The husk furnishes long fibers preferred for making sennit.
Niu niutao:
Niu tea: fruit green.
Niu toga: introduced in recent years from Tonga.
Niu uli: fruit very dark brown.

FAMILY CYCLANTHACEAE

Genus **CARLUDOVICA** Ruiz and Pavon

Carludovica palmata Ruiz and Pavon, Syst. Veg., 291, 1798.

Plants appear stemless. Leaves radical, palmlike, palmately deeply divided into four fanlike segments, these in turn divided to about the middle into linear-lanceolate, sharply acuminate lobes, some leaves 60 or more cm. wide, petioles up to 1 or more m. long. Flowers small, numerous, in a fleshy spike-like cluster 15 or more cm. long, peduncle up to 60 or more cm. long.

Introduced ornamental. A large clump is growing at the government plantation at Fonukula (9983). English name, Panama hat palm.

FAMILY ARACEAE

Genus **AMORPHOPHALLUS** Blume

Amorphophallus campanulatus (Roxburgh) Blume, Mus. Hist. Nat. Paris, Ann. 3 : 366, 1834.

Stemless herb. Leaves large, rising from a large corm, up to about 1 m. tall, petiole nearly 2.5 cm. thick, mottled light and dark green, spinulose, blade dichotomously branched, ultimate divisions pinnatifid, leaflets oblong-lanceolate, very unequal, acuminate. Flowers small, monoecious, on an elongated, fleshy spadix surrounded with a large, greenish-purple spathe, peduncle 15 or more cm. long.

Common in thickets and clearings (9930). The corms are cooked and eaten during periods of food shortage. Native name, *teve*.

Genus **DIEFFENBACHIA** Schott

Dieffenbachia Seguine (Linnaeus) Schott, Melet. Bot. 1 : 20, 1832.

Stems thick, more or less decumbent at base, rising to 3 or more m. high. Leaves alternate, oval-oblong, pinnately veined, abruptly acuminate, 35 or more cm. long and 20 or more cm. wide, spotted with irregular white areas, midrib and petiole thick and fleshy, green. Flowers monoecious, small, on a fleshy spadix surrounded with an oblong spathe.

Introduced ornamental (9932). The juice is very irritating and when taken into the mouth may cause temporary paralysis of the vocal apparatus. English name, dumbcane.

Genus **COLOCASIA** Schott

Colocasia esculenta (Linnaeus) Schott, Melet. Bot. 1 : 18, 1832.

Acaulescent, tuber-forming herb. Leaves ovate-cordate, peltate, entire, acute to acuminate, of various sizes but mostly 30 or more cm. long, petiole sheathing at the base and varying in color from light green to dark green or purplish. Flowers small, on a fleshy spadix, surrounded with a yellowish or reddish spathe.

Taro is one of the most important of the food crops (9985). The cooked tubers are the basic item of diet for the natives, and the young leaves are eaten

as greens or cooked with coconut cream. A large number of varieties are distinguished by the natives on the basis of the color of the petioles, shape of leaves, color and quality of the flesh, and so forth. Five main groups are recognized on differences in color and markings of the leaf stalks.

1. Fa kula group: leaf stalks yellow or pinkish.
   - Talo ago: flesh yellow, used for scraping or grating in preparation of vegetable puddings. Introduced.
   - Talo fua
   - Talo ifo kula: flesh red.
   - Talo ifo tea: flesh white.
   - Talo ifo uli: flesh bluish.
   - Talo lauila
   - Talo maga lau ila tea: leaf blade with a dark center.
   - Talo maga paku: flesh yellow or pink. Introduced from New Guinea.
   - Talo maha: flesh white with dark rings near the outside.
   - Talo maha tea: flesh white.
   - Talo maha uli: skin black, flesh white with brown rings.
   - Talo malau: stalks red, flesh white, of poor quality.
   - Talo malau kula: flesh white. Poor quality and not much used.
   - Talo matagi: flesh gray, leaves with dark central spot.
   - Talo paku: flesh yellow or pink.
   - Talo paku ago: flesh yellow.
   - Talo palaveka: flesh white.
   - Talo pogi kula: flesh bluish.
   - Talo pula maha: flesh white.
   - Talo pula nonu avaava: flesh yellow, petioles striped.
   - Talo pula pule kau: flesh yellow.
   - Talo toga kula: flesh blue.
2. Fa uli avaava group. Leaf stalks with longitudinal stripes.
   - Talo ago ivaiva: flesh orange.
   - Talo hega
   - Talo maga lau ila uli: flesh bluish.
   - Talo maga tifa
   - Talo malavalu: flesh purplish.
   - Talo manua avaava tea: flesh white, petiole dark with light stripes.
   - Talo manua avaava uli: flesh yellow, petiolar stripes dark.
   - Talo manua ivaiva tea: flesh white.
   - Talo pogi avaava: flesh gray.
   - Talo pula kula: flesh yellow.
   - Talo pula uli: flesh yellow.
   - Talo telulu: flesh white, petiole speckled.
   - Talo toga uli: flesh light blue.
3. Fa uli group. Leaf stalks black or dark colored.
   - Talo faliu
   - Talo fate: flesh gray. A favorite variety.
   - Talo fate manua: flesh white.
   - Talo fiti: flesh white, tough. Introduced from Fiji.
   - Talo laumegemege: flesh white.
   - Talo magafauli
   - Talo manua: flesh white, tough. Introduced from Manua.
   - Talo mataga: flesh white.
   - Talo mataga uli: flesh dark blue.
   - Talo paku uli: flesh yellowish.

Talo pogi tea: flesh white.
Talo pogi fa uli: flesh light green.
Talo toga tea: flesh gray.
Talo uli: flesh white.

4. Fa tea group: Leaf stalks light colored ("white").
Talo fate tea
Talo kiamu
Talo maga
Talo maga liki: flesh blue.
Talo maga lanu: flesh yellow and hard.
Talo maga tea
Talo maga hau kula: flesh pink or yellow. Introduced from New Guinea.
Talo paku: flesh yellowish.
Talo paku hega: flesh whitish.
Talo paku tea: flesh yellowish.
Talo pakapaka tea: flesh grayish white.
Talo pulu tea: flesh yellowish.
Talo tea: flesh white.
Talo timala: flesh brick red.
Talo uli: flesh white.

5. Fa lanu group. Leaf stalks green, bluish or purple.
Talo fate
Talo fuamoa: flesh grated or sliced for cooking.
Talo kape
Talo maga ifo: flesh white.
Talo maga nonu: flesh greenish yellow.
Talo maga hau uli: flesh light purple. Petiole with white spots.
Talo manua uli: flesh white, petioles very dark.
Talo mataga: petioles blue.
Talo matale: flesh grayish.
Talo paku famegemege: flesh white.
Talo paku taefu
Talo pogi fa lanu: flesh light green.
Talo polu nonu: flesh gray.
Talo pula: flesh yellow.
Talo tifa nonu: flesh white, petiole with long white stripes.
Talo toga: flesh bluish, petiole lighter above.
Talo uli: flesh purple.

Genus **ALOCASIA** Schott

Alocasia macrorrhiza (Linnaeus) Schott, Oesterr. Bot. Wochenbl. 4: 409, 1854.

Stem 1 or more m. tall and up to 15 or more cm. in diameter. Leaves cordate-sagittate, glabrous, margins entire or wavy, obtuse to acuminate, up to 1 m. long and 60 cm. wide but commonly smaller in some varieties, petioles up to 1 or more meters long, sheathing at the base. Flowers monoecious, on a fleshy spadix, enclosed in a greenish spathe.

Cultivated commonly as an ornamental (9922, 9991, 9993, 9994, 9995, 9996, 9997, 10135). The stems may be used for food in times of food shortage. English name, giant taro; native name, *kape.* The following listed varieties were seen:

Kape kaihule: petioles reddish at the bottom.
Kape kula: petioles red.
Kape laumao: petioles green.
Kape matamata: petioles green with purplish lines.
Kape pulaka: petioles green above, reddish below.
Kape tea: petioles yellow, leaves large.
Kape uli: petioles nearly black.

Genus **CALADIUM** Ventenat

Caladium bicolor (Aiton) Ventenat, Plant. nouv. Jard. Cels., pl. 30, 1800.

Stem short, subterranean. Leaves ovate-hastate, peltate, entire, long petiolate, green with various red, white and yellow markings. Flowers numerous on a fleshy spadix surrounded by a white spathe.

Introduced ornamental (9963). Native name, *talotalo*.

Family FLAGELLARIACEAE

Genus **FLAGELLARIA** Linnaeus

Flagellaria gigantea Hooker f., Icon. Plant. **15**: 23, pl. 1429, 1883.

Coarse, somewhat vinelike climbing plant. Leaves lanceolate, 35 or more cm. long and 5 cm. wide, with a tubular base about the stem, finely parallel veined, tapering into a long slender prehensile tip. Flowers small, sessile, numerous in white, loosely branching inflorescences up to 30 or more cm. long and about as wide.

Common in thickets and forests where it often climbs to the tops of the tallest trees (9623). The long, liana-like stems are used in house construction as a reinforcing medium in the walls and in the roofs as a binding medium to which the cane or other thatch leaves are fastened. They are also used as strainers in the preparation of starch. Native name, *va*.

Family BROMELIACEAE

Genus **ANANAS** Adanson

Ananas comosus (Linnaeus) Merrill, Interpret. Herb. Amboin., 133, 1917.

The pineapple is cultivated to a small extent. Small fruit of fair quality are produced at the government plantation at Fonukula, but it is improbable that pineapples can be grown in any quantity in the poor soil. Native name, *hukifa*.

Family COMMELINACEAE

Genus **COMMELINA** Linnaeus

Commelina diffusa Burman f., Fl. Ind., 18, pl. 7, fig. 2, 1768.

Low, tender, fleshy herb with weak, more or less prostrate stems. Leaves alternate, lanceolate, up to 5 cm. long, petiole tubular sheathing. Flowers blue, delicate, subtended by a flat, compressed spathe.

Forming mats on moist soil along roads and in waste areas (10082). English name, wandering Jew. The native name, *vailima,* is probably an error due to the slight resemblance of the plant to the *vailima* grass.

Genus **RHOEO** Hance

Rhoeo discolor (L'Héritier) Hance, in Walpers Ann. Bot. syst. 3 : 660, 1852.

Low herb with short, thick, creeping, fleshy stems. Leaves numerous, narrowly lanceolate, entire, up to 30 or more cm. long, purplish green or reddish beneath, green above. Flowers small, white, axillary, surrounded by a boat-shaped involucral bract.

Introduced ornamental which has become naturalized. It is common in waste areas and especially on rocks near the sea where it occasionally forms large patches (9593).

Genus **ZEBRINA** Schnizlein

Zebrina pendula Schnizlein, Bot. Zeitung 7 : 868, 1849.

Tender, decumbent herb with weak semi-prostrate, creeping stems. Leaves ovate-lanceolate, acute, alternate, about 3-5 cm. long, purple on the lower side, green above, petiole tubular and sheathing the stem. Flowers purplish white, small.

Introduced ornamental which has escaped and is now frequent on exposed rocks near the sea in the vicinity of villages (9726). English name, wandering Jew.

Family LILIACEAE

Genus **ALLIUM** Linnaeus

Allium Cepa Linnaeus, Spec. Plant., 300, 1753.

Onions are cultivated to some extent in gardens. They do not mature well, however, and are used mostly as green onions.

Genus **ASPARAGUS** Linnaeus

Asparagus plumosus Baker, Linn. Soc., Bot., Jour. 14 : 613, 1875.

Climbing, vinelike plant with sub-woody stems. The branches form a horizontal, flattened, fanlike frond. Cladophylls numerous, filiform, fascicled, mostly less than 1 cm. long. Flowers small, white, in few-flowered clusters. Berry black.

Introduced ornamental. English name, asparagus fern.

Asparagus Sprengeri Regel, Act. Hort. Petrop. 11 : 302, 1890.

Stems slender, drooping, up to 1 or more m. long, glabrous, branching. Cladophylls whorled, about 2-3 cm. long, smooth, linear, flattened. Flowers small, white or pink, fragrant, in racemose clusters. Berry about 6 mm. wide or larger, red.

Introduced ornamental commonly grown in hanging baskets. English name, Sprengeri fern.

Genus **GLORIOSA** Linnaeus

Gloriosa superba Linnaeus, Spec. Plant., 305, 1753.

Glabrous, herbaceous, vinelike plant. Leaves sessile, 1-3 at a node, elliptical-lanceolate, ending in a tendril-like, prehensile apex by means of which it clings to a support. Flowers handsome, nodding, on long axillary pedicels, perianth parts reflexed, crisped, at first yellow, turning red.

Introduced ornamental (9956). English name, climbing lily.

Genus **SANSEVIERIA** Thunberg

Sansevieria zeylanica Willdenow, Spec. Plant. 2 : 159, 1799.

Herb with very short, decumbent stem. Leaves thick and coriaceous, narrow, sword-shaped, up to 2 m. long, erect, transversely mottled with light and dark green. Flowers small, white, fragrant, in a long raceme. Fruit fleshy, globose, yellowish.

Introduced ornamental (9944). English name, bowstring hemp.

Genus **CORDYLINE** Commerson

Cordyline terminalis (Linnaeus) Kunth, Berl. Akad. Abh., 30, 1820.

Small tree up to 2 or 3 m. tall. Leaves elliptic-lanceolate, acuminate, finely veined, up to 60 cm. long and 15 cm. wide, alternate, smooth, entire, petiole winged and clasping the stem. Flowers white or pink, sessile, in large, branching, terminal, paniculate clusters.

Frequent in thickets and clearings (9615, 10043). The tuberous roots, after thorough cooking, are used as food especially during times of food shortage. A variety with red leaves and flowers is cultivated as an ornamental about dwellings. English name, dracaena; native names, *ti, ti gau, ti matalea.*

Family AMARYLLIDACEAE

Genus **HIPPEASTRUM** Herbert

? Hippeastrum vittatum Herbert, Appendix, Bot. Register, 31, 1821.

Herbaceous, bulbous plant with glabrous, strap-shaped leaves up to 60 cm. long. Flowers large, lily-like, red or whitish, clustered at the top of a tall, fleshy scape.

Introduced ornamental. A few plants were observed in Alofi. English name, amaryllis.

Genus **ZEPHYRANTHES** Herbert

Zephyranthes rosea (Sprengel) Lindley, Bot. Register **10** : 821, 1824.

Low herb with globose, onionlike bulb. Leaves flat, narrow, grasslike, up to 30 cm. long and 5 mm. wide. Flowers rose colored, about 3 cm. long, solitary, on slender hollow scapes nearly as long as the leaves.

Introduced ornamental (9724). Common in dooryards, and naturalized and frequent along roadsides and in waste areas. English name, zephyr lily.

Genus **CRINUM** Linnaeus

Crinum asiaticum Linnaeus, Spec. Plant., 292, 1753.

Coarse herb. Leaves numerous, oblong, straplike, acute, up to 25 cm. wide and 2 m. long, fleshy, clasping at the base. Flowers numerous, at top of a fleshy scape, white, fragrant, tube up to about 10 cm. long, filaments white, styles purplish.

Introduced ornamental (9962). Frequent near dwellings and occasional along roadsides as an escape. The thin, white, papery basal part of the leaves is sometimes used for house ornamentation. English names, crinum lily, spider lily; native name, *lili.*

Crinum longifolium Thunberg var. **album** Hort., The Garden **52**: 123, 1896.

Coarse herb. Leaves straplike, 60 or more cm. long and 5 or more cm. wide, thin and clasping at base. Flowers white, several, clustered at top of a stout scape, tube and perianth segments each about 10 cm. long, pedicels mostly 4-5 cm. long.

Introduced ornamental (10242). Occasional near dwellings. English name, crinum lily.

? Crinum scabrum Herbert, Bot. Mag. **47**: t. 2180, 1820.

Coarse herb. Leaves more or less fleshy, straplike, up to about 1 m. long and 3-5 cm. wide, glabrous, entire. Flowers several, on a fleshy scape, tube mostly 10-12 cm. long, perianth segments somewhat shorter and up to 2.5 cm. wide, white with a red keel, upper part of filaments pink.

An attractive introduced ornamental, occasional about dwellings (9826). English name, crinum lily; native name, *talotalo.*

Genus **EUCHARIS** Planchon

Eucharis grandiflora Planchon and Linden, Fl. des Serres I, 9: 255, 1853-54.

Herb with bulbous base 3-5 cm. thick. Leaf blades oval-oblong, up to 30 cm. long and 10-15 cm. wide, acuminate, petioles up to 24 cm. long. Flowers white, fragrant, tube 4-5 cm. long, lobes spreading to 7 or more cm., in umbellate clusters on scapes which are about as long as leaves.

Introduced ornamental, occasional about dwellings (9972). English name, Amazon lily.

Genus **EURYCLES** Salisbury

Eurycles sylvestris Salisbury, Hort. Soc., Trans. 1: 337, 1812.

Low, herbaceous, bulbous plant. Leaves broadly ovate-cordate, up to 25 cm. long and 15-20 cm. wide, shortly acute, petioles as long as or longer than blades. Flowers creamy white, numerous, in umbellate clusters on scapes about as long as leaves.

Introduced ornamental, occasional about dwellings (10178). English name, Brisbane lily.

Genus **HYMENOCALLIS** Salisbury

Hymenocallis littoralis Salisbury, Hort. Soc., Trans. 1: 338, 1812.

Coarse herb. Leaves basal, straplike, fleshy, glabrous, up to 60 or more cm. long and 4 cm. wide. Flowers several, at top of a fleshy, two-edged scape, white, tube up to about 15 cm. long, perianth segments linear, stamen filaments green, connected at base with a thin, weblike, crapy tissue 2 or 3 cm. high.

Introduced ornamental (9725, 9827). Common in dooryards, and also naturalized and frequent along roadsides and in waste areas. English name, spider lily.

Genus **FURCRAEA** Ventenat

? Furcraea gigantea Ventenat, Soc. Philom. Bull. 1: 65, 1793.

Coarse, short-stemmed plant. Leaves nearly flat, arising from the short stem and spreading rosette-fashion, linear-lanceolate, up to about 1 m. long, fleshy, marginally armed with strong, recurved teeth, apex acuminate, ending in a short, sharp spine. Inflorescence up to 3 or more m. tall, paniculate, flowers white, commonly replaced with bulbels.

Introduced for the fibers which are obtained from the leaves. The cultivation of the plants did not prove profitable and little or no fiber is obtained at present. The plant, however, has become established, especially along the eastern part of the island in the vicinity of Liku where it is a troublesome weed (9757). Native name, *toua*.

Family TACCACEAE

Genus **TACCA** Forster

Tacca pinnatifida Forster, Charact. Gen. Plant., 70, pl. 35, 1776.

Herb with large, radical, palmately 3-parted leaves, each division in turn deeply lobed and divided into acuminate lobes and teeth, petioles up to 60 or more cm. long. Flowers greenish, numerous, in umbellate clusters at top of a hollow, bracteate scape up to about 1 m. tall. Fruit globose, ribbed, yellowish when ripe.

Common throughout the island (9610, 10135). Occasional plants growing under favorable conditions in shade may be up to 1.5 or more meters tall. The tubers weigh up to two pounds. They are used for food during periods of food shortage. A good grade of starch is prepared from the tubers. This plant superficially resembles *Amorphophallus campanulatus* (Roxburgh) Blume (*teve*) with which it is sometimes confused. Native name, *pia*.

Family DIOSCOREACEAE

Genus **DIOSCOREA** Linnaeus

Dioscorea alata Linnaeus, Spec. Plant., 1033, 1753.

Herbaceous or somewhat woody, high-climbing vine with 4-angled and winged stems, often bearing small, axillary tubers. Leaves glabrous, opposite, entire, ovate-cordate,

attenuately acuminate, up to 12 or more cm. long, palmately 7-9-veined, petiole nearly as long as blade.

Extensively cultivated for the tubers which grow to a large size (9947, 10073, 10074). English name, yam; native name, *ufi*. The following varieties are recognized by the natives on the bases of the size and shape of the tubers, color and character of the flesh, and so forth:

Ufi fiti: tubers round, skin tough, flesh white.
Ufi fua: tubers small, potato-like.
Ufi fuhoi: tubers round, skin hairy, flesh white.
Ufi gu: tubers long, cylindrical, flesh purplish.
Ufi kakokako: tubers long and slender, flesh white.
Ufi kaokao: tubers several, long and slender, formed shallowly, flesh white. Introduced from New Guinea.
Ufi kaokao kula: similar to *kaokao* excepting the flesh which is deep yellow. Introduced from New Guinea.
Ufi kavekave: tubers long and slender, "size of the forearm", often hollow-hearted when mature, flesh white.
Ufi kavekave kula: tubers similar to *kavekave*, deep yellow at the top, white at the bottom.
Ufi kilimao: tubers long and thick, skin tough, flesh blue and crystalline-like, glistening.
Ufi kivi: tuber long and slender, flesh white. Poor quality and not ordinarily cultivated. Eaten only when food is scarce.
Ufi kokau: tuber bottle- or gourd-shaped, flesh white.
Ufi kogili: flesh white. Poor quality and ordinarily not cultivated.
Ufi lauhilifa: tubers long and slender, flesh blue.
Ufi levei: tubers round, short, flesh blue.
Ufi lokaloka: tubers long and thick, flesh purple, glistening. Introduced from Tonga.
Ufi maile: tubers small, flesh white.
Ufi malumalupu: tubers long, thick, flesh white.
Ufi mamanu: tuber long, thick, flesh variegated white and purplish.
Ufi muipu: tuber large, long, depressed at the bottom end, flesh white.
Ufi niukini: tubers shallow, several, flesh yellow.
Ufi paka: plants small, tubers with flattened, angular sides, flesh white.
Ufi paka tea: fine grower, flesh white.
Ufi palai: tubers several, long and slender, flesh white. Now scarce.
Ufi pia: tubers large, flesh white. Introduced from Tonga and now extensively grown.
Ufi pia fulufulu: similar to *pia* excepting the tuber which is hairy.
Ufi pilita: tuber round, large, flesh white.
Ufi poa: tubers long and thick, flesh light purple.
Ufi puka: tubers long and thick but hollow-hearted at maturity, flesh white.
Ufi tamoni: tubers long and thick, flesh gray with white crystals, glistening. Introduced from Tonga.
Ufi toga: tubers long and larger, flesh purple.
Ufi toga kula: tubers with a deep blue skin and flesh.
Ufi toga tea: tubers with a navy blue skin, flesh yellowish green. Quality very good.
Ufi tolo: tuber long and slender, flesh blue.
Ufi tua: tuber round, medium-sized, flesh dark purple.
Ufi vakili: tubers long and slender, hairy, flesh dark purple.
Ufi volileka: tubers large and moderately long, skin smooth, white, flesh white. Introduced from Tonga.

Dioscorea bulbifera Linnaeus, Spec. Plant., 1033, 1753.

Herbaceous, glabrous, high-climbing, twining vine. Leaves alternate, oval-ovate to suborbicular, deeply and obtusely cordate, abruptly acuminate, up to 20 or more cm. long, palmately 7-11-or more-veined, petioles commonly half to as long as the blade, twisted at the base, green or reddish aerial tubers up to 5 or more cm. in diameter often present in the axils. Flowers small, in long, slender, spike-like inflorescences in axillary fascicles.

Common in thickets throughout the island (9646, 9668, 9895, 9998, 10020, 10107). English name, bitter yam; native name, *hoi*. When properly prepared and cooked the tubers are edible but are used only when better species are not available. The natives recognize the following varieties:

Hoi kona: very bitter and eaten only in times of famine, after cleaning and soaking in sea water.

Hoi tea, hoi tua, hoi niua, hoi niukini, and hoi vakili: claimed to be of better flavor than *hoi kona*.

Dioscorea esculenta (Loureiro) Burkill, Gard. Bull. Straits Settlm. **1**: 396, 1917.

Strong, high-climbing, more or less prickly armed, subwoody, pubescent, twining vine with large edible root tubers. Leaves alternate, ovate-cordate to suborbicular or reniform, woolly pubescent, up to 15 or more cm. long, basal sinus broad, obtuse, apex abruptly attenuately acuminate, petioles commonly nearly as long as the blade, sometimes prickly.

Frequent in thickets (9649, 9811, 9914, 10094, 10181). Native name, *ufilei*. The natives recognize the following varieties:

Ufilei: tubers several, large, flesh white.
Ufilei fituna: flesh purple. Introduced from Fituna.
Ufilei gau: large variety, flesh tan or brown. Chewed like sugar cane.
Ufilei kula: flesh purple.
Ufilei niua: flesh blue. Introduced from Niua.
Ufilei niukini: tubers hairy. Introduced from New Guinea.
Ufilei niukini kula: flesh purple.
Ufilei niukini tea: flesh white.
Ufilei pilita: tubers potato-like.
Ufilei tea: flesh white.
Ufilei uli: flesh purple. Introduced from New Guinea.

Dioscorea pentaphylla Linnaeus, Spec. Plant., 1032, 1753.

Strong, twining, pubescent, somewhat prickly herbaceous vine with more or less angular stems. Leaves alternate, palmately 3-5 or sometimes 7-foliate, leaflets elliptic-lanceolate, attenuately acuminate, entire, up to 15 or more cm. long, pubescent, petiolules up to 1 cm. long, petioles up to 10 or more cm. long. Root tubers large.

Frequent in thickets (9771, 10069, 10090). Tubers edible. Native name, *pilita*. A variety with purple flesh is known as *pilita kula* and one with white flesh as *pilita tea*.

Family MUSACEAE

Genus **MUSA** Linnaeus

Musa nana Loureiro, Fl. Cochinch., 644, 1790.

Usually much smaller than *M. paradisiaca*.

Introduced in recent times. The fruit is comparatively small and of good quality. The small size of the plant and the quality of the fruit recommend it. English name, banana; native name, *futi.*

It was impossible during my stay on Niue to make an intensive study of the varieties of bananas which are grown there. I saw no wild species, and I believe that all the plants I did see belong to *M. nana* or to *M. paradisiaca* or their varieties. Bananas are important in the diet of the natives and are eaten raw or cooked. Large quantities are shipped to the New Zealand markets. In times of food shortage, the rhizomes can be cooked and eaten. The natives recognize a number of varieties. I was unable to verify the accuracy of the list as given me, and it may be that some varieties are included under the wrong species.

Futi kauvave: introduced from Samoa.
Futi malio: fruit small.
Futi malio kula: flesh and skin reddish.
Futi manini: fruit small.
Futi meme: fruit small, flesh white.
Futi mitiluku: fruit small.
Futi pulo: fruit small.
Futi puputa: fruit small.
Futi toga: variety commonly used for export.
Futi toga fou: flesh excellent, quick ripener.
Futi toga ku: fruit short.
Futi toga ku loa
Futi toga kula: fruit large, flesh pink.
Futi toga loa: fruit long.
Futi toga loa maka: fruit long.

Musa paradisiaca Linnaeus, Spec. Plant., 1043, 1753.

Tall, vigorous herbaceous plant with a cluster of large leaves at the top. The flowering stalk is usually more or less pendulous.

Extensively cultivated. The fruit varies considerably in color, size, and character of the flesh. English names, plantain, banana; native name, *futi.* The natives recognize the following varieties:

Futi apuapu: fruit short and thick, flesh yellow.
Futi feini: cooking variety.
Futi hai: fruit originally dried for export.
Futi hai foou: fruit quick ripener, flesh soft, cooking variety.
Futi hai maka: fruit long in ripening.
Futi hai uli: fruit large, eaten raw or cooked.
Futi haihaifaga: cooking variety.
Futi hulahula: fruit large and thick, flesh yellow, cooking variety. Fibers used in weaving.
Futi hulahula maka: fruit slow to ripen.
Futi hulahula tegatavahi
Futi hulahula veka
Futi kimoni: eaten raw.
Futi lalotoga: stem tall, fruit eaten raw.
Futi mageo: cooking variety.

Futi maholi: cooking variety.
Futi maholi kula: cooking variety.
Futi maholi tea: cooking variety.
Futi mame kula: flesh and inner skin eaten raw or cooked.
Futi manua
Futi mili: fruit long, eaten raw or cooked. It is tough and must be crushed by rolling in the hands before eating. Introduced from Tonga and there known as *vaivai.*
Futi moamoafua: cooking variety.
Futi paapaa: fruit four-angled, cooking variety.
Futi paapaa kula
Futi pakaefu: fruit large, skin grayish, cooking variety.
Futi paka faliu: fruit large, skin orange, cooking variety.
Futi paka tea: flesh floury when cooked.
Futi pakepake: fruit more or less four-angled, skin dark when ripe, eaten raw or cooked.
Futi palai: quality medium, cooking variety.
Futi papa tea: fruit short and thick, angled, cooking variety.
Futi pilikolo: eaten raw or cooked. Esteemed, as it cooks easily.
Futi pilikolo tea: fruit large, cooking variety.
Futi puteliga: fruit large, somewhat pointed, cooking variety.
Futi tanapani: cooking variety.
Futi toaa: fruit small, closely clustered, flesh yellow or pinkish, eaten raw or cooked. The black skin is used for colored material in mat weaving.
Futi toga Samoa: large fruited cooking variety.
Futi tolo: cooking variety.
Futi ume: fruit few, long and pointed, cooking variety.

Genus **RAVENALA** Adanson

Ravenala madagascariensis Gmelin, Syst. Nat. 2: 567, 1791.

Stem stout, becoming treelike. Leaves in a 2-ranked, fanlike arrangement, very large, and similar in shape to those of the banana, petioles long, overlapping, and cupped at the base.

Introduced ornamental. English name, traveler's tree.

Family ZINGIBERACEAE

Genus **ZINGIBER** Adanson

Zingiber Zerumbet (Linnaeus) Smith, Exot. Bot. 2: 103, pl. 112, 1804.

Herbaceous plant with pubescent, leafy branches rising to about 1 m. tall from a thickened, fleshy rhizome. Leaves 2-ranked, alternate, entire, oblong-elliptic or lanceolate, acuminate, pubescent beneath, up to about 30 cm. long and 5 cm. wide, clasping stem at base. Flowers white or pale yellow, in a large, bracteate, conelike spike at top of a leafless shoot up to about 30 cm. tall, bracts rounded, overlapping.

Common throughout, especially in clearings where it often forms a dense ground cover (9614, 10183). The rhizomes are used in native medicines and to flavor foods. The watery juice in the flower heads is sometimes used as a hair shampoo. English name, wild ginger; native name, *poloi.*

Genus **ALPINIA** Roxburgh

Alpinia purpurata (Vieillard) K. Schumann, Pflanzenr. 20(IV. 46): 323, 1904.

Leafy stemmed, herbaceous plant up to 1 or more m. tall. Leaves elliptical, acute, up to 30 or more cm. long, clasping stem at base. Flowers in axils of oval, bright red, overlapping bracts in large terminal spikes.

Introduced ornamental (10086). A concoction made from the rhizome and base of the stem is used as a medicine for sores in mouths of babies. English name, red ginger; native name, *kamapui futi kula.*

Alpinia speciosa (Wendland) K. Schumann, Fl. Kaiser-Wilhelm., 29, 1887.

Coarse, glabrous, herbaceous, leafy plant. Stems clumped, sometimes red, up to 2 or more m. tall. Leaves alternate, lanceolate, acuminate, up to 60 cm. long and 10 cm. wide. Flowers fragrant, in racemose clusters, corolla lip yellowish, red within.

Introduced ornamental (10127). English name, shell flower; native name, *kamapui.*

Genus **HEDYCHIUM** Koenig

Hedychium flavum Roxburgh, Hort. Beng., 1, 1814.

Somewhat hairy herb with stems up to 1 or more m. tall. Leaves clasping stem, elliptic-lanceolate, up to 40 or more cm. long, acuminate, two-ranked, midrib prominent, lateral veins numerous, very fine, densely long hairy beneath especially along midrib. Flowers in a dense, terminal spike, creamy yellow, very fragrant, in axils of broadly ovate, overlapping bracts.

Introduced ornamental (9949, 10195). The flowers are used in the making of leis. English name, yellow ginger; native names, *keuila, kamapui fiti tea.*

Genus **CURCUMA** Linnaeus

Curcuma longa Linnaeus, Spec. Plant., 2, 1753.

Erect, leafy, herbaceous plant. Leaves elliptic-oblong, 30 or more cm. long, acuminate, petiole about as long as blade. Flowers in a terminal, short-stemmed spike, yellowish, bracts greenish. Rhizome deep yellow, aromatic.

Occasional near dwellings (9990). A yellow dye is obtained from the rhizome. English name, turmeric; native name, *ago.*

Family ORCHIDACEAE

Genus **VANILLA** Swartz

Vanilla fragrans (Salisbury) Ames, Sched. Orchid. 7: 36, 1924.

Large, climbing, glabrous, epiphytic vine. Leaves alternate, oblong-lanceolate, acuminate, thick and fleshy, up to 15 or more cm. long and 2 cm. wide, finely parallel veined, petioles 1 to 2 cm. long. Flowers large, light green.

Introduced (9856). Used for house decoration and the making of garlands. English name, vanilla; native name, *vanila.*

Genus **NERVILIA** Commerson

? Nervilia Aragoana Gaudichaud, in Freyc. Voy. Uranie et Physic. Bot., 422, pl. 35, 1826.

Terrestrial. Leaves broadly ovate-cordate, about 6 cm. long and as wide, more or less scurfy, attenuately acuminate, petiole 12 or more cm. long. Only one sterile specimen was seen.

On coral rocks in shade near Alofi (10057). Native name, *lautaha.*

Genus **OBERONIA** Lindley

Oberonia glandulosa Lindley, Fol. Orchid., Oberonia, 6, 1859.

Epiphyte. Stems leafy, up to 10 or more cm. tall. Leaves equitant, 6 or more cm. long, acuminate. Flowers small, short-pedicellate, numerous, in dense, cylindrical racemose, terminal clusters up to 6 or more cm. long.

On trees in forest shade (9598). Native name, *limulimumoupi.*

Genus **SPATHOGLOTTIS** Blume

Spathoglottis plicata Blume, Bijdr. Fl. Nederl. Ind., 401, pl. 76, 1825.

Terrestrial. Leaves lanceolate, plicate, up to 100 or more cm. long and 5 cm. wide, acuminate, petioles up to 30 or more cm. long. Flowers lavender, about 2-3 cm. wide, numerous in racemose clusters at top of scapes up to 1.5 m. tall which bear several, small, leaflike bracts.

Common in clearings and thickets (9619). The leaves are somewhat fibrous and are used for tying bundles. Native name, *pupukale.*

Genus **GEODORUM** Jackson

Geodorum pictum (R. Brown) Lindley, Gen. Spec. Orch., 175, 1833.

Terrestrial. Leaves equitant, up to 20 or more cm. long and 3 cm. wide, lanceolate, acute. Flowers pale lavendar, in nodding, spike-like clusters at top of a bracteate scape which is somewhat shorter than leaves.

In thicket near Makefu, not common (10098). Native name, *pupukale.*

Genus **DENDROBIUM** Swartz

Dendrobium biflorum (Forster) Swartz, Nova Acta Soc. Sci. Upsal. II, 6: 84, 1799.

Epiphyte. Stems slender, up to 50 or more cm. tall. Leaves 2-ranked, sessile and sheathing the stem at the base, mostly 6-7 cm. long and 6-8 mm. wide, lanceolate, apex unequally emarginate. Flowers yellow, about 2 cm. wide, on pedicels about 1 cm. long, in pairs along the stem.

On trees in a grove at Fonukula plantation (9873). Native name, *vaakau.*

Genus **BULBOPHYLLUM** Thouars

Bulbophyllum longiscapum Rolfe, Kew Bull., 45, 1896.

Epiphyte. Leaves oblong, up to 20 or more cm. long and 2.5 cm. wide, glabrous, abruptly acute, petiole about 5 cm. long, swollen and elongated bulblike at base. Scape up to 50 cm. long, with several, lanceolate, scale-like bracts.

On trees in deep forest (9806). Native name, *pupupupukale.*

Bulbophyllum species.

Small epiphyte. Leaves oval, about 2.5 cm. long and 1.5 cm. wide, obtusish, petiole very short with subglobose bulblike base. Not seen in flower or fruit.

On trees in deep forest (9923). Native name, *kapaa.*

Bulbophyllum species.

Epiphyte. Leaves elliptical, 3-4 cm. long and 1-1.5 cm. wide, acute, petiole very short with a swollen, subglobose, bulblike base. Scapes longer than the leaves. Flowers not seen.

In deep forest (9808). Native name, *kapaa.*

Genus **PHREATIA** Lindley

Phreatia Graeffei Kränzlin, Pflanzenr. **50**(IV. 50[II] B[23]) : 26, 1911.

Epiphyte. Leaves oblong, equitant, up to 30 or more cm. long and 2 cm. wide, obtuse. Flowers 3-4 mm. long, yellowish, on pedicels about 1 mm. long, in a dense, spike-like raceme up to 10 or more cm. long.

In forest (9807, 10105). Native names, *kome vao, talotalo vao.*

Phreatia (§Euphreatia) Yunckeri L. O. Williams, new species (fig. 2).

Herbae epiphyticae, parvae, usque ad 15 cm. altae. Caules valde abbreviati, 0.5-2 cm. longi. Folia 4-11 cm. longa et 1-4 mm. lata, disticha, linearia vel lineari-oblanceolata, obtusa, apice trilobulata. Racemi foliis breviores, erecti, densiflori, multiflori; bracteae quam flores longriores, lineari-lanceolatae, aristatae. Sepala 0.75 mm. longa et ca. 0.6 mm. lata, triangulari-lanceolata, acuta, uninervia, lateralia subobliqua. Petala plusminusve 0.6 mm. longa et 0.25 mm. lata, elliptica, acuta, uninervia. Labellum plusminusve 0.75 mm. longum et 0.5 mm. latum, subcuneatum, truncatum vel apice obscure trilobulatum vel obscure apiculatum, leviter cochleatum, ecallosum. Columna sectionis.

Niue Island: on trees in moist forest, one mile south of Alofi village, flowers small, pale green, at 20 meters altitude, January 12, 1940, *Yuncker 9597;* epiphytic on tree in forest about 3 miles southwest of Lakepa village, flowers small, greenish white, at 65 meters altitude, January 27, 1940, *Yuncker 9928* (type in the Ames Herbarium, Cambridge, Massachusetts.)

Phreatia Yunckeri is allied to *P. stenostachya* (Reichenbach f.) Kränzlin and to *P. upoluensis* Schlechter, but is easily distinguished by the narrower leaves and shorter inflorescences; the aristate bracts, not merely acute ones; the cuneate lip instead of an unguiculate, broadly rhombic lip. Native name, *luku akau.*

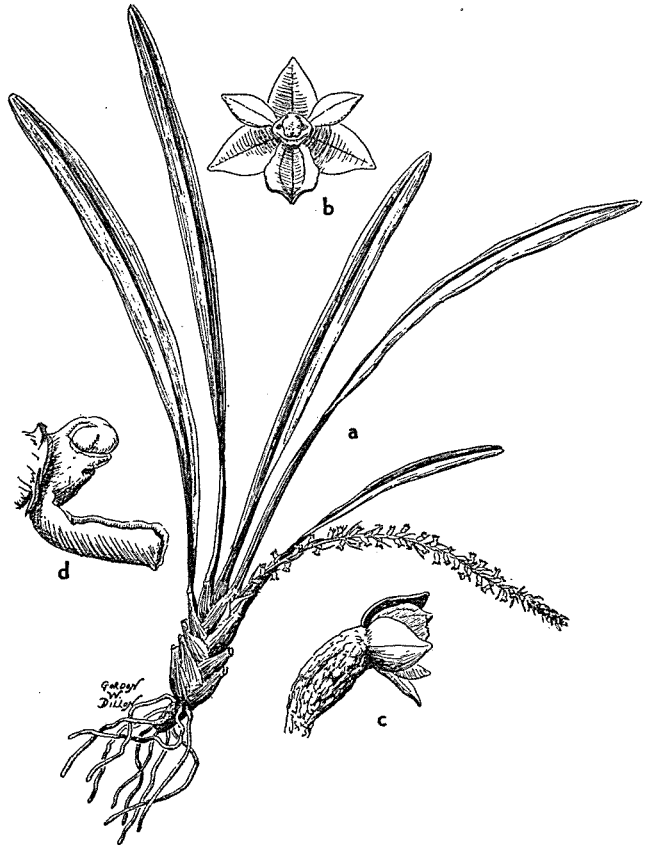

FIGURE 2.—*Phreatia Yunckeri* L. O. Williams, new species: **a**, habit × 1; **b**, front view of the flower, × 10; **c**, flower from the side, × 10; **d**, column and lip from the side, × 20.

Genus **THRIXSPERMUM** Loureiro

Thrixspermum species.

Epiphyte. Leaves oblong, up to 5 cm. long and 5 mm. wide, clasping the very short stem at base, emarginate.

On trees in forest (9929). Only sterile specimens were seen.

Genus **TAENIOPHYLLUM** Blume

Taeniophyllum species.

A curious, small, leafless epiphyte with green, flattened roots spreading octupus-like and clinging to the bark of trees. Only sterile specimens were found. Frequent in forests (9596).

DICOTYLEDONEAE

FAMILY CASUARINACEAE

Genus **CASUARINA** Linnaeus

Casuarina equisetifolia Linnaeus, Amoen. Acad. 4: 143, 1759.

Tall, oblong, hard-wooded tree, resembling a pine. Leaves whorled, minute, awl-shaped. Branchlets numerous, very slender, green, longitudinally ribbed, Equisetum-like. Flowers mostly monoecious. Male flowers in a terminal, spike-like inflorescence. Female flowers in a subglobose, short-pedunculate head which ripens into a hard, rough, conelike fruit about 1.5 cm. long.

A few specimens have been planted along the road on the west side of the island (9788). The fruit is used in the making of native medicines. English names, ironwood and Australian beefwood; native name, *toa*.

FAMILY PIPERACEAE

Genus **PIPER** Linnaeus

Piper Macgillivrayi C. DeCandolle, in Seemann, Fl. Vit., 262, pl. 75, 1868.

Shrub about 1 m. tall. Leaves mostly alternate, ovate, entire, up to about 15 cm. long and 12 cm. wide, palmately 7- or 9-veined, base rounded, apex attenuately pointed, petiole grooved and winged, mostly 1-2 cm. long. Spikes axillary, slender, up to 8 or more cm. long. Berries red.

Frequent in forested areas and occasionally planted near dwellings and used in the preparation of native medicines (9693, 9770, 9926, 10035). Native names, *kavakava ha, kava vao*.

Piper methysticum Forster f., De Plant. Esculent., 76, 1786.

Shrub, up to 3 or more m. tall, glabrous, nodes swollen. Leaves large, alternate, round-cordate, entire, acute, palmately 7- or 9-veined. Flowers small, greenish white, in slender, axillary spikes.

Probably of aboriginal introduction but at present infrequent. A few specimens were observed at Tamakautoga and vicinity (9750). It is extensively cultivated elsewhere in Polynesia for the roots, from which the beverage known as kava is prepared. It was stated, however, that the drink was no longer prepared in Niue where its use is now frowned upon. Pieces of the root were formerly fastened to spear heads to cause wound irritation, and during wars the chewed leaves were scattered over battle fields as a curse on the enemy. Chewed leaves were also applied as a cure for yaws. Native names, *kava, kava inu*.

Genus **PEPEROMIA** Ruiz and Pavon

Peperomia pallida (Forster f.) A. Dietrich, Spec. Plant. 1(1): 153, 1831.

Low, fleshy, freely branching, thick-leaved plants with stems ascending 15-30 cm. tall, from a decumbent, rooting base, young parts more or less finely puberulent. Leaves mostly

opposite, up to 4.5 cm. long and 3 cm. wide, but mostly somewhat smaller, elliptic-obovate, base acute, apex acute or obtuse, palmately 3- or 5-veined, somewhat puberulent to glabrate, petioles up to about 1 cm. long. Spikes terminal and axillary, up to 5 or more cm. long. Fruit very small, viscid.

Common in shade on coral cliffs near the sea (9608, 9786, 9845). Parts of the plant are used in preparing native medicines. Native name, *kapaa.*

Peperomia pallida (Forster f.) A. Dietrich var. **niueana,** new variety.

Herba usque ad 15 aut 20 cm. alta, carnosa et crassa, glabra. Folia oposita aut raro alterna, glabra, ovalo-ovata, usque ad 4 cm. longa et 3 cm. lata. Spicae usque ad 5 cm. longae; pedunculo 1-3 cm. longo.

Stems branching, glabrous, ascending from a decumbent, rooting base up to 15 or 20 cm. high, thick and fleshy when fresh, 2-3 mm. thick when dry, internodes mostly 1.5-2 cm. long. Leaves thick and fleshy, mostly opposite, less frequently with 1 or 3 leaves at a node, up to 4 cm. long and 3 cm. wide, but mostly somewhat smaller, oval-obovate, base acute, apex rounded or slightly abruptly constricted, glabrous, sparingly ciliated about the apex, lighter green beneath, palmately 3- or 5-veined, the outermost pair slender and obscure, petioles mostly 5 to 10 mm. long, flattened. Spikes up to 5 cm. long, fleshy and up to 5 mm. thick when fresh, terminal and axillary, peduncles up to 3 cm. long, but commonly somewhat shorter. Fruit globose-ovoid, verrucose, viscid, apex oblique, eventually on pseudopedicels.

On coral rocks near the sea, two miles north of Alofi, altitude 20 meters, January 23, 1940, *Yuncker 9838* (type in Bishop Museum); on coral rocks near the sea, Alofi, altitude 2 to 4 meters, January 11, 1941, *Yuncker 9588;* on rocks near the sea near Makefu, altitude 20 meters, February 7, 1940, *Yuncker 10115.*

This variety differs from the species because of its glabrous stems and leaves, shorter and mostly fleshier stems and commonly smaller leaves. It appears to be closely allied to variety *rurutensis* of the Society and Austral Islands but differs from that variety in its shorter, mostly more compact, fleshier plants with mostly smaller leaves. Parts of the plant are used in the preparation of native medicines. Native name, *kapaa.*

Family ULMACEAE

Genus **CELTIS** Linnaeus

Celtis paniculata (Endlicher) Planchon, Ann. Sci. Nat. III, **10**: 305, 1848.

Small tree. Leaves alternate, elliptical, entire, up to 14 or more cm. long and 6 cm. wide, glabrous, palmately 3-veined, base more or less oblique, apex attenuate, acuminate, petiole about 1 cm. long. Flowers small, axillary. Fruit about 5 mm. thick.

In a clearing near Mutalau village (9708). The wood is slow burning and is used to keep fires over night. Native name, *piliva.*

Genus **TREMA** Loureiro

Trema orientalis (Linnaeus) Blume var. **viridis** Lauterbach, Bot. Jahrb. **50**: 321, fig. 2, D, 1913.

Small to medium-sized tree or sometimes a shrub, with reddish bark and finely pubescent branches. Leaves alternate, scabrous, ovate-lanceolate, crenately toothed, up to 8 or more cm. long and 4-5 cm. wide, palmately veined, base somewhat oblique, apex acuminate, petioles up to 2 cm. long. Flowers small, greenish, in small axillary clusters.

Occasional in thickets (10231). The fruit is eaten by birds. Native name, *magele.*

Trema orientalis (Linnaeus) Blume, variety?

A shrub or small tree with reddish bark is found occasionally in thickets, differing somewhat from the usual variety *viridis.* The leaves are mostly less than 7 cm. long and 3.5 cm. wide, very scabrous above, and the petioles are less than 1 cm. long. Native name, *magele* (10223, 10230).

Family MORACEAE

Genus **PARATROPHIS** Blume

Paratrophis anthropophagorum (Seemann) Bentham and Hooker f., ex Drake, Illust. Ins. Mar. Pacif., fasc. **7**: 296, 1892.

Tree up to 5 or more m. tall. Leaves alternate, oblong-elliptical, up to 20 or more cm. long and 8 cm. wide, entire, abruptly acuminate, petioles 1-2 cm. long.

In thickets and forested areas (10021, 10067). Only sterile specimens were seen. The leaves are used as horse feed. Native name, *atatu.*

Genus **BROUSSONETIA** L'Héritier

Broussonetia papyrifera (Linnaeus) Ventenat, Tabl. Regn. Veg. **3**: 547, 1794.

Small tree with densely hairy branches and milky sap. Leaves alternate, scabrous above, velvety beneath, ovate, serrate, up to 18 or more cm. long and 15 or more cm. wide, sometimes lobed, sharply acuminate, petioles up to 6 or more cm. long. Flowers monoecious, small, in axillary clusters.

Occasional in villages (10114). Cultivated widely in Polynesia for its bark which furnishes the fiber for bark cloth (tapa, *kapa, hiapo*). English name, paper mulberry. Native name, *hiapo.*

Genus **ARTOCARPUS** Forster

Artocarpus altilis (Parkinson) Fosberg, Wash. Acad. Sci., Jour. **31**: 95, 1941.

Medium to large, round-topped tree. Leaves alternate, up to 60 or more cm. long and 30 or more cm. wide, somewhat thickened, deeply pinnately lobed, lobes acuminate, or in

some varieties shallowly divided with 2 or 4 short, triangular lobes, petioles short. Male flowers in large, dense, club-shaped, spike-like clusters. Female flowers in globose to oval, headlike clusters which develop into round or oval fruit 15 or more cm. thick.

Introduced in recent times for its fruit which is an important food. The tree does not grow as well on the thin calcareous soil of Niue as it does elsewhere in Polynesia where the soil of volcanic islands is apparently better suited to its development (9594, 9741, 9821, 9822, 9823, 9824, 9825). English name, breadfruit. Native name, *mei.* The following varieties were noted:

Mei fualahi: leaves large, divided about two thirds of the distance to the midrib, fruit large.
Mei luea: leaves large, divided to near the midrib.
Mei mafala: leaves large, divided to about the middle, fruit very small.
Mei mase: leaves medium-sized, the upper part divided to about the middle.
Mei miaopo: leaves nearly entire or but shallowly and sparingly lobed toward the apex into 2 or 4 triangular lobes. Fruit large and considered very good quality.

Genus **FICUS** Linnaeus

Ficus Carica Linnaeus, Spec. Plant., 1059, 1753.

A small tree sometimes up to 8 m. tall. Young growth finely pubescent. Leaves alternate, rounded-ovate in outline, palmately lobed and veined, finely pubescent, base cordate, apex bluntly acute, petioles about as long as the blade. Flowers dioecious. Fruit large. pear-shaped, fleshy, edible.

The edible fig of commerce. A few specimens have been introduced but do not appear to be growing well (9957).

Ficus ciliata Warburg, Bot. Jahrb. **25**: 615, 1898.

Small tree. Leaves alternate, ovate, entire, up to 20 or more cm. long and 10 cm. wide. base obliquely unequal, apex acute, petioles about 1 cm. long.

In thicket near Makefu (10113). Native name, *ata lulu.*

Ficus Godeffroyi Warburg, Bot. Jahrb. **25**: 613, 1898.

Large tree. Leaves alternate, oval-ovate, lighter green beneath, up to 15 or more cm. long and 10 cm. wide, palmately three-veined at base, pinnately veined above, obtuse or acutish, petioles up to 2 cm. long. Fruit globose, about 1 cm. in diameter, axillary, on pedicels about 1 cm. long.

In forested areas (9629, 9643, 10109). The leaves are used in preparing native medicines, and the fruit is eaten by birds. Native names, *mati, mati lulu.*

Ficus obliqua Forster f., Fl. Ins. Austr. Prodr., 77, 1786.

Small to medium-sized tree. Leaves alternate, glabrous, elliptic-obovate, entire, up to 8 or more cm. long and 4 cm. wide, pinnately veined, midrib prominent, lateral veins fine and inconspicuous, abruptly acute, petioles up to 2 cm. long. Fruit small, orange.

Occasional in thickets and forested areas (9890, 10106). The fruit is eaten by birds. Native names, *pualiki, ovava niukini.*

Ficus prolixa Forster f., Fl. Ins. Austr. Prodr., 77, 1786.

Medium to large tree. Leaves alternate, elliptic-oblong, up to 15 or more cm. long and 6 cm. wide, though mostly somewhat smaller, entire, glabrous, pinnately veined, the lower plinerved, base abruptly acute or obtuse, apex acute.

In thickets and forested areas (9712, 9828, 10081, 10139). Only sterile specimens were seen. The fruit is eaten by birds. The aerial roots were originally used to make *hiapo* and were used as cordage for bow strings, fish lines, and sling shots. English name, banyan; native names, *ovava, pualiki.*

Ficus pumila Linnaeus, Spec. Plant., 1060, 1753.

Small, hairy, woody vine adhering to walls with rootlike tendrils. Leaves up to 5 or more cm. long, ovate, entire, reticulate veiny and puberulent beneath. Flowers and fruit rare.

Introduced and cultivated as a covering for walls and rockery (9955). English name, creeping or climbing fig.

Ficus scabra Forster f., Flor. Ins. Austr. Prodr., 76, 1786.

Small tree with puberulent twigs. Leaves alternate, ovate-cordate, up to 12 or more cm. long, pinnately veined, base oblique, apex acuminate, petioles mostly less than 1 cm. long, puberulent. Fruit about 5 mm. thick, short pedunculate.

In forested areas (9627). Native name, *mati.*

Ficus Storckii Seemann, Fl. Vit., 251, 1868.

Small tree about 4 m. tall, young growth puberulent. Leaves alternate, entire, up to 15 or more cm. long and 6 cm. wide, palmately 3-veined at base, pinnately veined above, base obtuse or subcordate, apex attenuately acuminate, petioles mostly 2-3 cm. long, puberulent at first. Fruit small, dull red, clustered along stem.

In thickets near Makefu (10102). Native name, *mati pau.*

Ficus tinctoria Forster f., Fl. Ins. Austr. Prodr., 76, 1786.

Medium-sized tree with wide-spreading branches. Leaves alternate, entire, up to 20 or more cm. long, but commonly somewhat smaller, pinnately veined with the fine reticulate veins beneath commonly purplish in dry specimens, acute, petiole up to 1 or more cm. long. Fruit globose, about 12 mm. in diameter.

Common in forested areas (9656, 9812, 10016, 10214). The bark was formerly used in making *hiapo.* The leaves are used for stock feed and in the preparation of native medicines. Native names, *mati, ata, ata le.*

Family URTICACEAE

Genus **LAPORTEA** Gaudichaud

Laportea Harveyi Seemann, Bonplandia 9: 259, 1861.

Small, slender-stemmed tree. Leaves ovate or oval-ovate, margin irregularly toothed, up to 15 or more cm. long and 10 or more cm. wide, glabrous, acuminate, petioles up to 5 or more cm. long.

In thickets and forested areas (9927). Flowers and fruit not seen. Contact with the leaves produces a painful and persistent sting. Native name, *magiho.*

Genus **FLEURYA** Gaudichaud

Fleurya interrupta (Linnaeus) Gaudichaud, Bot. Freyc. Voy., 497, 1826.

Herbaceous, nearly glabrous plant, up to 30 or more cm. tall. Leaves alternate, ovate, coarsely toothed, sparingly pubescent, palmately veined, up to 6 or more cm. long and 3.5 cm. wide, acuminate, petioles long, slender. Flowers small, greenish, in small clusters scattered along a slender axillary peduncle.

Occasional in waste areas and clearings (10235). Native name, *ogoogo.*

Genus **PILEA** Lindley

Pilea microphylla (Linnaeus) Liebmann, Vidensk. Selsk. Skr. **5**(2) : 302, 1851.

Low, much-branched, glabrous, succulent plant with slender stems. Leaves opposite, 3 or 4 mm. long or less, elliptical to spatulate or obovate. Flowers mostly monoecious, minute, greenish.

Common on moist walls and shaded soil. English name, artillery plant; native name, *pikimaka.*

Genus **PROCRIS** Commerson

Procris pedunculata (Forster) Weddell, DC. Prodr. **16**(1) : 191, 1869.

Fleshy, somewhat decumbent, glabrous, terrestrial or epiphytic herb. Leaves alternate, up to about 15 cm. long, oblanceolate-oblong, base oblique, apex acuminate, petioles short. Flowers white, monoecious or dioecious. Male flowers in branching, axillary clusters. Female flowers crowded on a fleshy, headlike, axillary receptacle which is red when mature.

Common on rocks and logs in shade (9837, 10054, 10126). The fleshy fruit is edible. Native names, *kapaa taane, kapaa fua kula, kapaa lau loloa.*

Genus **PIPTURUS** Weddell

Pipturus aff. **argenteus** (Forster) Weddell, DC. Prodr. **16**(1) : 235, 19, 1869.

Shrub or small tree with puberulent branches. Leaves alternate, green above, whitened and somewhat woolly beneath, ovate, palmately 3-veined at base, pinnate above, serrate, up to 15 or more cm. long and 10 cm. wide but commonly somewhat smaller, acuminate, petioles mostly 2-5 cm. long. Flowers small, in small, globose clusters along slender, axillary peduncles.

Common in thickets, forested areas and along sea cliffs (9585, 9599, 9616, 10047, 10232). The fruit is eaten by birds and the leaves are used for fodder. The specimens collected show considerable variation in the size and other characters of the leaves and may represent different varieties. Native name, *malege.*

FAMILY PROTEACEAE

Genus **MACADAMIA** F. Mueller

Macadamia ternifolia F. Mueller, Phil. Inst. Victoria, Trans. 2:72, 1858.

Medium-sized tree. Leaves whorled, coriaceous, oblong-lanceolate or oblanceolate, up to 25 or more cm. long, serrate with sharp-awned teeth, margin wavy, subsessile. Flowers small, white, in long, racemose clusters. Fruit a hard, nutlike drupe, about 2.5 cm. in diameter.

Introduced; only one young tree was seen (10142). English name, Queensland nut.

FAMILY LORANTHACEAE

Genus **KORTHALSELLA** Van Tiegham

Korthalsella platycaula (Van Tiegham) Engler, in Engler and Prantl, Pflanzenfam. Nachtr. III: 138, 1897.

Green, semi-parasitic plant forming clusters on woody hosts. Stems coriaceous, flattened, jointed, branches opposite or whorled. Leaves reduced to scale-like structures. Flowers whorled at nodes, very small.

Occasional in thickets and forests. Collected on *tuale* (*Eugenia Brackenridgei* A. Gray) (9872). English name, *mistletoe;* native name, *holofa akau.*

FAMILY ARISTOLOCHIACEAE

Genus **ARISTOLOCHIA** Linnaeus

Aristolochia elegans Masters, Gard. Chron. 2: 301, 1885.

Slender, glabrous, twining vine. Leaves alternate, broadly triangular-reniform, entire, base broadly cordate, apex obtuse, petioles long and slender. Flowers solitary, axillary, on peduncles mostly 4-6 cm. long, with curved tube and widely flaring limb up to 8 cm. wide, maroon with greenish-white markings. Fruit an oblong, angular, deeply grooved capsule 4-6 cm. long.

Introduced ornamental (9740, 10200). Frequent on trellises and walls. English names, Dutchman's pipe, calico flower.

FAMILY POLYGONACEAE

Genus **ANTIGONON** Endlicher

Antigonon leptopus Hooker and Arnott, Bot. Beechey, 308, 1841.

Herbaceous, pubescent vine. Leaves alternate, wrinkled, cordate, entire, up to 10 or more cm. long, apiculate, petioles up to 2.5 or more cm. long. Flowers rose pink, in long, slender, loose racemes which end in branched tendrils.

Attractive, introduced ornamental, cultivated as a wall covering (9960). English name, Mexican creeper.

FAMILY CHENOPODIACEAE

The beet (*Beta vulgaris* Linnaeus) and spinach (*Spinacia oleracea* Linnaeus) are occasionally cultivated in gardens.

FAMILY AMARANTHACEAE

Genus **AMARANTHUS** Linnaeus

Amaranthus tricolor Linnaeus, Spec. Plant., 989, 1753.

Coarse, erect herb up to about 1 m. tall. Leaves alternate, veiny, crowded, narrowly elliptic-lanceolate, up to 15 or more cm. long, gracefully curving, green, or the upper leaves, stems, petioles and leaf veins bright red, margins wavy, acuminate. Flowers small, greenish, in small, compact, globose, axillary clusters.

Introduced ornamental (9948). English name, amaranth.

Amaranthus viridis Linnaeus, Spec. Plant., ed. 2, 1405, 1763.

Coarse, glabrous, erect herb up to about 1 m. tall. Leaves alternate, ovate, entire, obtusish, long petiolate. Flowers minute, greenish, sessile, in axillary clusters in long, densely flowered, branching, terminal and axillary spikes.

A weedy plant occasional in plantations, dooryards, and waste areas (9866). The roots can be used for food during times of food shortage. English name, pigweed; native name, *katule*.

Genus **ACHYRANTHES** Linnaeus

Achyranthes aspera Linnaeus, Spec. Plant., 204, 1753.

Coarse, erect or decumbent herb, pubescent in the younger parts. Leaves opposite, oval-obovate, entire, pubescent, up to 8 or more cm. long, base wedge-shaped, apex sharply acute, petioles 1-2 cm. long. Flowers small, greenish, sessile in a long, usually simple, terminal spike. Fruit dry, about 5 mm. long, abruptly reflexed.

A common weedy plant in plantations and waste areas (9630, 10111). The spinelike tips of the bracts and sepals enable them to cling tenaciously to clothing and the fur of animals. Parts of the plant are used in the preparation of native medicines. Native names, *talamoa, talamoa fiti*.

Genus **GOMPHRENA** Linnaeus

Gomphrena globosa Linnaeus, Spec. Plant., 224, 1753.

Low, branching, hairy herb. Leaves opposite, ovate to oblanceolate, entire, ciliate, up to 6 or more cm. long, cuspidate. Flowers small, in dense, chaffy-bracteate, pink, red or white, globose, clover-like heads, on long, axillary and terminal peduncles and subtended by two ovate, involucre-like, leafy bracts.

Introduced ornamental (9904). The flowers are used as "everlastings" in bouquets. English name, globe amaranth; native name, *malila*. The white variety is known as *malila tea*, and the red one as *malila kula*.

FAMILY NYCTAGINACEAE

Genus **MIRABILIS** Linnaeus

Mirabilis Jalapa Linnaeus, Spec. Plant., 177, 1753.

Tender, branching, glabrous or slightly pubescent herb up to about 1 m. tall. Leaves opposite, ovate-lanceolate, entire, base broadly cordate, apex long attenuately acuminate. Flowers trumpet-shaped, 3 or more cm. long, fragrant, variously colored, opening late in the afternoon, in terminal clusters.

Introduced ornamental which has become naturalized and is now common in waste areas and along roadsides (9831). English name, four-o'clock.

Genus **BOERHAAVIA** Linnaeus

Boerhaavia diffusa Linnaeus, Spec. Plant., 3, 1753.

Prostrate, glabrous, widely branching herb with green or reddish stems. Leaves wavy-margined, somewhat fleshy, lanceolate to ovate, green above, lighter green or red beneath, obtuse to acutish. Flowers small, in long-stalked, branching, axillary and terminal clusters. Fruit small, glandular, club-shaped.

A common weed in plantations and waste areas (9688, 9689, 9690, 10119, 10155). It is probable that different varieties are represented in the collections which were made. They do not agree entirely, however, with the descriptions of published varieties. The roots can be eaten in times of food shortage. Native name, *katule*. Red-stemmed forms are called *katule kula,* the green-stemmed ones *katule tea.*

Genus **BOUGAINVILLEA** Commerson

Bougainvillea spectabilis Willdenow, Spec. Plant. 2: 348, 1799.

Scrambling or climbing, armed, woody vinelike shrub. Young growth finely pubescent. Leaves alternate, entire, elliptical, acuminate at both ends. Flowers nearly 2.5 cm. long, surrounded by three, large, purplish-red, ovate, veiny bracts.

Introduced ornamental (9953). English name, bougainvillea; native name, *felila.*

Genus **PISONIA** Linnaeus

Pisonia grandis R. Brown, Prodr., Fl. Nov. Holl. 1: 422, 1810.

Medium to large, soft-wooded tree. Leaves opposite, rather thin, up to 20 or more cm. long and 10 or more cm. wide, smooth, oval-ovate, pinnately veined, hairy along the midrib beneath, obtuse to acutish, petioles up to 5 cm. or more long. Flowers small, fragrant, in terminal, cymose clusters.

Frequent in thickets and forested areas (9700, 9787, 10191). The wood is used in canoe construction. Native names, *puka, puka tea.*

FAMILY PORTULACACEAE

Genus **PORTULACA** Linnaeus

Portulaca lutea Solander, Forster, Plant. Esc. Insul., 72, 1786.

Prostrate, glabrous, fleshy herb with brownish- or reddish-green stems up to 1 or more cm. thick. Leaves obovate-cuneate, fleshy, up to 2 or more cm. long, obtuse. Flowers subsessile, terminal, yellow, withering by midday. Seeds black, rugose with small, round sculptured areas.

On exposed rocks near the sea (10205). English name, portulaca; native name, *paka loa noa.*

Portulaca oleracea Linnaeus, Spec. Plant., 445, 1753.

Prostrate, glabrous, fleshy herb. Leaves obovate, up to about 2.5 cm. long, fleshy, entire. Flowers sessile, terminal, yellow, withering early. Seeds black, slightly roughened.

A common weed in waste areas and plantations (9940, 10122). Native name, *kamole.*

FAMILY BASELLACEAE

Genus **BOUSSINGAULTIA** Humboldt, Bonpland, Kunth

Boussingaultia baselloides Humboldt, Bonpland, Kunth, Nov. Gen. Spec. Plant **7**: 196, pl. 646, 1825.

Vigorous, freely branching, herbaceous, twining vine. Leaves alternate, ovate, mostly 5 to 7 cm. long, somewhat thick and fleshy, short petiolate. Flowers about 5 mm. wide, white, fragrant, very numerous, on short pedicels in terminal and axillary spike-like, racemose clusters up to 30 or more cm. long.

An introduced ornamental vine. The only specimens observed, however, were growing in thickets on cliffs near the sea (10156, 10211). English name, Madeira vine; native name, *filikafa.*

FAMILY CARYOPHYLLACEAE

Genus **DIANTHUS** Linnaeus

Dianthus plumarius Linnaeus, Spec. Plant., 411, 1753.

Stems glabrous, up to 30 or more cm. tall, simple or branching. Leaves narrow, linear-lanceolate, opposite, stems swollen at nodes. Flowers fragrant, showy, 2-5 or more cm. wide, petals fringed.

Introduced ornamental. English name, pink.

FAMILY ANNONACEAE

Genus **CANANGA** Hooker f. and Thomson

Cananga odorata (Lamarck) Hooker f. and Thomson, Flor. Ind. **1**: 130, 1855.

Tree up to 15 or more m. tall. Leaves alternate, elliptic-oblong, up to 20 or more cm. long and 7 cm. wide, entire, base rounded, apex acute, petioles mostly less than 2 cm. long, pubescent. Flowers greenish-yellow, about 5 or more cm. wide, very fragrant, petals narrowly lanceolate, up to about 4 cm. long, in umbellate, axillary clusters. Fruit oblong, fleshy, black.

Introduced, not common (9986). The fragrant flowers are used for garlands and also for scenting coconut oil. English name, ylangylang; native name, *motooi.*

Genus **ARTABOTRYS** R. Brown

Artabotrys uncinatus (Lamarck) Merrill, Philip. Jour. Sci., Bot. 7:234, 1912.

Climbing shrub with spreading, somewhat zigzag branches. Leaves simple, elliptic- or oblong-lanceolate, up to 12 or more cm. long and 3-4 cm. wide, somewhat glossy, entire, acuminate, petioles up to 1 cm. long. Flowers fragrant, greenish yellow, 2.5 or more cm. long, axillary on hooked peduncles. Fruit of several, clustered, yellowish, fleshy carpels about 2 cm. long.

Introduced ornamental, not common (10055). English name, climbing ylangylang; native name, *motooi honolulu.*

Genus **ANNONA** Linnaeus

Annona muricata Linnaeus, Spec. Plant., 536, 1753.

Small tree. Leaves alternate, entire, oblong or elliptic-obovate, somewhat glossy above. up to about 14 cm. long and 4 or more cm. wide, acute or acuminate, petioles short. Flowers 2-3 or more cm. long, yellowish green. Fruit fleshy, heart-shaped, edible, up to 15 or more cm. long, covered with short, fleshy spines, seeds numerous, embedded in the white, juicy pulp.

Introduced and cultivated for its fruit (9857, 10056). English name, soursop; native names, *talapo, talapo fotofoto.*

?Annona purpurea Mociño and Sessé, ex Dunal, Monog. Anon., 64, 1817.

Small tree with puberulent branchlets. Leaves alternate, oval-obovate, prominently pinnately veined, upper surface smooth, puberulent beneath, up to 11 or more cm. long and 6 cm. wide, obtuse, petiole up to about 1 cm. long.

Introduced at the government experimental plantation at Fonukula (10158). Only young sterile plants were seen. Known locally as Queensland custard apple.

Annona reticulata Linnaeus, Spec. Plant., 537, 1753.

Small to medium-sized tree. Leaves alternate, elliptic- or oblong-lanceolate, pinnately veined, up to 17 cm. long and 5 cm. wide, acute, petioles about 12 mm. long. Flowers about 2.5 cm. long, axillary. Fruit about 10 cm. thick, smooth, divided into hexagonal areas, edible.

Introduced and planted extensively about dwellings for its fruit (10046, 10060, 10128). English name, custard apple; native names, *talapo, talapo elo, talapo fua kula, talapo fua pekepeke.*

Annona squamosa Linnaeus, Spec. Plant., 537, 1753.

Small tree. Leaves elliptic-lanceolate, entire, alternate, two-ranked, up to about 12 or more cm. long and 4-5 cm. wide, acute, petioles up to 1 cm. long. Flowers greenish yellow, about 2.5 cm. long. Fruit about 8 cm. thick, somewhat heart-shaped, tuberculate, sweet, edible.

Introduced and cultivated for its fruit (9694). English names, sugar apple, sweetsop; native name, *talapo*.

Family LAURACEAE

Genus **PERSEA** Gaertner

Persea americana (Linnaeus) Miller, Gard. Dict., ed. 8, 1768.

Medium to large tree. Leaves alternate, entire, mostly 10 or more cm. long, elliptic, oval, or sometimes obovate, pubescent beneath, veins prominent, somewhat coriaceous acute, petioles up to 5 cm. long. Flowers small, greenish, short-pedicellate in terminal, paniculate clusters. Drupe fleshy, 5 or more cm. long, subglobose to pear-shaped, seed single, large, round.

Introduced and sparingly planted about dwellings (10087). The trees are apparently all seedlings and produce an inferior grade of fruit which, however, is much relished by the natives. English name, avocado; native name, *avoka*.

Genus **CRYPTOCARYA** R. Brown

Cryptocarya species.

Small tree about 4 m. tall with glabrous branches. Leaves alternate, elliptic to elliptic-lanceolate, pinnately veined, entire, up to 12 or more cm. long and 5 cm. wide, attenuate, acute.

This tree differs from *C. samoensis* Christophersen and *C. Wilderiana* Christophersen of Samoa particularly in the characters of the leaves and may represent an undescribed species (10204). Flowers and fruit not seen. The bark is used for scenting oils. Native name, *tokitoki*.

Genus **CASSYTHA** Linnaeus

Cassytha filiformis Linnaeus, Spec. Plant., 35, 1753.

Slender, filiform, branching, glabrous, yellow or yellowish green, twining, parasitic plant attached to its host by means of sucker-like haustoria. Leaves reduced to minute scales. Flowers small, greenish white, sessile, in pedunculate, spike-like clusters. Fruit fleshy, berrylike, subglobose, about 5 mm. thick.

A weedy plant locally abundant in plantations and waste areas where it forms entangled masses on shrubby and herbaceous hosts (9661, 10166). English name, love vine; native name, *feteinoa*.

FAMILY HERNANDIACEAE

Genus **HERNANDIA** Plumier

Hernandia Moerenhoutiana Guillemin, Sci. Nat., Ann. II, 7 : 189, 1837.

Large tree up to 10 or 12 m. tall. Leaves alternate, oval-oblong or somewhat obovate, entire, palmately 3-veined, somewhat glossy above, up to 10 or more cm. long and 8 cm. wide, essentially glabrous, obtuse, petioles 2-5 cm. long. Flowers cream-colored, in loose, many-flowered, long-stalked, axillary clusters near the ends of the branches. Fruit enclosed in a white or reddish, fleshy, balloon-like vesicle.

Not common (9638). The wood is used in canoe construction and the flowers in scenting oil and in preparing native medicines. Native names, *pipi, hune.*

Hernandia ovigera Linnaeus, in Stickman, Herb. Amboin., 14, 1754.

Medium to large tree up to 10 or more m. tall. Leaves alternate, ovate, entire, peltate, up to 20 cm. long and nearly as wide, acuminate, long petiolate. Flowers white, numerous, in long-stalked, axillary and terminal, cymose clusters. Fruit dry, somewhat ribbed, enclosed in an enlarged, fleshy, white, balloon-like vesicle.

Common on the lower terrace near the sea (9834, 10061). The wood is sometimes used for canoe construction. Native names, *puka, puka tavaki, puka kula, puka tea, puka uli.*

FAMILY CAPPARIDACEAE

Genus **CAPPARIS** Linnaeus

Capparis sandwichiana DeCandolle, Prodr. 1 : 245, 1824.

More or less prostrate, straggling or trailing shrub. Leaves alternate, entire, 4 or more cm. long, oval or rounded, apex rounded, petioles 1.5 cm. or less long. Flowers irregular, about 5 cm. wide, at first white, turning pink as they age, solitary, axillary, stamens threadlike, very numerous, ovary exserted on a long gynophore. Fruit green, berrylike, ellipsoidal, about 5 cm. long, ridged, many seeded, peduncle curved.

Abundant along the east coast on rocks, occasional elsewhere, but mostly near the sea (10112, 10212). The flowers are very ornamental and the plant would form an attractive addition to a rock garden. English name, caper; native name, *pamoko.*

FAMILY CRUCIFERAE

Genus **LEPIDIUM** Linnaeus

Lepidium virginicum Linnaeus, Spec. Plant., 645, 1753.

Erect, much-branched, glabrous or somewhat puberulent herb. Basal leaves up to 12 cm. long, dissected, the terminal lobe large, obovate, the lateral lobes small, stem leaves

alternate, about 2.5 cm. long, oblanceolate, serrate, subsessile, acute. Flowers very small, white, in terminal and axillary racemose clusters. Fruit 3 mm. or less wide, flat, nearly round, notched at the top.

Weed in plantations, but as yet not common (9744). English name, pepper grass; native name, *momili.*

Genus **CORONOPUS** Gaertner

Coronopus didymus (Linnaeus) J. E. Smith, Fl. Brit. 2: 691, 1800.

Low, spreading, pubescent, fetid weed. Leaves 1-2-pinnately dissected, divisions narrowly linear, entire or toothed. Flowers very small, white, in small, axillary, racemose clusters. Fruit flattened, deeply notched at the apex, wrinkled.

A weed along roadsides and on rocky cliffs (9795, 10246). English name, wart cress.

Genus **BRASSICA** Linnaeus

Brassica juncea (Linnaeus) Cosson, Soc. Bot. France, Bull. 6: 609, 1859.

Glabrous, erect herb up to about 1 m. tall. Stem leaves alternate, entire or toothed, narrowed at the base, basal leaves lobed. Flowers yellow, in terminal and axillary racemes up to 30 or more cm. long, pedicels spreading, about 5 mm. long. Pods slightly curved, up to 4 cm. long, the beak conical and mostly 5 to 8 mm. long.

A weed along roadsides and in waste areas (9896).

Genus **NASTURTIUM** R. Brown

Nasturtium sarmentosum (Solander) O. E. Schulz, Bot. Jahrb. 32: 595, 1902.

Low, short-stemmed, glabrous herb with creeping branches. Leaves mostly radical, deeply pinnately lobed and divided, the terminal leaflet rounded and somewhat larger than the lateral ones. Flowers small, white, in long racemose clusters on mostly leafless peduncles up to 10 or more cm. long. Pods linear, about 2.5 cm. long.

Roadside and plantation weed (9768). Native name, *holofa.*

The cauliflower (*Brassica oleracea* Linnaeus var. *botrytis* Linnaeus), cabbage (*Brassica oleracea* Linnaeus), garden cress (*Lepidium sativum* Linnaeus) and radish (*Raphanus sativus* Linnaeus) have been introduced and are cultivated in gardens to some extent.

Family CRASSULACEAE

Genus **BRYOPHYLLUM** Salisbury

Bryophyllum pinnatum (Lamarck) Kurz, Asiat. Soc. Bengal, Jour. 40(2): 309, 1872.

Plant fleshy, glabrous, somewhat woody at base, with flowering stems up to about 1 m. tall. Leaves very fleshy, simple or pinnately compound with 3 or 5 oval-oblong, crenately toothed, obtuse leaflets which develop young plants easily from the notches when in contact

with the soil, petioles up to 5 or more cm. long. Flowers about 3 or 4 cm. long, 4-lobed, calyx greenish, thin, inflated, corolla reddish, tubular, in large, terminal panicles.

Introduced but now well established and abundant, especially on coral rocks near the sea (9784). English name, air plant; native names, *akau tupu he lau, tupu noa.*

Family SAXIFRAGACEAE

Genus **HYDRANGEA** Linnaeus

Hydrangea opuloides Steudel, Nomen. Bot., ed. 1, 416, 1821.

Low, shrublike plant. Leaves 15 or more cm. long, elliptic to ovate, toothed, abruptly pointed. Flowers commonly pink or bluish, in large, rounded, cymose clusters.

Introduced ornamental.

Family PITTOSPORACEAE

Genus **PITTOSPORUM** Banks

Pittosporum Brackenridgei A. Gray, Bot. U. S. Expl. Exped. **1**: 225, 1854.

Tree up to 10 or more m. tall. Leaves commonly crowded near the ends of the branches, alternate, oval-obovate, up to 12 or more cm. long, rather thick, essentially entire, obtuse, decurrent to form a more or less winged petiole up to 3 cm. long. Flowers small, in few-flowered axillary cymose clusters. Fruit coriaceous, 1 to 2 cm. thick, opening at maturity, seeds numerous, embedded in red pulp.

In thickets and forested areas (9613, 9713, 9840). The fruit, cut in half, placed between layers of bananas is claimed to hasten their ripening. The fruit is also used in preparing native medicines. Native name, *kuiti.*

Family ROSACEAE

One specimen of peach [*Prunus persica* (Linnaeus) Stokes, native name, *piti*] was seen in blossom. A few strawberry plants (*Fragaria* species) were observed in gardens, but they do not grow well on the island and are to be regarded only as a curiosity. A number of varieties of ornamental roses (*Rosa* species) are cultivated.

Family LEGUMINOSAE

Genus **LEUCAENA** Bentham

Leucaena glauca (Linnaeus) Bentham, Hook. Jour. Bot. **4**: 416, 1842.

Shrub or small tree 2-4 m. tall, young growth puberulent. Leaves alternate, bipinnate with 5 or 6 pairs of pinnae, ultimate leaflets numerous, oblong, about 6 to 12 mm. long, obliquely inequilateral, acute. Flowers small, white, in globose, axillary, headlike clusters about 2.5 cm. in diameter. Pods thin, flat, stalked, seeds small, brown.

Occasional in thickets on the lower terrace near the sea (9780). Native name, *tavahi kaku.*

Leucaena insularum (Guillemin) Daniker, Nat. Ges. Zürich, Vierteljahrschr. 77: Beibl. 19, 176, 1932.

Small tree. Leaves alternate, bipinnate with 8 or more pairs of pinnae. Leaflets up to 7 mm. long, oblong, obliquely inequilateral, obtuse, 45 or more on each pinna. Flowers very small, pale pink, in globose, headlike, axillary clusters, peduncles up to 2 or more cm. long.

Occasional in thickets and clearings on the lower terrace near the sea (9899, 10153). Native names, *tavahi, tavahi kaku.*

Genus **MIMOSA** Linnaeus

Mimosa pudica Linnaeus, Spec. Plant., 518, 1753.

Low, decumbent, subwoody, loosely branching, prickly plant. Leaves bipinnate, pinnae usually 1 or 2 pairs, each with 15 or more pairs of linear-oblong leaflets up to 6 or more mm. long. Flowers rose pink, small, pedunculate, in globose, headlike, axillary clusters. Leaves and their subdivisions sensitive to touch, and folding together and appearing to wilt when molested.

Not seen, but claimed by local informants to occur on the island. English name, sensitive plant; native name, *memege.*

Genus **ADENANTHERA** Linnaeus

Adenanthera pavonina Linnaeus, Spec. Plant., 384, 1753.

Medium to large tree. Leaves bipinnate, leaflets oval-oblong, up to 3 cm. long and 2-2.5 cm. wide, entire, mostly 10-12 on each division, obtuse. Flowers small, short-pedicellate, in slender, spike-like, racemose clusters up to 15 or more cm. long, cream colored, fragrant. Pods up to 20 or more cm. long, becoming twisted upon opening, seeds lens-shaped, bright red, ornamental.

Frequent in thickets and forested areas (9622, 9697, 10143). The wood is durable and strong. The seeds are much used for the making of necklaces. English name, red sandalwood; native name, *pomea.*

Genus **TAMARINDUS** Linnaeus

Tamarindus indica Linnaeus, Spec. Plant., 34, 1753.

Medium to large, thickly branched, round-topped tree. Leaves alternate, even-pinnate, leaflets up to 36 or more, oblong, about 2 cm. long, obtuse or slightly emarginate, sessile, light green, base obliquely inequilateral. Flowers yellow with red veins, in axillary, racemose clusters. Pods linear, curved, up to 12 or more cm. long, seeds several, enclosed in an edible pulp.

Introduced (9852). English name, tamarind; native names, *fitihetau, tamaleni.*

Genus **BAUHINIA** Linnaeus

Bauhinia monandra Kurz, Asiat. Soc. Bengal, Jour. 42(2) : 73, 1874.

Shrub or small tree with brown-hairy young growth. Leaves alternate, rounded-ovate, in outline, up to 10 or more cm. wide, deeply cleft a third or more of its length into two winglike lobes, otherwise entire, palmately veined. Flowers pink, white and yellow variegated, in terminal or axillary racemes, stamen solitary. Pod elongated, up to 15 or more cm. long.

Introduced ornamental but naturalized and occasional in thickets (9901). The flowers are handsome and resemble orchid flowers somewhat. English names, tree orchid, St. Thomas Tree; native name, *pine fua loloa.*

Genus **CASSIA** Linnaeus

Cassia alata Linnaeus, Spec. Plant., 378, 1753.

Small tree or shrub. Branches stout, pithy, commonly more or less finely pubescent. Leaves alternate, short petiolate, pinnately compound, leaflets 25 or more, oblong, sessile, up to 15 or more cm. long and 5 cm. wide, essentially glabrous, mucronate. Flowers yellow, about 4 cm. wide, in large racemose clusters.

Introduced ornamental (10220). Sap from young leaves is used in native medicines as a treatment for ringworm. English name, candelabra bush; native name, *mulamula.*

Cassia fistula Linnaeus, Spec. Plant., 377, 1753.

Small to medium-sized, glabrous, spreading tree. Leaves alternate, pinnate, leaflets 8 or more, ovate, up to 15 or more cm. long, acute, petiolules about 5 mm. long. Flowers bright yellow, about 3 cm. wide, on long, slender pedicels, in pendulous, racemose clusters 30 or more cm. long. Pod cylindrical, up to 50 or more cm. long and 1 or more cm. thick.

Recently introduced (9804). Very decorative and usually easily grown. English name, golden shower.

Cassia occidentalis Linnaeus, Spec. Plant., 377, 1753.

Glabrous, branching herb up to about 1 m. tall. Leaves alternate, even-pinnate, leaflets mostly 10 or 12, elliptic-lanceolate, up to 8 or more cm. long, entire, acuminate, petiole with a conspicuous gland near its base. Flowers yellow, about 2.5 cm. wide, in few-flowered, axillary, racemose clusters. Pods flat, slightly sickle-shaped, 12 or more cm. long.

Infrequent on rocky cliffs near the sea (9728). Said to be poisonous to live stock. English name, coffee senna.

Genus **DELONIX** Rafinesque

Delonix regia (Bojer) Rafinesque, Fl. Tellur. 2 : 92, 1836.

Rapidly growing, deciduous, medium-sized, round-topped, spreading tree with smooth, light-colored bark. Leaves alternate, up to 60 cm. long, twice pinnate, leaflets very numerous, about 12 mm. long, oblong, subsessile, obtusish. Flowers bright red, 8 or more cm. wide, petals narrowed into a stalk-like base, the upper petal with whitish or yellowish streaks. Pods flat, 30 or more cm. long and 25 to 50 mm. wide.

Introduced ornamental, as yet not planted as abundantly as it deserves to be (10031). A fine specimen is growing in the grounds of the Residency. English names, flamboyant, flame tree, poinciana.

Genus **CAESALPINIA** Linnaeus

Caesalpinia Bonduc (Linnaeus) Roxburgh, Hort. Beng., 32, 1814.

Prickly, scrambling shrub, young parts brown pubescent. Leaves large, bipinnate, leaflets subsessile, oblong to ovate, up to 8 cm. long and 4 or more cm. wide, but commonly somewhat smaller, mucronate, the rachis with numerous short, very sharp, recurved prickles. Flowers yellow, in supra-axillary, racemose clusters. Pod nearly lenticular, prickly, about 5 cm. long.

Frequent in thickets (9888, 10224, 10233). The plant is disagreeable because of the vicious prickles which cling to clothing and produce painful scratches. The stems are used to make snares to capture fruit bats. English name, yellow nickers; native names, *talamoa, talatalamoa, talamoa foto.*

Caesalpinia pulcherrima (Linnaeus) Swartz, Observ. Bot., 166, 1791.

Glabrous shrub or small tree up to 2 or more m. tall, branches usually armed with short, stiff, scattered prickles. Leaves alternate, bipinnate, leaflets oblong, up to 2.5 cm. long, light green, obliquely inequilateral, obtuse or shallowly notched at apex. Flowers red or orange, about 2.5 cm. wide, stamens long exserted, on long pedicels in large terminal racemes. Pods oblong, flat, up to 10 cm. long.

Introduced ornamental (9742). English name, pride of Barbados; native name, *fitihetau.*

Genus **CROTALARIA** Linnaeus

Crotalaria anagyroides Humboldt, Bonpland and Kunth, Nov. Gen. Spec. Plant. 6:404, 1823.

Freely branching, shrubby, densely brown pubescent plant, up to 2 or more m. tall. Leaves alternate, trifoliate, leaflets elliptical, entire, up to 7 or more cm. long, cuspidate. Flowers yellow, showy, short pedicellate, numerous in elongated, terminal, spike-like racemes. Pod up to 4 cm. long and about 8 mm. thick, somewhat flattened.

Introduced and cultivated at the government plantation at Fonukula (9674). The seeds have been scattered throughout the island in the hope that the growth of the plant will improve the poor soil. English name, rattle-box.

Crotalaria angulosa Lamarck, Encycl. Méth. 2: 197, 1786.

Herbaceous or semi-woody plant up to about 1 m. tall with 4-angled, puberulent stems. Leaves alternate, simple, ovate, margin crisped, obtuse, petiole mostly less than 1 cm. long, with large, acute stipules. Flowers white, about 12 mm. wide, on short pedicels in terminal racemes. Pod inflated, hairy, about 3.5 cm. long.

Occasional along roadsides and in waste areas (9748).

Crotalaria Saltiana Andrews, Bot. Repos. **10**: pl. 648, 1811.

Erect, widely branching, subshrubby, finely pubescent plant up to 1.5 or more m. tall. Leaves alternate, trifoliate, leaflets entire, elliptic-obovate, obtuse or slightly emarginate. Flowers yellow with purple lines, about 15 mm. long, short pedicellate in an elongated, terminal, slender spike-like raceme. Pods about 4 cm. long, subcylindrical, slightly curved.

Common along roadsides and in waste areas, but most abundant on the eastern side of the island (9675). English name, Salt's rattle-box.

Genus **TEPHROSIA** Persoon

Tephrosia purpurea (Linnaeus) Persoon, Syn. Plant. 2: 329, 1807.

Low, silky-pubescent, somewhat shrubby plant with erect stems up to 50 or more cm. tall. Leaves alternate, odd-pinnate, leaflets up to 2.5 cm. long, oblong-obovate, finely appressed pubescent beneath, emarginate. Flowers small, commonly white, in terminal or leaf-opposed racemose clusters. Pods about 4 cm. long, compressed, the halves twisted when open.

Frequent in waste areas, along roadsides, etc. (9671, 9979). A concoction of the plant is used to stupefy fish. Native names, *kohuhu, kohuhu tea.*

Genus **ARACHIS** Linnaeus

Arachis hypogaea Linnaeus, Spec. Plant., 741, 1753.

Hairy, spreading, herbaceous plant about 30 cm. tall. Leaves alternate, pinnately even-compound, leaflets 4, oval-obovate, entire, mostly obtuse, stipules large, lanceolate. Flowers yellow, 10 or more mm. wide, from lower leaf axils, peduncle elongating after flowering to bury the developing pod.

A few peanuts are grown at the government plantation at Fonukula (9886).

Genus **URARIA** Desvaux

Uraria lagopodioides (Linnaeus) Desvaux, Soc. Linn. Paris, Mém. 4: 309, 1826.

Finely pubescent, semi-woody, somewhat sprawling plant with stems ascending up to 30 or more cm. high. Leaves pinnately 3-foliate, alternate, leaflets elliptic-ovate, rather veiny, up to 4 cm. long, mucronate. Flowers lavender or pinkish, in densely hairy, terminal, spike-like clusters up to 5 or more cm. long.

Occasional in waste areas and clearings (9892, 10203). Native name, *uluhega.*

Genus **DERRIS** Loureiro

Derris elliptica (Roxburgh) Bentham, Linn. Soc. Bot., Jour. 4: iii, 1860.

Prostrate or semi-climbing shrub. Leaves pinnate, long petiolate, leaflets mostly 7, up to 15 or more cm. long and 9 or more cm. wide, entire, abruptly and attenuately acuminate. Flowers small, in spike-like axillary clusters.

Infrequent (9984). Said to have been introduced from New Guinea. An extract of the root is used to stupefy fish. Native name, *akau niukini.*

Derris species.

Glabrous, woody vine. Leaves pinnate, long petiolate, leaflets mostly 3 or 5, ovate, entire, pinnately veined, up to 10 or more cm. long and 6 cm. wide, but mostly somewhat smaller, attenuately acuminate.

Occasional in thickets and forested areas where it climbs high in trees (10063). Only sterile specimens were seen. Fish baskets are made from the tough stems. Native name, *kanai uli.*

Genus **INOCARPUS** Forster

Inocarpus fagiferus (Parkinson) Fosberg, Wash. Acad. Sci., Jour. 31:95, 1941.

Medium to large tree. Leaves alternate, oblong to elliptic-lanceolate, entire, up to 30 or more cm. long and 10 or more cm. wide, somewhat coriaceous, pinnately veined, base cordate, apex acute, petioles short and thick. Flowers white, 1 or more cm. long. Fruit large, fleshy, edible.

In thickets and forested areas (9789, 10004, 10006). The leaves are used in preparing native medicines, the seeds are roasted and eaten, and the wood is used for a number of purposes. English name, Tahitian chestnut; native name, *ifi* (*ifi tea* and *ifi kula* are two varietal names which were given as indicating differences in fruit color).

Genus **ABRUS** Linnaeus

Abrus precatorius Linnaeus, Syst., ed. 12, 472, 1767.

Subwoody vine with slender, glabrous branches. Leaves even-pinnate, alternate, leaflets nearly sessile, mostly 20-30, about 12 mm. long, oblong, slightly emarginate. Flowers small, red or white, in terminal or axillary, racemose clusters. Pods several-seeded, seeds handsome, bright red with the base black.

Frequent in thickets (9751, 10202). Seeds used for necklaces, bracelets, and other ornaments. English name, black-eyed Susan; native name, *pomea mataila.*

Genus **CLITORIA** Linnaeus

Clitoria Ternatea Linnaeus, Spec. Plant., 753, 1753.

Slender, twining vine, young growth somewhat pubescent. Leaves alternate, odd-pinnate, leaflets mostly 5 or 7, oval-ovate, entire, 2 to 4 cm. long, obtuse. Flowers mostly solitary in the leaf axils, deep blue with a yellowish eye, about 4 cm. long. Pods hairy, 8 or more cm. long, flat.

Introduced ornamental commonly planted for trellis and wall coverings (9579). English name, butterfly pea; native name, *pepe.*

Genus **ERYTHRINA** Linnaeus

Erythrina crista-galli Linnaeus, Mantissa Plant., 99, 1767.

Shrub or small tree. Leaves alternate, pinnately 3-foliate, long petiolate, leaflets oval-oblong or somewhat ovate, entire, up to 8 or more cm. long and 3 or more cm. wide, acutish, petioles and main veins with recurved prickles. Flowers large, bright red, in racemose clusters.

Introduced ornamental (9908). English name, cockspur coral tree.

Erythrina variegata Linnaeus var. **orientalis** (Linnaeus) Merrill, Interpret. Herb. Amboin., 276, 1917.

Small to medium-sized, spiny, deciduous tree. Leaves alternate, pinnately 3-foliate, long petiolate, leaflets broadly triangular-ovate, up to 15 cm. long and about as wide, the lower two leaflets somewhat oblique, prominent glands below the base of the petiolules. Flowers bright red, numerous in dense, racemose clusters. Pods up to 25 or more cm. long, seeds dark red.

On rocky cliffs near the sea (9736). The bark and small twigs are used in the preparation of native medicines. English name, coral tree; native name, *gate*.

Erythrina species.

Small, somewhat thorny tree. Leaves pinnately 3-foliate, petioles 10 or more cm. long, terminal leaflet oval-ovate, up to 12 cm. long, lateral leaflets elliptical, attenuately acute, prominent glands just below the base of the petiolules. Not seen in flower or fruit.

Introduced and growing at the government plantation at Fonukula (10028).

Erythrina species.

Small, unarmed tree. Leaves pinnately 3-foliate, petioles up to 10 or more cm. long, terminal leaflet broadly oval-rhomboid, attenuately acuminate, up to 12 or more cm. long, lateral leaflets elliptic-ovate, prominent glands just below the base of the petiolules.

Introduced and growing at the government plantation at Fonukula (9660). Not seen in flower or fruit.

Genus **MUCUNA** Adanson

Mucuna aterrima (Piper and Tracy) Merrill, Interpr. Rumph. Herb. Amboin., 279, 1917.

Strong, pubescent vine. Leaves large, 3-foliate, leaflets ovate, up to 15 cm. long, entire, acuminate. Flowers up to 3 cm. long, purple.

Introduced and cultivated at the government plantation at Fonukula. English names, Mauritius bean, velvet bean.

Mucuna gigantea (Willdenow) DeCandolle, Prodr. 2 : 405, 1825.

Slender, climbing vine. Leaves alternate, pinnately 3-foliate, long petiolate, leaflets oval-ovate, the lower two obliquely unequal, up to 15 or more cm. long and 10 or more cm. wide, entire, acuminate, palmately veined, turning black upon drying. Flowers greenish. Pods flattened, margin two-winged, up to 15 or more cm. long, seeds large, flattened.

Climbing in thickets, especially near the coast (10053, 10110, 10196). The leaves are used in preparing native medicine. The dried pods are tied about the ankles of dancers as rattles. English name, sea bean; native name, *feteka uli.* A green (?) variety is called *feteka tea.*

Genus **PUERARIA** DeCandolle

Pueraria Thunbergiana (Siebold and Zuccarini) Bentham, Linn. Soc. Bot., Jour. 9: 122, 1865.

Coarse, densely brown-hairy, trailing or somewhat twining vine with large tuberous roots. Leaves pinnately 3-foliate, long petiolate, leaflets ovate, densely hairy, lower pair obliquely asymmetrical, shallowly lobed, acuminate. Flowers about 2 cm. long, purplish lilac, in large, axillary, spike-like clusters. Pod 6 or more cm. long, densely hairy.

Common along roadsides, in plantations, waste areas, and clearings (9711, 10124, 10227). The root is cooked and eaten during times of food shortage. English name, kudzu bean. Native names, *aka, aka fala, fou gau.*

Genus **CANAVALIA** DeCandolle

Canavalia sericea A. Gray, U. S. Expl. Exped., Bot. 1: 440, 1854.

Trailing, densely silky vine. Leaves alternate, densely pubescent, pinnately 3-foliate, leaflets rounded-ovate to obovate, entire, veins prominent, up to 9 or more cm. long and about as wide, obtuse. Flowers rose colored, in axillary, racemose clusters. Pod up to 14 cm. long.

Trailing on the ground in coconut groves and waste areas (9889).

Canavalia turgida Graham, in Wall. Cat., no. 5534, 1832.

Trailing or climbing vine. Leaves alternate, somewhat pubescent, pinnately 3-foliate, leaflets oval, obtuse, up to 8 or more cm. long. Pods up to 12 or more cm. long.

Not found by me. A specimen collected by Smith is in the Auckland Museum herbarium. Native name, *teteka.*

Genus **RHYNCHOSIA** Loureiro

Rhynchosia minima (Linnaeus) DeCandolle, Prodr. 2: 385, 1825.

Slender, pubescent, trailing and twining vine. Leaves pinnately 3-foliate, leaflets rhombic-ovate, up to 5 or more cm. long, pubescent, glandular-punctate beneath, obtuse or acutish, lateral leaflets obliquely inequilateral. Flowers yellow with red lines, in long, pedunculate, axillary racemose clusters. Pods about 12 mm. long, flattened, pubescent.

Common weedy vine in thickets and clearings (9687).

Genus **PHASEOLUS** Linnaeus

Phaseolus vulgaris Linnaeus, Spec. Plant., 723, 1753.

Climbing, pubescent vine. Leaves pinnately 3-foliate, long petiolate, leaflets triangular-ovate, lower leaflets unequally two-sided, palmately veined, abruptly acuminate. Flowers small, mostly white or yellowish. Pods slender, elongated.

Introduced and cultivated to some extent (9891). Occasional plants are found in thickets or clearings. English name, kidney bean.

The broad bean (*Vicia faba* Linnaeus) and the pea (*Pisum sativum* Linnaeus) have also been introduced but have not proved very successful under cultivation.

Genus **VIGNA** Savi

Vigna marina (Burman) Merrill, Interpret. Herb. Amboin., 285, 1917.

Trailing, glabrous, herbaceous vine. Leaves alternate, pinnately 3-foliate, petiole stout, leaflets ovate or suborbicular to oval-elliptical, with three prominent veins, at first pubescent but glabrate when older, obtuse. Flowers yellow, in long pedunculate, racemose clusters. Pods comparatively small and slender, up to 5 or more cm. long.

Frequent on the lower terrace and near the sea (9778). English name, beach pea.

Genus **DOLICHOS** Linnaeus

Dolichos Lablab Linnaeus, Spec. Plant., 725, 1753.

Vigorous, finely pubescent, twining vine. Leaves alternate, long petiolate, pinnately 3-foliate, leaflets broadly triangular-ovate, lateral leaflets oblique, entire or with slightly wavy margins, palmately veined, up to 15 or more cm. long and about as wide, acute. Flowers commonly white, in long, axillary, racemose clusters. Pods flattened, curved, up to 10 cm. long.

Naturalized and occasional in thickets (9686). English names, bonavist, hyacinth bean.

Family OXALIDACEAE

Genus **OXALIS** Linnaeus

Oxalis corniculata Linnaeus var. **repens** (Thunberg) Zuccarini, Akad. Muench., Abh. 1 : 230, 1829-30.

Low herb with short, hairy, runnerlike stems. Leaves alternate, palmately 3-compound, petioles long, slender, leaflets obcordate, entire excepting for the apical notch. Flowers yellow, in umbellate clusters of 2 to 5 or more flowers on erect peduncles. Capsules beaked, oblong, about 12 mm. long.

Occasional roadside and plantation weed (9925). English name, sheep sorrel; native name, *kihikihi.*

Family TROPAEOLACEAE

Genus **TROPAEOLUM** Linnaeus

Tropaeolum majus Linnaeus, Spec. Plant., 345, 1753.

The nasturtium has been introduced and is cultivated to some extent as an ornamental.

FAMILY RUTACEAE

Genus **EVODIA** Forster

Evodia hortensis Forster f. **simplicifolia** (Rechinger) K. Schumann, Bot. Jahrb. **55**: 232, 1918.

Shrub. Leaves opposite, linear-oblanceolate, up to 15 or more cm. long and 12 mm. wide, entire, short petiolate, somewhat coriaceous, obtusish. Flowers white, small, on short pedicels, in narrow, branching, axillary clusters. Fruit ovoid, oblique, about 4 mm. long.

Introduced ornamental (9819). Dried specimens are very aromatic. The leaves, when chewed, are considered a remedy for toothache and stomach pains. The leaves are used to scent bath water, and "branches waved about in a room will chase the ghosts away." Native name, *uhi*.

Genus **ACRONYCHIA** Forster

Acronychia niueana H. St. John, new species (fig. 3).

Frutex 2-5 m. altus, ramis corticibusque glabratis pallide brunneis, ramulis novellisque sparse adpressi-puberulis, foliis oppositis unifoliatisque, petiolis 16-38 mm. longis glabratis ad apicem articulatis, laminis 9-19 cm. longis ovalibus chartaceis punctatis cuneatis ad apicem obtusis vel retusis, cymis elongatis in axillis ad effectum dioeceis, cymis masculis 2-6 cm. longis, 15-32-floriferis, lobis calycorum subimbricatis 0.5-0.7 mm. longis, petalis valvatis 3.2-3.5 mm. longis albis ovato-lanceolatis crassis ad mediam puberulis, staminibus 8, illis alternis cum filamentis 1.8-2 mm. longis, antheris 0.6-0.7 mm. longis ovatis, cymis foemineis 1-4.5 cm. longis 9-50-floriferis, calycibus campanulatis 0.8-1.5 mm. longis, petalis 2-2.5 mm. longis viridescentibus anguste oblongo-lanceolatis crassis, staminodeis 8, ovariis 1.2-1.5 mm. longis subglobosis 4-partitis, stigmatibus 4 rotatis, ovulis 2 superpositis, capsulis 5-6 mm. altis 5-7 mm. diametro subglobosis punctatis, seminibus 4 mm. longis atris lucidis.

Shrub 2-5 m. tall. Older branches with pale brown, smooth, glabrate bark, at length with pale, longitudinal fissures; nodes 1-5 cm. apart; leafy branchlets 3-6 mm. in diameter, quadrangular, remotely appressed puberulous; young shoots remotely appressed puberulous; herbage glandular dotted and aromatic. Leaves opposite, unifoliate; petioles 16-38 mm. long, at first remotely appressed puberulous, early glabrate, with a slightly swollen articulation at the apex; blades 9-19 cm. long, 31-100 mm. wide, oval, the tissue densely dotted with glandular internal pits, firm chartaceous, smooth, above dark green, somewhat shining, below green, the apex obtuse or retuse, the base abruptly cuneate, midrib prominent, raised beneath, the primary lateral veins 10-15 on a side, prominent, diverging at 60 degrees to 70 degrees from the midrib, nearly straight, the tips inarched well back from the margin, the lower surface with numerous pale, superficial, flat glands, up to 0.5 or 1 mm. in diameter on the secondary or tertiary veinlets. Cymes axillary, elongate and compound; plants functionally dioecious by the partial abortion of one sex. Staminate cymes 2-6 cm. long, 8-20 mm. in diameter, 15-32-flowered, appressed puberulous; bracts 0.5-0.7 mm. long, lanceolate; pedicels 1-2.5 mm. long; buds subglobose, the calyx lobes slightly imbricate, the petals valvate; calyx cup-shaped to campanulate, appressed puberulous, the broad tube 0.5-0.7 mm. long, the deltoid, erect lobes 0.5-0.7 mm. long; the 4 petals 3.2-3.5 mm. long, 1.2-1.5 mm. wide, white, ovate-lanceolate, thick and almost fleshy, on the outside appressed puberulous on the middle line toward the tip, on the inside carinate toward the tip; stamens 8, dimorphic, the 4 opposite the nearest petals, the shorter with filaments 0.8-1 mm. long, flat, thin, and lanceolate in shape, the anthers 0.7-0.8 mm. long 2-celled, cordate, the lobes cordate and divergent at base, dehiscing by a median, longitu-

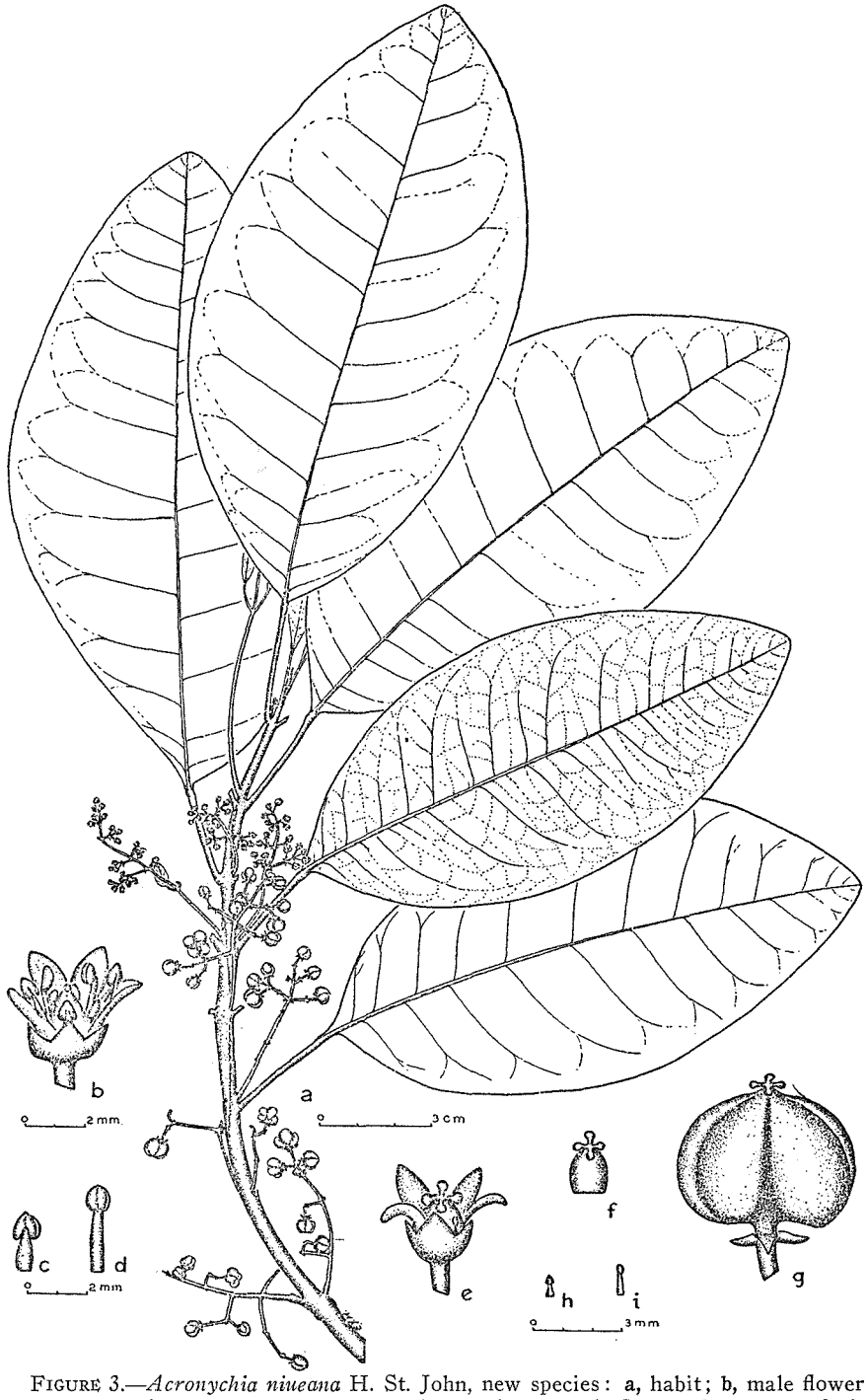

FIGURE 3.—*Acronychia niueana* H. St. John, new species: **a**, habit; **b**, male flower; **c**, stamen opposite petals; **d**, stamen opposite sepal; **e**, female flower; **f**, ovary; **g**, fruit; **h**, staminodium opposite petal; **i**, sterile stamen opposite calyx lobe.

dinal suture; the 4 stamens alternate with the petals with filaments 1.8-2 mm. long, subulate, the anthers 0.6-0.7 mm. long, broadly ovate, the sacs not divergent at base; pistilode 1.5 mm. long, pyramidal, sterile; stigma 0.1 mm. wide, not expanded. Pistillate cymes 1-4.5 cm. long, 5-40 mm. in diameter, 9-50-flowered, appressed puberulous; bracts 0.5-0.7 mm. long, lanceolate; pedicels stout, in fruit 3-5 mm. long; buds subglobose, the petals imbricate; calyx cup-shaped or campanulate, appressed puberulous, the tube 0.3-0.5 mm. long, the lobes 0.5-0.7 mm. long, deltoid; petals 2-2.5 mm. long, 1-1.2 mm. wide, white, greenish white, or greenish, narrowly oblong lanceolate, thick and fleshy, within short keeled near the tip, without appressed puberulous up the middle line toward the tip; staminodia 8, anther-bearing but reduced and sterile, the 4 staminodia opposite the calyx lobes the larger, 1 mm. long; the 4 staminodia opposite the petals the smaller 0.6 mm. long; ovary 4-celled, 1.2-1.5 mm. long, subglobose, with a puberulous ring at base; style none; stigmas 4, brown, rotate, capitate, 0.5 mm. long; ovules 2 in a cell, superposed, axile; capsule 5-6 mm. high, 5-7 mm. in diameter, gland dotted and aromatic depressed subglobose, with 4 shallow sinuses invading the area of the dissepiments; seeds one in each cell, 4 mm. long, 2.2 mm. wide, asymmetrically ovoid, the hilum and its angle of the seed straight or nearly so; the testa black, shining; middle tissue pale, spongy; inner wall bony, black tuberculate.

Types, Niue Island: Lakepa village, 3 miles southwest, in forest, alt. 65 m., tree 4 m. tall, flowers greenish white, fruit green, 4-seeded, Jan. 27, 1940, *T. G. Yuncker 9917* (gynetype, in fruit, Bishop Museum); Alofi, 6 miles east of, alt. 66 m., in thicket, edge of forest, shrub or small tree 2 m. tall, flowers white, Jan. 13, 1940, *Yuncker 9637* (gynetype, in flower, DePauw University); Liku village, 2 miles south of, alt. 65 m., in thicket, small tree 3 m. tall, corolla white, Jan. 19, 1940, *Yuncker 9753* (androtype, Bishop Museum).

Specimens examined: Alofi, 2 miles east of, alt. 65 m., in thicket, tree 3 m. tall, flowers greenish, Feb. 6, 1940, *Yuncker 10083* (fl. fr.); Alofi, 6 miles east of, alt. 65 m., in thicket, tree 5 m. tall, 10 cm. in diameter, corolla white, Jan. 20, 1940, *Yuncker 9777*.

The species is occasional in the native thickets on the plateau in the central or eastern sections of the island. It is gland dotted throughout the herbage and the fruit. These reservoirs contain an ethereal oil that gives the plant a strong fragrance which persists after drying. The fragrance is sweet and pleasant, not too strong, and is evident at a distance of several feet. The odor resembles that of *Pelea Wawraeana* (*alani*), or that of *Alyxia olivaeformis* (*maile*). On one specimen, the collector noted that the leaves were used in native medicine for the treatment of skin irritations.

The classification here followed is that of Engler (Natürl. Pflanzenf., 2d ed. **19a**: 187-359, 1931). Because of its 8 stamens and its 4-celled fruits with carpels fused to the tip, it is placed in the genus *Acronychia* which includes about 40 species and extends from southern Asia through Malaysia to Queensland, Australia, Fiji, and Samoa. The closest relative, and one which is very similar in structure and appearance, is *Acronychia retusa* Gray of Samoa, which differs in having young shoots densely appressed cinereous puberulous; blades without superficial flat glands on lower surface; pedicels in fruit 1.5-2 mm. long; petals of staminate and pistillate flowers densely appressed puber-

ulous on the outer side (though Gray said glabrous or nearly so); all stamens of staminate flowers with oval anthers; ovary and capsule of pistillate flowers appressed puberulous; capsule 3-4 mm. high; seeds 2.5-3 mm. long, broadly ovoid, the hilum curved. In contrast, *A. niueana* has the following diagnostic characters: young shoots remotely appressed puberulous; blades having on the lower surface superficial flat glands up to 0.5 or 1 mm. in diameter; pedicels in fruit 3-5 mm. long; petals of staminate and pistillate flowers appressed puberulous only on a median line near the tip on the outer side; the four shorter stamens (opposite the petals) of the staminate flowers with cordate anthers, having the sacs divergent at base; ovary and capsule of pistillate flowers glabrous; capsule 5-6 mm. high; seeds 4 mm. long, asymmetrically ovoid, the hilum and its angle of the seed straight. Native names, *kalakalalai, kalapalai, kalakalai.*

Genus **MICROMELUM** Blume

Micromelum minutum (Forster f.) Seemann, Viti, 434, 1862.

Small tree with puberulent branches. Leaves pinnate, leaflets up to 12 or more, alternate, ovate-lanceolate, obliquely two-sided at the base, up to 10 or more cm. long and 7 cm. wide, but mostly somewhat smaller, petiolules short. Flowers very small, white, fragrant, puberulent, in many-flowered, branching terminal and axillary clusters.

In thickets and forested areas (9920, 10017, 10220). The wood is very hard and is used for crowbars. Native names, *takatakapalu, takapalu.*

Genus **CITRUS** Linnaeus

Citrus aurantifolia (Christman) Swingle, Wash. Acad. Sci. Jour. 3: 465, 1913.

The lime has been introduced and large quantities of the fruit are produced. The juice is extracted and marketed on a small scale in New Zealand (9945, 10172). Native name, *limoni.*

Citrus Aurantium Linnaeus, Spec. Plant., 782, 1753.

The orange is cultivated about dwellings and a few trees grow spontaneously along roadsides and in thickets (9760). Native name, *moli.*

Citrus limona Osbeck, Reise Ostind. China, 250, 1765.

Small, round-topped tree with numerous sharp spines. Leaves alternate, oval, crenate. Flowers white, axillary. Fruit yellow, acid, rind rough.

Introduced and cultivated to some extent, also growing spontaneously in thickets (9762). Native name, *tipolo.*

The grapefruit (*C. grandis* Osbeck), navel orange (*C. sinensis* Osbeck), mandarin (*C. nobilis* Loureiro), and the tangele (*C. nobilis* Loureiro var.) have been introduced on an experimental basis at the government plantation at Fonukula. They may prove successful and add to the scanty fruit supply of the island.

FAMILY BURSERACEAE

Genus **CANARIUM** Linnaeus

Canarium Harveyi Seemann, Fl. Vit., 35, 1865.

Tree up to 12 or more m. tall. Leaves alternate, pinnate, leaflets oval-oblong or ovate, entire, somewhat glossy, strongly pinnately veined, acuminate, petiolules up to 2.5 cm. long. Flowers small, greenish orange, in branching, terminal clusters.

In forested areas (9849). The Niue specimens are similar in many respects to *C. mafoa* Christophersen of Samoa. It is believed, however, that they resemble more closely the Tongan species to which they are referred. The gum is used for caulking canoes. The fruit was not seen but it was reported as being edible and of good flavor. Native name, *ai.*

FAMILY MELIACEAE

Genus **MELIA** Linnaeus

Melia Azedarach Linnaeus, Spec. Plant., 384, 1753.

Small tree. Leaves twice pinnate, leaflets opposite, ovate-lanceolate, toothed, acuminate, up to 5 or more cm. long, glabrous. Flowers in loose, axillary panicles, violet or lavender, fragrant, showy. Fruit fleshy, subglobose, yellow, about 15 mm. in diameter.

Introduced ornamental (9800, 9859). English names, pride of India, chinaberry; native name, *tili.*

Genus **DYSOXYLUM** Blume

Dysoxylum Richii (A. Gray) C. DeCandolle, Monog. Phan. 1: 511, 1878.

Medium to large forest tree. Leaves alternate, pinnate, leaflets 20 or more, up to 10 or more cm. long, subsessile, elliptic-oblong, acute, base strongly obliquely inequilateral, rachis pubescent. Flowers yellowish green, about 1 cm. long, narrowly tubular, numerous, subsessile in large, lax, axillary, paniculate clusters. Fruit subglobose, about 2 cm. thick when dry, brown with whitish scurfy patches.

Frequent in forested areas (?9639, 9846). The wood is used in making canoes and the fruit is eaten by birds. Native name, *moota.*

Genus **AGLAIA** Loureiro

Aglaia samoensis A. Gray, U. S. Expl. Exped., Bot. 1: 236, 1854.

Medium-sized tree, young growth scurfy. Leaves alternate, pinnate, leaflets mostly 7-9, elliptic-obovate, entire, pinnately veined, up to 20 or more cm. long, obtuse or subacute, base rounded or wedge shaped, more or less obliquely inequilateral, petiolules about 1 cm. long. Flowers small, numerous, in large, lax, paniculate, axillary clusters.

In thickets and forested areas (9755, 10131, 10192). The flowers are used for personal ornament and for scenting oil. The wood is used in building. Native name, *lagakali.*

Family EUPHORBIACEAE

Genus **PHYLLANTHUS** Linnaeus

Phyllanthus Niruri Linnaeus, Spec. Plant., 981, 1753.

Branching, slender stemmed, glabrous herb, up to 30 or more cm. tall. Leaves arranged alternately along very slender branches, pale beneath, oblong-spatulate, entire, up to about 1 cm. long, obtuse, petioles very short. Flowers monoecious, very small, white, pendent beneath the branches on short, slender, axillary pedicels. Fruit depressed-globose.

Common in moist soil of gardens and plantations (9907).

Phyllanthus simplex Retzius, Observ. Bot. **5**: 29, 1789.

Slender, glabrous, branching plant, up to about 60 cm. tall, but mostly somewhat shorter, slightly woody at the base. Leaves numerous, alternate, subsessile, elliptic-oblong, up to about 2 cm. long and 6 mm. wide, often reddish beneath, acutish with a short mucronate tip. Flowers very small, solitary, on slender, axillary pedicels. Capsule small, subglobose, 3-parted.

A common dooryard and plantation weed (9628, 9666, 10014, 10099). Native names, *kihikihi, mohemohe fiti kula, kohuhu kula.*

Genus **GLOCHIDION** Forster

Glochidion ramiflorum Forster f., Fl. Ins. Austr. Prodr., 361, 1786.

Medium-sized tree. Leaves alternate, 2-ranked, elliptical, up to 10 or more cm. long and 3-5 cm. wide, entire, pinnately veined, acute, petioles up to 1 cm. long. Flowers yellow, on pedicels about 1 cm. long, in axillary, umbellate clusters. Fruit about 8 mm. wide, depressed, yellow.

In thickets (9695). The wood is strong and is used for house timbers and for furniture. The leaves are chewed and used as a dressing for cuts. They are also considered good for toothache. An extract of the bark is used in the cure of diarrhea. Native name, *kahame.*

Genus **BREYNIA** Forster

Breynia nivosa (Bull) Small, Torrey Bot. Club, Bull. **37**: 516, 1910.

Shrub or small tree with glabrous, spreading, 2-ranked branches. Leaves alternate, 2-ranked, oval-ovate, entire, variegated with yellow and red, obtuse or abruptly pointed, petioles short, stipules very small, triangular-acute. Flowers monoecious, small, green, on short, axillary pedicels.

Introduced ornamental (9580). English name, summer snow.

Genus **BACCAUREA** Loureiro

? Baccaurea aff. **tahitensis** Mueller-Argau, DC Prodr. **15**(2): 463, 1866.

Tree about 5 m. tall. Leaves alternate, oval-ovate, entire or slightly undulate, essentially glabrous, up to 15 or more cm. long, pinnately veined, base rounded or subacute, apex acuminate, petioles up to 5 cm. long. Flowers and fruit not seen.

In forested areas (9773). A fast red dye is obtained from the bark. The wood is used for house construction, and parts of the plant are used in native medicines. Native name, *koka.*

? Baccaurea aff. **Wilkesiana** Mueller-Argau, DC Prodr. **15**(2) : 463, 1866.

Shrub, as collected, about 1 m. tall, the young growth densely pubescent with branching hairs. Leaves alternate, oval-ovate, up to 15 cm. long, margin slightly uneven, apex acute to acuminate, base obliquely unequal, petioles 3-4 cm. long.

In thickets (9676, 9678, 9935). Native name, *utiuti.* Not found in flower or fruit.

Genus **MACARANGA** Thouars

Macaranga Harveyana Mueller-Argau, DC Prodr. **15**(2) : 998, 1866.

Small, soft-wooded, dioecious tree with brown-puberulent, pithy branches. Leaves alternate, peltate, mostly shallowly toothed, up to 20 or more cm. long and 18 cm. wide, but commonly somewhat smaller, attenuate, acute, petioles up to 15 or more cm. long, stipules lanceolate, long acuminate, up to 2 or more cm. long. Flowers small, in axillary, stalked clusters.

Common in thickets and forested areas. The large leaves are used as a covering for native ovens. The wood is employed for the upper part of canoes and outriggers and also to some extent for house construction. Native names, *lehau, le.*

Genus **ACALYPHA** Linnaeus

Acalypha boehmerioides Miquel, Fl. Ind. Bat., Suppl., 459, 1861-62.

Small, finely pubescent, semi-woody plant, branching from the base; up to 60 or more cm. tall, but mostly somewhat shorter. Leaves alternate, ovate, up to 3 or more cm. long and 2.5 cm. wide, crenate, veins often red, acute, petiole slender, up to 3 cm. long. Flowers small, greenish, in spicate, axillary clusters.

An occasional weed along roadsides and in plantations. Native name, *magiho.* Christophersen reports *ongo ongo* as the Samoan name for this plant. The Niueans gave *ogoogo* as the name for *Fleurya interrupta* (L.) Gaudichaud which bears a superficial resemblance to this species.

Acalypha hispida Burman f., Fl. Ind., 303, pl. 61, fig. 1, 1768.

Shrub, up to 2 m. tall, branches pubescent. Leaves alternate, ovate, toothed, up to 10 or more cm. in width, acuminate. Flowers in red, axillary catkins up to 20 or more cm. long.

Introduced ornamental.

Acalypha Wilkesiana Mueller-Argau, DC Prodr. **15**(2) : 817, 1866.

Shrub, up to 2 or more m. tall, branches pubescent. Leaves mostly ovate, serrate, up to 20 or more cm. long and 15 cm. wide, long petiolate, pubescent, mottled with various shades of red, yellow and bronzy green, acuminate. Flowers monoecious, small, on slender, axillary spikes up to 15 or more cm. long.

Introduced ornamental frequently planted in hedges. A common variety with reddish-green leaves with pink margins is probably variety *marginata* Hort. English name, copper leaf.

Genus **RICINUS** Linnaeus

Ricinus communis Linnaeus, Spec. Plant., 1007, 1753.

Large, coarse, semi-woody, glabrous shrub or small tree with spreading, hollow branches. Leaves alternate, peltate, mostly deeply palmately 5-9 lobed, lobes sharply acuminate, serrate. Flowers monoecious, in large terminal paniculate clusters. Capsules 3-seeded, spiny, seeds about 1 cm. long, smooth, variegated.

Introduced but now frequent in thickets and waste areas (9731). The seeds are used in the making of necklaces. English name, castor bean; native names, *tuitui, tuitui fua ikiiki.*

Genus **ALEURITES** Forster

Aleurites moluccana (Linnaeus) Willdenow, Spec. Plant. 4: 590, 1805.

Medium-sized tree with brown, stellate-scurfy branches. Leaves light green, alternate, lower surface covered with stellate scales, the upper surface sparingly so, ovate-lanceolate to rounded, entire or palmately 3 or 5 lobed, lobes triangular, acute, petioles up to 15 or more cm. long. Flowers small, greenish yellow to white, in large, many-flowered, terminal, paniculate clusters. Fruit about 5 mm. thick, round, containing 1 or more black, very hard, nutlike seeds.

Occasional throughout the island (9702). Originally the nuts were used to make torches and the soot from them served as a coloring material for *hiapo* designs. The oil extracted from the nuts was used in lamps and for bathing infants. The nuts when wrapped with green bananas are said to hasten their ripening. The roasted nuts are considered especially good for young children. English name, candlenut; native name, *tuitui.*

Genus **JATROPHA** Linnaeus

Jatropha multifida Linnaeus, Spec. Plant., 1006, 1753.

Small tree or shrub, up to about 4 m. tall. Leaves nearly round in outline, palmately divided into 7-11 entire or irregularly incised, lanceolate, acuminate lobes, petioles longer than leaves. Flowers scarlet, in red, branching, flat-topped, cymose clusters on terminal peduncles up to 30 or more cm. long.

Introduced ornamental (9943). English name, coral plant.

Genus **MANIHOT** Adanson

Manihot esculenta Crantz, Inst. Rei Herb. 1: 167, 1766.

Glabrous, half-woody, shrubby plant up to about 2 m. tall. Leaves alternate, pale beneath, deeply palmately parted into 3-7 oblanceolate, entire, acuminate divisions, petioles longer than blades. Flowers monoecious, about 2 cm. wide, yellowish green or reddish, in axillary clusters. Fruit subglobose, about 1.5 cm. in diameter, ridged.

Of comparatively recent introduction and now cultivated to a considerable extent (9691, 9851, 10080, 10089, 10095). The roots, which resemble sweet potatoes, are edible. They also furnish starch. English names, tapioca, cassava; native name, *maniota.* The natives recognize several varieties on the basis of stem color and other characters:

Maniota hiata: may be eaten raw. The other varieties must be cooked before eating.
Maniota kaufi: edible.
Maniota keka: must be properly prepared and washed in sea water before it is edible.
Maniota kula: edible.
Maniota pukofu: must be prepared the same as *maniota keka.*
Maniota tea: edible.
Maniota uli: not considered edible and is used only for its starch.

Genus **CODIAEUM** Jussieu

Codiaeum variegatum (Linnaeus) Blume, Bijdr. Fl. Nedrl. Ind., 606, 1825.

Densely branched, glabrous shrubs. Leaves alternate, varying greatly in shape and size, commonly entire, sometimes interrupted or twisted, pinnately veined, mostly acuminate, variegated green, red, pink, yellow and white. Flowers small, monoecious, in axillary, racemose clusters.

Introduced ornamental, but occasional in thickets as an escape (9938, 10118, 10133). This is an exceedingly variable species, exhibiting a large number of varieties and forms distinguished mainly by differences in the leaf shapes and colors. They are favorite decorative shrubs, common everywhere in villages. English name, croton; native names, *kafiki uli, tonatona.*

Genus **EXCOECARIA** Linnaeus

Excoecaria agallocha Linnaeus, Syst., ed. 10, 1288, 1759.

Tree about 5 m. tall with white, adhesive latex. Leaves alternate, glabrous, ovalobovate, margins revolute, entire, up to 8 or more cm. long, midrib prominent, lateral veins slender, petioles up to 2 cm. long.

Collected on a rocky slope near the sea (9793). Flowers and fruit not seen. An extract of the bark is used as a cure for ringworm. Native name, *fetaanu.*

Genus **HOMALANTHUS** Jussieu

Homalanthus nutans (Forster) Pax, in Engler and Prantl, Nat. Pflanzenfam. III, 5: 96, 1890.

Small glabrous tree. Leaves alternate, triangular-ovate, entire, acute, petioles slender, longer than the blade. Flowers monoecious. Male flowers small, greenish, in axillary spikes. Female flowers on long, axillary pedicels. Fruit pyramidal, about 8 mm. thick.

Frequent in thickets (9600, 9692, 10079). Parts of the plant are used in the preparation of native medicines. A strong twine is prepared from the

bark, and the straight stems are used in making shafts for arrows and *tikas* or throwing sticks. Native name, *foumamala.*

Genus **EUPHORBIA** Linnaeus

Euphorbia atoto Forster f., Fl. Ins. Austr. Prodr., 207, 1786.

Erect, glabrous, branching, subshrubby plant up to about 1 m. tall. Leaves oval-ovate, palmately veined, green above, whitened beneath, entire, up to about 2 or 3 cm. long and 1-2 cm. wide, base cordate and somewhat unevenly 2-sided, apex obtuse, petioles about 2 mm. long. Flowers white, numerous, in small, branching, terminal clusters.

Common in old clearings and waste areas (9591, 9672, 10163). The milky latex is believed to be a cure for warts. Native name, *toto.*

Euphorbia hirta Linnaeus, Spec. Plant., 454, 1753.

Low, widely branching, densely hairy herb. Leaves opposite, green or reddish, pubescent, elliptical, 1-3 cm. long, serrulate, unequally 2-sided at base, apex acute, petioles very short. Flowers minute, greenish, in small, dense, branching, axillary clusters.

A common weed in plantations and waste areas (9880, 9884). Native name, *toto taane.*

Euphorbia prostrata Aiton, Hort. Kew 2 : 136, 1789.

Low, prostrate, widely spreading, slender-stemmed herb. Leaves opposite, oval-obovate, serrulate, up to 8 or 10 mm. long, base oblique, apex obtuse. Flowers minute, in small axillary clusters.

A common weed in lawns and waste areas (9861, 9931). Native name, *toto fifine.*

Euphorbia pulcherrima Willdenow, ex Klotz, in Otto and Dietrich, Allgem. Gartenz. 2 : 27, 1834.

Erect, glabrous, branching shrub up to 2 or more m. tall. Leaves elliptical or elliptic-ovate, up to 25 or more cm. long and 15 cm. wide, entire or sinuate toothed or lobed, pubescent, acute, on petioles up to about 8 cm. long, upper leaves near the inflorescence commonly lanceolate and bright red. Flowers comparatively small and inconspicuous, yellow and reddish green.

Introduced ornamental cultivated for the very attractive bracteate inflorescences (9801, 10187). English name, poinsettia.

Euphorbia ramosissima Hooker and Arnott, Bot. Beechey, 69, 1841.

Small, subwoody plant with short, thickened, decumbent stems and numerous slender, ascending branches. Leaves oval-ovate, up to 1 cm. long, petioles about 2 mm. long. Flowers small, white.

Infrequent on exposed coral rocks near the sea (10206). Native name, *toto tea.*

Euphorbia splendens Bojer, Bot. Mag. **56**: pl. 2902, 1829.

Low, semi-shrubby, thorny plant. Leaves alternate, obovate, entire, obtuse, mostly on the young growth. Flowers small, in terminal clusters, surrounded by two, broadly ovate, conspicuous red bracts.

Introduced ornamental often cultivated as a hedge (9970). English name, crown of thorns.

Family ANACARDIACEAE

Genus **MANGIFERA** Linnaeus

Mangifera indica Linnaeus, Spec. Plant., 200, 1753.

Large, dense, round-topped tree. Leaves alternate, simple, oblong-lanceolate, entire, coriaceous and somewhat shiny, pinnately veined, midrib prominent, young leaves often reddish, apex acute, petioles up to about 5 or more cm. long. Flowers small, yellowish white, in large, terminal panicles. Fruit a fleshy, edible drupe with a large, compressed fibrous stone.

Introduced for its fruit and now common about dwellings, in thickets, and along roadsides (9897). The fruit is a favorite with the natives. Most of the trees bear fibrous fruit of poor quality. English name, mango; native name, *mago*.

Genus **SPONDIAS** Linnaeus

Spondias dulcis Parkinson, Jour. Voy. Endeavour, 39, 1773.

Medium to large, stiff-branched tree. Leaves alternate, odd-pinnate, leaflets commonly 11 or 13, oval-lanceolate or oblong, remotely serrate, up to 8 or more cm. long and 2.5 cm. wide, acuminate. Flowers small, numerous, whitish, in large paniculate clusters. Fruit yellow, oval-obovate, up to 7 or more cm. long, fleshy, edible.

Occasional near dwellings (9718). English name, vi apple; native name, *vi*.

Genus **RHUS** Linnaeus

Rhus taitensis Guillemin, Sci. Nat., Bot., Ann. II, **7**: 361, 1837.

Medium to large forest tree with young parts more or less puberulent. Leaves large, alternate, odd-pinnate, leaflets commonly 20 or more, oblong, obliquely unequal at the base, up to 10 or more cm. long, acute, short petiolulate. Flowers small, white, numerous in large, terminal, compound clusters 30 or more cm. long.

One of the commonest of the larger forest trees (9651, 9664). When in flower the trees are conspicuous and attractive. The stripped bark is used as a receptacle for grated starch, and the trunks are sometimes used for the making of canoe hulls. The fruit is eaten by native pigeons (*lupe*). Native name, *tavahi*.

A small shrubby form about 2 meters tall occurs occasionally in thickets. The leaves are much smaller, being mostly less than 20 cm. long and with the

leaflets 5 cm. or less long. The inflorescence is likewise much reduced. Similar small plants have been collected in Samoa by Christophersen (607). Aside from the differences in size, these small plants closely resemble *R. taitensis,* and probably should be considered as ecologically dwarfed specimens.

Family SAPINDACEAE

Genus **ALLOPHYLUS** Linnaeus

Allophylus rhomboidalis (Nadeaud) Radlkofer, Bayer. Akad. Sitzungsber. 20 : 230, 1890.

Shrub or small tree up to 5 m. tall. Branches minutely appressed puberulent, soon glabrate. Leaves alternate, pinnate, leaflets 3, obliquely ovate or elliptic, subacute, 10-15 cm. long, chartaceous, beneath the axils of principal veins hairy tufted, petioles 2-4.5 cm. long. Panicle of small greenish flowers. Sepals 1.5 mm. long. Petals concave, crenulate. Fruit of 1-3 cocci, globose, glabrate, each up to 7 mm. in diameter.

In thicket near Mutalau village (9707). Also indigenous in the Marquesas, Makatea, Tahiti, and Rarotonga. Native name, *kalakalai.*

Genus **POMETIA** Forster

Pometia pinnata Forster, Charact. Gen. Plant., 110, pl. 55, 1776.

Medium to large tree. Leaves even-pinnate, alternate, leaflets 14 or more, oblong, up to 18 or more cm. long and 8 cm. wide, the lower leaflets much smaller, veins prominent, pinnate, nearly glabrous, subsessile, acute to acuminate.

In forested areas (9910). Only sterile specimens were seen. The fruit is said to be edible. Native name, *tava;* varietal names, *tava kula, tava tea, tava tototo.*

Genus **ELATTOSTACHYS** Radlkofer

Elattostachys falcata (Seemann) Radlkofer, Sap. Holl.-Ind., 42, 1877.

Large forest tree. Leaves alternate, pinnate, leaflets 10 or more, alternate, up to 15 cm. long and 3.5 cm. wide, somewhat coriaceous, falcately lanceolate, entire, base obliquely inequilateral, apex acuminate, petiolules about 1 cm. long.

Occasional in forested areas (10229, 10245). Flowers and fruit not seen. The wood is considered good for fuel, straight branches are used as darts, and the bark is used in the preparation of arrowroot. Native names, *malili, lautaha.*

Genus **DODONAEA** Linnaeus

Dodonaea viscosa Jacquin, Enum. Pl. Carib., 19, 1760.

Shrub or small tree up to 3 or more m. tall. Leaves alternate, oblanceolate, up to 10 or more cm. long, entire, subsessile or on short, winged petioles, obtuse, viscid. Flowers small, greenish yellow, in terminal or axillary, branching, paniculate clusters. Fruit papery, inflated 2-4 winged, about 15 or 20 mm. wide.

In thickets and open forests (9658). The wood is close-grained and is used for the making of utensils requiring a hard, tough wood. It is claimed to have been used anciently for the making of fishhooks. Native name, *kapa akau.*

Family BALSAMINACEAE

Genus **IMPATIENS** Linnaeus

Impatiens Balsamina Linnaeus, Spec. Plant., 938, 1753.

Erect, branching herb up to about 60 cm. tall. Leaves lanceolate, serrate, acuminate. Flowers on short, axillary pedicels, variously colored, irregular, spurred, commonly double. Capsules large, hairy.

Introduced ornamental. English name, balsam.

Family RHAMNACEAE

Genus **COLUBRINA** L. C. Richard

Colubrina asiatica (Linnaeus) Brongniart, Ann. Sci. Nat. **10**: 369, 1827.

Low, trailing, shrublike plant. Leaves alternate, ovate, crenate-dentate, palmately 3-veined, up to 8 or more cm. long and 5 cm. wide, nearly glabrous, base rounded or subcordate, apex acuminate, petioles about 1 cm. long. Flowers small, yellowish green, in small, axillary, briefly pedunculate, cymose clusters. Fruit subglobose, about 6 mm. in diameter.

Frequent in thickets and scrambling over rocks near the shore (9662, 9729, 10045). Extracts of the leaves are used in native medicines for the treatment of headache and tuberculosis. The leaves produce a soaplike lather when rubbed on rocks and are used for washing hair and clothes. The plant is reported as being poisonous and extracts of it have been used elsewhere to stupefy fish. Native names, *fihoa, vihoa.*

Genus **ALPHITONIA** Reissek

Alphitonia zizyphoides (Sprengel) A. Gray, U. S. Expl. Exped., Bot. **1**: 278, 1854.

Medium to large tree with young branches brown-tomentose. Leaves alternate, elliptic-lanceolate, bright green above, whitened-tomentose beneath, minutely toothed, up to 10 cm. long and 4 cm. wide, veins pinnate, prominent, petioles mostly 1 to 2 cm. long. Flowers small, whitish, numerous, in branching, axillary and terminal cymose clusters. Fruit about 5 mm. thick, purplish.

Common in thickets and forested areas (9644, 10161). The strong, mahogany-colored wood is used for the making of such things as canoe paddles and house furniture and is considered an excellent firewood. The leaves are used in washing the hair. Native name, *toi.*

Family ELAEOCARPACEAE

Genus **ELAEOCARPUS** Linnaeus

Elaeocarpus samoensis Lauterbach, Bot. Jahrb. 41 : 230, 1908.

Small to medium-sized tree. Leaves alternate, elliptic-ovate, up to 12 or more cm. long, smooth, distantly and minutely toothed, acute, petioles 2.5-4 cm. long, small saccate glands in the axils of the main veins. Flowers in axillary, racemose clusters. Fruit ovoid, blue, about 1 cm. long.

Frequent in thickets and forested areas (9612, 9870, 9898). The wood is used for timbers in house construction. Native names, *malalava, mamalava.*

Family TILIACEAE

Genus **BROWNLOWIA** Roxburgh

? Brownlowia species.

Small tree. Leaves alternate, ovate-elliptical, entire, up to 27 or more cm. long and 14 cm. wide, green above, lower surface covered with brown scales, pinnately veined, acute, petioles brown scurfy, up to 10 cm. long.

In the forest near Mutalau (10244). Only sterile specimens were seen. The wood is tough and is said to have been used anciently in the making of weapons. Native name, *tafaki.*

Genus **GREWIA** Linnaeus

Grewia crenata (J. R. and G. Forster) Setchell, Dept. Marine Biol. Carnegie Inst. Wash. 20 : 72, 1924.

Small tree. Leaves alternate, elliptic-lanceolate, up to 15 or more cm. long and 6 or more cm. wide but mostly somewhat smaller, palmately veined at base, pinnate above, finely crenately toothed, acuminate. Flowers greenish white, about 1 cm. wide, numerous in stalked, axillary clusters. Fruit about 1 cm. or less wide, lobed.

Frequent in thickets (9710, 9813, 9848, 10012). The wood was said to have been used anciently for fishhooks. Bonito fishing poles are sometimes tipped with it because of its toughness. Native names, *lala, lala vao, lala uli.*

Genus **TRIUMFETTA** Linnaeus

Triumfetta Bartramia Linnaeus, Syst., ed. 10, 1044, 1759.

Low, branching, densely stellate-hairy, half-woody, shrub-like plant. Leaves alternate, ovate, commonly palmately 3-lobed, serrate, stellate-pubescent, palmately 3 or 5 veined. Flowers yellow, small, in axillary fascicles. Fruit subglobose, about 5 mm. in diameter, covered with hooked bristles.

A common weed in plantations and waste areas (9865, 10239). Native name, *motipo.*

Triumfetta procumbens Forster f., Fl. Ins. Austr. Prodr., 35, 1786.

Prostrate, semi-woody plant with long trailing, densely stellate-pubescent branches. Leaves alternate, rounded-ovate-cordate, often somewhat 3-lobed, crenate-serrate, densely stellate-woolly beneath, mostly 2-4 cm. long, palmately veined, petioles about as long as the blade. Flowers about 1 cm. long, yellow, in axillary, cymose clusters. Fruit globose, about 12 mm. in diameter, soft-spiny.

Common on rocky cliffs near the sea, less frequent inland (9727). The leaves produce a lather and are used for washing the hair. English name, burweed; native name, *tititai.*

Family MALVACEAE

Genus **ABUTILON** Gaertner

Abutilon indicum (Linnaeus) Sweet, Hort. Brit., 54, 1826.

Semi-trailing to erect shrub, with densely hirsute stems. Leaves ovate-cordate, toothed, densely stellate-pubescent beneath, acuminate, long petiolate. Flowers 2.5 to 3 cm. wide, orange yellow, calyx lobes large, ovate, densely stellate-pubescent.

On sea cliffs and in thickets (9887, 10157). Native name, *fou hele.*

Genus **MALVASTRUM** A. Gray

Malvastrum coromandelinum (Linnaeus) Garcke, Bonplandia 5: 297, 1857.

Plant herbaceous or semi-woody, widely branching, 30-60 cm. tall, appressed-pubescent with 4-rayed hairs. Leaves alternate, ovate-lanceolate, serrate, appressed-pubescent, acute, petioles mostly 1 or more cm. long. Flowers salmon yellow, bracts 3, linear, short-pedicellate in axillary and terminal clusters.

A common roadside and plantation weed difficult to control because of its deep-rooting habit (9582, 9874, 10030, 10033, 10117). English name, false mallow; native name, *motofu lau taletale.*

Genus **SIDA** Linnaeus

? Sida acuta Burman f., Fl. Ind., 147, 1768.

Low, shrubby, freely branching plant. Young growth and lower leaf surface stellate-pubescent. Leaves lanceolate, toothed, 3.5 or more cm. long, alternate, acute, petioles up to 4 mm. long, stipules linear, up to 12 mm. long.

Occasional along roadsides, in waste areas and plantations (10150). Only sterile specimens were found. English name, clock plant.

Sida rhombifolia Linnaeus, Spec. Plant., 684, 1753.

Low, widely branching, somewhat shrubby, more or less stellate-scurfy plant. Leaves alternate, elliptic or rhombic to subspatulate, toothed, acute or obtusish. Flowers yellow, on slender, axillary pedicels up to 5 or more cm. long.

A common roadside and plantation weed (10037, 10044, 10120, 10209). Native name, *motofu.*

Sida samoensis Rechinger, Fedde Repert. Nov. Spec. 4: 228, 1907.

Small, prostrate, spreading herb. Leaves alternate, about 12-15 mm. long, oval-ovate, toothed, obtuse, petioles slender. Flowers salmon yellow, on slender, axillary pedicels 2-3 cm. long.

Roadside and garden weed (10034). Native names, *motofu totolo, motofu lau ikiiki.*

Genus **URENA** Linnaeus

Urena lobata Linnaeus, Spec. Plant., 692, 1753.

Shrubby plant up to about 1 m. tall, with stellate-pubescent stems. Leaves alternate, ovate, more or less lobed, toothed, both surfaces stellate-pubescent, acute, petioles 2.5-5 cm. long. Flowers white to pink, axillary. Fruit about 1 cm. wide, the segments covered with barbed spines.

A frequent weed in clearings and waste areas (10048). Because of the recurved barbs on the spines the fruit adheres tenaciously to fur and clothing. Native name, *motipo.*

Genus **HIBISCUS** Linnaeus

Hibiscus abelmoschus Linnaeus, Spec. Plant., 693, 1753.

Plants somewhat woody at base, mostly 30-60 cm. tall, hirsute. Leaves alternate, ovate-cordate, palmately 5-lobed, lobes acute to acuminate, petioles long. Flowers yellow with an orange or red center, 5 or more cm. wide. Capsule oblong, pointed, 5 or more cm. long, hirsute, splitting into 5 sections.

Frequent in clearings and waste areas (9636, 10162). The flowers are used in preparing native medicines. Native name, *fou hele.*

Hibiscus cannabinus Linnaeus, Syst., ed. 10, 1149, 1759.

Sub-shrubby plant with prickly and somewhat stellate-pubescent stems. Leaves long petiolate, the lower ones cordate, the upper often deeply palmately lobed and toothed. Flowers 5 cm. or more wide, yellow with red center, bractlets and calyx lobes densely bristly, on short, axillary pedicels. Capsule subglobose, bristly.

Weed in clearings and waste areas (9879). Native name, *fouigo.*

Hibiscus esculentus Linnaeus, Spec. Plant., 696, 1753.

The okra has been introduced and is sparingly cultivated at the government plantation at Fonukula.

Hibiscus mutabilis Linnaeus, Spec. Plant., 694, 1753.

Shrub up to 2 or more m. tall with scurfy or short-hairy branches. Leaves alternate, ovate-cordate, 5-lobed, lobes toothed, acute, stellate-pubescent, petioles long. Flowers white at first, changing to pink or red, about 10-12 cm. wide, on long pedicels. Capsules globose, hairy.

Introduced (9782). One specimen was seen in Hikutivake. English name, rose mallow; native name, *fou papalagi.*

Hibiscus Rosa-sinensis Linnaeus, Spec. Plant., 694, 1753.

Shrub up to 3 or more m. tall. Leaves alternate, ovate, coarsely toothed, acute. Flowers axillary, solitary near the ends of the branches, large, red.

Introduced ornamental. Common about dwellings and also spontaneous along roadsides and in thickets. English name, Chinese hibiscus; native name, *kaute*.

Hibiscus Sabdariffa Linnaeus, Spec. Plant., 695, 1753.

Freely branching, shrubby, up to 1 or more m. tall. Leaves smooth, mostly 3- or 5-lobed, lobes narrow, toothed, acute. Young stems, petioles and leaf veins red. Flowers yellow with darker center, on axillary pedicels about 1 cm. long. Calyx becoming red and fleshy in fruit which is pointed, ribbed, many-seeded.

Introduced ornamental (10032, 10149). The fleshy calyxes are eaten or sometimes made into a beverage. English names, wine plant, roselle.

Hibiscus syriacus Linnaeus, Spec. Plant., 695, 1753.

Erect, branching, glabrous shrub 2 or more m. tall. Leaves rhombic-ovate, alternate, lower ones often 3-lobed, toothed, acute to acuminate. Flowers up to 8 cm. wide, red or purplish, solitary in leaf axils on the current season's growth. Fruit ovoid, up to 2.5 cm. long.

Introduced ornamental (10197). English name, Rose of Sharon; native name, *kaute*.

Hibiscus schizopetalus (Masters) Hooker f., in Curtis's Bot. Mag. III, **36**: pl. 6524, 1880.

Glabrous shrub up to about 3 m. tall. Leaves alternate, ovate-elliptical, toothed, acute. Flowers solitary, pendulous on long pedicels at the ends of slender, drooping branches; petals much dissected, reflexed, coral red.

Introduced ornamental now naturalized and occasional along roadsides and in thickets (9578). English name, coral hibiscus; native name, *kaute*.

Hibiscus tiliaceus Linnaeus, Spec. Plant., 694, 1753.

Tree up to 8 or more m. tall with glabrous, spreading branches. Leaves round-cordate, entire or minutely crenate, palmately veined, glabrous above, lighter and densely stellate-pubescent beneath, abruptly acuminate, long petiolate. Flowers up to 8 cm. wide, at first yellow later salmon red, axillary and terminal. Capsule 5-celled, hairy, several seeded.

Abundant on the lower terrace near the sea (9620, 9977, 10185). The wood is used for canoe outriggers and the flowers in the preparation of native medicines. The bark fibers are used for cordage and the making of kiltlike garments. Native names, *fou, fou kula, fou maka.*

Genus **THESPESIA** Solander

Thespesia populnea (Linneaus) Solander, Correa in Mus. Hist. Nat. Paris, Ann. **9**: 290, 1807.

Medium-sized, round-topped tree with young branches brown scurfy. Leaves alternate, somewhat fleshy, ovate-cordate, entire or rarely somewhat lobed, up to 12 or more cm. long, acuminate, petioles long. Flowers yellow with reddish center, changing to purple as they wither, axillary. Capsules depressed-globose, about 2.5 cm. in diameter, seeds numerous, hairy.

Frequent on the lower terrace near the sea (9714, 10184, 10194). The wood is used for a number of purposes. An extract of the fruit is used as a purge and as an application for swollen testicles. English name, Portia tree; native name, *milo*.

Genus **GOSSYPIUM** Linnaeus

? Gossypium brasiliense Macfayden, Fl. Jamaica, 1: 72, 1837.

Semi-shrubby, branching plant up to 1.5 or more m. tall. Leaves alternate, ovate-cordate in outline, mostly palmately 3-lobed, the lobes entire, acuminate, petioles long. Fruit dry, 3-celled, involucral bracts ovate-cordate, laciniate, seeds numerous, covered with long, white fibers.

The cotton was introduced for its fibers, but its cultivation was not practicable and only a few specimens now survive about dwellings (9858). Native name, *vavae*.

Family BOMBACACEAE

Genus **CEIBA** Medikus

Ceiba pentandra (Linnaeus) Gaertner, Fruct. et Semin. 2: 244, pl. 133, fig. 1, 1791.

Medium to large, glabrous, soft-wooded tree with smooth or short-spiny bark and whorled, spreading branches. Leaves palmately compound, leaflets 5-9, elliptic to oblanceolate, entire, of various sizes, acuminate, petioles long. Flowers white or pinkish, petals pubescent, up to 2.5 cm. long. Capsules up to 15 cm. long, seeds numerous, silky hairy.

Introduced and occasional in villages (10003). The silky seed fibers are used for the filling of pillows and cushions. English names, silk-cotton tree, kapok; native name, *vavae*.

Family STERCULIACEAE

Genus **THEOBROMA** Linnaeus

Theobroma Cacao Linnaeus, Spec. Plant., 782, 1753.

Small tree becoming 6 or more m. tall under favorable conditions. Leaves alternate, simple, oval to obovate, entire, up to about 30 cm. long, attenuate, acuminate. Flowers about 10 mm. wide, yellow or pinkish, borne in axillary clusters or on the trunk and larger branches. Capsules fleshy, reddish, up to 30 cm. long and 10-15 cm. thick, longitudinally grooved, seeds numerous, about 2.5 cm. thick.

Introduced but now rare on the island where conditions do not appear to be favorable for its cultivation on a commercial scale (10241). English name, cacao; native name, *koka*.

Genus **STERCULIA** Linnaeus

Sterculia species.

Small tree up to about 4 m. tall. Leaves alternate, clustered near the ends of the branches, oval-subobovate, entire, palmately 5-veined at the base, pinnate above, up to 30 or more cm. long and 18 cm. wide but mostly smaller, base rounded-cordate, apex acute, petioles up to 8 or more cm. long.

Frequent in thickets and forested areas (9699, 9841, 10015, 10228). Only sterile specimens were found. The bark is used for plaiting such objects as baskets and hats. Native name, *kanakuata.*

Family DILLENIACEAE

Genus **ACTINIDIA** Lindley

Actinidia chinensis Planchon, Hook. Lond. Jour. Bot. 6: 303, 1847.

Brown-hairy, woody vine. Leaves alternate, rounded-cordate, 10-12 cm. long, conspicuously veined, scabrous with short, stiff hairs above, densely woolly beneath with stellate hairs, margins ciliate with short, stiff extensions of the veins, abruptly acuminate. Flowers white to yellow, up to 5 cm. wide. Fruit ovoid, 2-5 cm. long, edible.

A few plants have been introduced at the government plantation at Fonukula (9869). English name, Chinese gooseberry.

Family GUTTIFERAE

Genus **CALOPHYLLUM** Linnaeus

Calophyllum inophyllum Linnaeus, Spec. Plant., 513, 1753.

Medium to large, hard-wooded tree. Leaves opposite, thick and leathery, 15 or more cm. long, oval-elliptical, midrib prominent, lateral veins pinnate and very slender, entire, obtuse or commonly emarginate, petioles less than 2.5 cm. long, flattened. Flowers white, fragrant, stamens numerous, in axillary, racemose clusters. Fruit globose, about 3-4 cm. in diameter, flesh thin, 1-seeded.

Frequent on the lower terrace near the sea (9738, 10059). The wood is durable and used for a number of purposes. The fruit is used for scenting oil and the seeds are used by children as a substitute for marbles. Native names, *fetau, tamanu.*

Family FLACOURTIACEAE

Genus **XYLOSMA** Forster f.

? Xylosma aff. **samoense** (Christophersen) Sleumer, Notizbl. 14: 295, 1938.

Shrub or small tree. Leaves simple, alternate, elliptic-ovate, crenately toothed, up to 8 or more cm. long and 3-4 cm. wide, somewhat glossy, acuminate. Flowers comparatively small. Fruit obovoid, ridged, 1.5-2 cm. long.

In thickets and forested areas (9756). Native name, *koka.*

Xylosma orbiculatum (Forster) Forster f., Fl. Ins. Austr. Prodr., 72, 1786.

Shrub, trailing. Branches minutely puberulous. Blades 1.5-3.5 cm. long, coriaceous, broadly oval to suborbicular, entire, and glabrous. Petioles 2-4 mm. long. Cymes axillary, about twice as long as the petioles. Flowers dioecious. Sepals 4, imbricate, 2-2.5 mm. long, greenish, glabrous, but ciliate on the margin. Receptacle with a close ring of distinct, cuneate glands surrounding the numerous stamens.

Prostrate and trailing on the sea cliffs (9732, 9853). The type locality is Niue Island, where it was originally collected by the Forsters, father and son, botanists of Captain Cook's second expedition. The father, J. R. Forster, described it as *Myroxylon orbiculatum* in 1776. The son, J. G. A. Forster, transferred it and made the combination *Xylosma orbiculatum* (Forster) Forster f. in 1786.

Genus **FLACOURTIA** L'Héritier

? Flacourtia rukam Zollinger and Morren, Syst. Verz, 33, 1854.

Tree, up to about 8 m. tall. Leaves simple, alternate, elliptic-ovate, crenate, up to 8 or more cm. long, more or less glossy, attenuately acuminate, petioles less than 1 cm. long.

A specimen collected in Alofi agrees well with specimens collected on Tau, Samoa (9951). A. J. Smith compared the specimens with some in the Gray Herbarium and reported them as being identical with those of the same name from the East Indies. Only sterile specimens were seen in Niue.

Family PASSIFLORACEAE

Genus **PASSIFLORA** Linnaeus

Passiflora edulis Sims, Bot. Mag. **45**: pl. 1989, 1818.

Glabrous, tendril-bearing vine. Leaves alternate, broadly ovate, deeply palmately 3-lobed, lobes serrate, sharply acute, sinuses rounded, petioles mostly about 2 cm. long with a pair of conspicuous glands near the base of the blade. Flowers axillary, about 5 cm. wide, purplish white. Fruit globose, purplish, rind hard, size of a small egg, pulp edible.

Introduced and planted at the government plantation at Fonukula (10140). English names, passion fruit, purple water lemon.

Passiflora laurifolia Linnaeus, Spec. Plant., 956, 1753.

Glabrous, woody, tendril-bearing vine. Leaves alternate, elliptic-oblong, entire, up to 20 or more cm. long and 6 cm. wide, base rounded or subcordate, apex acuminate, petioles up to 2.5 cm. long. Flowers up to 10 cm. wide, white with red spots. Fruit yellow, edible.

Frequently planted about dwellings (9954, 10177). English names, yellow granadilla, water lemon.

Passiflora maliformis Linnaeus, Spec. Plant., 956, 1753.

Glabrous, woody, tendril-bearing vine. Leaves alternate, ovate-elliptical, up to 15 or more cm. long and 8 cm. wide, base rounded or subcordate, apex acuminate, petioles 3-5

cm. long, bearing 2 glands. Flowers solitary, purplish, axillary on peduncles 5 or more cm. long. Fruit about 4 cm. long, rind hard.

Planted about dwellings, and frequent in thickets as an escape (9844).

Passiflora quadrangularis Linnaeus, Syst., ed. 10, 1248, 1759.

Robust, glabrous, tendril-bearing, herbaceous vine with 4-angled and winged stems. Leaves alternate, broadly oval-ovate, entire, up to 15 or more cm. long, pinnately veined, mucronate, petioles with several prominent glands, stipules ovate, acute, about 4 cm. long. Flowers large, axillary, purplish, fragrant. Fruit oblong, up to nearly 30 cm. long, yellowish green, rind 2 or more cm. thick, central cavity filled with numerous seeds each surrounded by a juicy edible pulp.

Extensively planted for its fruit which is a favorite. It is found frequently in thickets as an escape (9876). English name, granadilla; native names, *palatini, vine fua lalahi, tinitini.*

Passiflora samoensis Exell, Jour. Bot. 63 : 203, 1925.

Glabrous, woody, tendril-bearing vine. Leaves alternate, broadly ovate or rounded-cordate, 10 or more cm. long, palmately 3-lobed with rounded sinuses, the lobes cuspidate, petioles up to 8 or more cm. long, with a pair of glands near the base of the blade. Flowers axillary, solitary, greenish to red or yellow, calyx and corolla segments linear, gynophore about 2.5 cm. long, pedicel with 2 or 3 filiform appendages near the middle.

An attractive species seen occasionally in thickets (9701).

Family CARICACEAE

Genus **CARICA** Linnaeus

Carica Papaya Linnaeus, Spec. Plant., 1036, 1753.

Mostly unbranched, treelike plant up to 4 or more m. tall, with thick, soft-wooded stems and copious milky latex. Leaves clustered near the top, large, round in outline, deeply palmately 7 or 9 lobed, the lobes in turn acuminately toothed and lobed, petioles long. Flowers polygamous-dioecious, white or cream-colored, fragrant. Female flowers sessile, axillary. Male flowers smaller, in loose paniculate clusters on long axillary peduncles. Fruit green to yellow, of various shapes but mostly subglobose to long ovoid, up to 20 or more cm. long, flesh red-orange, 3 or more cm. thick, central cavity lined with numerous small, round, black seeds.

Common about dwellings, in thickets and along roadsides throughout the island (9810). The fleshy fruit is edible and is much relished both raw and cooked and is also fed to chickens and hogs. English name, papaya; native name, *loku.* Short fruited varieties are known as *loku fua ku* and those with long fruit as *loku fua leleva* or *loku fua magaia.*

Family BEGONIACEAE

Several varieties of begonia have been introduced and are cultivated for their ornamental foliage and flowers.

FAMILY CACTACEAE

Genus **EPIPHYLLUM** Haworth

Epiphyllum oxypetalum (DeCandolle) Haworth, Philos. Mag., 109, Aug. 1829.

Stout, climbing, spineless, flat-stemmed plant. Branches flattened, somewhat leaflike, coarsely crenate, pointed, up to 8 or more cm. wide, central rib prominent. Flowers tubular, up to 25 or more cm. long, white or sometimes pinkish outside, fragrant, opening at night; stamens very numerous.

A showy and interesting ornamental (9971). Only one specimen was seen, in a dooryard in Alofi. English name, gooseneck cactus.

FAMILY LYTHRACEAE

Genus **PEMPHIS** Forster

Pemphis acidula Forster, Charact. Gen. Plant., 68, pl. 34, 1776.

Low, sprawling, silky-pubescent shrub. Leaves opposite, lanceolate or elliptic-spatulate, subsessile, crowded, up to about 2.5 cm. long and 6 mm. wide, entire, acutish. Flowers solitary, about 15 mm. wide, petals white, membranous, axillary.

Common on rocky cliffs near the sea (9583, 10188). The wood is tough and is used for the making of dart (*tika*) heads and clubs. Native name, *gigie*.

FAMILY PUNICACEAE

Genus **PUNICA** Linnaeus

Punica Granatum Linnaeus, Spec. Plant., 472, 1753.

Shrub up to about 2 m. tall, branchlets often spinelike at tip. Leaves opposite, entire, mostly elliptic or oblong, up to 8 cm. long and 1.5 cm. wide, glabrous, base wedge shaped, apex obtuse or acutish, petiole short, winged. Flowers axillary, showy, 3-4 cm. wide, petals scarlet, stamens numerous. Fruit up to 6 or more cm. thick, very juicy, edible; rind leathery.

Introduced and cultivated for its fruit and also as an ornamental (9746). English name, pomegranate; native name, *limoni*.

FAMILY LECYTHIDACEAE

Genus **BARRINGTONIA** Forster

Barringtonia asiatica (Linnaeus) Kurz, Asiatic Soc. Beng., Jour. 45(2) : 131, 1876.

Round-topped tree up to 8 or more m. tall. Leaves alternate, up to about 30 cm. long, somewhat coriaceous, obovate, apex rounded, mostly sessile. Flowers large, calyx com-

monly 2-parted, persistent on the fruit, corolla 4-parted, white, easily deciduous, stamens numerous, pink and white, pedicels long, racemes terminal. Fruit angular, pyramid-shaped, about 8 cm. long, fibrous.

Frequent on the lower terrace near the sea (9716, 9900, 10216). The fruits are buoyant and are used as floats for fishing nets. An extract of the crushed fruit is used to stupefy fish and it was stated also to be good for sore feet. Native name, *futu*.

Barringtonia samoensis A. Gray, U. S. Expl. Exped., Bot. 1: 508, 1854.

Medium to large tree. Leaves elliptic-oblanceolate, finely serrulate, up to 22 or more cm. long and 6 cm. wide, clustered near ends of branches, pinnately veined, acuminate, petioles about 12 mm. long. Flowers early deciduous, corolla reddish, on short pedicels in racemose, terminal clusters up to 20 or more cm. long. Fruit more or less 4-sided, up to about 8 cm. long and 5 cm. thick at base.

The only specimens seen were growing in villages (9973, 10217). Native name, *falagi*.

Family COMBRETACEAE

Genus **QUISQUALIS** Linnaeus

Quisqualis indica Linnaeus, Spec. Plant., ed. 2, 556, 1762.

Vigorous, semi-shrubby or woody vine with young growth pubescent. Leaves mostly opposite, oval-oblong to subobovate, entire, essentially glabrous, up to 8 or more cm. long, abruptly acuminate, petioles up to 1 or more cm. long. Flowers fragrant, showy, sessile, in terminal, several-flowered, spike-like clusters, corolla tube slender, up to 8 cm. long, varying in color from a very light pink to dark red, often in the same cluster. Fruit angular.

Introduced ornamental (9966). English names, quisqualis, Rangoon creeper.

Genus **TERMINALIA** Linnaeus

Terminalia Catappa Linnaeus, Mantissa, Plant., 128, 1767.

Medium to large tree with whorled, horizontal branches. Leaves clustered at the ends of the branches, obovate, entire, up to 25 or more cm. long and 15 cm. wide, glabrous or brown-pubescent beneath, base tapering, apex mostly obtuse or abruptly acute, petioles short and thick. Flowers small, greenish white, in axillary, spike-like clusters near the ends of the branches. Fruit flattened, 2-edged, greenish to red drupe, about 5 cm. long, flesh thin and edible.

Common in thickets and on cliffs near the sea (9709, 9836). The trunks are used for canoe hulls. An extract of the bark is used in native medicines, specifically for children's sore mouths. English name, Indian almond; native name, *telie*.

Family MYRTACEAE

Genus **PSIDIUM** Linnaeus

? Psidium cujavillus Burman f., Fl. Ind., 114, 1768.

Shrub about 2 m. tall, young branches quadrangular, densely puberulent. Leaves opposite, elliptical-oblong, entire, mostly 4-6 cm. long and 2 cm. wide, pinnately veined, obtuse or acutish, petioles 2-4 mm. long.

I saw two or three plants of this small-leaved guava (9974), but they were sterile. The small size of the plants and leaves are in strong contrast to those of *P. Guajava,* but they may represent reduced or depauperate forms of that species. Occasional in thickets associated with *P. Guajava.* Native name, *kautoga fifine.*

Psidium Guajava Linnaeus, Spec. Plant., 470, 1753.

Vigorous shrub or small tree up to 3 or more m. tall, young branches quadrangular, pubescent. Leaves opposite, oval-elliptical or oblong, up to 12 or more cm. long, prominently pinnately veined, entire, petioles short. Flowers axillary, white, about 2.5 cm. wide. Fruit the size of a small lemon, yellow, flesh pink when ripe.

A weedy plant, probably of early introduction, now common throughout the island and one of the first to occupy newly cleared land (9650). The fruit is much relished by the natives and is commonly picked before it has an opportunity to fully ripen on the plant. The leaves are used as "ghost medicine." English name, guava; native name, *kautoga.* This larger species is also called *kautoga taane* to distinguish it from the smaller species.

Genus **EUGENIA** Linnaeus

Eugenia Brackenridgei A. Gray, U. S. Expl. Exped., Bot. 1: 521, pl. 61, 1854.

Medium to large tree. Leaves opposite, oval-elliptical, entire, thick, glossy above, finely pinnately veined, up to 11 or more cm. long and 6 cm. wide, obtuse, petioles stout, about 5 mm. or less long.

In forested areas (9816). No flowering or fruiting specimens were seen. The timber is used in house construction. Native name, *tuale.*

Eugenia clusiaefolia A. Gray, U. S. Expl. Exped., Bot. 1: 528, 1854.

Large tree. Leaves opposite, coriaceous, glossy above, oval-obovate, finely pinnately veined, up to 12 or more cm. long and 5 cm. wide, entire, obtuse, petioles short, thick.

Common in thickets and forested areas (9999). No flowering or fruiting specimens were seen. The fruit is said to be edible, and the wood is used for fuel. Native name, *kolivao tuale.*

Eugenia inophylloides A. Gray, U. S. Expl. Exped., Bot. 1: 521, 1854.

Large tree. Leaves opposite, simple, oval-elliptical, glossy above, entire, finely pinnately veined, about 10 cm. long and 5 cm. wide, bluntly acute, petioles about 1 cm. long.

In thickets and forested areas (9983). No flowering or fruiting specimens were seen. An excellent hardwood timber tree with tall, straight trunk. The wood is used in house construction and is good firewood. It splits easily and small, dried pieces are tied in bundles for use as torches for night fishing. The fruit is edible. Native names, *kafika, kafika vao.*

Eugenia malaccensis Linnaeus, Spec. Plant., 470, 1753.

Medium to large tree. Leaves opposite, oval, entire, pinnately veined, up to 18 or more cm. long and 8 cm. wide, acutish, petioles stout, up to 1 cm. long. Flowers red, in axillary, cymose clusters. Fruit obovoid, fleshy, red, one-seeded, edible.

In open forest (9706). An extract of the bark is used in native medicines as a specific for sore mouths of infants. English name, malay apple; native name, *fekakai.*

Eugenia rariflora Bentham, in Hook. Lond. Jour. Bot., 2: 221, 1843.

Low, sprawling shrub. Leaves opposite, oval-obovate, entire, more or less coriaceous, up to 4 cm. long, somewhat puberulent and paler beneath, glossy above, obtuse, petioles mostly 2 to 4 mm. long.

On rocky cliffs near the sea (10050). No flowering or fruiting specimens were seen. Native name, *liki.*

Eugenia Richii A. Gray, U. S. Expl. Exped., Bot. 1: 510, 1854.

Medium to large tree. Leaves opposite, simple, oval, subsessile, up to 15 or more cm. long and 10 cm. wide, pinnately veined, entire, acute.

Common in forested areas (9705, 9921, 10000). No flowering or fruiting specimens were seen. Fruit said to be edible. Native name, *kolivao.*

Eugenia uniflora Linnaeus, Spec. Plant., 470, 1753.

Freely branching shrub or small tree. Leaves opposite, ovate, up to 7 or more cm. long, subsessile, glossy above, entire, acute. Flowers greenish white, solitary on pedicels up to 3 or more cm. long, or in few-flowered, umbellate, axillary clusters, fragrant, about 12 mm. wide. Fruit 1 or more cm. thick, prominently ribbed, red when mature, fleshy, one-seeded, edible.

Occasional about dwellings and in thickets near villages (9572, 9982). Planted for its edible fruit and attractive compact growth and glossy leaves. English name, Surinam cherry; native names, *kafika, kafika papalagi.*

Family ARALIACEAE

Genus **POLYSCIAS** Forster

Polyscias Guilfoylei (Bull) L. H. Bailey, Rhodora **18**: 153, 1916.

Shrub or small tree up to 3 or more m. tall, with abruptly ascending branches. Leaves alternate, odd-pinnate, green with white margins, leaflets coarsely sharp-toothed, mostly 5 or 7, the terminal leaflet largest, petiole clasping stem. Flowers and fruit rare, in terminal, racemose clusters.

Introduced ornamental, commonly planted in hedges (9933). It has become naturalized and is frequent in thickets and along roadsides. Native name, *tanetane.*

Polyscias Guilfoylei (Bull) L. H. Bailey var. **laciniata** (Hort.) L. H. Bailey, Rhodora 18: 153, 1916.

Similar in habit to *P. Guilfoylei* excepting the leaflets which are divided into broad or narrowly filiform, serrated segments which are green or with some margins white.

Introduced ornamental used as a hedge plant (10002).

Polyscias Guilfoylei (Bull) L. H. Bailey variety?

Similar in habit to *P. Guilfoylei* excepting the leaflets which are rounded, deeply divided, and coarsely toothed.

Introduced ornamental (10051).

Polyscias multijuga (A. Gray) Harms, in Engler and Prantl, Nat. Pflanzenfam. III, 8: 45, 1894.

Small tree with thick, pithy stems and branches. Leaves pinnate, petioles winged toward the base and clasping, leaflets mostly 7 or more, oval-oblong, entire, up to 20 or more cm. long and 8 cm. wide, acuminate, petiolules up to about 3 cm. long. Flowers very small, numerous, in large, branching clusters up to 60 cm. long.

Common in thickets and forested areas (9717). The large leaves are used as cover for native ovens and as fodder. Native names, *tanetane, tanetane vao.*

Family UMBELLIFERAE

Genus **CENTELLA** Linnaeus

Centella asiatica (Linnaeus) Urban, in Martius, Fl. Brasil. 11(1): 287, 1879.

Low, prostrate, silky-hairy herb, widely spreading by slender, runnerlike stems. Leaves 2-4 cm. wide, orbicular-ovate, crenately toothed, obtuse, petioles long. Flowers very small, white, in axillary, few-flowered, headlike umbels. Fruit round, compressed ribbed.

Common in plantations and waste areas and considered especially obnoxious because of the difficulty of its eradication (9648). Parts are used in the preparation of native medicines. Native name, *tonu.*

Genus **APIUM** Linnaeus

Apium leptophyllum (Persoon) F. Mueller, ex Benth., Fl. Austral. 3: 372, 1866.

Erect, glabrous herb. Leaves alternate, divided into numerous, filiform divisions. Flowers minute, white, in terminal or leaf-opposed, few-flowered umbels. Fruit ovate, compressed, ribbed, very small.

Common roadside weed (9655). The flowers and seeds are used to scent oil. Native names, *taletale, taletale elo, tekule.*

Genus **FOENICULUM** Adanson

Foeniculum vulgare Gaertner, Fruct. et Semin. 1 : 105, pl. 23, fig. 5, 1788.

Smooth, erect, branching herb with aromatic foliage. Leaves 3-4-pinnate, the ultimate divisions filiform, petioles broad and clasping. Flowers small, yellow, in compound, umbellate clusters, each umbel usually made up of 15 or more rays, each ray bearing a smaller umbel of 10 or more flowers.

Occasional roadside weed (10116). English name, fennel; native name, *taletale.*

The parsnip (*Pastinaca sativa* Linnaeus), parsley (*Petroselinum hortense* Hoffman) and the carrot (*Daucus carota* Linnaeus variety *sativa* DeCandolle) are sparingly cultivated in gardens.

Family PLUMBAGINACEAE

Genus **PLUMBAGO** Linnaeus

Plumbago auriculata Lamarck, Encycl. Méth. 2 : 270, 1786.

Low shrub. Leaves alternate, oval-oblong, entire, base cuneate, apex rounded or somewhat acute, short branches with small leaves common in the leaf axils. Flowers on very short pedicels, in terminal racemes, upper half of calyx with numerous, stiff, glandular-viscid hairs, corolla pale blue, about 2.5 cm. long.

Introduced ornamental (9959). English name, blue plumbago.

Family SAPOTACEAE

Genus **PLANCHONELLA** Pierre

Planchonella Grayana St. John, B. P. Bishop Mus., Bull. **120** : 38, 1934.

Medium-sized tree. Leaves alternate or sometimes subopposite, oval-obovate, coriaceous, entire, up to 18 or more cm. long and 8 cm. wide, veins pinnate, obtuse, petioles stout, about 3 cm. long, narrowly two-winged. Flowers small, on pedicels about 1 cm. long, numerous in axillary, fasciculate clusters.

In thickets near the shore (9830). Used for firewood. Native name, *kalaka.*

Planchonella samoensis (Reinecke) H. J. Lam, Jard. Bot. Buitenzorg, Bull. III, **7** : 218, fig. 10, 1925.

Large tree. Leaves alternate, oblong-obovate, prominently pinnately veined, up to 30 or more cm. long and 12 or more cm. wide, entire, obtuse or abruptly pointed, petioles up to 5 cm. long.

In thickets and forested areas (9919, 10201). Not seen in flower or fruiting stage. Native name, *mafoa.*

Planchonella species.

Medium to large tree. Leaves oval-subobovate, alternate, entire, veins pinnate, up to 13 cm. long and 7 cm. wide, abruptly pointed, petioles mostly 2-3 cm. long. Flowers small, on pedicels about 1 cm. long, in many-flowered, axillary, fasciculate clusters.

In thicket near Alofi (10001). Native name, *kanumea.*

Specimens were obtained from a small tree about 4 meters tall, growing in a thicket on the upper terrace about 1 mile east of Alofi (10096). Because of the sterile condition, it is impossible to make positive identification of the material although it may possibly be referable to the Sapotaceae. The wood was said by the natives to be strong and useful in the making of clubs and other implements. Native name, *oluolu.*

Family EBENACEAE

Genus **DIOSPYROS** Linnaeus

? Diospyros ellipticifolia (Stokes) Bakhuizen, Gard. Bull. Straits Settlem. **7**: 162, 1913.

Tree about 4 m. tall. Leaves elliptical or subobovate, subcoriaceous, glossy, up to 12 or more cm. long and 5.5 cm. wide, entire, obtuse or subacute, petioles stout, about 5 mm. long.

In forested areas (10104). Not collected in the flowering or fruiting stage. Fruit said to be edible. English name, persimmon; native names, *kieto, kanumea uli.*

? Diospyros samoensis A. Gray, Am. Acad. Arts Sci., Proc. **5**: 326, 1862.

Tree up to 10 or more m. tall. Leaves coriaceous, glossy, elliptic-ovate, entire, up to 9 cm. long, attenuate, acute, petioles mostly less than 1 cm. long, stout. Flowers in small, axillary clusters, corolla fleshy, cream colored.

In forested areas (10064). Fruit not seen. The very hard, ebony-like heart wood of decaying logs is used for barbed spear heads. A concoction of the fruit is used to stupefy fish. English name, persimmon; native name, *kieto.*

Family OLEACEAE

Genus **LINOCIERA** Swartz

Linociera pauciflora C. B. Clarke, in Hook. f., Fl. Brit. Ind. **3**: 609, 1882.

Tree up to about 8 m. tall. Leaves opposite or essentially so, elliptic-oblong, up to about 15 cm. long and 6 cm. wide, glabrous, entire, pinnately veined with prominent midrib, base cuneate, apex attenuate, acute, petioles up to about 1.5 cm. long. Flowers small, white, 4-parted, very fragrant, in small, axillary and terminal, lilac-like clusters.

Frequent in thickets and open forests (9647, 9809, 9835). Used for firewood. Native name, *hooto.*

Genus **JASMINUM** Linnaeus

Jasminum didymum Forster f., Fl. Ins. Austr., Prodr., 3, 1786.

Woody, vinelike shrub. Leaves opposite, 3-parted, leaflets ovate, entire, 3-veined from near the base, pinnately veined above, terminal leaflet up to 7 or more cm. long and 5 cm. wide, lateral leaflets somewhat smaller, obtuse or acute. Flowers white, about 12 mm. long. very fragrant, in branching, many-flowered, axillary or terminal, cymose clusters.

Scrambling over rocks or climbing in thickets (9734, 10040, 10215). The slender stems are used to make fish baskets. Native name, *kanai tea.*

Jasminum grandiflorum Linnaeus, Spec. Plant., ed. 2, 9, 1762.

Woody, glabrous, vinelike shrub with longitudinally ridged stems. Leaves opposite, pinnate, leaflets 5 or 7, when 5, the terminal leaflet often lobed and mitten-shaped, oval-ovate, obtuse, cuspidate, the terminal leaflet elliptic-lancolate. Flowers very fragrant, in open, terminal and axillary cymes, corolla white, tubular, up to 2.5 cm. long, with lobes nearly as long.

Introduced ornamental (9818). English name, jasmine.

Jasminum Sambac (Linnaeus) Aiton, Hort. Kew, ed. 1, 1 : 8, 1789.

Somewhat scandent shrub with finely pubescent branches. Leaves opposite, oval-ovate, up to about 8 cm. long and 5 cm. wide, pinnately veined, entire, acute, petioles about 5 mm. long, pubescent. Flowers fragrant, in few-flowered, axillary clusters, corolla white, tubular, about 15 mm. long.

Introduced ornamental (9942). Sometimes grown as a hedge. English name, Arabian jasmine.

Jasminum simplicifolium Forster f., Fl. Ins. Austr., Prodr., 3, 1786.

Trailing or climbing, shrublike plant with many slender, glabrous branches. Leaves simple, opposite, ovate, entire, up to about 8 cm. long and 3 cm. wide, acute, petioles up to about 1 cm. long. Flowers white, fragrant, about 2 cm. wide, in axillary, branching, cymose clusters.

Occasional in thickets or scrambling over rocks (9992). Native name, *kanai elo.*

Family LOGANIACEAE

Genus **GENIOSTOMA** Forster

Geniostoma rupestre Forster, Charact. Gen. Plant., 24, pl. 12, 1776.

Shrub up to 2 or more m. tall. Leaves opposite, elliptic, entire, up to 8 cm, long and 3 cm. wide, somewhat crowded towards the ends of the branches, obtuse or acutish, petioles up to 6 mm. long. Flowers small, white, in small, branching, axillary, cymose clusters. Fruit oval, pointed, about 5 mm. long.

Frequent in thickets (9625, 9696, 10092, 10152). An extract of the bark is used in native medicines for kidney or bladder disorders and also for diarrhea. The fruit is used to scent oil and is made into leis. Native names, *tete, teatea.*

Genus **FAGRAEA** Thunberg

Fagraea Berteriana A. Gray, Jour. Linn. Soc. 1 : 98, 1857.

Medium to large tree. Leaves opposite, oval-obovate, thick, up to 15 or more cm. long and 8 or more cm. wide, obtuse, petioles up to 2.5 cm. long. Flowers very fragrant, nearly 5 cm. wide, in axillary, cymose clusters, corolla at first white, later turning yellow, tubular, up to 5 cm. long, lobes spreading. Fruit ellipsoidal, about 3 cm. long, bright red when ripe.

Common in thickets and forested areas (9611, 9761). The fragrant flowers are used in the making of garlands and for scenting oil. The wood is strong and is put to a number of uses. The wild pigeons (*lupe*) eat the ripe fruit. Native name, *pua.*

Family APOCYNACEAE

Genus **ALLAMANDA** Linnaeus

Allamanda cathartica Linnaeus var. **Hendersonii** (Bull) Bailey and Rafill, Standard Cycl. Hort. 1 : 247, 1914.

Woody, vinelike shrub. Leaves opposite or in whorls of 3 or 4, elliptical to subobovate, entire, thick and somewhat coriaceous, midrib prominent, abruptly acuminate, petioles very short. Flowers in axillary and terminal, racemose clusters, corolla yellow, trumpet-shaped, up to 7 or more cm. long with broad, spreading, rounded lobes. Fruit a prickly capsule.

Introduced and cultivated for its large and handsome flowers (9937). It grows easily and is considered one of the best ornamental vines.

Genus **PLUMERIA** Linnaeus

Plumeria acuminata Aiton, Hort. Kew, ed. 2, 2 : 70, 1811.

Small, soft-wooded, glabrous tree with thick, spreading branches. Leaves alternate, clustered near the ends of the branches, elliptic-oblong, up to 40 or more cm. long and 6-8 cm. wide, pinnately veined, midrib prominent, lateral veins loop-connected near the margin, glabrous, acuminate-cuspidate, petioles stout, up to 6 or more cm. long. Flowers very fragrant, in terminal, cymose clusters, corolla cream, or yellowish white, salverform, lobes obovate, longer than tube.

Introduced ornamental (9833, 10186). Frequent in villages and also naturalized along roadsides and in thickets. The flowers are favorites for the making of garlands. English name, frangipani; native names, *tiale, tiale toga.*

Plumeria rubra Linnaeus, Spec. Plant., 209, 1753.

Shrub or small tree similar to *P. acuminata* but with pink or red flowers.

Introduced ornamental. English name, frangipani; native name, *tiale kula.*

Genus **LOCHNERA** Reichenbach

Lochnera rosea (Linnaeus) Reichenbach, Conspect., 134, 1828.

Herbaceous, finely pubescent plant with somewhat woody base, mostly 30-60 cm. tall. Leaves opposite, oblong to obovate, apex rounded, mucronate, petioles about 1 cm. or less long. Flowers solitary or in pairs, axillary, corolla white or rose, tube about 2.5 cm. long. Follicles many-seeded.

Introduced ornamental (9934). Common about dwellings and also along roadsides and in waste areas. English name, periwinkle.

Genus **ALYXIA** R. Brown

Alyxia stellata (Forster) Roemer and Schultes, Syst. Veg. 4: 439, 1819.

Vinelike shrub with long, slender branches. Leaves opposite or more commonly in whorls of three, elliptical, subsessile, midrib prominent, lateral veins inconspicuous, acute at both ends. Flowers yellow, up to 7 or more mm. long, in axillary, cymose clusters. Fruit about 10 or more mm. long, ellipsoidal or ovoid, fleshy, 1-seeded.

Frequent in thickets (9624, 9665, 9681, 9775). All parts of the plant are aromatic and are used for garlands and for house decoration. The wood is hard and was used anciently for making fishhooks and arrow points. The black, fleshy fruit is said to be edible and used in times of food shortage. There is considerable variation in the size and shape of the leaves and it is possible that several forms are represented on the island. Native name, *maile*.

Genus **OCHROSIA** Jussieu

Ochrosia parviflora (Forster) Henslow, Ann. Nat. Hist. 1: 345, 1838.

Small to medium-sized tree. Leaves in whorls of 3 or 4, obovate, 15 or more cm. long, somewhat coriaceous, smooth, finely pinnately veined, entire, obtuse. Flowers in terminal and axillary cymose clusters, corolla salverform, creamy white. Fruit in pairs, about 5 cm. long, red, fleshy.

In thickets near the sea (9719). The trunk is sometimes used for house timbers, and weapons are made from the wood. Nose flutes are made from the hollow branches. The fruit is edible. Native name, *pao*.

The type of this species was collected on Niue by Forster and was published by Forster, the son, as *Cerbera parviflora* Forst. f. A later synonym is *Cerbera elliptica* Labill.

Genus **THEVETIA** Linnaeus

Thevetia peruviana (Persoon) Merrill, Philippine Jour. Sci. 9: 130, 1914.

Small to medium-sized, glabrous tree. Leaves numerous, crowded, alternate, linear-lanceolate, glossy, subsessile, entire, mostly 12-15 cm. long, acute. Flowers mildly fragrant, in few-flowered, terminal, cymose clusters, corolla yellow, funnel-form, about 6 cm. long. Fruit subspherical.

Introduced ornamental (9905). The fruit is claimed to be poisonous. English name, trumpet flower.

Genus **NERIUM** Linnaeus

Nerium oleander Linnaeus, Spec. Plant., 209, 1753.

Shrub or small tree with young growth finely pubescent. Leaves commonly in whorls of 3, somewhat coriaceous, narrowly oblong-lanceolate, midrib prominent, lateral veins numerous, fine, up to 10 or more cm. long, sharply acute. Flowers showy, in terminal, cymose clusters. Follicles elongated.

Introduced ornamental, naturalized in thickets (9781). The flowers vary from white to red, but only red-flowered specimens were seen. English name, oleander; native name, *talona.*

Family ASCLEPIADACEAE

Genus **STEPHANOTIS** Thouars

Stephanotis floribunda Brongniart, Ann. Sci. Nat. II, 7: 30, 1837.

Twining, vinelike plant. Leaves opposite, thick and somewhat coriaceous, oval-elliptical, up to 8 cm. or more long, abruptly acute. Flowers fragrant, in axillary, umbellate clusters, corolla tubular, waxy white, up to 3 or more cm. long. Follicles fleshy, about 10 cm. long.

Introduced ornamental. English name, Madagascar jasmine.

Family CONVOLVULACEAE

Genus **MERREMIA** Dennstedt

Merremia peltata (Linnaeus) Merrill, Interpr. Herb. Amboin., 441, 1917.

Coarse, semi-woody, twining, glabrous vine. Leaves alternate, ovate-peltate, up to 20 or more cm. long and nearly as wide, margin entire or somewhat undulate, veins prominent and often red, acute to attenuately acuminate. Flowers white.

Common in thickets where it covers trees and shrubs with a vigorous growth (9769, 9850, 10018). Native names, *fue, fue vao, fue kula.*

Genus **IPOMOEA** Linnaeus

Ipomoea batatas (Linnaeus) Poiret, in Lamarck, Encycl. 6:14, 1804.

Smooth, creeping, herbaceous vine. Leaves alternate, deltoid-ovate, variously lobed but commonly with two prominent basal lobes, acute, petioles slender and longer than the blades. Flowers purplish red.

Cultivated for the edible tubers (9667). Niue is noted for the fine quality of tubers produced, some of which are exported to the New Zealand markets.

English name, sweet potato; native names, *timala, kumara.* The following varieties are distinguished by the natives:

Timala kula: tubers red. This is the variety which is mostly exported.
Timala niukini: introduced from New Guinea.
Timala norfoko: introduced from Norfolk Island.
Timala talopaku: flesh yellow or greenish yellow.
Timala tea: flesh white. Said to have been the variety first introduced on the island.

Ipomoea gracilis R. Brown, Prodr., 484, 1810.

Glabrous, twining, herbaceous vine. Leaves alternate, ovate, deeply cordate, entire, acute or obtusish, on slender petioles up to about 7 cm. long. Flowers mostly 3-4 cm. long, axillary, in several-flowered clusters, or more commonly solitary, pedicels 2-3 cm. long, sepals oblong to ovate, mucronate, corolla flesh-pink or rose, with a darker center.

Frequent in thickets or trailing over rocks (9581, 10025, 10234). An infusion of the branches in cave water was originally used for treating tuberculosis. English name, wild morning-glory; native name, *tefifi.*

Ipomoea grandiflora (Choisy) Hallier, Herb. Boissier, Bull. **5**: 1013, 1897.

Vigorous, twining, glabrous, herbaceous vine. Leaves alternate, cordate-ovate, entire, up to 12 or more cm. long and nearly as wide, acuminate, petioles about as long as the blade. Flowers white, nocturnal, fragrant, corolla tube up to 10 cm. long, peduncles long, axillary, commonly 1-flowered.

Frequent in thickets (9635, 9843, 10005). Parts of the plant are used in preparing a native medicine for the treatment of tuberculosis. Native name, *fue tea.*

Ipomoea Quamoclit Linnaeus, Spec. Plant., 159, 1753.

Slender, glabrous, twining, herbaceous vine. Leaves alternate, deeply pinnately divided into narrowly filiform lobes. Peduncles mostly longer than the leaves, few-flowered, corolla funnelform, scarlet, up to about 3 cm. long.

Introduced ornamental (9950). English name, cypress vine.

Ipomoea tuberosa Linnaeus, Spec. Plant., 160, 1753.

Vigorous, twining, glabrous vine. Leaves alternate, cordate, round in outline, deeply divided into 7 acuminate lobes. Flowers orange yellow. Capsules large, subglobose, surrounded by the persistent, firm, calyx-like segments which open petal-like.

Introduced and cultivated for its attractive seed pods which are used as floral decorations (9967). English name, wood rose.

Ipomoea species.

Slender, branching, somewhat hairy, twining vine. Leaves alternate, 3- to 5-hastately lobed, acuminate.

Collected only once, in a waste area near Hikutivake (10243). Flowers not seen. Native name, *tefifi tea.*

FAMILY POLEMONIACEAE

Genus **PHLOX** Linnaeus

Phlox paniculata Linnaeus, Spec. Plant., 151, 1753.

Erect, herbaceous plant, up to 1 or more m. tall. Leaves more or less lanceolate, up to 6 or 8 cm. long, acute to acuminate. Flowers of various colors, about 2.5 cm. wide and 4 cm. long, numerous, in a pyramidal, paniculate, terminal cluster.

Introduced ornamental. English name, phlox.

FAMILY BORAGINACEAE

Genus **CORDIA** Linnaeus

Cordia subcordata Lamarck, Tabl. Encycl. 1: 421, 1791.

Small to large tree with spreading branches, up to 8 or more m. tall. Leaves ovate, alternate, up to 15 or more cm. long, entire, acute, petioles up to 60 or more cm. long. Flowers orange, in few-flowered, axillary or terminal, cymose clusters, corolla funnel-shaped, about 3-5 cm. long. Fruit ovoid, 2-3 cm. long, more or less fleshy, 1-seeded.

Frequent on cliffs and in thickets near the shore (9730, 10123). The wood is hard and is used for hat blocks. Native name, *motou*.

Genus **MESSERSCHMIDIA** Hebenstreit

Messerschmidia argentea (Linnaeus f.) Johnston, Arnold Arb., Jour. **16**: 164, 1935.

Widely branching shrub or small tree, up to 4 or more m. tall, young growth brittle, densely whitish- or buff-pubescent. Leaves alternate, clustered near the ends of the branches, obovate to spatulate, entire, wedge-shaped at the base, apex obtuse, densely silvery hairy. Flowers numerous, small, white, sessile, in large, branching, long-pedunculate, scorpioid cymose clusters. Fruit round, 4-parted, about 7 mm. in diameter.

Common on rocky cliffs near the sea (9737, 10190). The flowers and leaves are used in preparing native medicines for the reduction of swellings, and the wood is used for fuel. English name, velvet leaf; native names, *toihune, toihune taane*.

Genus **HELIOTROPIUM** Linnaeus

Heliotropium anomalum Hooker and Arnott, Bot. Beechey, 66, 1841.

Low, nearly prostrate, densely white-pubescent, somewhat woody plant. Leaves linear to spatulate, crowded, about 2.5 cm. long and 3 mm. wide, alternate. Flowers small, in many-flowered, long-pedunculate, terminal, cymose clusters, corolla white, funnel-shaped.

Common on exposed cliffs near the sea (9592, 10189). Native name, *toihune fifine*.

Lithospermum incanum Forster f. (Fl. Ins. Austral., Prodr. 12, 1786; not of Ruiz and Pavon, Flor. Peruv. 2: 2, pl. 108, 1799 from Ecuador) may be, fide Ind. Kew, the same as *Heliotropium anomalum* Hooker and Arnott. It was, however, described as having five separate nutlets. The type should be examined to verify this feature. If they should prove to be the same, Forster's name is the older and valid one for this species.

Family VERBENACEAE

Genus **VERBENA** Linnaeus

Verbena officinalis Linnaeus, Spec. Plant., 20, 1753.

Low, sprawling, much branched, weedy herbaceous plant. Leaves opposite, subsessile or on winged petioles, deeply toothed to pinnatifid, up to 3 or more cm. long. Flowers lavender, in long, slender, axillary and terminal spikes.

Occasional along roadsides and in waste areas (9645, 10145). Native name, *tialu*.

Genus **STACHYTARPHETA** Vahl

Stachytarpheta indica Vahl, Enum. 1: 206, 1804.

Stems woody below, herbaceous above, up to 1 m. tall, widely branching. Leaves opposite, oval-ovate, toothed, smooth or somewhat hairy, acute. Flowers numerous, deep blue, sessile, in furrowlike depressions in a spikelike rachis up to 60 cm. long, opening successively from the base upward and easily deciduous.

In waste areas, but as yet not common (10024). Native name, *motofu*.

Genus **TECTONA** Linnaeus f.

Tectona grandis Linnaeus f., Suppl., 151, 1781.

Medium to large tree, the young branches 4-sided, brown-scurfy. Leaves opposite, oval, entire, scabrous above, densely brown-hairy beneath, up to 35 or more cm. long and 30 cm. wide, veiny, acute, decurrent forming winged petioles.

A few trees have been introduced from Samoa and are planted at the government plantation at Fonukula where they appear to be growing well (9885). English name, teak.

Genus **PREMNA** Linnaeus

Premna corymbosa (Burman f.) Rottler and Willdenow, Gesell. Nat. Freunde Neue Schr. 4: 187, 1803.

Shrub about 1 m. tall, young growth puberulent. Leaves opposite, oblong-ovate, up to 8 or more cm. long and 5 cm. wide, crenate-serrate, base obtuse, apex abruptly acute, petiole mostly less than 1 cm. long. Flowers small, greenish, in terminal, branching clusters.

In thickets (9669). Native name, *aloalo*.

Premna taitensis Schauer, DC, Prodr. **11**: 638, 1847.

Shrub or small tree with puberulent branches. Leaves opposite, entire or with slightly wavy margins, rounded to oblong-ovate, up to about 10 cm. long and 8 cm. wide, base cordate, apex abruptly pointed or obtuse, petioles up to 2.5 cm. long. Flowers very small, greenish white, in branching, many-flowered, terminal clusters.

Common in thickets or trailing over rocky cliffs near the sea (9663, 9815, 10132). The flowers are used in scenting oils and the leaves are used in preparing native medicines used for tuberculosis. Native name, *aloalo.*

Genus **VITEX** Linnaeus

Vitex negundo Linnaeus variety **bicolor** (Willdenow) H. Lam, Verb. Malay Arch., 191, 1919.

Shrub or small tree. Leaves opposite, 3- or 5-palmately compound, leaflets elliptic-lanceolate, entire, dark green above, much lighter beneath, lower pair of leaflets smaller, sessile, lower surface of leaflets, petioles and young stems densely tomentose. Flowers lilac or lavender, in large, branching, axillary or terminal clusters. Fruit small, round, black.

Occasional in thickets (10041). Native name, *lala tea.*

Genus **CLERODENDRUM** Linnaeus

Clerodendrum fallax Lindley, Bot. Register, sub. pl. 19, 1844.

Hairy, herbaceous or sub-shrubby plant up to 1 or more m. tall. Leaves opposite, ovate-cordate, pubescent, toothed, palmately veined, sharply acute, petioles up to 20 cm. or more long. Flowers about 2.5 cm. long, in large, terminal, cymose clusters. Flowers and all parts of the inflorescence scarlet.

Occasional in thickets and waste areas (9799). A fine, ornamental species though rarely planted about dwellings.

Clerodendrum inerme (Linnaeus) Gaertner, Fruct. et Semin. Plant. **1**: 271, 1788.

Trailing or scrambling, glabrous shrub. Leaves opposite, lanceolate-elliptical, up to about 10 cm. long and nearly 5 cm. wide, pinnately veined, acute, petioles 1-2 cm. long, leaf scars prominent and somewhat raised. Flowers in few-flowered, axillary, cymose clusters on peduncles up to about 2 cm. long, corolla slenderly tubular, up to about 3 cm. long, white, stamens purple, exserted.

Common on sea cliffs (9733, 9814, 10042, 10218). The bark is used to make baskets in which arrowroot is prepared and parts are used in preparing native medicines. Native names, *koli, kakoli.*

Clerodendrum Thompsonae Balfour, Edinb. New Philosoph. Jour., II, **15**: 233, 1862.

Somewhat shrubby or vinelike, young branches puberulent. Leaves opposite, elliptic-ovate, acuminate. Flowers in axillary, cymose clusters near the ends of the branches. Calyx large, greenish white, corolla bright red.

Introduced ornamental (10138). The contrast in colors between the calyx and the corolla is very striking and attractive.

Family LABIATAE

Genus **TEUCRIUM** Linnaeus

? Teucrium inflatum Swartz, Veg. Ind. Occ., Prodr., 88, 1788.

Erect, square-stemmed, densely pubescent herb. Leaves opposite, ovate-lanceolate, serrate, densely pubescent, up to 8 or more cm. long and 2.5 cm. wide, acuminate. Flowers pale lavender, short pedicellate, in few-flowered whorls in narrow, terminal and axillary, spike-like clusters, calyx densely pubescent, somewhat inflated.

Occasional along roadsides (10075). Native name, *hogohogo*.

Genus **LEUCAS** R. Brown

Leucas flaccida R. Brown, Fl. Nov. Holl., Prodr., 505, 1810.

Herbaceous or slightly woody plant, up to about 60 cm. tall, branching from the base, finely retrorsely pubescent. Leaves opposite, elliptic-ovate, crenate, up to 2.5 or more cm. long, densely pubescent, obtuse or acutish, petioles about 7 mm. long. Flowers small, white, subsessile, in dense axillary clusters.

Along roadsides and in waste areas (10070). Native name, *pupu elo*.

Genus **LEONORUS** Linnaeus

Leonorus sibiricus Linnaeus, Spec. Plant., 584, 1753.

Square-stemmed, branching, pubescent herb, up to 60 or more cm. tall. Leaves opposite, deeply divided into lanceolate, toothed lobes, long petiolate. Flowers about 12 mm. long, red or purplish, sessile, numerous, in compact, whorled, axillary clusters, calyx lobes aristate-tipped.

Occasional along roadsides and in waste areas (9683). English name, motherwort.

Genus **SALVIA** Linnaeus

Salvia occidentalis Swartz, Veg. Ind. Occ., Prodr., 14, 1788.

Erect to spreading or subdecumbent, more or less pubescent herb, with slight swellings a few millimeters above each node. Leaves opposite, ovate, serrate, up to 4 cm. long and 2.5 cm. wide, acute, petioles up to 2 cm. long. Flowers blue, in terminal and axillary, spike-like, racemose clusters.

Roadside weed (10011). English name, West Indian sage; native name, *pupu elo*.

Salvia coccinea Jussieu, Murray, in Comm. Soc. R. Sci. Gotting. **1**: 86, 1778.

Freely branching, hairy herb, up to about 60 cm. tall. Leaves ovate, about 2.5 cm. long, opposite, margins shallowly crenate, acute, petioles slender. Flowers bright red or

pink, pedicellate, in whorls in interrupted terminal and axillary racemes, corolla puberulent, about twice as long as the calyx.

Introduced but now naturalized and common as a roadside weed (9640, 9641). Some of the plants have scarlet flowers whereas others have pink ones with few, if any, intermediate shades of color. Native name, *pupu elo.*

Genus **POGOSTEMON** Desfontaines

Pogostemon nepetoides Stapf, Kew Bull., 116, 1908.

Low, densely pubescent, shrublike plant. Leaves opposite, ovate, coarsely toothed, finely pubescent on both surfaces, up to 12 or more cm. long and 9 cm. wide, acute, petioles up to 5 or more cm. long.

Occasional about dwellings (9981). No flowering or fruiting specimens were seen. Native name, *patiole.*

Genus **COLEUS** Loureiro

Coleus Blumei Bentham, Labiat. Gen. Spec., 56, 1832.

Erect, tender, square-stemmed, brown-pubescent herb, up to about 1 m. tall. Leaves opposite, ovate, crenate, up to 15 cm. long, acute, often dark red above, red and green beneath, petioles long and slender. Flowers light blue, subsessile, in whorls on an elongated terminal spike.

Forming dense patches occasionally along roadsides (9913). Decorative both in foliage and in flower. English name, coleus; native name, *televete.*

Genus **OCIMUM** Linnaeus

Ocimum Basilicum Linnaeus, Spec. Plant., 597, 1753.

Freely branching, square-stemmed, pubescent, aromatic herb, up to 60 or more cm. tall. Leaves opposite, smooth, oval-ovate, shallowly and finely toothed, minutely punctate, acute. Flowers short-pedicellate, nodding, in interrupted terminal spikes, calyx bilabiate, purplish, membranous, veiny, upper lip suborbicular, acute, lower lip aristate, corolla white or essentially so.

Frequently cultivated by the natives for the fragrant leaves and flowers which are used for ornamentation, food flavoring, and scenting oil (9980, 10022, 10049, 10176). English name, basil; native names, *momili, momili manogi, momili elo.*

Ocimum sanctum Linnaeus, Mantissa Plant., 85, 1767.

Freely branching, pubescent herb. Leaves opposite, elliptic-obovate, commonly 2-3 cm. long, acutish, petioles up to 1.5 cm. long. Flowers short pedicellate, verticillate, in elongated, interrupted terminal and axillary racemose clusters, up to 12 or more cm. long, calyx bilabiate, membranous, veiny, upper lip suborbicular, lower lip aristate-toothed.

About dwellings (9720). Probably used the same as *O. Basilicum.* Native name, *momili elo.*

FAMILY SOLANACEAE

Genus **PHYSALIS** Linnaeus

Physalis minima Linnaeus, Spec. Plant., 183, 1753.

Low, much branched, somewhat sprawling herb. Leaves mostly alternate, oval-ovate, 2-6 cm. long, margin entire or somewhat wavy, acute, petioles long, slender. Flowers axillary, yellow with a darker center. Fruit berry-like, enclosed in a papery, inflated, bag-like calyx.

Occasional weed along roadsides, in plantations and waste areas (9745, 10101). English name, ground cherry; native name, *manini.*

Physalis peruviana Linnaeus, Spec. Plant., ed. 2, 1679, 1763.

Widely branching, pubescent herb, up to 50 or more cm. tall. Leaves alternate, ovate, rounded or cordate at the base, apex acuminate, irregularly sinuate-toothed. Flowers axillary, yellow with brownish-purple center. Berry yellow, many seeded, enclosed in a veiny, inflated, parchment-like case about 3 cm. in diameter.

Occasional in waste areas and plantations (9759, 10088). The fruit is edible. English name, cape gooseberry; native names, *manini, manini fua lalahi.*

Genus **CAPSICUM** Linnaeus

Capsicum frutescens Linnaeus, Spec. Plant., 189, 1753.

Densely branching, sub-shrubby plant up to about 1.5 m. tall. Leaves alternate, ovate-elliptical, smooth or slightly pubescent, entire, acuminate, petioles mostly 1-2 cm. long. Flowers small, white, axillary, long-pedicellate. Fruit ovoid, about 2.5 cm. long, bright red when ripe, very pungent.

Introduced but now established and occasional in thickets and cut-over areas (9631, 10026). When in fruit, the plant is very attractive. In Samoa one or more of the ripe fruits are macerated and added to *kava* to increase its peppery taste. Native names, *polo miti, polo magiho.*

Genus **CYPHOMANDRA** Sendtner

Cyphomandra betacea Sendtner, Flora 28: 172, 1845.

Shrub or small, half-woody, treelike plant, up to 2 or more m. tall. Leaves ovate-cordate, simple, entire, up to 30 cm. long, pubescent, abruptly pointed. Flowers up to 12 mm. wide, pinkish-white, fragrant. Fruit purplish, about 5 cm. long, egg-shaped, edible.

Not common. English name, tree tomato.

Genus **SOLANUM** Linnaeus

Solanum album Loureiro, Fl. Cochinch., 129, 1790.

Leaves alternate, up to 20 or more cm. long and 15 cm. wide, margins repand, densely stellate-tomentose, base cordate, apex acute, petioles up to 5 cm. long.

Occasional as a weed in plantations (10221). Only sterile plants were found. The fruit was said to be edible. Native name, *lokumaka.*

Solanum nigrum Linnaeus, Spec. Plant., 186, 1753.

Glabrous or slightly pubescent, branching herb, up to about 80 cm. tall. Leaves alternate, elliptic-ovate, entire or somewhat sinuate, acute, petioles mostly 1-2 cm. long. Flowers small, white, in long-stalked, umbellate clusters. Berry small, globose, black when ripe.

A common weed in plantations and waste areas (9632). The fruit is edible and the roots may be eaten during periods of food shortage. English name, black nightshade; native name, *polo kai.*

Solanum repandum Forster f., Fl. Ins. Austr., Prodr., 18, 1786.

Somewhat shrubby, branching plant, up to about 1 m. tall. Leaves ovate, up to 20 or more cm. long, pubescent, margin repand, petioles up to 10 or more cm. long. Flowers white, pubescent. Fruit ellipsoidal.

The only specimen known from Niue was collected by Smith in 1901 and is now in the Auckland Museum herbarium. Native name, *lukumoka.*

Solanum uporo Dunal, DC Prodr. 13 : 138, 1852.

Somewhat sprawling shrub about 1-1.5 m. tall. Leaves alternate, ovate, margin somewhat sinuate, lower veins, petioles and young stems stellate-scurfy, acute to acuminate. Fruit fleshy, orange red, 2.5 or more cm. in diameter.

Occasional in thickets (10039). The fruits are used to make garlands. Native name, *polo iti.*

Genus **DATURA** Linnaeus

Datura fastuosa Linnaeus, Syst., ed. 10, 932, 1759.

Coarse, branching, subwoody plant, up to 1 or more m. tall. Leaves ovate to lanceolate, margin coarsely sinuate toothed, up to 15 or more cm. long, alternate, acute. Flowers up to 15 or more cm. long, tubular, more or less double, white or somewhat purplish on the outside. Capsules globose, 2 or more cm. in diameter, spiny.

Occasional in waste areas (9684, 10160). Grown as an ornamental. Native name, *hiapo.*

Genus **CESTRUM** Linnaeus

Cestrum nocturnum Linnaeus, Spec. Plant., 191, 1753.

Glabrous, slender-branched shrub, up to about 2 m. tall. Leaves entire, alternate, elliptic-ovate, acuminate, petioles mostly less than 1 cm. long. Flowers creamy white, about 2 cm. long, in terminal and axillary, paniculate clusters. Berries small, white.

Introduced ornamental cultivated for its fragrance (9855). English names, night jessamine, queen-of-the-night; native name, *iki he po.*

Genus **NICOTIANA** Linnaeus

Nicotiana Tabacum Linnaeus, Spec. Plant., 180, 1753.

Erect, glandular-pubescent herb, up to 1 or more m. tall. Leaves alternate, oval, sessile, entire, obtuse or acutish. Flowers mostly 3-5 cm. long, pink or red, tubular, glandular pubescent, in terminal, paniculate clusters. Capsules many-seeded.

Sparingly cultivated about dwellings (9854). English name, tobacco; native name, *tabaka*.

The petunia (*Petunia hybrida* Vilmorin) has been introduced and cultivated as an ornamental. The egg plant (*Solanum Melongena* Linnaeus var. *esculentum* Nees) and the tomato (*Lycopersicon esculentum* Miller) are sparingly cultivated but do not grow well. Some potatoes (*Solanum tuberosum* Linnaeus) are grown, but they form small tubers that do not reach maturity.

Family SCROPHULARIACEAE

Genus **ANGELONIA** Humboldt and Bonpland

Angelonia Gardneri Hooker, Bot. Mag. **66**: pl. 3754, 1839.

Herb. Leaves opposite, lanceolate, finely toothed, up to about 5 cm. long and 5 mm. wide, acuminate. Flowers blue, about 2 cm. long, in long, terminal, leafy, racemose clusters.

Introduced ornamental (9969).

Genus **RUSSELIA** Jacquin

Russelia equisetiformis Schlechtendal and Chamisso, Linnaea 6: 377, 1831.

Semi-shrubby plant up to about 1 m. tall with longitudinally-ridged green stems and numerous verticillately arranged, drooping branches. Leaves very small, linear or awl-shaped, whorled. Flowers about 2.5 cm. long, in lax, terminal clusters, corolla tubular, red.

Introduced ornamental (9680). Occasional about dwellings and also along roadsides as an escape. English name, coral plant; native name, *tamafine*.

Family BIGNONIACEAE

Genus **TECOMARIA** Spach

Tecomaria capensis (Thunberg) Lindley, ex Spach, Hist. Veg. Phan. 9:137, 1840.

Half-climbing shrub. Leaves opposite, odd-pinnate, glabrous, leaflets mostly 7 or 9, 1 or more cm. long, broadly oval-ovate to nearly orbicular, toothed, subsessile. Flowers 3-5 cm. long, in several-flowered, terminal clusters, corolla orange red, funnel-form, 2-lipped.

Introduced ornamental (9902). English name, cape honeysuckle.

Genus **TECOMA** Jussieu

Tecoma stans Jussieu, Gen. Plant., 139, 1789.

Erect shrub. Leaves opposite, odd-pinnate, leaflets lanceolate, serrate, mostly 5-9, acuminate. Flowers fragrant, corolla yellow, funnel-form, up to about 5 cm. long. Clusters large, terminal, paniculate. Capsules slender, up to 15 cm. long.

Introduced ornamental (9817, 10029). English name, yellow elder.

Genus **SPATHODEA** Beauvois

Spathodea campanulata Beauvois, Fl. Oware 1: 47, 1804.

Large, handsome tree. Leaves odd-pinnate, opposite, leaflets mostly 11-17, ovate or oval, 5-10 cm. long, acuminate, petiolules about 3 mm. long. Flowers up to about 10 cm. long, in terminal, racemose clusters, calyx hairy, opening along one side, boat shaped, curving upward, nearly as long as the irregular, campanulate, orange-red corolla. Capsules flattened, 15 or more cm. long, seeds with a wide, parchmentlike wing.

Introduced ornamental (9802). Not planted as abundantly as it deserves. Under favorable soil and moisture conditions the trees become 20 or more meters tall. English name, African tulip tree.

Family GESNERIACEAE

Genus **CYRTANDRA** Forster

Cyrtandra samoensis A. Gray, Am. Acad. Arts and Sci., Proc. 6: 39, 1862.

Shrub up to 2 or more m. tall, young growth densely brown-pubescent, pith large. Leaves opposite, up to 30 or more cm. long and 20 cm. wide, oval-ovate, shallowly toothed, lighter colored beneath, acute, petioles 2 or more cm. long. Flowers white, in dense, short-pedunculate, axillary clusters.

Frequent in thickets (9595, 10085, 10175). Native names, *gahu, gahu vao.*

Genus **EPISCIA** Martius

Episcia cupreata Hanstein, Linnaea 34: 340, 1865-66.

Low, decumbent or drooping, hairy, weak-stemmed plant, rooting at the nodes. Leaves opposite, oval-elliptical, crenate, very hairy, reddish or copper colored with green veins, obtuse. Flowers scarlet, solitary, mostly 1-2 cm. wide.

Introduced ornamental, usually grown in pots or hanging baskets (9961).

Genus **GLOXINIA** L'Héritier

Gloxinia maculata L'Héritier, Stirpes Novae, 149, 1784-85.

Low, herbaceous plant with glabrous, red-mottled stems. Leaves oval-ovate, up to 10 or more cm. long, toothed, green above, red beneath. Flowers blue, in terminal clusters.

Introduced ornamental cultivated for its attractive flowers.

Family ACANTHACEAE

Genus **THUNBERGIA** Linnaeus

Thunbergia alata Bojer, ex Sims, Bot. Mag. **52**: pl. 2591, 1825.

Herbaceous or slightly woody, retrorsely pubescent vine with angular stems. Leaves opposite, ovate-lanceolate, hastate, somewhat irregularly repand toothed, palmately veined, acute, cuspidate. Flowers mostly solitary, on axillary pedicels up to 5 cm. long, subtended by two large bracts, corolla creamy white or buff with dark purple throat. Capsule beaked.

Introduced ornamental cultivated on trellises and walls (9803). English name, black-eyed Susan.

Thunbergia erecta (Bentham) T. Anderson, Linn. Soc. Bot., Jour. **7**: 18, 1864.

Erect to somewhat sprawling, glabrous shrub, up to 2 m. tall, with spreading, square branches. Leaves opposite, oval-ovate, up to about 3 cm. long. Flowers solitary, on pedicels 1-2 cm. long, subtended by two large bracts, corolla curved funnel-form, irregularly 5-lobed, 4 or more cm. long, rich blue with yellow throat.

Introduced ornamental cultivated about dwellings for the attractive flowers (9958).

Genus **HEMIGRAPHIS** Nees

Hemigraphis colorata (Blume) Hallier f., Nova Acta Acad. Nat. Cur. **70**: 199, pl. 9, fig. 1, 1897.

More or less prostrate, somewhat pubescent herb, commonly forming mats of considerable area. Leaves opposite, ovate-cordate, toothed, purplish green, up to 5 or more cm. long, acute, petioles mostly 1-2 cm. long. Flowers tubular, white, about 2 cm. long, in short, terminal, spike-like clusters.

Introduced ornamental (9964). Occasional along roadsides and in waste areas.

Genus **ASYSTASIA** Blume

Asystasia gangetica (Linnaeus) T. Anderson, in Thwaites, Enum. Plant. Zeyl., 235, 1859-64.

Low, semi-woody, pubescent, somewhat scandent shrub. Leaves opposite, entire, ovate, up to 6 or more cm. long, petioles about 1 cm. long. Flowers white, yellow, or sometimes purplish, corollas 2-3 cm. long, tubular, irregularly 5-lobed, in elongated, terminal, racemose clusters up to 15 or more cm. long.

Introduced ornamental (9805).

Genus **GRAPTOPHYLLUM** Nees

Graptophyllum pictum (Linnaeus) Griffith, Notulae Plant. Asiat. **4**: 139, 1854.

Shrub, up to about 2 m. tall. Leaves opposite, elliptic-ovate, entire, commonly irregularly marked with red or yellow along the midrib, acute to acuminate. Flowers about 4 cm. long, in short axillary or terminal clusters, corolla red or purplish, tubular, irregular.

Introduced ornamental (9989). English name, caricature plant.

Genus **PSEUDERANTHEMUM** Radlkofer

Pseuderanthemum atropurpureum (Bull) Bailey, Gentes Herbarum **1**: 130, fig. 61, 1923.

Nearly glabrous, shrubby plant up to about 1 m. tall. Leaves opposite, often yellow and purple mottled, mostly 7-12 or more cm. long and up to 7 or more cm. wide, oval-ovate, pinnately veined, obtusish, petioles short. Flowers irregular, in narrow, axillary and terminal, spike-like clusters, corolla tubular, about 1.5 cm. long, mostly white with a purple center and spots.

Introduced ornamental cultivated for its attractive foliage and flowers (9978).

Family PLANTAGINACEAE

Genus **PLANTAGO** Linnaeus

Plantago lanceolata Linnaeus, Spec. Plant., 113, 1753.

Low, nearly stemless herb. Leaves parallel veined, lanceolate or oblanceolate, silky-hairy, up to 15 or more cm. long, acute. Flowers small, brownish, in the axils of greenish-brown bracts, in a short, dense spike at the top of a slender peduncle up to 30 or more cm. long. Capsule ovoid, circumscissile.

A common roadside and plantation weed said to have been introduced as a forage plant (9941). English name, buckhorn plantain; native name, *motie* (because of its remote resemblance to grass).

Plantago major Linnaeus, Spec. Plant., 112, 1753.

Low, nearly stemless, somewhat pubescent herb. Leaves oval, somewhat fleshy, margins coarsely toothed, apex blunt, petioles winged, clasping at base. Flowers small, numerous, in a narrow spike about 10 or more cm. long, on a peduncle up to 15 or more cm. tall. Capsules small, ovoid, circumscissile, seeds several.

Common roadside and plantation weed (9653). English name, plantain.

Family RUBIACEAE

Genus **BIKKIA** Reinwardt

Bikkia grandiflora Reinwardt, ex Blume, Bijdr. Fl. Java, 1017, 1825, in syn., and in Syll. Ratisb. **2**: 8, 1828.

Shrub or small tree, often somewhat sprawling. Leaves opposite, glabrous, oval-obovate, entire, up to 15 or more cm. long and 8 cm. wide, obtuse, petioles stout, up to 3 cm. long, stipules connate forming a short, apiculate cup. Flowers handsome, solitary

in the upper leaf axils on pedicels about 1 cm. long, corolla tubular, tube up to 15 cm. long, white. Capsule about 2.5 cm. long.

On rocky cliffs near the sea (9584, 10058). Native names, *tiale tofa, gahu lau ikiiki.*

Portlandia tetrandra Forster f. (Fl. Ins. Austral. Prodr., 15, 1786, fide Ind. Kew) is synonymous with this species. If, after an examination of the type, this proves to be true, Forster's older specific name would be the valid one for this species.

Genus **HEDYOTIS** Linnaeus

Hedyotis foetida (Forster) J. E. Smith, in Rees Cyclop. 17(2), 1811.

Low shrub. Leaves opposite, elliptical, up to 8 or 10 cm. long, but mostly 4-6 cm., entire, acute, petioles short, winged, stipules connate, apiculate. Flowers white or pale pink with an unpleasant odor, in long-stalked, axillary and terminal, lax, cymose clusters.

Frequent on rocky cliffs near the sea (9785, 10125). The extracted juice is used as an application in the treatment of skin diseases. Native names, *fakamaka, pupu feutu.*

Genus **TARENNA** Gaertner

Tarenna sambucina (Forster f.) Durand in Drake, Ill. Fl. Ins. Mar. Pac. 6: 190, 1890.

Shrub or small tree, up to about 5 m. tall. Leaves opposite, up to 15 or more cm. long, elliptical, entire, acuminate, petioles about 1 cm. long, stipules connate. Flowers numerous, in large, terminal, cymose clusters, corolla yellowish or white, funnel-shaped. Fruit globose, about 5 mm. in diameter.

In thickets (9626, 9703, 9847). The wood is white and strong and is used for spear heads and also for digging purposes. A liniment is prepared from the fruit. Native name, *manono.*

Genus **RANDIA** Linnaeus

Randia species.

Shrub about 2 m. tall. Leaves opposite, oval-oblong, entire, up to 15 or more cm. long, obtuse or acutish, petioles about 1 cm. long, winged. Only sterile specimens were seen.

In thickets (10019). The wood is hard and is used for making bows and pegs for fastening canoe outriggers to the braces. The bark is used in the making of fish nets. Native name, *moea.*

Genus **GARDENIA** Linnaeus

Gardenia taitensis DeCandolle, Prodr. 4: 380, 1830.

Sprawling to upright shrub, about 1.5 m. tall. Leaves opposite, up to about 10 cm. long and 6 cm. wide, oval-obovate, more or less glossy, obtuse, petioles less than 1 cm.

long, winged, stipules connate. Flowers axillary, very fragrant, calyx prominently 4-lobed, lobes 1.5 cm. long, lanceolate, corolla white, tube about 3 cm. long, lobes about as long as the tube. Fruit about 2 cm. in diameter, longitudinally ridged.

Frequent in thickets, especially near the sea (9735, 9832, 9894, 10146). The fragrant flowers are used for necklaces. The bark of the roots is used in a native medicine for headache. English name, gardenia; native names, *tiale, tiale tofa, tiale feutu.*

Genus **GUETTARDA** Linnaeus

Guettarda speciosa Linnaeus, Spec. Plant., 991, 1753.

Tree, up to 8 or more m. tall. Leaves opposite, obovate, up to 10 or more cm. long, obtuse, petioles 1 or more cm. long. Flowers white, somewhat fragrant, about 3 cm. long, densely hairy, in axillary, compact, cymose clusters, peduncles up to about 5 cm. long.

Common in thickets near the sea (9715, 9839, 10154). The pulped wood is used in preparing certain native medicines. Native name, *panopano.*

Genus **TIMONIUS** DeCandolle

Timonius polygamus (Forster) Robinson, Am. Acad. Arts Sci., Proc. **45**: 394, 1910.

Low, sprawling shrub, up to 1 m. tall. Leaves opposite, obovate, up to 10 cm. long, somewhat coriaceous, obtuse, petiole very short, stout. Flowers in axillary, stalked, cymose clusters, corolla whitish, tubular, pubescent. Fruit fleshy, black, about 1 cm. in diameter.

In thickets, especially abundant near the sea (9673, 10052, 10091). The leaves and fruit are used in preparing native medicines. Native name, *kaveutu.*

Genus **COFFEA** Linnaeus

Coffea arabica Linnaeus, Spec. Plant., 172, 1753.

Shrub or small tree, about 2-3 m. tall. Leaves opposite, oblong-elliptic to subobovate, glossy, glabrous, up to 15 cm. long, entire, acuminate. Flowers white, fragrant, short-pedicellate, in axillary clusters. Berry ovoid, red, 2-seeded.

Introduced but used to a slight degree only (10199). Occasional in thickets as an escape. English name, coffee; native name, *kofe.*

Genus **IXORA** Linnaeus

Ixora coccinea Linnaeus, Spec. Plant., 110, 1753.

Dense, glabrous shrub, up to 1 or more m. tall. Leaves opposite, somewhat coriaceous, elliptic-obovate, entire, acute, sessile. Flowers in terminal clusters, corolla bright red, tubular, up to 3 or 4 cm. long.

Introduced ornamental (10137). Native name, *tugi.*

Genus **PSYCHOTRIA** Linnaeus

Psychotria insularum A. Gray, Am. Acad. Arts Sci., Proc. 4: 45, 1860.

Shrub or small tree, up to about 2 m. tall. Leaves opposite, up to about 14 cm. long and 6.5 cm. wide, elliptical, entire, pubescent beneath along the veins, prominently pinnately veined, acute at both ends, petioles about 2 cm. long. Flowers white, in axillary, cymose clusters, corolla tubular, about 1 cm. long. Fruit ribbed, mostly 6-8 mm. long.

In thickets (10240). Native name, *moea kula.*

Genus **GEOPHILA** D. Don

Geophila herbacea (Jacquin) O. Kuntze, Rev. Gen. Plant., 300, 1891.

Glabrous, herbaceous plant with creeping, slender stems rooting at the nodes. Leaves rounded-cordate, opposite, about 2.5 cm. wide, palmately veined, entire, mostly obtuse, petioles long. Flowers small, white, axillary. Berry red.

Common in shady, moist situations (9766). Native name, *tono.*

Genus **GYNOCHTHODES** Blume

Gynochthodes ovalifolia (Valeton) Kanehira, Bot. Mag., Tokyo **45**: 351, 1931.

Vigorous, glabrous, woody vine. Leaves opposite, oval-ovate, entire, up to 8 or more cm. long, turning black when crushed or dried, acuminate, petioles 1-2 cm. long. Only sterile specimens were seen.

In thickets (10129). Native name, *kanai elo.*

Genus **MORINDA** Linnaeus

Morinda citrifolia Linnaeus, Spec. Plant., 176, 1753.

Shrub or small tree with 4-sided, glabrous branches. Leaves opposite, entire, up to 30 cm. long, broadly elliptical to somewhat obovate, pubescent when young, acute, petioles mostly about 2 cm. long, stipules connate, triangular-acute. Flowers white, in a fleshy, axillary, globose, headlike cluster. Fruit globose-ovoid, about the size of an egg, fleshy and yellowish white when ripe.

Common everywhere in thickets (9609, 10182). The bark, leaves and flowers are used in preparing native medicines, and the fruit is eaten in times of food scarcity. Native name, *nonu.*

Morinda Forsteri Seeman, Fl. Vit., 129, 1866.

Stout, woody vine. Leaves opposite, entire, elliptical, up to 7 or more cm. long, somewhat coriaceous, acute to acuminate, petioles about 1 cm. long. Flowers white, in stalked, axillary, headlike clusters less than 1 cm. in diameter.

Climbing in thickets (9642, 10121). Native names, *kanai, kanai kula.*

Genus **BORRERIA** G. F. W. Meyer

Borreria laevis (Lamarck) Grisebach, K. Ges. Wiss. Goet., Abh. **7**: 231, 1857.

Low, spreading, branching herb. Leaves opposite, up to 4 or more cm. long, elliptic-lanceolate, veins prominent, petioles short. Flowers small, white, in verticillate axillary clusters.

A weed in clearings and waste areas (9881).

Family CAPRIFOLIACEAE

Genus **LONICERA** Linnaeus

Lonicera japonica Thunberg, Fl. Jap., 89, 1784.

Twining, semi-woody, brown-hairy vine. Leaves opposite, ovate-lanceolate, or oblong, entire, acute, petioles about 1 cm. long. Flowers commonly in pairs, on short, axillary branches, very fragrant, corolla 2.5 or more cm. long, white changing to yellow, glandular-pubescent without. Berries black, several seeded.

Introduced ornamental (10198). English name, Japanese honeysuckle.

Family CUCURBITACEAE

Genus **MELOTHRIA** Linnaeus

Melothria samoensis A. Gray, U. S. Expl. Exped., Bot. **1**: 641, 1854.

Slender, glabrous vine. Leaves deltoid-hastate, deeply cordate, acute, scabrous above, dentate, teeth mucronate, petioles slender, 2-3 cm. long. Flowers white, axillary, on slender pedicels. Fruit yellow, fleshy, about 2 cm. long, "edible."

Common in thickets and waste areas (9652, 10208). Native names, *keakea, ume.*

Genus **CITRULLUS** Forskål

Citrullus vulgaris Schrader, Linnaea **12**: 412, 1838.

Herbaceous, hairy, tendril-bearing vine. Leaves alternate, deeply lobed. Flowers yellow, axillary. Fruit large.

Introduced and frequent in cultivation (9797). Occasional plants occur spontaneously in waste areas. The fruit is a favorite with the natives. English name, watermelon; native name, *meleni.*

Genus **CUCUMIS** Linnaeus

Cucumis Anguria Linnaeus, Spec. Plant., 1011, 1753.

Prostrate, tendril-bearing vine covered with short, stiff hairs. Leaves alternate, hispid on both surfaces, ovate-cordate, palmately 5-lobed. Flowers yellow, axillary, on slender pedicels. Fruit ellipsoidal, up to 5 or more cm. long, light green or yellowish, often striped.

Introduced for its fruit (9794, 10010). Occasional plants occur spontaneously in waste areas. English name, bur gherkin. The native name for the striped variety is *atiu,* and for the unstriped variety, *atiu hega.*

Genus **SECHIUM** Swartz

Sechium edule Swartz, Fl. Ind. Occ. 2: 1150, 1800.

Herbaceous, nearly glabrous, monoecious, tendril-bearing vine. Leaves round or broadly ovate in outline with broad, rounded basal lobes, shallow and sharply 3-lobed above, up to 20 or more cm. long and nearly as wide, somewhat scabrous on the upper surface. Flowers small, axillary, greenish white. Fruit somewhat pear shaped, up to 15 or more cm. long.

Introduced for its fruit which is used as a vegetable (9975). English name, chayote.

The cucumber (*Cucumis sativus* Linnaeus), muskmelon (*Cucumis Melo* Linnaeus), squash (*Cucurbita Pepo* Linnaeus var. *condensa* Bailey), gourd (*Lagenaria leucantha* Rusby) and pumpkin (*Cucurbita Pepo* Linnaeus) have been introduced and are cultivated to a small extent.

Family GOODENIACEAE

Genus **SCAEVOLA** Linnaeus

Scaevola frutescens (Miller) Krause, Pflanzenr. **54**(IV. 277): 125, fig. 25, 1912.

Shrub, up to about 2 m. tall, pith large. Leaves alternate, with hairy tufts in the axils, oblong-spatulate, somewhat fleshy, crowded near the ends of the branches, margins somewhat wavy and obscurely toothed, base cuneate, apex obtuse, petioles short. Flowers white or pale lavender, appearing as though partly lacking, in axillary, cymose clusters. Fruit fleshy, subglobose, white, about 10 mm. in diameter.

Frequent in thickets (9607, 9704). The stems are used to make children's pop guns. Native names, *gahu pa, pa.*

Family COMPOSITAE

Genus **VERNONIA** Schreber

Vernonia cinerea (Linnaeus) Lessing, Linnaea 4: 291, 1829.

Simple or much branched, slightly hairy herb, up to 60 cm. tall. Leaves obovate, alternate, very small, on margined petioles. Flower heads about 5-8 mm. wide, lavender, on slender peduncles, in loose, branching, terminal clusters, pappus bristles white.

Common in waste areas, lawns and plantations (9863). English name, small ironweed.

Genus **ADENOSTEMMA** Forster

Adenostemma Lavenia (Linnaeus) O. Kuntze, Rev. Gen. Plant. 1 : 304, 1891.

Erect, somewhat glandular-pubescent herb, up to 60 or more cm. tall. Leaves opposite, ovate, dentate, palmately 3-veined, up to 12 or more cm. long, base cuneate and decurrent along the petiole, apex acute. Flower heads hemispherical, on slender pedicels in loose, terminal and axillary, paniculate clusters, corollas viscid-woolly without, white.

In waste areas. Collected by Smith. Specimen in the Auckland Museum herbarium.

Genus **AGERATUM** Linnaeus

Ageratum conyzoides Linnaeus, Spec. Plant., 839, 1753.

Erect to somewhat sprawling, hairy herb. Leaves opposite, ovate, crenate, up to 8 or more cm. long, acutish, petioles long. Flower heads small, bluish, in loose, terminal and axillary clusters, pappus of 5 awned scales.

Occasional along roadsides (9882, 10072). English name, ageratum; native name, *tekote tea.*

Genus **MIKANIA** Willdenow

Mikania micrantha Humboldt, Bonpland and Kunth, Nov. Gen. Spec. Plant. 4 : 134, 1820.

Nearly smooth, creeping or climbing, herbaceous vine. Leaves opposite, ovate-sagittate, deeply cordate, irregularly and coarsely toothed, palmately veined, acuminate, petioles long and slender. Flower heads small, white, infrequent.

A rapidly growing, weedy vine common in waste areas and plantations (9864). It forms dense, tangled mats on the ground and in surrounding vegetation and is regarded as a pest. English name, mile-a-minute (with reference to its rapid growth) ; native name, *fou laina.*

Genus **ZINNIA** Linnaeus

Zinnia elegans Jacquin, Collectanea 3 : 152, 1789.

Erect, more or less hairy, annual plant, up to 50 or more cm. tall. Leaves elliptic-ovate, hispid, sessile and more or less clasping. Heads solitary, up to 10 or more cm. wide, variously colored.

Introduced ornamental. Native name, *tinia.*

Genus **MONTANOA** Cervantes

? Montanoa species.

Herb. Leaves opposite, ovate-deltoid, dentate and shallowly lobed, 10 or more cm. long, decurrent to form a winged petiole, acute. The flowers were said to be white, but only sterile specimens were seen.

Occasional near dwellings (10023). The oil is used as a hair dressing. Native name, *kafetoga.*

Genus **WEDELIA** Jacquin

Wedelia biflora (Linnaeus) DeCandolle, in Wight, Contrib. Bot. Ind., 18, 1834.

Erect to trailing, more or less scabrous shrub. Leaves up to 10 or more cm. long and 5-8 cm. wide, opposite, shallowly serrate, elliptic-ovate, rough-hispid above, 3-veined from near the base, acute to acuminate, petioles up to 2.5 or more cm. long. Flower heads few, about 2.5 cm. wide, rays yellow, on peduncles 5-7 or more cm. long, in terminal clusters.

Scrambling on rocky cliffs and in thickets (9749, 10144). Native name, *matakula.*

Genus **TITHONIA** Desfontaines

Tithonia diversifolia (Hemsley) A. Gray, Am. Acad. Arts Sci., Proc. **19**: 5, 1883.

Tall, coarse, somewhat pubescent, subwoody weed. Leaves alternate, densely woolly, hairy beneath, 3-5-lobed, the lobes in turn toothed, decurrent at the base to form a narrowly winged, elongated petiole. Flower heads bright yellow, 5 or more cm. wide, on long, stout peduncles.

Probably originally introduced as an ornamental but now common and weedy along roadsides and in plantations (9743). English name, Mexican sunflower; native name, *matalaa.*

Tithonia speciosa Hooker, ex Grisebach, Cat. Plant. Cub., 155, 1866.

Coarse, erect, branching herb, flocculently pubescent in young parts. Leaves alternate, ovate-cordate, entire or 3-lobed, up to 15 cm. long, crenate, scabrous, acuminate, base decurrent to form a long, strongly winged petiole. Flower heads orange-red, 5 or more cm. wide, solitary, on stout, elongated terminal and axillary, woolly peduncles.

Introduced ornamental (9577).

Genus **HELIANTHUS** Linnaeus

Helianthus tuberosus Linnaeus, Spec. Plant., 905, 1753.

The Jerusalem artichoke has been introduced and is cultivated occasionally for its edible tubers.

Genus **SYNEDRELLA** Gaertner

Synedrella nodiflora (Linnaeus) Gaertner, Fruct. et Semin., Plant. 2: 456, pl. 171, fig. 7, 1791.

Coarse, erect or somewhat procumbent, branching, more or less pubescent herb, up to 60 or more cm. tall, often rooting at the lowermost nodes. Leaves opposite, oval-ovate, shallowly toothed, 5 or more cm. long, scabrous, acute, petiole short, winged. Flower heads yellow, subsessile, axillary. Disk achenes with long, sharp, apical awns, ray achenes with marginal and apical awns.

Common weed in waste areas and plantations (9867).

Genus **COREOPSIS** Linnaeus

Coreopsis tinctoria Nuttall, Acad. Sci. Philad., Jour. 2: 114, 1821.

Smooth or somewhat hairy, annual, upright, branching herb. Leaves opposite, pinnately divided, lower leaves long petiolate, upper leaves sessile. Flower heads 2.5 or more cm. wide, rays yellow with maroon base, disk dark red or brown, on peduncles up to 15 or more cm. long.

Introduced ornamental (9677, 9679). English name, tickseed.

Genus **DAHLIA** Cavanilles

Dahlia pinnata Cavanilles, Icon. Descr. Plant. 1: 57, pl. 80, 1791.

Erect, branching, glabrous, semi-shrublike herb, up to about 1 or more m. tall. Leaves pinnate. Heads large, up to 10 or more cm. wide, much doubled, variously colored.

Introduced ornamental.

Genus **BIDENS** Linnaeus

Bidens pilosa Linnaeus, Spec. Plant., 832, 1753.

Erect, branching, glabrous or somewhat pubescent herb, up to 60 or more cm. tall. Leaves opposite, simple or ternately compound, serrate, acute. Flower heads yellow, on axillary and terminal peduncles 1-3 or more cm. long. Achenes 4-angled, with 2-4, retrorsely barbed awns.

A common roadside and plantation weed (9767). The flowers are used to scent coconut oil. English names, devil's pitchforks, Spanish needle; native name, *kofetoga.*

Genus **COSMOS** Cavanilles

Cosmos sulphureus Cavanilles, Icon. Descr. Plant. 1: 56, pl. 79, 1791.

Smooth or somewhat hairy herb, about 1 m. tall. Leaves opposite, deeply pinnately divided, lobes narrow and these in turn toothed or lobed, mucronate. Flower heads deep yellow orange, peduncles long.

Introduced ornamental (9796).

Genus **GAILLARDIA** Fougeroux

Gaillardia pulchella Fougeroux var. **picta** A. Gray, Syn. Fl. N. Am. 1(2): 352, 1884.

Erect, branching, finely hairy annual, up to 60 cm. tall. Leaves alternate, narrowly oblong, spatulate or oblanceolate, entire or with occasional small teeth, the lower ones occasionally pinnately divided, sessile. Flower heads on long terminal peduncles, 3-5 cm. wide, rays yellow to red.

Introduced ornamental (9682).

Genus **TAGETES** Linnaeus

Tagetes erecta Linnaeus, Spec. Plant., 887, 1753.

An erect, glabrous, branching herb, up to about 60 cm. tall. Leaves opposite, pinnately divided. Flowers yellow or orange, up to 8 cm. wide, on long, terminal peduncles.

Introduced ornamental. Occasional as an escape along roadsides. English name, African marigold.

Tagetes patula Linnaeus, Spec. Plant., 887, 1753.

Freely branching herb, about 30 cm. tall. Leaves opposite, pinnately divided, leaflets lanceolate, finely and sharply toothed. Flower heads solitary, up to 4 cm. wide, on long, terminal peduncles, ray flowers orange brown, disk flowers orange.

Introduced ornamental (9798). Occasional as an escape along roadsides. English name, French marigold.

Genus **EMILIA** Cassini

Emilia sonchifolia (Linnaeus) DeCandolle, Prodr. **6**: 302, 1837.

Smooth, erect, branching herb, 30-60 cm. tall. Leaves alternate, oblong-lanceolate, irregularly lobed and toothed, sessile and clasping at the broad base. Flower heads about 1 cm. long, on long, slender peduncles, in loose, branching, terminal clusters, rays lavender, pappus bristles white, silky.

Common weed in plantations, along roadsides and in waste areas (9747, 10071). Native name, *pupu lele.*

Genus **TRAGOPOGON** Linnaeus

Tragopogon porrifolius Linnaeus, Spec. Plant., 789, 1753.

The salsify has been introduced and is sometimes cultivated for its edible root.

Genus **SONCHUS** Linnaeus

Sonchus oleraceus Linnaeus, Spec. Plant., 794, 1753.

Herb, up to about 1 m. tall. Leaves thin, alternate, up to 20 cm. long, deeply pinnately lobed, the lobes dentate with short, spiny teeth, clasping the stem at the base with sharply acute, auriculate lobes. Flower heads about 1 cm. long, on long peduncles, in loose, terminal clusters, rays yellow, pappus fine, white.

A common weed in waste areas and plantations (9758, 9909, 10076). English name, sow thistle; native name, *pupu lele.*

Genus **LACTUCA** Linnaeus

Lactuca sativa Linnaeus, Spec. Plant., 795, 1753.

Lettuce has been introduced and is cultivated to a slight extent.

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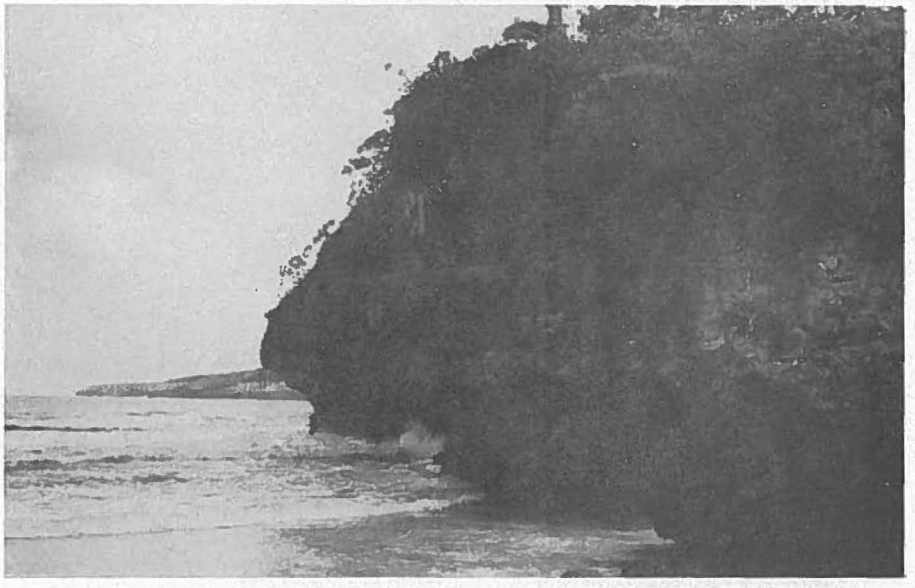

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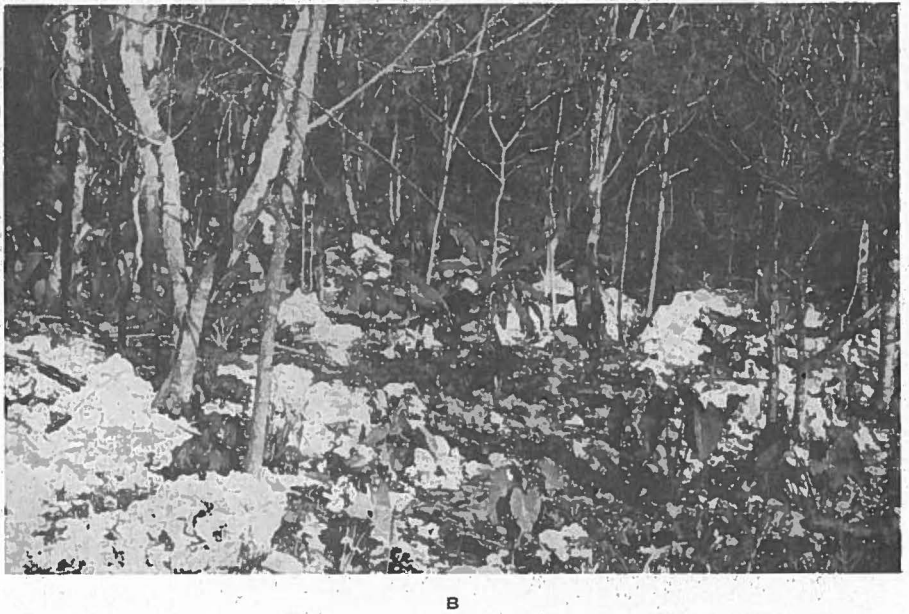

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