

# THE FLORA OF PONAPE

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# The Flora of Ponape<sup>1</sup>

By SIDNEY F. GLASSMAN

## INTRODUCTION

For approximately 11 weeks, from June 15 to September 2, 1949, I was on Ponape, where I made a study of the flora. Collections were made at a number of localities in each of the five districts of Ponape (U, Metalanim, Net, Jokaj, and Kiti), and also from several of the outlying islets. Most of the time was devoted to studying plants in the higher mountains (1,800 to 2,500 feet). In all, 13 mountains were visited. On most of the collecting trips, I was accompanied by two experienced native guides, Alec and Lawrence. I collected a total of 500 numbers, principally vascular plants, made field notes on the flora and vegetation, and obtained native names and the economic uses of the plants observed and collected.

I made some identifications of the vascular plants at Bishop Museum in Honolulu on my return trip to the United States. The remainder were classified at the New York Botanical Garden and the United States National Herbarium. The first set of specimens was deposited in the United States National Herbarium, and duplicate sets were sent to Bishop Museum and the Bebb Herbarium, University of Oklahoma. In addition, a number of vascular cryptogams from this collection were sent to the University of California at Berkeley.

## COLLECTING AND PREPARATION OF SPECIMENS

Field collecting equipment included a press consisting of two heavy cardboard exteriors, light folded cardboard or newspaper fillers, and webbing straps. The exteriors were kept covered with oilskin to prevent deterioration from excess moisture. On collecting trips of several days' duration, specimens were painted with a mixture of equal parts of 95 percent alcohol mixed with water and concentrated (40 percent) formaldehyde, according to the method described by Fosberg (18).<sup>2</sup> This application effectively prevented the formation of mold and the deterioration of plant parts until the specimens were put in a permanent press. Because of the humid climate on Ponape, it was necessary to use heat to dry plants; and as an additional precaution against mold formation, each specimen was painted with the alcohol and formaldehyde mixture. Blotters, aluminum corrugated sheets, and the cutting of fleshy plant parts were also employed to expedite drying. A heated cabinet was used for storage of dried plants until they were shipped out.

<sup>1</sup> This is a thesis submitted to the faculty of the Graduate School of the University of Oklahoma for the degree of Doctor of Philosophy, 1950.

<sup>2</sup> Numbers in parentheses refer to Literature Cited, page 135.





Although Ponape is a relatively small island, only 13 miles in diameter, travel is difficult and time-consuming. Most traveling must be done on foot, in canoes, or in motor boats, as roads are poor. In general, trails to the tops of the higher mountains are difficult to follow because of the rapidity of re-vegetation. However, some paths are well-defined, and the summit can be reached with comparative ease. This is true of the Mount Seletereh trail. During the Japanese regime, a number of trails were kept cleared because of the location of gun positions at high altitudes and because of frequent trips made for the purpose of extracting bauxite and iron from rock deposits. Now most of these trails are covered with secondary growth, or the original vegetation has grown back, so that it is necessary to use a machete.

Most of the high mountains are steep, rocky, and rugged, with scattered hogback ridges. The soil is shallow, largely because of erosion by frequent torrential rains. In these areas, many of the trees have buttressed roots or prop roots. Exposed roots, together with frequent projecting rocks, make walking through the mountains very difficult. In level areas, the soil is relatively deep (one to two feet) and soft. Here travel is slow because of the mud.

Clouds frequently hang on the mountains during the day, moving down the slopes and into the valleys in the late afternoon. Because of the exceptionally high humidity at higher altitudes, it is necessary to keep all equipment covered with some type of rain-repelling cloth. Cameras require special care, since lenses are easily fogged and shutters damaged.

In a number of places, especially at the higher altitudes, gnats and mosquitoes are most annoying. A smoldering fire of damp wood is more effective in combatting gnats than either mosquito nets or chemical repellents.

In the mountains, the most suitable shelters for sleeping are under overhanging rock ledges or in small caves. The former type of shelter was found on Mounts Ninani, Tolunkiup, and Tolentrahket; the latter type on Mount Seletereh. On Poaipoi and Tolotom there are no such shelters, and my guides constructed thatch houses from the trunks and leaves of *Exorrhiza* (*kotop*)<sup>3</sup> bound together with the stems of lianas such as *Flagellaria* (*itan-wal*) or *Hoya* (*takituk*). Nights in the mountains were usually cool enough to necessitate the use of a blanket for sleeping.

Various staple foods were always taken along on mountain trips, but our meals were often supplemented with such foods as deer, wild pigs, pigeons, young tropic birds, hearts of the *Exorrhiza* (*kotop*) palm, mountain yams, berries of *Syzygium stelechanthum* (*kirakinwahl*), and nuts of the *Pandanus patina* (*pet*).

In most of the mountains there is a continuous supply of fresh water.

<sup>3</sup> Native names, which are in italics, were obtained from my guides and are spelled as they sounded to me.



Streams and pools are abundant, especially where the original vegetation has not been appreciably destroyed. Water may also be obtained from the succulent petioles of the mountain banana (*tikap*). The leaves of *Alocasia* (*oht*), which has been planted in some mountain localities, can be made into excellent containers for carrying water.

According to native guides, a fire can be started by rubbing together pieces of wood of *Hibiscus tiliaceus* (*kalau*), *Ficus* (*neen*), or *Premna* (*tobuk*). The best kindling woods found in the mountains are *Garcinia* (*konpuil*) and *Aglaia* (*marasaw*), both of which contain a great quantity of resin and burn slowly for a long period of time.

#### ACKNOWLEDGMENTS

I wish to express my gratitude to the Office of Naval Research and the Pacific Science Board of the National Research Council for the fellowship grant which enabled me to make this study, and to the University of Oklahoma for supplementary financial assistance. Thanks are also extended to all Navy and civilian personnel on Guam and Ponape who assisted me in carrying out this project. I am greatly indebted to Dr. G. J. Goodman of the Department of Plant Sciences, University of Oklahoma, under whose direction this paper was written; to Dr. W. H. Wagner, Jr., of the Department of Botany, University of Michigan and Dr. E. B. Copeland of the Department of Botany, University of California, Berkeley, for identifications of vascular cryptogams; to Dr. H. N. Moldenke of the New York Botanical Garden for Verbenaceae determinations; to Dr. F. R. Fosberg of Catholic University, for miscellaneous determinations, nomenclatural problems, and numerous valuable suggestions; to my wife, who edited a major part of the manuscript; and to the curators of the New York Botanical Garden, Bernice P. Bishop Museum, and the United States National Herbarium, for the privilege of studying specimens in those institutions.

#### GEOGRAPHY AND CLIMATE

Ponape, the largest island (145 square miles) in the eastern Carolines, extends from 6° 46' to 7° 4' N. and 158° 5' to 158° 23' E. It is 2,350 miles from Manila, 2,700 miles from Honolulu, and 4,650 miles from San Francisco. Ponape consists of one central main island surrounded by a coral reef, 23 small basaltic islets, a number of inshore deposit islets and an outer encircling reef with about 15 low coral islets. The inner and outer reefs are separated by a lagoon, within which are located the basaltic and inshore deposit islets. In the southeastern part, however, there is no lagoon, as the two reefs are joined together. The basaltic islets are detached segments of the main island, whereas the inshore deposit islets, such as Takatik (fig. 1), are alluvial in



formation and are frequently covered with mangrove. Some of these islets are surrounded by separate, individual coral reefs. In the east, near Metalanim, many of the inshore islets are artificial, and on some of them, such as Nanmatol, are archaeological ruins (fig. 2). There are about 50 of these artificial islets which were built up on the reef by man during an unknown period. The outer reef is broken in a number of places to form passages.

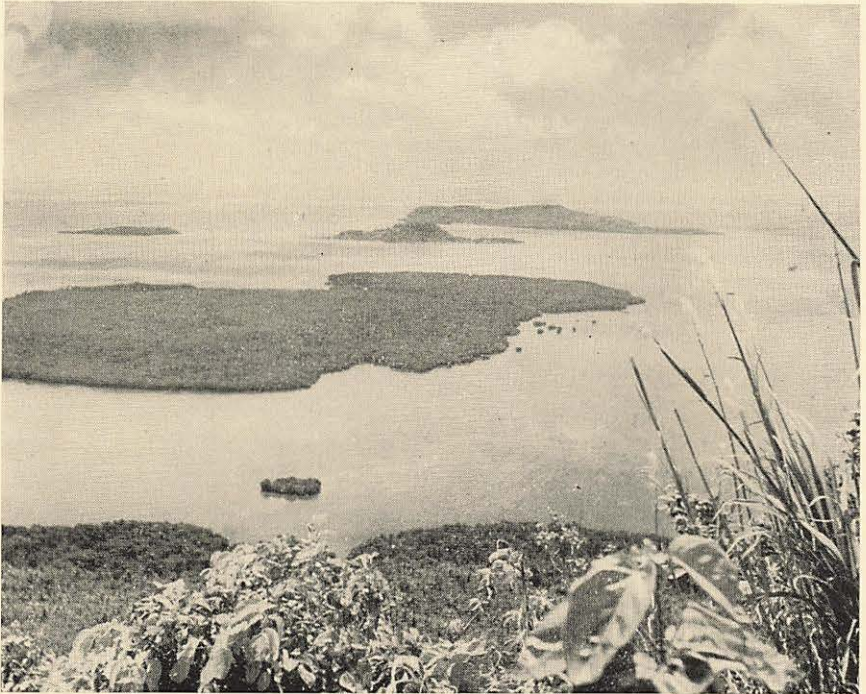


FIGURE 1.—Takatik Islet from top of Mount Peipalap.

The main island is 13 miles in diameter, almost circular in shape, and irregular in outline. In most places the shore is fringed with mangrove, but in some areas there are bold, steep cliffs. Jokaj Rock (fig. 3), composed of layers of columnar basalt, is the most conspicuous feature of the northern side of the island. The greater part of the island is mountainous, and most of the high mountains are rugged, with steep, rocky slopes and relatively few level ridges. Mount Ninani (2,550 feet), in the central portion, is the highest peak. Other high peaks include Tolenwalik (2,500 feet), Tolokatar (2,475 feet), Nanalaut (2,450 feet), Beirut (2,200 feet), Poaipoi (2,200 feet), Tolotom (2,100 feet), Seletereh (2,000 feet), Tolenkiup (2,000 feet), and Tamatamansakir (1,800 feet). The rocks are entirely of volcanic origin, belong to the Eocene and Oligocene ages, and are composed of a succession of basaltic



flows with minor amounts of interbedded tuffs and agglomerates (Bridge, 4). There are also mineral deposits of lateritic bauxite and limonite. Soil in the lowlands is generally yellowish brown to reddish brown, but at some places near Colonia the soil is nearly black with a powdery consistency. In cultivated areas, much of the organic matter has been washed away by erosion or destroyed by fire. Soil in the mountain regions is mostly dark brown to black, containing much organic matter. In level areas, soil may be a few feet deep, whereas on slopes it is usually only a few inches in depth.

Numerous streams are found in most of the high mountains, the number increasing after heavy rains. Some of these streams dry up during rainless



FIGURE 2.—Nanmatol, showing archaeological site.



periods, whereas others flow into larger rivers which eventually empty into the sea. The principal rivers are the Filenkiup, arising on Mount Tolenkiup and flowing into the Nanpil, which joins with the Tawensokola in Net; the Lehtau, originating on Mount Tolenlepen in Metalanim; and in Kiti: the Pileneh arising on Mount Tolotom, the Pok on Mount Poaipoai, and the Kapinpilap originating near Mount Nanalaut. There are also a few waterfalls in the Metalanim District. Additional information on the geography of Ponape has been reported by Murphy (48).

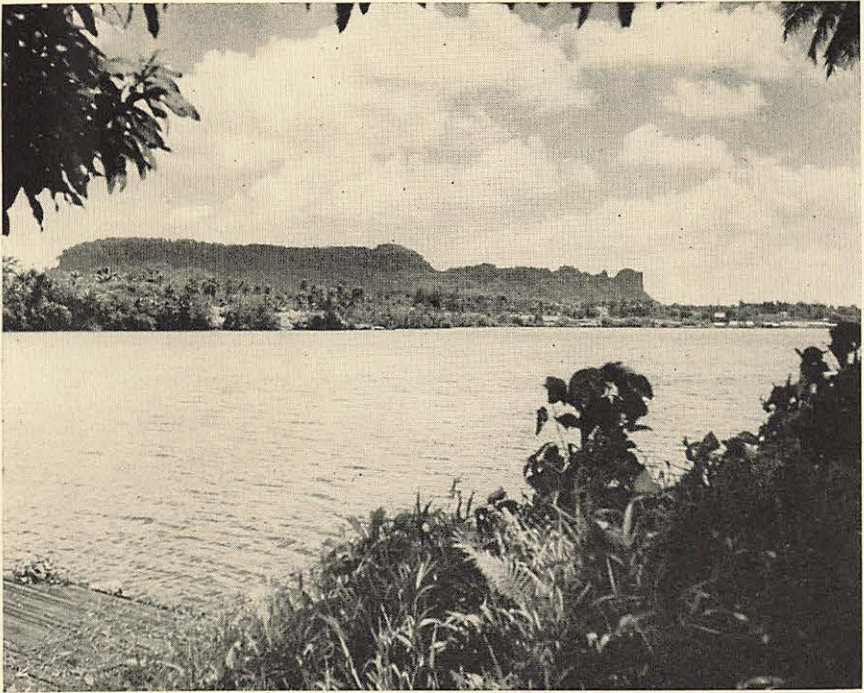


FIGURE 3.—Jokaj Rock.

The climate of Ponape is characterized by high temperatures, heavy rainfall in all months of the year, uniform atmospheric pressure (29.65 to 29.85 inches), high relative humidity, and a high degree of cloudiness (Bryan, 6). Winds blow from east-northeast or east from December to May, at which time there is a decrease in storm activity and rainfall. From May to December, the winds from the southeast increase. This period is marked by unsettled or stormy weather accompanied by rain. Above 16,000 feet the westerlies set in. Winds blow at a daily average of five to six knots and may increase to gusts of 35 or 40 knots during storms. Although typhoons originate near the equa-





1950, the precipitation for January, February, and March was 16.08 inches, 21.73 inches, and 19.81 inches, respectively. According to Bryan's records, the average monthly rainfall was 16.88 inches for July, 15.5 inches for August, 16.04 inches for September, 11.86 inches for January, 8.17 inches for February, and 11.44 inches for March. Unfortunately, there are no precipitation records available for high altitudes. Undoubtedly, the high mountains receive more rain than areas near sea level because there are more clouds and the air is cooler. Hosokawa (29) estimates the annual rainfall at Nipit (1,500 feet) to be 200 to 235 inches.

Temperature records are scanty. Data for 1900 to 1901 and for 1927 to 1929 (Bryan, 6) show a maximum of 92° F. and a minimum of 67.6° F. As with rainfall, there are no records of temperatures for high altitudes. However, the average minimum is undoubtedly several degrees lower than in the lowlands.

Over an unspecified seven-year period during the Japanese administration, the mean relative humidity at low altitudes was 86 percent (Civil Affairs Handbook, 9). January, February, and March were less humid (about 80 percent), whereas August, September, and October were more humid (about 90 percent). On sunny days during August 1949 the relative humidity in Colonia ranged from 50 to 60 percent, whereas on overcast days, it was 80 to 90 percent. In 1940, Hosokawa (29) found the average annual relative humidity at one station on Mount Nanalaut (1,500 feet) to be 96.2 percent.

In using maps of Ponape prepared by the U. S. Commercial Company and the United States Hydrographic Office, I discovered certain inaccuracies in the altitudes and locations of mountains. For example, Mount Tolotom, or Tolocolme, is actually more than 300 feet lower than the maps indicate. A number of the locality names, mostly of Japanese origin, were completely strange to the native inhabitants. Owing to these discrepancies, I have revised the map (fig. 4), making various corrections and adding a number of new names. Most of the information for these corrections and additions was obtained from the native guide, Alec, one of the few people on Ponape who knows all the mountain trails.

#### BOTANICAL HISTORY

Ponape (*pon-pey*), which literally translated means "on a sacred altar," was first discovered by Quiros in 1595 (7). Since that time, a number of botanists and explorers have visited the island. Apparently, the first botanist to stop off at Ponape was Mertens, with the corvette *Le Senevine*, in 1828. His general account of the vegetation of the Caroline Islands was published by Luetke (46). For a period of about 70 or 80 years thereafter, the island was frequently visited by explorers, whalers, missionaries, and ethnologists. In 1843, in an account of his voyage around the world, Micheleana y Rojas (47)



briefly mentions plants from Ponape.<sup>4</sup> Both Von Wullerstorff-Urbair (65) and Von Hochstetter (24) have reported on the vegetation and cultivated plants observed on the island during a visit made sometime between 1857 and 1858 by the frigate *Novara*. L. H. Gulick, a missionary who spent several years on Ponape, gave a brief discussion of the economic plants in 1858 (21). In 1865, Duff, a gardener with the Sydney Botanical Garden, collected some plants from the island which were later deposited in the Kew Herbarium. Of the ethnologists, Finsch collected some plants there in the 1880's, and a number of his specimens were cited by Schumann and Lauterbach (57). In 1895, Cabeza Pereiro included some notes on the flora of Ponape in his "Estudios sobre Carolinas" (7). Another ethnologist with botanical interest was Christian, who spent some months on Ponape in the 1890's during his tour of the Caroline islands (8). He listed a number of plants by native and scientific names and gave some information on economic botany, but there is no record of any collected specimens. Prager (52), in 1901, discussed the vegetation, edible plants, and timber; and the following year Daiber (13) gave a brief report of the vegetation.

In 1903, Jatta (34) cited a lichen collected from Ponape by Parkinson, but he did not give the date of collection. From November 1913 to April 1914, Ledermann collected 1,500 specimens of vascular plants, algae, and fungi from Ponape and the Palaus. A series of articles based on these collections was later published (Diels, 14; Schmidt, 56). The original set was sent to the Berlin Herbarium, with a duplicate set going to Bishop Museum. Other collections during the German period were made by Schnee in 1911 and Gibbon in 1913 (Diels, 14). Specimens of algae collected by Koshida in 1914 and Yanagi in 1915 are cited by Okamura (51). During his tour of some Micronesian islands in 1915, Koidzumi stopped off at Ponape to make some collections of vascular plants; and he later described several new species from the island (42). His specimens were deposited in the Herbarium of Science College, Imperial University, Tokyo. During the same expedition, Kusano and Miyake collected some plants from Ponape, and Kawagoe (41) published a list of cultivated and drug plants in 1918. In 1925, Kariyone made a brief excursion to the island and collected a number of specimens, some of which were sent to the University of California Herbarium at Berkeley. In 1927, he also published a paper on drug plants (40). In August of 1929 and July of 1931, Kanehira visited the island, at which time he collected approximately 500 numbers. Most of his specimens were later included in "Flora Micronesica" (35) and "An enumeration of Micronesian plants" (36). Kanehira also published lists of new species and new records in subsequent articles too numerous to

<sup>4</sup> Since this paper went to press, I have found that N. J. Andersson (Ein Weltumsegehlung mit der Schwedischen Kriegsfregatte "Eugenie," . . . 1851-1853, Leipzig, 1854), botanist with the frigate *Eugenie*, and C. Skogman (Erdumsegehlung der Konigl. Schwedischen Fregatte "Eugenie," . . . 1851-1853, vols. 1, 2, Berlin, 1856) reported on the food plants and vegetation in 1854 and 1856.



cite here. The original set is in the Herbarium of the Kyushu Imperial University, and duplicate sets are in Bishop Museum, the New York Botanical Garden, the United States National Herbarium, and the Arnold Arboretum. Other intensive collections were made by Hosokawa, also a student of Micronesian plants, who visited Ponape on three different occasions: August 5 to September 3, 1933; July 9 to July 19, 1936; and July 29 to September 18, 1940. He subsequently published a series of articles based on these collections and entitled "Materials of the botanical research toward the flora of Micronesia". These articles will be cited later under the taxonomic treatment of species. Original sets were placed in the Herbarium of Taihoku Imperial University in Formosa. Duplicate specimens were later purchased by Bishop Museum, Arnold Arboretum, and the United States National Herbarium. During the 1930's, Hosino collected some angiosperms and subsequently sent them to Kanehira for determinations. Hambruch (22) included some information on economic plants from a general survey of the island made during the German period. For the most part, the native names listed are derived from Christian's work.

In 1936, Takamatsu collected several hundred plants from Ponape for Bishop Museum. Copeland (10), Fosberg (15), Tuyama (62), and Bartram (1) have written short papers on the ferns, Rubiaceae, orchids, and mosses, respectively, partially based on Takamatsu's collections. Collections have also been reported by Hatusima in 1939 (38; Tuyama, 62), and Ito in 1941. Imazeki (33) cites some fungi collected on the island by Huzii in 1915, Kobayasi in 1936, and Esaki in 1939. Sakurai (55) cites a number of mosses collected from Ponape by Kondo and Okabe in 1941, and Horikawa (26) lists a number of mosses which he collected in 1940. In 1944, Tanaka (60) included an alga from Ponape in his treatment of the Protofloridae, and in the same year Imasini (32) discussed the plant sociology of the island.

Under the sponsorship of the U. S. Commercial Company, Fosberg visited the island briefly in 1946 and collected a number of specimens which were later sent to the United States National Herbarium. A summary of the vegetation and a list of plants of Ponape can be found in his "Botanical report on Micronesia" (16). In a recent paper on ferns (19), Fosberg refers to some of his own specimens and some of those collected by Hosokawa and Takamatsu. Hosaka, also working for the U. S. Commercial Company in 1946, reported on the botany of Ponape (27). In the same year, Koch collected some plants from the island which are at present deposited in the herbarium of the University of California at Berkeley and in the United States National Herbarium. Bascom has written an account of the general economic botany (2). In 1948, Riesenbergh published a paper on the medicinal plants (54), and in 1949, Bascom (3) wrote a paper on subsistence farming. Philip A. Adams, an entomologist, collected a number of orchids on the island during



the summer of 1950 and subsequently sent them to Alex D. Hawkes for determination. Hawkes' paper based on these specimens was published in *Pacific Science*, January 1952.

## AGRICULTURE AND ECONOMIC BOTANY

### FOOD PLANTS

Relatively little crop cultivation has been practiced on the island since Japan relinquished Ponape in 1945. Certain plants—such as rice, sweet potato, and cassava—which were at one time extensively cultivated, are now either virtually absent or grow as weeds along roadsides and in abandoned fields. The planting, harvesting, and milling of rice requires a great deal of labor; sweet potato is not particularly relished by the natives; and cassava requires labor to cultivate and is difficult to prepare for the table. At the present time, the principal food plants are breadfruit, yam, coconut, *Cyrtosperma*, *Colocasia*, banana, pineapple, papaya, and sugar cane. With the exception of yam and *Cyrtosperma*, little labor is required for cultivation of these plants. Additional details on economic plants of Ponape are given by Bascom (2). O'Connell, a sailor who was shipwrecked on the island in 1826, gives some interesting information on the economic plants and native customs of that period (50).

At the present time, coconut is the only plant grown for commercial purposes. It has been estimated that there are about two or three million coconut trees on the island today. The principal plantations are the Ponlangas in Metalanim, financed by the United States Government, and that of Oliver of Nanpei in the Kiti District. The former plantation, started by the Japanese in 1927, is now managed by Mr. E. Sprote of Honolulu. A total of 125,000 trees on 2,500 acres produces approximately 605,000 nuts per month, which is equivalent to 100 tons of copra.

Coconuts grow best on soil with a high water table. The trees begin producing when seven years old and may continue to bear until they reach the age of 70. Once the trees in the plantations have attained maturity, the only cultivation necessary is the removal of stray coconut seedlings, and the control of weeds. Certain species of *Digitaria* and *Paspalum*, as well as *Axonopus compressus*, are excellent ground cover plants in the grove. They form a dense cover and thus prevent the invasion of many undesirable plants.

In the preparation of copra, the meat is removed from the fruit and allowed to dry in the sun. The dried copra is packed in burlap sacks and stored for shipment. Because of the frequent heavy rainfall, drying copra outdoors is a difficult problem; hence electric driers are being installed at Ponlangas.

Breadfruit (*mai*) and yam are the two most important staple foods on Ponape. Once breadfruit trees become established, no cultivation is required. Most of the varieties of breadfruit are seedless. *Mai-pah* and *mai-kohleh* are



exceptions which frequently grow without any cultivation. A number of the varieties are of aboriginal introduction. Yam is a unique crop on Ponape, in that it is cultivated in small scattered plots. Each plot is surrounded by a bank of stones, and the vines are tied to a tree for support. Besides being a major source of food, it is grown traditionally for prestige. Consequently, yam cultivation is shrouded in secrecy, each man tending his individual plots before sunrise. A root of this plant may grow to as much as 20 or 30 feet long.



FIGURE 5.—*Cyrtosperma chamissonis*.

Some varieties, *kapin-air*, for instance, were formerly planted in the mountains as a reserve food source. Although *Dioscorea bulbifera* (*palai*), a species with aerial tubers, is not usually eaten at present because of its bitter taste, it is likely that it was used in the past as famine food.

*Cyrtosperma chamissonis* (*muaing*) is cultivated in fresh-water marshes (fig. 5). Weeds are usually shaded out, since the plants, which have ex-



tremely large leaves and may reach a height of 15 or 20 feet, grow close together. The wetland varieties of taro (*sawah*, or *Colocasia esculenta*, for the most part) are generally grown with *Cyrtosperma chamissonis* along the edges of the marsh. *Colocasia esculenta* is much more difficult to cultivate, but it is more highly relished by the natives. In former times, *Alocasia macrorrhiza* (*oht*) (fig. 6) was regarded as a very important starch crop, but it has been largely replaced by the more palatable *Colocasia esculenta* and *Cyrtosperma chamissonis*. At present, *Alocasia macrorrhiza* is found in small numbers around dwellings and at fairly high altitudes in the mountains.



FIGURE 6.—*Alocasia macrorrhiza*.

Banana (*ut*), pineapple, papaya (*moniap*), and sugar cane (*seu*) are grown locally without special cultivation techniques. Banana is propagated from sprouts, whereas papaya may grow spontaneously without cultivation. During the Japanese period, extensive experimental plots were planted with pineapple



for the purpose of determining the best-suited varieties with the highest yield. Sugar cane was grown commercially on a large scale by the Japanese as a source of alcohol and sugar, and the plants were cultivated in rows. Now there is no definite scheme of planting. At the present time, sugar cane is grown mainly for the juice in the stems which is used by the natives as a beverage. A number of other food plants of minor importance which are consumed by the natives include mango (*congít*), *Tacca* (*mokmok*), soursop (*sae*), and citrus fruit (*karrer*).

#### BEVERAGE PLANTS

Several kinds of beverages are drunk on Ponape. Fermented drinks are used in only a few localities; and the distillation of beverages has been declared



FIGURE 7.—Root of *Piper methysticum*.



unlawful since the American occupation. Two, *rah-matal* and *rah-mangar*, are fermented drinks prepared from the sap of the coconut inflorescence; *sakau looie* is distilled from sugar cane, coconut, or tapioca; *sakau-n-zvai*, from banana; *maticu* is prepared from the bark of native species of *Cinnamomum* and is drunk occasionally by natives who visit the mountains where *Cinnamomum* is found; and kava, or *sakau*, is made from fresh, macerated roots of *Piper methysticum*.



FIGURE 8.—Pounding kava root with rock.

From a social and religious standpoint, *Piper methysticum*, *sakau* in the Net District and *shakau* in the Kiti District, undoubtedly has been and still is the most important beverage plant on Ponape. It is a shrub 6 to 10 feet high with a trunk diameter of 1 to 1.5 inches, cordate leaves, and a spikelike inflorescence. It reaches a height of 50 feet, with a trunk diameter of 1 to 3 feet. Native informants say there are such large trees near the locality of Mehlaut.

In the everyday preparation of kava, the entire shrub is uprooted (fig. 7), and the roots are chopped off. The loose soil is knocked off, and the unwashed roots are placed on a large, flat basalt slab, which rests on several half coconut shells. The roots are pounded into small pieces with rocks (fig. 8), and small quantities of water are added from time to time as the pounding con-



tinues. At frequent intervals, the pulp is kneaded by hand to test its consistency. The mass is subsequently placed on wet strips of *Hibiscus tiliaceus* which are wound around the pulp, and the liquid is finally wrung out of the pulp into a coconut shell (fig. 9).

The liquid is usually drunk shortly after preparation. Kava so prepared has a slimy consistency due to the mucilage which comes from the *H. tiliaceus* bark. When first swallowed, it numbs the mouth. Yuncker (66) describes the taste as peppery with a slight puckering sensation, and Hough (30) likens the taste to that of soapsuds.

If taken in excess, this drink is a soporific and induces a pleasant, undisturbed sleep. According to the United States Dispensatory (63), the chemical principles involved in kava are several fractions including an unsaponifiable neutral resin which is responsible for the chief physiological action. This drug acts as a depressant to the motor tract of the spinal cord and affects the involuntary muscles, at first stimulating them, then depressing them.

In the past, kava has been used medicinally for chronic irritations of the genito-urinary tract, especially in gonorrhoea. On Ponape, it is believed that heavy drinkers of the beverage do not contract this disease; and during the Japanese period, pills were manufactured from *sakau* as a specific against gonorrhoea (Riesenberg, 53). The leaves of *P. methysticum* are chewed by the natives of Ponape to alleviate toothaches, and kava itself is considered to be a panacea. Cuzent (12) states that kava is used as a remedy for bronchitis and phthisis on Nukuhiva Island; Hamilton (23) describes its use for skin ulcers in Hawaii; and Yuncker (67) mentions two uses for Niue Island. He writes that root pieces were formerly fastened to spear heads to cause wound irritations and that chewed leaves are now utilized as a cure for yaws.

During ceremonies or feasts attended by native chiefs or foreign guests, the preparation of kava on Ponape is essentially the same as it is for everyday use, with a few exceptions. In a ceremony which I witnessed at Auak, a number of stone slabs were used for pounding the roots. As the men pounded in unison, a few women arose and danced to the rhythmic, musical sounds emitted from the slabs. After the drink was prepared, each participant offered the filled cup to the chiefs and guests, turning away his head in so doing. This traditional gesture dates back to ancient times, when natives without rank were forbidden to look at kings or chiefs. Before contact with white men, kava could be prepared only by noblemen. During the German period (1899 to 1914) this restriction was removed, and since that time anyone may make the drink. During the war, the Japanese limited kava drinking to once a week and to authorized ceremonial occasions (Civil Affairs Handbook, 9). This restriction was enforced because indulgence made the natives lazy and because it was believed that the drink had certain toxic effects on the body. At present, the

United States Government does not interfere with the tradition of kava preparation, nor does it place any restrictions on the use of kava.

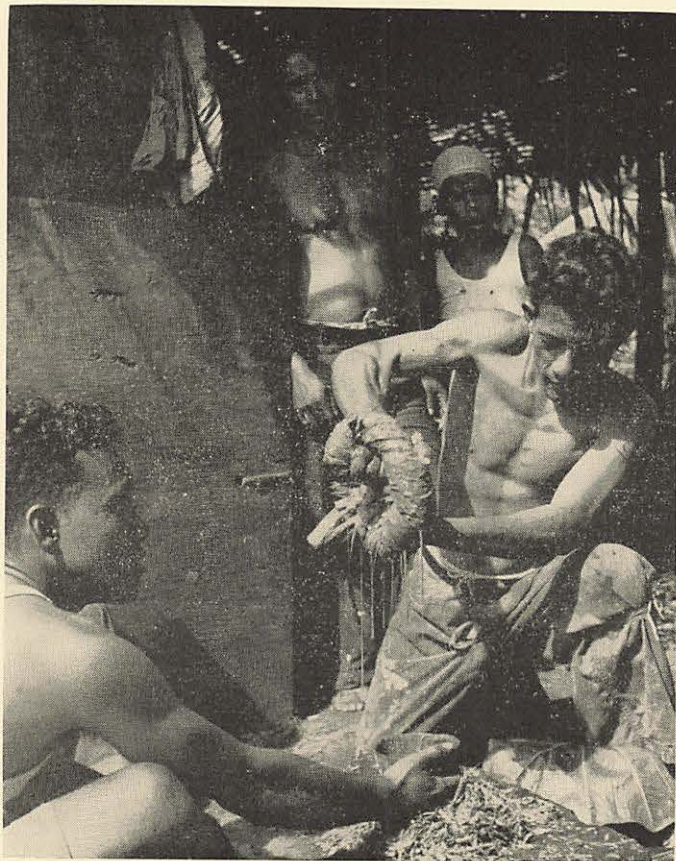


FIGURE 9.—Straining kava through *Hibiscus tiliaceus*.

According to Hough (30), the drinking of kava originated in the Papuan region, where the custom reached its highest development. There is no definite information as to when or from where *P. methysticum* was introduced into Ponape, but it is likely that the plant came from either Melanesia or Polynesia at some early date. At the present time, Ponape is apparently the only island in Micronesia where kava is prepared for daily use. Luetke (46) described the use of kava, or *seka*, on Kusaie in 1828; but according to native informants, the drink was banned on that island by missionaries by 1850, and this ruling is still in effect.

In Polynesia, *P. methysticum* has been variously called 'awa, awa, kava,



*kawa*, and *hoi*. In Fiji, it is known as *yakona* or *yangona*, and in the New Hebrides it is called *namoluk*.

The use of kava has been reported from the following islands: Tonga, Samoa, the Marquesas, and Fiji by Hough (30); Wallis Island by Home (25); Tahiti, where the use of the drink was reported to be obsolete in 1862, by Cuzent (12); New Guinea, the New Hebrides, the Austral Islands, and the Tuamotus by Lewin (45); and the Cook Islands and Hawaii by Brown (5). The method of preparation varies from island to island, but the essential features are the same. In Samoa (Hough, 30), the roots were formerly chewed by chiefs' daughters, but today the roots are broken up with rocks. In Tonga (Home, 25), too, roots were formerly chewed, but by young men instead of women; and today they are broken up with rocks. The macerated pulp was strained through *Hibiscus tiliaceus* bark (25) and stalks of *Cyperus cinctus* (30). In Polynesia, fruits of *Capsicum frutescens* are sometimes added to the drink to increase the peppery taste (Yuncker, 66). I summarize the preceding information on kava in a recent paper (20).

#### FUMATORIES, MASTICATORIES, AND DRUGS

Of the fumatories, tobacco is grown locally and dried in the sun. The natives, however, prefer American tobacco if they can afford it. During the war, when there was a scarcity of tobacco, the leaves of such plants as *Elephantopus* and *Alocasia* were tried as substitutes, but without success.

Betel-nut chewing is practiced only by people who have moved to Ponape from Yap or the Palaus. Most of the native Ponapeans frown on the habit. *Areca cathecu* (*poo*) and *Piper betle* (*tuh*), from which the betel nut and betel leaf are derived, have probably been introduced into Ponape from Yap during recent times.

Many of the plants on Ponape have a wide variety of medicinal uses. Some drugs derived from these plants are used for such things as relieving emotional distress and stopping diarrhoea, and as contraceptives and abortifacients. Native men and women who cure patients successfully by the use of medicines are known as *sozwini* and *katinwini*, respectively. These specialists will divulge little information pertaining to drug plants, owing, apparently, to the fear of being struck dead for telling too much. One *katinwini* interviewed by me gave information on the uses of about 30 different plants and then suddenly professed ignorance. Riesenberg (54) has presented an excellent account of medicinal plants on Ponape and the superstitions pertaining to their uses.

Apparently, the only plants utilized for poisoning or stupefying fish on Ponape are several species of *Derris* (*up*). The use of *Derris* root for this purpose, however, is more commonly practiced by people who came from Yap or the Palaus than by the Ponapeans themselves.



## CLOTHING MATERIALS

Native informants say that before contact with the white man, Ponapean women wore "grass" skirts and the men wore nothing or only loin cloths. At a later date, and during most of the Spanish period (1886 to 1899), "grass" skirts were the fashionable clothing for men. Most of these skirts were from coconut leaves or *Hibiscus tiliaceus* bark, though some were made from banana fibers and *Pandanus* root fibers (Bascom, 2). Toward the end of the Spanish period, European shirts and pants became the vogue for men. During the Spanish period and for some time previous to it, women wore a sarong-like garment (*maimai*) made from breadfruit bark, which was sewed together with thread made from the bark of *Ficus (neen)*, and shawls woven from *Hibiscus tiliaceus* bark. Belts made from coconut or *Pandanus* leaves are now worn with trousers. At the present time, "grass" skirts are worn only by some of the older men, except during ceremonies and feasts, when they are also worn by the young men. Women wear either European style dresses or *maimai* made from introduced cloth. For a long time, buttons have been manufactured from the fruit of the native ivory nut palm (*os*). Hats are plaited, chiefly from coconut leaves.

## PIGMENTS AND OILS

Dyes for clothing and body decoration have been used for a long time on Ponape. One variety of *Curcuma (ongitik)* yields a reddish pigment, and other varieties (*ongalap*, *luh-aroo*, and *ongkol*) produce a yellowish dye. Other plants used for dyeing are *Morinda citrifolia (weypul)* and *Myristica hypargyrea (kararah)*, both of which yield red pigments. In the former plant, the bark of the root is utilized, whereas the nuts of the latter are used. In the past, *Curcuma* was also used for tattooing, though *Aleurites moluccana (sakan)* apparently was used more extensively for this purpose. Tattooing is becoming obsolete and is seen only on older men and women. *A. moluccana* is prepared for use by burning and grinding the nuts, then adding water to the pulverized particles. The tattooing instrument (*kahliss*) is a short stick made from *Hibiscus tiliaceus* or *Saccharum spontaneum (ahlec)*, with a number of citrus thorns bound together at one end with coconut rope. After the preparation is applied to the skin, the thorns are placed against the skin and tapped with a heavy object, such as a portion of the fleshy petioles of banana, to imbed the color. After the process is completed, coconut oil is rubbed on the skin to soothe the wounds. A more detailed description of tattooing on Ponape can be found in J. S. Kubary (Weitere Nachrichten von der Inseln Ponape, Mus. Godeffroy, Jour. 3: 261-267, 1875).

The natives prepare paint by mixing oil from the seeds of *Parinarium glaberrimum (ais)* with red soil. Atkins, Kroll, and Company of San Francisco analyzed these seeds, found a fat content of 27 percent, and they ex-



pressed interest in developing the plant commercially. Leaves of certain sedges, *Cyperus javanicus* (*use*) and *C. odoratus* (*use-n-ant*), contain an oil which emits a pungent, soaplike odor. The oil of either one of these plants is used in conjunction with coconut oil as a hair wash.

#### ROPE, MATS, AND THATCH

Plants most commonly used for making rope on Ponape are coconut, a variety of *Hibiscus tiliaceus* called *pah-takai*, and *Enhalus acoroides* (*ohlot*). *E. acoroides*, which grows in the shallow water of the lagoon, is reputed to contain the strongest fiber of any plant on Ponape. In the process of making rope from coconut, the fruit is soaked in salt water for three or four months in order to separate the fibers. After this period, the fibers are removed and placed in the sun to dry.

Most dwelling roofs are thatched with the leaves of *Coelococcus amicarum* (*os*) and *Saccharum spontaneum* used together, whereas canoe-house and cooking-house roofs are more commonly thatched with coconut leaves. Interiors of house walls, on the other hand, are covered with *Phragmites karka* (*rau*) or *Saccharum spontaneum* leaves. The latter is principally used in native homes, whereas *rau* is usually preferred by foreigners.

Mats are plaited from *Pandanus* (*kipar* and *matal*) leaves, and baskets from *Pandanus* or coconut leaves. These articles are not produced on a large scale today, principally because they are imported from neighboring atolls where the people are much more skilled than the Ponapeans at this type of handicraft.

#### LUMBER

According to native informants, the strongest woods in Ponape are *Northiopsis hoshinoi* (*kohreh*), *Calophyllum inophyllum* (*isyo*), *Cynometra* (*kahsilah*), and *Intsia bijuga* (*choyo*), in that order. A number of native woods have a higher specific gravity than water, hence logs must be kept afloat by bamboo stems tied to them. Some of these heavy woods are *Lumnitzera littorea* (*zwengal*), *Rhizophora apiculata* (*aakalel*), *R. mucronata* (*aakapah*), *Bru-guiera conjugata* (*shom*), *Premna* (*tobuk*), *Syzygium carolinense* (*kanpaap*), *Terminalia catappa* (*tipop*), *Pangium edule* (*durien*), *Calophyllum inophyllum* (*isyo*), *Parinarium* (*ais*), and *Mangifera* (*congit*).

House posts are made from *R. mucronata* (*aakapah*) and *Cyathea nigricans* (*kattar*); rafters from *R. apiculata* (*aakalel*) and *Ochrosia* (*kitee*); floors from *Sonneratia* (*kotoh*), *Lumnitzera littorea*, *Intsia bijuga*, *Elaeocarpus carolinensis* (*syatak*), *Camptosperma brevipetiolata* (*tong*), and *Cordia subcordata* (*eekoh-eek*). *Barringtonia asiatica* (*we*), *Syzygium carolinense*, and *Heritiera littoralis* (*marapinset*) are used for general construction pur-

poses. Furniture is made from *Terminalia catappa*, *Thespesia populnea* (*pone*), *Calophyllum inophyllum*, *Cordia subcordata*, and *Northiopsis hoshinoi*.

The most important woods for canoes are *Campnosperma brevipetiolata*, *Elaeocarpus carolinensis*, *Xylocarpus granatum* (*plock*), *Parkia koroni* (*kurum*), and breadfruit, in that order. Most of these trees have long straight trunks with few branches on the lower half of the plant. Others which may be used but which are not so highly prized include *Erythrina* (*pahr*), *Hernandia* (*pingapin*), and *Thespesia populnea*. On the coral atolls, breadfruit is used almost exclusively for canoes, since other suitable woods are not always available. For the outriggers, a variety of *Hibiscus tiliaceus* called *likital*, and *Kleinhovia hospita* (*kalau-n-ant*) are used. Paddles are made from another variety of *H. tiliaceus* called *pah-taki*; canoe poles are made from *Parinarium* or *Rhizophora apiculata*; *Artocarpus atilis* (*mai*) is used for bailers; and *Ixora* (*kartieu*) is utilized for other canoe parts. Canoes are caulked with a mixture of breadfruit latex and limestone.

#### ORNAMENTAL PLANTS

*Casuarina equisetifolia* and *Cycas circinalis*, which are native to some of the other high islands in Micronesia, are found only in cultivation on Ponape. Other ornamental trees include *Spathodea campanulata* (African tulip tree), *Roystonea elata* (royal palm), *Elaeis guineensis* (African oil palm), *Hibiscus rosa-sinensis*, *Allamanda cathartica*, *Cassia fistula* (golden shower), *Tamarindus indica*, *Cananga odorata* (*pur-n-zwai*), *Ceiba pentandra* (*cottin*), *Acalypha*, *Codiaeum*, and *Plumeria rubra* (*pomaria*). The flowers of *Cananga odorata* are used for perfume and garlands. *Ficus elastica* (India rubber tree, or *rapah*) was introduced during the German period as a source of rubber, but the plant was never exploited for this purpose. At present, there are a number of huge rubber trees in the vicinity of Colonia, and some near Ronkiti.

The more common herbaceous ornamentals are *Catharanthus roseus*, *Celosia cristata* (*ropon-malek*), *Angelonia gardneri* (*carmeena*), *Hedychium coronarium* (*ginzer*), *Canna indica* (*yuyu-n-zwai*), *Gomphrena globosa* (*pahweis*), *Coleus scutellarioides* (*koromaht*), *Caladium bicolor*, and *Hippobroma longiflora*. All except *Caladium bicolor* occur as weeds along roadsides or in abandoned fields. *Eichhornia crassipes* (water hyacinth), introduced a number of years ago by the Japanese, now occupies a large area in the shallow parts of the Nanpil River.

#### GRASSES AND FORAGE PLANTS

Lawns are usually planted with *Cynodon dactylon* (Bermuda grass), *Zoysia tenuifolia*, and *Chrysopogon aciculatus* (*reh-takai*), species which also occur as weeds. *Pennisetum purpureum* (*puk-soh*), introduced by the Jap-



anese for the purpose of manufacturing paper, has become permanently established as a weed. The most important forage grasses are *Paspalum conjugatum*, *P. orbiculare*, and *P. scrobiculatum*. None of these is cultivated systematically, since there is little commercial cattle raising on the island. At the Ponlangas plantation, where cattle are raised for subsistence only, the animals are allowed to graze among the coconut trees in order to keep down the number of undesirable weeds. An average of one cow or carabao per acre has been found to be most practical in the prevention of overgrazing. During the Japanese period, *Vigna hosei*, a climbing, yellow-flowered legume, was introduced on Ponape for forage purposes. At the present time, this plant is a common weed in the Kiti and Metalanim Districts.

#### AGRICULTURAL EXPERIMENT STATION

An agricultural experiment station was started during the German period and was expanded by the Japanese, who called it the Tropical Industries Research Institute. Under the Japanese administration and the direction of Mr. M. Hosino, several hundred kinds of plants of commercial and aesthetic value were grown. After the Japanese relinquished the island, Mr. R. Burton became director of the station; and since June 1950, Mr. Donald Anderson has held that position.

Most of the plants in the experiment station were introduced from Japan, Formosa, the Palaus, and Malaysia, but some were brought in from Hawaii and Saipan. The following is a brief list of some of the plants and their uses: for drugs, *Taraktogenos kurzii* King (chalmoogra tree), several species and varieties of *Cinchona*, and *Cinnamomum zeylanicum* Blume (cinnamon); for beverages, several species of coffee, tea, and cocoa; for fibers, *Agave sisalana* (Engelm.) Perrine (sisal hemp), *Boehmeria nivea* Hooker and Arnott (ramie), and *Carludovica palmata* Ruiz and Pavon (Panama hat palm); for fruits, *Achras zapota* L. (sapodilla), *Garcinia mangostana* L. (mangosteen) and *Litchi chinensis* Sonn. (litchi nut); for ornamentals, *Ravenala madagascariensis* J. F. Gmel. (traveler's tree), *Platynerium bifurcatum* C. Chr. (elk's-horn fern), and *Quisqualis indica* L. (Rangoon creeper); for timbers, two species of *Swietenia* (mahogany), *Tectona grandis* L. f. (teak), and *Grevillea robusta* A. Cunn. (silky oak); for crops, corn, peanuts, and rice; for rubber, the rubber trees, India, Para, and Ceara. There are also more than 35 different species of palms.

#### VEGETATION

The vegetation of Ponape may be separated into the following broad divisions: mangrove forest, strand vegetation, secondary growth of lowlands, and rain forest and secondary growth of uplands.



## MANGROVE FOREST

On Ponape, the mangrove forest encircles the entire main island, except in such places as the trees have been cut to clear the way for building harbors, and extends for some distance up a number of tidal streams. It is also found around the inner shores of some of the basaltic islets; and it constitutes the entire vegetation of a number of the inshore deposit islets. For the most part, roots and trunks of the trees are either continually or intermittently immersed in water. The combined conditions favorable for development of mangrove vegetation are a mild climate, saline or brackish water in which wave action is retarded, and a substratum composed of silt deposited from rivers. Sometimes, broken particles of coral are also mixed with the silt.

Along the seaward side of the mangrove swamps, *Sonneratia caseolaris* (*kotoh*), a tree with vertical surface roots growing at some distance from the main trunk, is generally the dominant species (fig. 10). At the mouths of the larger rivers and around bay indentations, *Rhizophora mucronata* and *R. apiculata* form almost pure stands, or are mixed with *Sonneratia* and *Bruquiera conjugata* (*shom*). Other species which may occur toward the rear of the swamp are *Lumnitzera littorea* and *Xylocarpus granatum*. As a rule, epiphytes and lianas are not very abundant. *Davallia (uligan kiail)*, *Nephrolepis (rahtil)*, and *Microsorium scolopendria (kitieu)* are representative of the former group, whereas species of *Derris* are the most conspicuous lianas. At the mouths of a few of the large rivers, such as Kapinpilap, and for a short distance upstream, are found pure stands of *Nipa fruticans (pahrun)*. Christian (8) says that Param Islet (fig. 4) was so named because of the abundance of the *Nipa* palm. However, I was unable to find any of these trees during my brief visit there. In most cases, mangrove is immediately replaced by strand vegetation where the land level rises from the shoreline.

As the estuary narrows and becomes river-like, *Sonneratia* drops out, *Rhizophora* remains conspicuous, and *Bruquiera*, *Xylocarpus*, and *Lumnitzera* are more noticeable. Farther up the stream, the last three named species and *Heritiera littoralis (marapinset)* gradually become dominant. *Xylocarpus*, with its peculiar stratified root knees, is especially conspicuous. Along the Paneewee and Ohlos Rivers (fig. 4) in the Kiti District, where this type of mangrove vegetation reaches its peak development, the forest extends more than a mile upstream. In this forest of magnificent trees, which are mostly over 100 feet tall, stands of *Rhizophora* still persist, usually in the deeper parts of the swamp. The forest is practically free of undercover plants, owing to the daily flooding of the mud flats and the poor penetration of sunlight through the dense foliage. *Nephrolepis acutifolia (rahtil)*, a fern with hanging leaves four or five feet long, is the most abundant epiphyte. Other common epiphytes are *Dendrobium carolinense* and *Asplenium nidus (telurik)*.



When the land level begins to rise, mangrove is usually succeeded by a small strip of strand plants or rain-forest vegetation. Kariyone (39) reports on mangroves from Ponape and Truk, and Fosberg (17) discusses other mangrove forests in the Caroline Islands.



FIGURE 10.—*Sonneratia caseolaris* and *Rhizophora mucronata*.

Hosokawa (29) alludes to Ponape mangrove forests as the *Sonneratia-Rhizophora-Bruguiera* association. Since mangrove is a subclimax of long duration which only becomes displaced after much silting, I believe that the entire forest should be referred to as "mangrove subclimax" with several communities within it. The mangrove forest along the shore and at river mouths (fig. 10) should be called the *Sonneratia-Rhizophora* community. In areas where the dominants of this subclimax form almost pure stands, the vegetational units are known as *Sonneratia caseolaris*, *Rhizophora mucronata*, and *R. apiculata* communities, respectively. At the transition point, where the

estuary gradually becomes river-like, the community can be called *Rhizophora-Bruguiera*. Farther upstream, the forest may be termed the *Xylocarpus-Bruguiera* community.

#### STRAND VEGETATION

Since there are only a few areas on the main island of Ponape with sandy beaches (in the Metalanim District for example), strand vegetation is usually poorly developed. Scattered strips of strand plants are found here and there behind mangrove forests, forming an ecotone with the latter where the land rises from the water. This type of vegetation is also found in disturbed areas close to the shore, on the sandy shores of basalt islets, and on coral islets.

On the main island, the woody strand plants most likely to be seen are *Desmodium umbellatum* (*likar-tikutik*), which is the most abundant, *Calophyllum inophyllum*, *Terminalia catappa*, *Pangium edule*, *Erythrina*, and *Barringtonia asiatica*. *Calophyllum* is also found in disturbed areas on Mount Peipalap at altitudes up to about 800 feet. Other woody plants of less frequent occurrence are *Thespesia populnea*, *Pandanus* (*kipar-n-ai*), *Clerodendrum inerme* (*ilau*), *Allophylus* (*ungeh*), *Heritiera littoralis*, *Ochrocarpus* (*luas*), *Ochrosia* (*kitee*), and *Inocarpus fagiferus* (*marrup*). *Clerodendrum inerme* also occasionally occurs along roadsides. Of the herbaceous plants, *Ipomoea pes-caprae* (*shonshol*) is the most abundant, especially in disturbed areas near the seashore. *Wedelia biflora* (*ingkah*) is common and becomes locally abundant in a number of secondary growth areas up to 700 feet or more in altitude. Some other herbaceous plants, such as *Cyperus javanicus* (*use*), *Hymenocallis littoralis* (*kiup*), *Vigna marina* (*tansilituh*), *Derris* (*keh-orrer*), and *Abrus precatorius* (*caygus*), occur less frequently. *Cyperus*, however, appears as a dominant on a few of the basaltic islets, such as Langar.

In addition to the plants already mentioned for the main island, the following species grow along the strand on the basaltic islets: *Scaevola frutescens* (*cenut*), *Hibiscus tiliaceus*, *Cordia subcordata* (*cekoh-cek*), *Pemphis acidula* (*ngi*), *Colubrina asiatica* (*putaput*), *Hernandia sonora*, *Cassytha filiformis* (*kohtokot-shau*), and *Canavalia* (*wahntal*). As on the main island, *Ipomoea pes-caprae* is very common in similar types of situations. I made no collections on coral islets.

#### SECONDARY GROWTH OF LOWLANDS

This type of vegetation occurs from sea level to about 800 feet in areas where there has been or still is human interference with the original vegetation. Here and there are also scattered remnants of the rain forest flora, such as *Campnosperma brevipetiolata*, *Elaeocarpus carolinensis*, *Barringtonia racemosa*, and *Cyathea nigricans*. The vegetation consists principally of cultivated and naturalized plants, but it also includes a number of indigenous species.



Cultivated plants were previously discussed in the section on economic botany. This discussion, therefore, will be confined to naturalized and indigenous species.

Along roadsides and often in abandoned fields the following plants are either abundant or frequent: *Cassia alata*, *C. occidentalis*, *C. lechenaultiana*, *C. mimosoides*, *Mimosa pudica*, *Passiflora foetida*, *Ipomoea digitata*, *Merremia peltata*, *Piper bonapense*, *Stachytarpheta*, *Elephantopus*, *Hyptis*, *Ageratum*, *Vernonia*, *Sida*, *Urena*, *Desmodium heterocarpum*, *Crotalaria*, *Cyclosorus adenophora*, *Polygala*, *Phyllanthus*, *Digitaria*, *Eragrostis amabilis*, *Cenchrus*, *Eleusine indica*, *Paspalum*, and *Echinochloa colonum*.



FIGURE 11.—*Ischaemum chordatum*.

A number of abandoned areas are completely dominated by grasses. *Ischaemum chordatum* (*reh-patil*), which grows to a height of four or five feet, forms such a dense cover that practically all other species of plants are excluded (fig. 11). In other disturbed situations, *Saccharum spontaneum*, a tall grass with plume-like panicles, also grows in abundance. Both of these plants are common on Mount Peipalap, at about 700 or 800 feet. *Miscanthus floridulus* (*sapalang*), another tall grass, is occasionally found at low altitudes, but it seems to be more frequent in upland areas.



In marshy areas, in roadside ditches, or even along some rivers, *Phragmites karka* (*rau*) is perhaps the most conspicuous plant. Other plants common in these situations are *Rhynchospora*, *Fuirena*, *Cyperus*, *Fimbristylis*, and *Jussiaea*.



FIGURE 12.—*Camptosperma* and *Exorrhiza*.

The removal of the original vegetation and the subsequent abandonment of land are also responsible for the development of thickets and woodlands. *Hibiscus tiliaceus*, which forms a dense cover with its spreading, drooping branches, occupies large areas in these disturbed situations. Both *Lantana camara* and *Leucaena glauca* also form closed communities; but at present, *L. glauca* is common only in the vicinity of Colonia. *Commersonia bartramia* (*kahil*), *Melochia odorata* (*kotol*), *Glochidion* (*muek*), *Morinda citrifolia* (*weypul*), and *Macaranga* (*apuit*) are the principal woodland species.



## RAIN FOREST AND SECONDARY GROWTH OF UPLANDS

In some places, such as Nanpil, the virgin rain forest begins as low as 150 feet, whereas in other areas the altitude at which this formation starts varies with the amount of previous deforestation. As a consequence of using a series of 50 quadrats (each quadrat measuring 30 by 30 meters) for various altitudes, Hosokawa (29) concluded that the rain forest was divided into the following categories: *Camptosperma brevipetiolata* consociation, from 100



FIGURE 13.—*Exorrhiza ponapensis*, Mount Nanalaut.

feet to 1,100 feet; *Exorrhiza* (*Bentnickiopsis*) *ponapensis* consociation, from 360 feet to 2,200 feet; and *Cyathea* (*Alsophila*) *ponapeana*-*Pandanus patina* association, from 2,000 feet to 2,570 feet. I made no quadrat studies during my visits to the rain forest, but my observations lead me to agree with the essential features of Hosokawa's classification. Since *Pandanus patina* always grows in pure stands, however, I feel that it should be considered as a con-



sociation. The other vegetation between 2,000 feet and the highest peak could be termed the *Cyathea ponapeana*-*Gynotroches axillaris* association, as these two species appear to be the most abundant.

In many of the areas examined, from altitudes of about 150 feet to 1,000 feet, *Campnosperma* (*tong*), was found to be the dominant tree, but not necessarily the most abundant. (See figure 12.) However, it grows to a height of about 120 feet and is either the tallest or one of the tallest plants. *Exorrhiza ponapensis* (*kotop*) (fig. 13), which is usually the most abundant or next in abundance, becomes dominant in some areas. Seedlings of this species are also numerous in certain localities. Other tall trees which may be locally dominant include *Elaeocarpus carolinensis* (*syatak*), *Parinarium glaberrimum* (*ais*), and *Syzygium carolinense* (*kanpaap*). On mountains such as Tolonkiup, Poaiपोai, and Tolotom, *Parinarium* seedlings are numerous, especially where there has been earlier deforestation. Additional conspicuous trees are *Parkia korom* (*kurum*), *Palaquium karrak*, *Myristica hypargyrea* (*kararah*), *Ficus tinctoria* (*neen*), *Barringtonia racemosa* (*winmarr*), *Terminalia carolinensis*, and *Cynometra bijuga* (*kumoh*). The trees reach their greatest heights in level areas whereas they are noticeably smaller on slopes. Of trees less than 50 feet in height, the most important are *Cyathea nigricans* (*kat-tar*); *Pandanus cominsii* (*matal*); *Aglaiia ponapensis* (*marasaw*); *Pandanus* (*kipar-n-zwahl*); *Syzygium stelecanthum* (*kirakinwahl*); *Ponapea* (*kattai*), which is locally dominant near Nanpil at an altitude of about 150 feet; *Glochidion marianum* (*luhwikitoh-lol*); *Claoxylon carolinianum* (*koyaet*); *Disco-calyx ponapensis* (*kartiel*); and *Alpinia carolinensis* (*yuyu*). Seedlings of *Pandanus cominsii* were numerous in some of the localities I visited.

Above 1,000 feet, *Campnosperma* is less abundant, but it is an important part of the flora up to the highest altitudes. *Parkia korom*, *Cynometra bijuga*, *Ponapea*, and *Alpinia carolinensis* either drop out or become sparse above 1,000 feet. At about 1,500 feet, *Parinarium glaberrimum*, *Ficus tinctoria*, *Myristica hypargyrea*, and *Elaeocarpus carolinensis* begin to disappear; and above 1,700 feet these species are not likely to be found. The remainder either continue to the highest peaks or drop out before 2,000 feet.

From approximately 1,000 to 2,000 feet, *Exorrhiza* is usually the dominant plant. At these altitudes, *Exorrhiza ponapensis* ranges in height from about 80 to 100 feet. This plant attains such exclusive dominance principally because of its size, abundance, and unusual capacity to reseed itself, especially in disturbed areas. From a sample plot of 20 square meters near Nipit (1,300 feet), Hosokawa (28) counted 2,200 seedlings. At 1,500 feet or higher, the vegetation generally becomes exceedingly mossy, with a marked increase in vascular epiphytes. In addition, some of the characteristic sub-dominants of the *Cyathea*-*Gynotroches* association, *Astronidium ponapense*, *Ilex volkensiana*, and *Eurya nitida* begin to appear.



On a number of the convex or relatively flat ridges, from approximately 2,000 to 2,500 feet, *Pandanus patina*, or *pect* (fig. 14), forms pure stands. The forest crown seldom exceeds 20 feet in height, and the crown cover is about 98 percent. Almost no epiphytes or understory exist in this forest, the floor of which is covered with heaps of fallen leaves. This consociation was observed in three different places on Mount Nanalaut, 10 distinct areas on Mount Ninani, and a few stations on Mounts Tolenwalik and Beirut.



FIGURE 14.—*Pandanus patina*, showing prop roots.

In other areas from 2,000 feet to the summit of the highest peak, the woody vegetation is virtually covered with numerous epiphytes, especially mosses and ferns. Many of the tree trunks show bulges resulting from masses of pulvinated bryophytes plus the adhering soil, whereas others are nearly obscured with pendulous mosses and ferns such as *Pleuromanes pallidum* (fig. 15). In addition, leaves of the trees are almost completely covered with epi-



phyllous bryophytes. Above 2,000 feet, the trees are obviously stunted. On acute ridges, these trees range from seven to 10 feet in height, whereas they are seldom more than 20 feet tall on the flat ridges. *Camptosperma* and *Exorrhiza ponapensis*, however, may grow as high as 30 and 40 feet, respectively, on flat ridges. On the summit of Mount Ninani, the woody plants are only four or five feet tall. The vegetation on top of this mountain, as well as on



FIGURE 15.—*Pleuromanes pallidum*.

other mountain tops, is exposed to frequent strong winds. *Cyathea ponapensis* and *Gynotroches axillaris* are the dominant plants in a number of locations. *Astromidium ponapense*, *Garcinia ponapensis* (*konpuil*), *Ilex volkensiana*, *Cinnamomum sessilifolium* (*matieu*), *Elaeocarpus kerstingianus*, *Glochidion* (*muek*), *Syzygium carolinense*, *Rapanaea carolinensis*, and *Camptosperma* may also attain dominance in some areas. Other woody species entering into the floristic composition include *Eurya nitida* (*pah-puh*), *Cyrtandra urvillei* (*etin-wohl*), *Timonius ledermannii*, and *Maesa carolinensis*.

Excluding the seedlings of *Exorrhiza ponapensis*, the most abundant ground cover plant in the rain forest is *Thoracostachyum pandanophyllum* (*pohkee*), which is especially prominent between 1,000 and 2,200 feet. At approximately 1,000 feet and above, other conspicuous species comprising the ground cover include *Tapenidium pinnatum*, *Cyclosorus dentatus*, *Phajus amboinensis*, *Tectaria grandifolia*, and *Cephalomanes*. *Cephalomanes* is most



often found in the wetter parts of the forest and sometimes grows in shallow stream beds. *Zingiber zerumbet* (*ong-n-pahlow*) is of frequent occurrence throughout the rain forest up to about 1,800 feet. On the exposed ridges of Mount Ninani and some other high mountains, the soil surface is covered with various mosses, sedges, and grasses.



FIGURE 16.—*Freycinetia ponapensis* (right center and lower right), *Cyathea nigricans* (lower center and left), and *Exorrhiza ponapensis* (upper center).

*Freycinetia ponapensis* (*rahrak*), a root climber, is undoubtedly the most common liana (fig. 16). Other conspicuous climbing plants frequently seen are *Hoya schneei* (*takituk*), *Procris pedunculata* (*pahkeh*), and *Flagellaria*



*indica* (*itan-wal*). All except *F. indica*, which usually grows at lower altitudes, have a broad altitudinal range.

Hosokawa (29) classifies epiphytes into a number of categories depending on whether the renewal buds are borne close to or far removed from the substratum. He also includes *Freycinetia*, *Hoya*, and *Procris* as epiphytes, but I prefer to consider these plants lianas. At altitudes below 1,500 feet, vascular epiphytes are not particularly common. As previously mentioned, together with mosses they become increasingly conspicuous beyond this point. The most abundant epiphytes fall almost entirely into the Hymenophyllaceae, Orchidaceae, and Polypodiaceae. Representatives of the first family are *Pleuromanes pallidum*, *Mecodium reinwardtii*, *Microgonium omphalodes*, and *Nesopteris grandis*. Orchids include *Corybas ponapensis*, *Dendrobium nanarauticum*, and *Pseuderia*; whereas the most common members of the Polypodiaceae are *Asplenium nidus*, *A. pellucidum*, and *Lindsaea macraeana*. Other epiphytes of less frequent occurrence are *Lycopodium phlegmaria* and *Peperomia*. *Amyema artensis* (*tauerlung*) represents the only hemiparasite.

In quite a few regions throughout the rain forest, the climax vegetation has been cut or burned. Some of the original plants have come back; but in a number of areas, secondary growth vegetation has replaced the primary vegetation. *Dicranopteris linearis* (*matalin-mahl*) and *D. weatherbyi* produce pure stands in many burned-over areas, mostly above 1,000 feet. These plants, which often grow to four or five feet, form dense impenetrable thickets. Other species in these areas include *Histiopteris incisa* (*peypey-aramus*), which also forms dense stands, and *Hedyotis ponapensis*. *Hibiscus tiliaceus* may grow in altitudes up to 1,300 feet, but not commonly. Additional secondary growth plants are *Isachne*, *Scleria*, *Melastoma*, and *Oplismenus*. Certain species are frequently found in open marshy areas. Some of the more common representatives are *Fimbristylis*, *Fuirena*, *Scleria*, *Rhynchospora*, *Paspalum*, *Digitaria*, and *Lycopodium cernuum*.

It is my opinion that, except for the present location of mangrove vegetation and a narrow strip of strand vegetation immediately behind this subclimax, the entire main island and most of the basaltic islets of Ponape were originally covered with rain forest. This conclusion is based on the occurrence of isolated patches of rain-forest flora throughout the lowlands and close to the sea shore.

#### FLORA

I have tried to include in the following list of species all available records of vascular plants from Ponape, except plants cultivated in the Agricultural Experiment Station. Subphyla and classes included in this treatment derive from a classification by O. Tippe (61). For the most part, Copeland's "Genera Filicum" is followed for nomenclature of ferns. Angiosperms are arranged by



families according to the system used by Hutchinson (31). All genera and species are listed alphabetically under their respective families. Each entry is based on specimens collected or seen by me on Ponape; on other collectors' specimens examined at various herbaria; or on published names of species for which specimens were not available. Immediately after the place of publication of the valid name, other authors who mention the species for Ponape are cited in chronological order. Synonyms which pertain to Ponape only are listed below the valid name. Specimens cited are those which have been verified personally, or those which have been determined by specialists in certain groups. Abbreviations of the herbaria mentioned are as follows: United States National Herbarium (US), Bishop Museum (BM), and New York Botanical Garden (NY).

Native names of species are italicized. Where native names differ between districts, the district to which the name applies is indicated in parentheses; and if they were obtained by other authors, the collector's name is acknowledged.

Economic uses of a number of species which were not mentioned under the heading "Agriculture and economic botany" are included here. For the most part, medicinal uses are from Riesenberg (54). Other uses I obtained from my native guides, from Oliver of Nanpei, and from various other native informants.

The list includes 104 species of vascular cryptogams, one species of gymnosperm, and 458 species of angiosperms. Among these are three new combinations, *Dicranopteris weatherbyi*, *Cyathea ponapeana*, and *Syzygium stelechanthum*; three new species, *Glochidion senyavinianum*, *Pandanus tolotomensis*, and *Isachne purpurascens*; and 106 new records, not previously recorded in taxonomic literature. Further exploration will undoubtedly reveal additional records. There are 80 endemic species, but no endemic genera. It is likely that some of these so-called endemics will be discovered in other islands of Micronesia, or even in Melanesian and Polynesian island groups.

## SUBPHYLUM PSILOPSIDA

### PSILOTACEAE

***Psilotum complanatum*** Sw., Syn. Fil., 188, 414, pl. 4, fig. 5, 1806.—Fosb., Am. Fern Jour. 40: 147, 1950.

*Ledermann 13185* (BM)<sup>5</sup>; Mt. Poaipoai, 1,800 ft., July 8, 1949, *Glassman 2483* (US), epiphyte.

Kusaie, Nukuoro, Palaus, Alamagan; pantropical.

<sup>5</sup> No localities are given by Ledermann.

**Psilotum nudum** (L.) Griseb., Ges. Wiss. Gott., Abhandl. 7: 278, 1857.

Anapeng-pa, Feb. 5, 1936, *Takamatsu* 771 (BM); vicinity of Colonia, on stone wall, July 17, 1949, *Glassman* 2550 (US).

Tropics and subtropics of both hemispheres.

## SUBPHYLUM LYCOPSIDA

### LYCOPODIACEAE

**Lycopodium cernuum** L., Sp. Pl., 1103, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 257, 1935.

*Lycopodium cernuum* L. var. *capillaceum* Spring, Monogr. fam. Lycopod. 1: 80, 1842.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 440, 1935.

Near Colonia, Aug. 8, 1929, *Kanehira* 645 (BM); Anapeng-pa, Feb. 6, 1936, *Takamatsu* 726 (BM); Tolomail, in open field, Feb. 11, 1936, *Takamatsu* 979 (BM); Mt. Tamatamansakir, 1,000 ft., rain forest, June 23, 1949, *Glassman* 2335 (US), epiphyte.

Native name, *limpahr*. Pantropical.

**Lycopodium phlegmaria** L., Sp. Pl., 1101, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 257, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 438, 1935; 33: 117, 1943.

*Urostachys harmsii* Hert. apud Ness., Barlappg., 223, pl. 57, fig. 9, 1939. Mt. Ninani, 1,700 ft., Aug. 14, 1929, *Kanehira* 818 (NY); no locality given, Aug. 12, 1933, *Hosokawa* 5695 (US); Mt. Tolotom, Feb. 15, 1936, *Takamatsu* 1063 (BM); Mt. Nanalaut, Feb. 17, 1936, *Takamatsu* 1092 (BM); Mt. Tamatamansakir, 1,300 ft., June 22, 1949, *Glassman* 2325 (US), epiphyte; Mt. Seletereh, 2,000 ft., July 28, 1949, *Glassman* 2750 (US).

Native name, *limpahr*. Paleotropics.

**Lycopodium phyllanthum** Hook. and Arn., Bot. Beechey Voy., 102, 1832.—Fosb., Am. Fern Jour. 40: 145-146, 1950.

Colonia-Palikir, Aug. 23, 1940, *Hosokawa* 9547 (US).

Polynesia. Type from Hawaii.

**Lycopodium squarrosus** Forst. f., Prodr., 86, 1786.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 438, 1935.—Fosb., Am. Fern Jour. 40: 146, 1950.

*Lycopodium ulicifolium* Vent. apud Sw., Syn. Fil., 177, 1806.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 28: 146, 1938; 33: 117, 1943.

*Ledermann* 13439 (BM); Kuporujo, Mar. 13, 1936, *Takamatsu* 687 (BM), epiphyte; Nanalaut, July 13, 1936, *Hosokawa* 8196 (US).

Kusaie, Palaus; Africa to Tahiti.



## SELAGINELLACEAE

- Selaginella kanehirae** Alst., Jour. Bot. 72: 227, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 258, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 440, 1935; 31: 472, 1941; 33: 118, 1943.  
Nipit-one, Aug. 16, 1933, *Hosokawa 5813* (US); Mt. Tamatamansakir, 1,100 ft., rain forest, June 23, 1949, *Glassman 2329* (US), epiphyte.  
Native name, *kitien-mahl*. Also known from Kusaie.

## SUBPHYLUM PTEROPSIDA

## CLASS FILICINEAE

## OPHIOGLOSSACEAE

- Ophioglossum pendulum** L., Sp. Pl., ed. 2, 1518, 1763.  
*Ophioderma pendula* (L.) Presl, Tent. Pterid., Suppl., 56, 1845.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 113, 1943.  
Mt. Nanalaut, 2,000 ft., rain forest, June 28, 1949, *Glassman 2367* (US), epiphyte.  
Tropical Asia to Polynesia.

## MARATTIACEAE

- Angiopteris evecta** (Forst.) Hoffm., Comment. Soc. Reg. Gotting. Cl. Phys. 12: 29, pl. 5, 1796.—Nakai, Bot. Mag. Tokyo 41: 76, 1927.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 245, 1935.—Fosb., Am. Fern Jour. 40: 133, 1950.  
*Angiopteris beecheyana* de Vries, Monogr. Maratt., 22, 1853.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 44, 1936.  
*Angiopteris palmiformis* C. Chr., Dansk. Bot. Arkiv 9(3): 30, pl. 3, figs. 7, 8, 1937.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 32: 283, 1942.  
*Angiopteris durvilleana* de Vries, Monogr. Maratt., 17, 1853.  
Palikir, Aug. 10, 1929, *Kanehira 719* (NY); Roi-pa, Feb. 29, 1936, *Takamatsu 927* (BM); Mt. Peipalap, 850 ft., June 22, 1949, *Glassman 2310* (US), terrestrial.  
Native name, *payuit* in Net District, *umpai* in Kiti District. This plant is used to cure illnesses during pregnancy. Old World tropics.
- Marattia fraxinea** J. E. Sm., Pl. Icones Ined. 2: pl. 48, 1790.—Fosb., Am. Fern Jour. 40: 133-134, 1950.  
*Marattia mertensiana* (Presl) C. Chr., Ind. Fil., 415, 1906.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 45, 1936.  
*Marattia sambucina* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 245, 1935; not Bl., 1828.

July 1929, *Kanehira* 759 (BM); Mt. Ninani, 1,500 ft., rain forest, Aug. 14, 1929, *Kanehira* 811 (NY); Tolomail, Feb. 11, 1936, *Takamatsu* 983 (BM).

Native name, *payuit* (of Riesenberg). Kusaie, Palaus; Paletropics.

## SCHIZAEACEAE

**Schizaea dichotoma** (L.) J. E. Sm., Acad. Turin, Mém. 5: 422, pl. 9, fig. 9, 1793.

*Schizaea biroi* Richt., Mathes. Termesztet., Ertesito 29: 1074, pl. 10, 1915.

—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 468, 1941.

*Schizaea dichotoma* (L.) J. E. Sm. var. *sellingi* Fosb., Am. Fern Jour. 40: 144, 1950.

*Ledermann* 13490 (BM); Mt. Tolenkup, 400 ft., rain forest, July 15, 1949, *Glassman* 2537 (US), epiphyte.

Kusaie, Palaus, Yap, Guam; Madagascar and tropical Asia to Polynesia.

**Schizaea plana** Fourn., Ann. Sci. Nat. Bot. V, 18: 353, 1873. —Selling, Svensk Bot. Tidsk. 38: 213, fig. 4, 1944.

Mt. Nanalaut, 2,000 ft., June 28, 1949, *Glassman* 2382 (US), epiphytic and terrestrial; same data, Aug. 17, 1949, 2880 (det. O. H. Selling) (US).

Type from New Caledonia, where the species is reported to be rare.

**Schizaea ponapensis** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 39, 469, 1941; 33: 117, 1943.—Fosb., Am. Fern Jour. 40: 145, 1950.

Malaya and the Philippines. Fosberg says that this species appears to be identical with *S. inopinata* Selling (58, p. 274).

## GLEICHENIACEAE

**Dicranopteris linearis** (Burm.) Underw., Torr. Bot. Club, Bull. 34: 249, 1907.

*Dicranopteris dichotoma* (Thunb.) Bernhardt, Neu. Jour. Bot. Schrad. 1: 38, pl. 3, fig. 13, 1806.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 434-435, 1935.

Anapeng-pa, Feb. 6, 1936, *Takamatsu* 718 (BM).

Native name, *matalin-mahl*. Pantropical. Bridge (4) says this species is an indicator of bauxite rock.

**Dicranopteris weatherbyi** (Fosb.) Glassman, new combination.

*Gleichenia weatherbyi* Fosb., Am. Fern Jour. 40: 140-142, 1950.

Mt. Tolotom, 2,100 ft., open area, 4-5 ft. tall, Aug. 11, 1949, *Glassman* 2854 (US), common.

Native name, *matalin-mahl*. Type from Kusaie.



## HYMENOPHYLLACEAE

- Cephalomanes acrosorum** Copel., Philippine Jour. Sci., Bot. 6: 72, 1911.  
*Trichomanes javanicum* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 246, 1935 (in part); not Bl., 1828.  
 Mt. Ninani, 1,700 ft., Aug. 14, 1929, *Kanehira 816* (NY); Mt. Nanalaut, 2,000 ft., on rocks in stream, June 28, 1949, *Glassman 2361* (US), common.  
 Type from New Guinea.
- Cephalomanes boryanum** (Kze.) v.d.B., Syn. Hym., 11, 1859.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 46, 1941; 33: 113, 1943.  
*Trichomanes javanicum* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 246, 1935 (in part).—Hosokawa, op. cit. 26: 48, 1936; not Bl., 1828.  
*Trichomanes javanicum* Bl. var. *boryanum* Fosb., Am. Fern Jour. 40: 136-137, 1950.  
 No locality given, Aug. 12, 1929, *Kanehira 757* (NY); Param, Feb. 8, 1936, *Takamatsu 643* (BM).  
 Micronesia and Polynesia.
- Crepidomanes bipunctatum** (Poir.) Copel., Philippine Jour. Sci. 67: 59, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 44, 1941; 33: 113, 1943.  
*Trichomanes bipunctatum* Poir. apud Lam., Encycl. Méth. 8: 69, 1808.  
 —Fosb., Am. Fern Jour. 40: 136, 1950.  
 Nipit-one, Sept. 1, 1940, *Hosokawa 9588* (US).  
 Palaus; Madagascar to Tahiti.
- Crepidopteris humilis** (Forst.) Copel., Philippine Jour. Sci. 67: 58, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 43, 1941; 33: 113, 1943.  
 Sumatra to Tahiti.
- Gonocormus minutus** (Bl.) v.d.B., Hym. Javan., 7, pl. 3, 1861.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 113, 1943.  
*Trichomanes minutum* Bl., Enum. Pl. Javæ 2: 223, 1828.—Fosb., Am. Fern Jour. 40: 137, 1950.  
*Microtrichomanes parvulum* of Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 42, 1941; not (Poir.) Copel., 1938.  
 Mt. Poaiipoai, 1,900 ft., rain forest, July 8, 1949, *Glassman 2492* (US), epiphyte.  
 Truk, Kusaie, Nukuoro, Palaus; Africa to Polynesia and Japan.
- Mecodium polyanthos** (Sw.) Copel., Philippine Jour. Sci. 67: 19, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 45, 1941; 33: 113, 1943.

- Hymenophyllum polyanthos* Sw., Jour. Bot. Schrad. 4: 102, 1801.—Fosb., Am. Fern Jour. 40: 135, 1950.  
Kusaie, Palaus; pantropical.
- Mecodium reinwardtii** (v.d.B.) Copel., Philippine Jour. Sci. 67: 20, 1938.  
—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 45, 1941; 33: 114, 1943.  
Mt. Tolenwalik, 2,100 ft., Aug. 17, 1949, *Glassman 2894* (US), epiphyte, common.  
Palaus; Java, Sumatra, New Guinea.
- Meringium holochilum** (v.d.B.) Copel., Philippine Jour. Sci. 67: 41, 1938.  
—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 114, 1943.  
*Hymenophyllum holochilum* (v.d.B.) C. Chr., Ind. Fil., 362, 1905.—Fosb., Am. Fern Jour. 40: 135, 1950.  
Kusaie; type from Java.
- Microgonium beccarianum** (Ces.) Copel., Philippine Jour. Sci. 67: 63, 1938.  
—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 42, 1941.  
?Palaus; Ceylon to Formosa, the Solomons and Admiralties. Hosokawa lists this species for Ponape, but cites no specimens.
- Microgonium craspedoneuron** (Copel.) Copel., Philippine Jour. Sci. 67: 61, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 114, 1943.  
*Trichomanes craspedoneuron* Copel., Philippine Jour. Sci., Bot. 7: 53, 1912.—Fosb., Am. Fern Jour. 40: 136, 1950.  
*Crepidomanes pseudonymani* Hosokawa, op. cit. 31: 44, 1941.  
Truk; type from Luzon.
- Microgonium omphalodes** Vieill. apud Fourn., Ann. Sci. Nat. Bot. V, 18: 255, 1873.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 41, 1941; 33: 114, 1943.  
Mt. Tolenkiup, 400-600 ft., rain forest, July 14, 1949, *Glassman 2531* (US), epiphyte, common.  
Java to Tahiti.
- Microtrichomanes dichotomum** (Kze.) Copel., Philippine Jour. Sci. 67: 36, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 114, 1943.  
*Hymenophyllum alternatum* Fosb., Am. Fern Jour. 40: 135, 1950.  
Type from Java.
- Microtrichomanes digitatum** (Sw.) Copel., Philippine Jour. Sci. 67: 1, 36, 1938.  
Mt. Nanalaut, 2,000 ft., rain forest, July 28, 1949, *Glassman 2387* (US), epiphyte.  
East African islands to Samoa.



**Nesopteris grandis** (Copel.) Copel., Philippine Jour. Sci. 67: 68, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 46, 1941.

*Trichomanes maximum* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 246, 1935.—Hosokawa, op. cit. 26: 48, 1936; not Bl., 1828.

Mt. Ninani, 2,600 ft., Aug. 15, 1929, *Kanehira* 839 (NY); Mt. Nanalaut, July 1931, *Kanehira* 1667 (NY); Kuporujo, Mar. 13, 1936, *Takamatsu* 683 (BM); Mt. Nanalaut, 1,800-2,200 ft., rain forest, June 28, 1949, *Glassman* 2383 (US), common.

Type from New Guinea.

**Pleuromanes pallidum** (Bl.) Presl, Epim. Bot., 258, 1849.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 43, 1941; 33: 114, 1943 (fig. 15).

*Trichomanes pallidum* Bl., Enum. Pl. Javae 2: 225, 1828. — Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 246, 1935.—Hosokawa, op. cit. 26: 47, 1936.

*Ledermann* 13348 (BM); Mt. Ninani, 2,000 ft., Aug. 14, 1929, *Kanehira* 819 (NY), leaves fluorescent at night; Mt. Tolotom, Aug. 13, 1933, *Hosokawa* 5771 (BM); Tolomail, Feb. 11, 1936, *Takamatsu* 949 (BM); Mt. Tamatamansakir, 1,500 ft., June 23, 1949, *Glassman* 2336 (US), leaves pale bluish green.

Kusaie; Formosa, Malaya, New Guinea, Polynesia.

**Selenodesmium rigidum** (Sw.) Copel., Philippine Jour. Sci. 67: 82, 1938.

*Trichomanes rigidum* (Sw.), Prodr., 137, 1788.—Fosb., Am. Fern Jour. 40: 138, 1950.

Palaus, Yap; pantropical; type from Jamaica.

#### CYATHEACEAE

**Cyathea nigricans** Mett., Mus. Bot. Lugd.-Bat., Ann. 1: 56, 1863.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 49, 1936.

*Cyathea affinis* of Kanehira, Bot. Mag. Tokyo 48: 730, 1934, and Dept. Agric. Kyushu Imp. Univ., Jour. 4: 246, 1935; not (Forst.) Sw., 1801.

Mt. Tolotom, Feb. 15, 1936, *Takamatsu* 1056 (BM); Mt. Nanalaut, July 14, 1936, *Hosokawa* 8213 (BM); Mt. Tamatamansakir, 1,200 ft., tree 20-30 ft., June 23, 1949, *Glassman* 2322 (US), common; 0.5 mile south of Agricultural Experiment Station, along stream, July 19, 1949, *Glassman* 2596 (US), common.

Native name, *kattar*. An infusion of the leaves is used as a contraceptive by native women. Type from Kusaie.

**Cyathea ponapeana** (Hosokawa) Glassman, new combination.

*Alsophila ponapeana* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 51, 1936; Jour. Jap. Bot. 16: 536, 1940.

Mt. Ninani, Aug. 12, 1933, *Hosokawa 5672* (US).

Native name, *kattar*. Also known from Kusaie.

## POLYPODIACEAE

**Antrophyum alatum** Brack., U. S. Expl. Exped. 1838-1842, Bot. 16: 64, 1854, Oa, Mar. 2, 1936, *Takamatsu 911* (BM), epiphyte, common; Mt. Tolenkuiup, 500 ft., rain forest, July 14, 1949, *Glassman 2532* (US).

Native name, *tolkenwol*. Plant parts are used to relieve itching and bites on small children. Philippines to Polynesia.

**Antrophyum callaefolium** Bl., Enum. Pl. Javae 2: 111, 1828.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 234, 1936. (Falso ut *A. callifolium*.)

Native name, *tahruk-kinuzwal* (of Hosokawa). Malaysia, Melanesia, and Polynesia.

**Antrophyum reticulatum** (Forst.) Kaulf., Enum. Fil., 198, 1824.—H. Ito, Jour. Jap. Bot. 14: 732, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 114, 1943.

Old World tropics.

**Asplenium acutiusculum** Bl., Enum. Pl. Javae 2: 178, 1828.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 40, 1941.

Malaysia, New Guinea, Samoa.

**Asplenium cuneatum** Lam., Encycl. Méth. 2: 309, 1786.

*Tarachia cuneata* (Lam.) Presl, Epim. Bot., 81, 1849.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 117, 1943.

*Asplenium nitidum* of Hosokawa, op. cit. 26: 232, 1936; not Sw., 1806.

Pantropical.

**Asplenium curtisorum** Christ, Jard. Bot. Buitenzorg, Ann. 2: 39, 1904.

*Neottopteris curtisorus* (Christ) Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 474, 1941; 33: 116, 1943.

Palau; type from Celebes.

**Asplenium falcatum** Lam., Encycl. Méth. 2: 306, 1786.

*Asplenium adiantoides* (L.) C. Chr., Ind. Fil., 99, 1905.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 231, 1936.

*Tarachia adiantoides* (L.) Nakai ex Tuyama, Bot. Mag. Tokyo 49: 505, 1935.—Hosokawa, op. cit. 33: 116, 1943.

*Asplenium macrophyllum* Sw. var. *angustipinna* v.A.v.R., Bot. Gard. Buitenzorg, Bull. 7: 7, 1912.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 231, 1936.



Near Colonia, Aug. 9, 1929, *Kanehira 676* (NY); Mt. Nanalaut, 400-500 m., July 1931, *Kanehira 1613* (NY); Mt. Sankaku, Aug. 8, 1933, *Hosokawa 5534* (US); Oa, Mar. 2, 1936, *Takamatsu 912* (BM); Mt. Poaipoai, 2,000 ft., rain forest, July 9, 1949, *Glassman 2502* (US), epiphyte.

Old World tropics.

**Asplenium laserpitifolium** Lam., Encycl. Méth. 2: 310, 1786.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 248, 1935.

*Tarachia laserpitifolia* (Lam.) Presl, Epim. Bot., 83, 1849.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 117, 1943.

No locality cited, Aug. 8, 1929, *Kanehira 643* (NY); Mt. Ninani, 1,200-1,500 ft., Aug. 14, 1929, *Kanehira 806* (BM, NY).

Tropical Asia to Polynesia.

**Asplenium nidus** L., Sp. Pl., 1079, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 248, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 230, 1936.

*Neottopteris nidus* (L.) J. Sm., Hook. Jour. Bot. 3: 409, 1841.—Hosokawa, op. cit. 33: 116, 1943.

No locality cited, Aug. 1929, *Kanehira 713* (BM); Tolomail, Feb. 11, 1936, *Takamatsu 998* (BM); Mt. Nanalaut, 2,000 ft., June 28, 1949, *Glassman 2355* (US).

Native name, *tahlík*. Old World tropics.

**Asplenium pellucidum** Lam., Encycl. Méth. 2: 305, 1786.

*Asplenium caudatum* Forst. f., Prodr., 80, 1786.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 248, 1935.

Tolomail, Feb. 11, 1936, *Takamatsu 952* (BM); Mt. Tolotom, 1,750 ft., rain forest, Aug. 11, 1949, *Glassman 2848* (US), epiphyte, frequent.

Native name, *lipatamatee*. Tropical Asia, Madagascar, Polynesia.

**Asplenium pellucidum** Lam. var. **ponapensis** (Hosokawa) Hosokawa, Jour. Jap. Bot. 13: 610, 1937.

*Asplenium ponapensis* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 231, 1936.

*Tarachia pellucida* (Lam.) Hosokawa var. *ponapensis* (Hosokawa) H. Ito ex Hosokawa, op. cit. 33: 117, 1943.

Endemic.

**Asplenium scandens** J. Sm., Hook. Jour. Bot. 3: 408, 1841. — Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 249, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 232, 1936.

Mt. Nanalaut, 500 m., July 1931, *Kanehira 1622* (BM, NY).

Malaya, Philippines, Melanesia.

- Asplenium scolopendriopsis** F. Muell., Papuan Plants 3: 49, 1876.  
*Phyllitis d'urvillei* (Bory) O.K., Rev. Gen. Pl. 2: 818, 1891.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 232, 1936.  
*Ledermann* 13250 (BM); Palikir, Aug. 10, 1929, *Kanehira* 712 (NY); Salabuk, Feb. 5, 1936, *Takamatsu* 582 (BM); Oa, Mar. 2, 1936, *Takamatsu* 915 (BM).  
 Kusaie; type from New Guinea.
- Asplenium tenerum** Forst. f., Prodr., 80, 1876.  
 Mt. Poaipoai, 1,700 ft., rain forest, July 9, 1949, *Glassman* 2498 (US), terrestrial.  
 Palaus; tropical Asia to Polynesia.
- Asplenium vulcanicum** Bl., Enum. Pl. Javae 2: 176, 1828.  
 Kuporujō, Mar. 13, 1936, *Takamatsu* 682 (BM).  
 Truk, Kusaie; Malaysia, Melanesia.
- Athyrium ponapense** Copel., B. P. Bishop Mus., Occ. Papers 15 (7): 81, fig. 2, 1939.  
*Diplazium ponapense* (Copel.) Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 475, 1941.  
 Also known from Kusaie.
- Blechnum capense** (L.) Schlecht., Adumbr. Pl., 34, pl. 18, 1825.  
*Lomaria capense* Willd., Sp. Pl. 5: 291, 1810.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 229, 1936.  
 Africa, Melanesia, Polynesia.
- Blechnum orientale** L. (Sp. Pl., 1077, 1753; *B. occidentale* by error), Sp. Pl., ed. 2: 1535, 1763.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 249, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 229, 1936.  
 Palikir, waste places, July 1931, *Kanehira* 1516 (BM, NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu* 698 (BM).  
 Tropical Asia to Australia and Polynesia.
- Blechnum vulcanicum** (Bl.) Kuhn, Mus. Bot. Lugd.-Bat., Ann. 4: 284, 1869.  
*Lomaria vulcanica* Bl., Enum. Pl. Javae 2: 202, 1828.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 229, 1936.  
*Pteris pellucida* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 254, 1935; not Presl, 1825.  
 Mt. Ninani, 2,000 ft., Aug. 15, 1929, *Kanehira* 838 (NY); Mt. Nanalaut, 500-600 m., July 1931 (sterile), *Kanehira* 1643 (NY); Kuporujō, Mar. 13, 1936, *Takamatsu* 651 (BM); Mt. Nanalaut, Feb. 17, 1936, *Takamatsu* 1097 (BM); Mt. Nanalaut, 2,000 ft., rain forest, June 28, 1949, *Glassman* 2372 (US), terrestrial.  
 Malaysia, Melanesia, Polynesia, Australia.



- Bolbitis heteroclita** (Presl) Ching ex C. Chr., Ind. Fil., Suppl. 3: 48, 1934, Tolomail, Feb. 11, 1936, *Takamatsu 953* (BM).  
Tropical Asia to Malaya and Polynesia.
- Bolbitis nigra** (Copel.) Ching ex C. Chr., Ind. Fil., Suppl. 3: 49, 1934.  
*Campium nigrum* Copel., Philippine Jour. Sci. 37: 361, pl. 10, 1928.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 248, 1936.  
Mt. Sankaku, Aug. 12, 1929, *Kanehira 754* (NY).  
Endemic.
- Calymmodon ponapensis** Copel., B. P. Bishop Mus., Occ. Papers 15 (7): 86, fig. 5, 1939.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 114, 1943.  
*Polypodium cucullatum* of Hosokawa, op. cit. 26: 244, 1936; not Nees and Bl., 1823.  
Endemic.
- Cyclosorus adenophorus** (C. Chr.) Copel., Gen. Fil., 142, 1947.  
*Dryopteris adenophora* C. Chr., Ind. Fil., 251, 1905.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 250, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 77, 1936.  
Palikir, Aug. 10, 1929, *Kanehira 730* (NY); 2 miles south of Colonia, in *Lantana* thickets, July 5, 1949, *Glassman 2441* (US), terrestrial.  
Native name *mahrek* (*mallak* of Hosokawa). Truk, Kusaie, Palaus; Celebes, Philippines.  
According to Wagner, *Glassman 2441* may be *C. maemonensis* Wagner and Grether, described from Guam.
- Cyclosorus goggilodus** (Schkuhr) Link, Hort. Bot. Berol. 2: 128, 1833 (spelling emended from *C. gongylodes*; see St. John, Torr. Bot. Club, Bull. 72 (1): 22-23, 1945).  
*Dryopteris gongylodes* (Schkuhr) O. K., Rev. Gen. Pl. 2: 811, 1891.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 75, 1936; Copel., B. P. Bishop Mus., Occ. Papers 15(7): 81, 1939.  
No locality given, Aug. 30, 1933, *Hosokawa 6095* (US); Nipit, moist field, Feb. 29, 1936, *Takamatsu 899* (BM); near outlet of Tawensokola River, July 5, 1949, *Glassman 2446* (US), terrestrial.  
Pan-tropical.
- Cyclosorus jaculosus** (Christ) H. Ito, Bot. Mag. Tokyo 51: 725, 1937; Jour. Jap. Bot. 14: 732, 1938.  
Truk; Formosa. This entry is based on a specimen collected by Kusano in 1915.
- Davallia bilabiata** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 123, 1936.  
Endemic.

**Davallia embolostegia** Copel., Philippine Jour. Sci., Suppl. II, 1: 147, pl. 3, 1906.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 123, 1936; 33: 114, 1943.

Aug. 26, 1933, *Hosokawa 6072* (US).

Palau; Philippines.

**Davallia solida** (Forst.) Sw., Jour. Bot. Schrad. 4: 87, 1801.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 250, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 122, 1936; 33: 114, 1943.

Palikir, Aug. 10, 1929, *Kanehira 703* (NY); Mt. Tolotom, 2,000 ft., rain forest, Aug. 11, 1949, *Glassman 2851* (US), epiphyte, uncommon.

Native name, *uligan-kiail*. This plant is used as an antidote for poisons in the body. Malaya to Polynesia and Australia.

**Dryopteris sparsa** (Ham.) O. K., Rev. Gen. Pl. 2: 813, 1891.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 73, 1936; 33: 114, 1943.

A new combination should be made for this name; but since I am not certain of the identity of this species, I will retain the present combination.

**Elaphoglossum carolinense** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 32: 284, 1942; 33: 114, 1943.

*Elaphoglossum decurrens* of Hosokawa, Jour. Jap. Bot. 16: 538, 1940; not Moore, 1857.

Also from Kusaie.

**Elaphoglossum** sp. (group of *E. conforme*).

Mt. Nanalaut, Feb. 17, 1936, *Takamatsu 1074* (BM), epiphyte; Mt. Nanalaut, 1,800-2,200 ft., June 28, 1949, *Glassman 2379* (US), frequent.

**Goniophlebium percussum** (Cav.) Wagner and Grether, B. P. Bishop Mus., Occ. Papers 19(2): 88, 1948.

*Polypodium persicifolium* Desv., Ges. Nat. Freunde Mag., Berlin 5: 316, 1811.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 253, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 245, 1936.

Tropical Asia to Samoa.

**Goniophlebium ponapense** Copel., B. P. Bishop Mus., Occ. Papers 15(7): 90, fig. 9, 1939.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 115, 1943.

Tolomail, Feb. 11, 1936 (type collection), *Takamatsu 946* (BM); Mt. Nanalaut, 1,600-2,200 ft., rain forest, June 28, 1949, *Glassman 2373, 2378* (US), epiphyte.

Endemic.



**Grammitis ponapensis** Copel., B. P. Bishop Mus., Occ. Papers 15(7): 88, fig. 7, 1939.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 115, 1943. *Polypodium diplosorum* of Hosokawa, op. cit. 26: 244, 1936; not Christ, 1896.

Tolomail, Feb. 11, 1936, *Takamatsu 950* (type collection, BM), epiphyte; Mt. Nanalaut, 2,000 ft., June 28, 1949, *Glassman 2380* (US); Mt. Tolenwalik, 2,000 ft., rain forest, Aug. 18, 1949, *Glassman 2893* (US), frequent.

Endemic.

**Grammitis scleroglossoides** Copel., B. P. Bishop Mus., Occ. Papers 15(7): 86, fig. 6, 1939.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 115, 1943.

*Polypodium australe* of Hosokawa, op. cit. 28: 148, 1938; not (R. Br.) Mett., 1857.

Mt. Nanalaut, Aug. 23, 1933, *Hosokawa 6006* (US); Mt. Nanalaut, Feb. 17, 1936, *Takamatsu 1095* (type collection, BM), epiphyte.

Endemic.

**Histiopteris incisa** (Thunb.) J. Sm., Hist. Fil., 295, 1875.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 251, 1935.

No locality given, Aug. 1929, *Kanehira 642* (BM); Mt. Nanalaut, 500 m., July 1931, *Kanehira 1646* (NY); Salabuk, Feb. 5, 1936, *Takamatsu 584* (BM); Tolomail, in open forest, Feb. 11, 1936, *Takamatsu 944* (BM); Mt. Nanalaut, 1,800 ft., June 28, 1949, *Glassman 2377* (US), terrestrial in open area.

Native name, *peypey-aramus*. Leaves are used to alleviate a burning sensation in urination, and as a relief for pains in childbirth. Pantropical.

**Humata banksii** Alst., Philippine Jour. Sci. 50: 176, 1933.

*Humata gaimardiana* (Gaud.) J. Sm., London Jour. Bot. 1: 425, 1842.

—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 251, 1935.

*Humata pectinata* (Sm.) Desv., Prodr., 323, 1827.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 120, 1936.

*Humata trukensis* H. Ito, Nakai. Icon. Pl. As. Orient. 4: 373-375, pl. 121, 1941.—Hosokawa, op. cit. 33: 115, 1943.

Palikir, Aug. 10, 1929, *Kanehira 704* (NY); Nanuwe, Feb. 26, 1936, *Takamatsu 1011* (BM).

Native name, *muatal-iniak*. This plant is used to increase the appetite of young children and to relieve the coughs of babies. New Guinea to Polynesia.

**Humata heterophylla** (Sm.) Desv., Prodr., 323, 1827.

Mt. Poaipoai, 500 ft., rain forest, July 8, 1949, *Glassman 2471* (US), epiphyte.

Native name, *kitun-wul*. Tropical Asia to New Guinea and Fiji.

- Humata ophioglossa** Cav., Descr. Pl., 273, 1802.—H. Ito, Nakai. Icon. Pl. As. Orient. 4: 376-377, 1941. — Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 115, 1943.  
Kuporujō, Mar. 13, 1936, *Takamatsu 684* (BM).  
Carolines and ?Marianas; type from the Philippines.
- Humata repens** (L.f.) Diels, Nat. Pflanzenfam. 1 (4): 209, 1899.—H. Ito, Nakai. Icon. Pl. As. Orient. 4: 377, 1941.  
*Humata trifoliata* Cav., Descr. Pl., 273, 1802.—H. Ito, loc. cit.  
Tolomail, Feb. 11, 1936, *Takamatsu 976* (BM).  
Old World tropics.
- Hypolepis tenuifolia** (Forst.) Bernhardt, Neu. Jour. Bot. Schrad. 1: 34, 1806.  
—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 227, 1936.  
New Zealand (type) to China.
- Lastrea** cf. **brackenridgei** (Mett.) O.K.  
Mt. Nanalaut, 1,600-2,200 ft., June 28, 1949, *Glassman 2375* (US), terrestrial, abundant.
- Leucostegia pallida** (Mett.) Copel., Philippine Jour. Sci. 34: 252, 1927.—  
Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 115, 1943.  
*Davallia pallida* Mett. apud Kuhn, Linnaea 36: 142, 1869.—Hosokawa, op. cit. 26: 121, 1936.  
Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5756*; Mt. Nanalaut, Aug. 23, 1933, *Hosokawa 5933* (US); Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2376* (US), epiphyte.  
Malacca to Polynesia.
- Lindsaea**<sup>6</sup> **davallioides** Bl., Enum. Pl. Javae 2: 218, 1828.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 117, 1936.  
Salabuk, Feb. 10, 1936, *Takamatsu 599* (BM).  
Native name, *matil* (of Hosokawa). Kusaie; Malaya, Philippines, New Guinea.
- Lindsaea decomposita** Willd., Sp. Pl. 5: 425, 1810.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 252, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 117, 1936.  
*Lindsaya ambigens* Ces., Rend. Ac. Napoli 16: 25, 29, 1877.—Hosokawa, loc. cit.; op. cit. 33: 115, 1943.  
Mt. Sankaku, Aug. 12, 1929, *Kanehira 755* (NY); Mt. Nanalaut, July 1931, *Kanehira 1648* (NY); Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2369* (US), epiphyte.  
Kusaie, Palau; tropical Asia to Australia and Polynesia.

<sup>6</sup> For change of spelling of this genus from *Lindsaya* to *Lindsaea*, see Copeland (Gen. Fil., 53, 1947).



**Lindsaea ensifolia** Sw., Jour. Bot. Schrad., 77, 1801.

*Schizoloma ensifolia* (Sw.) J. Sm., Hook. Jour. Bot. 3: 414, 1841.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 118, 1936.

*Ledermann 13557* (BM); Tolomail, open moist field, Feb. 11, 1936, *Takamatsu 980* (BM).

Old World tropics.

**Lindsaea macraeana** (Hook. and Walk.-Arn.) Copel., B. P. Bishop Mus., Bull. 59: 70, 1929.—Wagner and Grether, B. P. Bishop Mus., Occ. Papers 19(2): 71, fig. 8, 1948.

*Lindsaya merrillii* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 252, 1935; not Copel., 1905.

*Lindsaya boryana* (Presl) Brause, Engl. Bot. Jahrb. 56: 129, 1920.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 116, 1936.

*Ledermann 13570* (BM); Mt. Sankaku, Aug. 12, 1929, *Kanehira 752* (NY); Mt. Ninani, 1,500 ft., Aug. 14, 1929, *Kanehira 808* (NY); July 1931, *Kanehira 1614* (NY); Mt. Tolotom, Feb. 15, 1936, *Takamatsu 1055* (BM); Mt. Tamatamansakir, 1,300 ft., rain forest, June 22, 1949, *Glassman 2326* (US), epiphyte.

Kusaie, Guam; Old World tropics exclusive of Africa and its islands.

**Lindsaea rigida** J. Sm., Hook. Jour. Bot. 3: 415, 1841.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 116, 1936; 33: 116, 1943.

Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5736* (US); Mt. Tolotom, Feb. 15, 1936, *Takamatsu 1043* (BM); Mt. Seletereh, 1,900 ft., rain forest, July 28, 1949, *Glassman 2745* (US), pendulous epiphyte, common.

Malaya, Philippines, New Guinea.

**Microlepia speluncae** (L.) Moore, Ind. Fil., xliii, 1857.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 252, 1935.

No locality given, Aug. 1929, *Kanehira 644* (BM).

Old World tropics.

**Microsorium alternifolium** (Willd.) Copel., Gen. Fil., 197, 1947.

*Polypodium nigrescens* Bl., Enum. Pl. Javae 2: 126, 1828.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 253, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 246, 1936.

No locality given, Aug. 1929, *Kanehira 628, 817* (NY).

India to Polynesia.

**Microsorium scolopendria** (Burm.) Copel., Univ. Calif. Pub. Bot. 16: 112, 1929.

*Polypodium phymatodes* L., Mant. Pl. 2: 306, 1771.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 246, 1936.

*Phymatodes scolopendria* (Burm.) Ching, Contrib. Inst. Bot. Nat. Acad. Peiping 2: 63, 1933.—Hosokawa, op. cit. 33: 116, 1943.

*Phymatodes scolopendria* var. *longisecta* H. Ito ex Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 116, 1943.

Two miles south of Colonia, July 3, 1949, *Glassman 2436* (US), epiphyte.

Native name, *kitieu*. Leaves are used by native women for relieving pains after childbirth. Old World tropics.

**Nephrolepis acutifolia** (Desv.) Christ, Nat. Ges. Basel, Verh. 11: 243, 1895.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 252, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 67, 1936.

Native name, *rahtil*. An infusion of this plant is used for relieving emotional distress. Africa, tropical Asia, and the Philippines to Australia.

**Nephrolepis biserrata** (Sw.) Schott, Gen. Fil., pl. 3, 1834.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 116, 1943.

Pantropical.

**Nephrolepis cordifolia** (L.) Presl, Tent. Pterid., 79, 1836.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 68, 1936.

Pantropical.

**Nephrolepis exaltata** (L.) Schott, Gen. Fil., pl. 3, 1834.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 68-69, 1936; 33: 116, 1943.

*Nephrolepis biserrata* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 252, 1935; not (Sw.) Schott, 1834.

Colonia, Aug. 10, 1929, *Kanehira 687* (NY), 2 miles south of Colonia, terrestrial in *Lantana* thickets, July 5, 1949, *Glassman 2440* (US).

Native name, *rahtil*. Pantropical.

**Phegopteris ponapeana** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 233, 1936.

*Glaphyopteris ponapeana* (Hosokawa) Hosokawa, op. cit. 32: 285, 1942.

Native name, *malken-nana* (of Hosokawa). Endemic.

The name of this plant should probably be changed to *Lastrea*, but since the identity is not certain, I do not choose to make a new combination.

**Prosaptia alata** (Bl.) Christ, Jard. Bot. Buitenzorg, Ann. II, 5: 127, 1905.

*Prosaptia serraeformis* (Bl.) Christ, Herb. Boiss., Bull. 6: 143, 1898.—Hosokawa, Jour. Jap. Bot. 16: 537, 1940; Nat. Hist. Soc. Formosa, Trans. 33: 116, 1943.

Kusaie; tropical Asia, Malaysia, Melanesia.

**Pteris macracantha** Copel., B. P. Bishop Mus., Occ. Papers 15(7): 85, fig. 4, 1939.

Subtic, Aug. 1933, *Hosokawa 6151* (US); Anapeng-pa, Feb. 6, 1936. *Takamatsu 744* (type collection, BM).

Endemic.



- Pteris quadriaurita** Retz., *Observ. Bot.* 6: 28, 1791.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 228, 1936.  
Kusaie and Marianas; pantropical.
- Pteris spinescens** Presl, *Reliq. Haenk.* 1: 56, 1825.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 228, 1936.  
*Pteris quadriaurita* of Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 254, 1935; not Retz., 1791.  
*Ledermann 13336* (BM); Mt. Ninani, 2,000 ft., rain forest, Aug. 14, 1929, *Kanehira 821* (NY).  
Carolines and Marianas.
- Pteris tripartita** Sw., *Jour. Bot. Schrad.*, 67, 1801.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 228, 1936.  
Palau, Marianas; Africa through tropical Asia to Tahiti.
- Rumohra aristata** (Forst.) Ching, *Sinensia* 5: 33, 1934.  
*Polystichum aculeatum* of Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 254, 1935; not (L.) Schott, 1834.  
*Polystichum aristatum* (Forst.) Presl, *Tent. Pterid.*, 83, 1836.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 71, 1936.  
*Polystichum carvifolium* of Hosokawa, *Jour. Jap. Bot.* 16: 538, 1940; not (Kze.) C. Chr., 1906.  
Mt. Nanalaut, July 1931, *Kanehira 1617* (NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5707* (BM, US); Mt. Nanalaut, July 14, 1936, *Hosokawa 8216* (US); Mt. Tolotom, Aug. 16, 1936, *Hosokawa 9535* (US).  
Native name, *kittiu* (of Hosokawa). Old World tropics.
- Scleroglossum pusillum** (Bl.) v.A.v.R., *Jard. Bot. Buitenzorg, Bull.* 2: 39, 1912.—Copel., *B. P. Bishop Mus., Occ. Papers* 15(7): 86-87, 1939.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 33: 116, 1943.—Copel., *Gen. Fil.*, 213, 1947.  
*Scleroglossum sulcatum* (Kuhn) v.A.v.R., *loc. cit.*—C. Chr., *Dansk Bot. Arkiv.* 6: 28-29, pl. 2, 1929.—Hosokawa, *op. cit.* 28: 146, 1938.—Copel., *B. P. Bishop Mus., Occ. Papers* 15(7): 86-87, 1939.—Hosokawa, *Jour. Jap. Bot.* 16: 539, 1940; *Nat. Hist. Soc. Formosa, Trans.* 33: 116, 1943.  
Tolomail, Feb. 11, 1936, *Takamatsu 948* (BM); Mt. Nanalaut, Feb. 17, 1936, *Takamatsu 1105* (BM), epiphyte.  
Java (type) to Ceylon, Luzon, and New Guinea.
- Tapeinidium pinnatum** (Cav.) C. Chr., *Ind. Fil.*, 213, 1905.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 255, 1935.  
Mt. Tolotom, 500 ft., July 1931, *Kanehira 1549* (BM, NY); Mt. Nanalaut, July 1931, *Kanehira 1615* (NY); Mt. Ninani, Aug. 13, 1933, *Hosokawa*

5616 (US); Tolomail, Feb. 11, 1936, *Takamatsu 954* (BM); Mt. Nanalaut, 1,000-2,000 ft., rain forest, June 28, 1949, *Glassman 2384* (US), terrestrial, common.

Malaysia and Polynesia. Type from Luzon.

**Tectaria crenata** Cav., *Descr. Pl.*, 250, 1802.

Mt. Nanalaut, 2,000 ft., rain forest, June 28, 1949, *Glassman 2374* (US), epiphyte.

Palaus, Yap, Marianas; Malaya to Polynesia.

**Tectaria grandifolia** (Presl) Copel., *Philippine Jour. Sci., Bot.* 2: 413, 1907.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 255, 1935.

*Tectaria polymorpha* of Kanehira, *op. cit.*, (in part); not (Wall.) Copel., 1907.

*Sagenia grandifolia* (Presl) Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 71, 1936.

*Dryomenis polymorpha* of H. Ito, *Jour. Jap. Bot.* 14: 732, 1938; not (Wall) Nakai, 1933.

Mt. Ninani, Aug. 1929, *Kanehira 822, 844* (NY); Mt. Tolenkup, 400 ft., rain forest, July 14, 1949, *Glassman 2526* (US), terrestrial, frequent.

Kusaie; New Guinea, Philippines, Santa Cruz Islands.

**Thelypteris oligophlebia** Ching var. *lasiocarpa* H. Ito, *Bot. Mag. Tokyo* 52: 589, 1938; *Jour. Jap. Bot.* 14: 733, 1938.

This entry is based on a collection by Koidzumi in 1915. If this species is correctly identified, a new combination should be made under *Lastrea*.

**Vaginularia paradoxa** (Fee) Mett., *Mus. Bot. Lugd.-Bat., Ann.* 4: 174, 1869.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 33: 117, 1943.

*Monogramma junghuhnii* Hook., *Sp. Fil.* 5: 123, pl. 289B, 1864.—Hosokawa, *op. cit.* 26: 234, 1936.

Mt. Tamatamansakir, 1,200 ft., rain forest, June 23, 1949, *Glassman 2342* (US), epiphyte.

Ceylon to Polynesia.

**Vittaria angustifolia** Bl., *Enum. Pl. Javae* 2: 199, 1828.

*Vittaria lloydiiifolia* of Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 26: 235, 1936; not Racib., 1898.

*Vittaria angustata* v.A.v.R., *Malayan Ferns, Suppl. Corrections* 57, 1917.—Hosokawa, *op. cit.* 33: 117, 1943.

Malaysia.

**Vittaria elongata** Sw., *Syn. Fil.*, 109, 302, 1806.—Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 33: 117, 1943.



*Ledermann 13221* (BM); no locality given, Feb. 6, 1936, *Takamatsu 739* (BM); Mt. Nanalaut, 2,000 ft., rain forest, June 28, 1949, *Glassman 2354, 2381* (US); Mt. Poaipoai, 900 ft., July 8, 1949, *Glassman 2478* (US), epiphyte.

Old World tropics.

**Weatherbya accedens** (Bl.) Copel., Gen. Fil., 191, pl. 6, 1947.

*Polypodium accedens* Bl., Enum. Pl. Javae 2: 121, 1828.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 253, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 26: 245, 1936.

*Lepisorus accedens* (Bl.) Hosokawa, op. cit. 31: 477, 1941; 33: 115, 1943.

Mt. Ninani, 1,000 ft., Aug. 14, 1929, *Kanehira 805* (NY), epiphyte; Salabuk, Feb. 5, 1936, *Takamatsu 583* (BM); Mt. Tamatamansakir, 1,200 ft., rain forest, June 23, 1949, *Glassman 2341* (US).

Kusaie; Java (type), Malaya, Luzon, Samoa, Queensland.

## CLASS GYMNOSPERMAE

### CYCADACEAE

**Cycas circinalis** L., Sp. Pl., 1188, 1753.

Planted. Apparently not native in eastern Carolines.

## CLASS ANGIOSPERMAE

### SUBCLASS DICOTYLEDONAE

#### ANNONACEAE

**Annona glabra** L., Sp. Pl., 537, 1753.—Kanehira, Bot. Mag. Tokyo 45: 278, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 318, 1935.

No locality given, Aug. 19, 1929, *Kanehira 872* (NY), planted.

Introduced from tropical America.

**Annona muricata** L., Sp. Pl., 536, 1753.—Kanehira, Bot. Mag. Tokyo 45: 278, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 318, 1935.

Native name, *sac*. Native of tropical America.

**Cananga odorata** (Lam.) Hook. f. and Thoms., Fl. Ind. 1: 129, 1855.

*Canangium odoratum* (Lam.) Baill. ex King, Asiatic Soc. Bengal, Jour. 61: 41, 1892.—Kanehira, Bot. Mag. Tokyo 45: 279, 1931; Dept. Agric.

Kyushu Imp. Univ., Jour. 4: 318, 1935.

Mt. Peipalap, 800 ft., July 12, 1949, *Glassman 2516* (US), tree 40 ft.

Native names, *pur-n-wai* and *sair-n-wai*. Of wide distribution in the Indo-Malayan and Polynesian regions.

## LAURACEAE

**Cassytha filiformis** L., Sp. Pl., 35, 1753.

Na Islet, Feb. 24, 1936, *Takamatsu 844* (BM); Saputik Islet, along beach, Aug. 7, 1949, *Glassman 2786* (US), climbing, common.

Native name, *kohtokot-shau*. Pantropical.

**Cinnamomum carolinense** Koidz., Bot. Mag. Tokyo 30: 401-402, 1916.—Kanehira, Bot. Mag. Tokyo 45: 280, 1931; Fl. Micronesica, 117, fig. 36, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 320, 1935.

Forest at low altitude (no further locality data), Aug. 1929, *Kanehira 639* (NY); Palikir, July 1931, *Kanehira 1492, 1524* (NY, BM); Param, Feb. 8, 1936, *Takamatsu 615* (BM), flowers white, abundant.

Native name, *matieu*. Inner bark is used as a hemostatic in excessive menstruation. Also known from Kusaie.

**Cinnamomum sessilifolium** Kanehira, Bot. Mag. Tokyo 46: 453-454, 1932;

Fl. Micronesica, 119, fig. 38, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 320, 1935.

Mt. Ninani, Aug. 12, 1933, *Hosokawa 5625* (US); Kuporujō, *Takamatsu 657* (BM); Mt. Tolotom, *Takamatsu 1068* (BM); Nanalaut, Feb. 1936, *Takamatsu 1078* (BM); Mt. Beirut, 2,100 ft., open windy area, July 17, 1949, *Glassman 2551* (US), flowers white, fruit red.

Native name, *matieu*. Endemic.

## HERNANDIACEAE

**Hernandia sonora** L., Sp. Pl., 981, 1753.

Saputik Islet, along beach, Aug. 7, 1949, *Glassman 2788* (US), tree 50 ft., flowers yellow, occasional.

Native name, *pingapin*. Old World tropics.

## MYRISTICAEAE

**Myristica hypargyrea** A. Gray, U. S. Expl. Exped., 1838-1842, Bot. 1: 33, 1854.—Kanehira, Bot. Mag. Tokyo 45: 280, 1931; Fl. Micronesica, 113, fig. 34, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 319-320, 1935.—Diels, Engl. Bot. Jahrb. 69: 397, 1938.

*Myristica insularis* Kanehira, Fl. Micronesica, 115, fig. 35, 1933.—A. C. Smith, Torr. Bot. Club, Bull. 68: 402-403, 1941.

Palikir, Aug. 1929, *Kanehira 727* (BM); Aug. 8, 1933, *Hosokawa 5522* (BM); Mt. Seletereh, 650 ft., July 28, 1949, *Glassman 2729* (US), flowers green.

Native name, *kararah*. Inner bark is used in the treatment of gonorrhoea, and as a hemostatic in excessive menstruation. Canoes are often made from the trunks of this tree.

Palaus; Tonga. Type from Samoa.



## MENISPERMACEAE

**Pachygone ledermannii** Diels, Engl. Bot. Jahrb. **56**: 507, 1921.—Kanehira, Bot. Mag. Tokyo **45**: 278, 1931.

*Pachygone ponapensis* Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 318, 1935 (nom. nud.).

*Hypserpa ponapensis* Kanehira, Bot. Mag. Tokyo **50**: 604, fig. 59, 1936.

*Ledermann 13489* (BM); Colonia, Aug. 9, 1929, *Kanehira 669* (type collection of *Hypserpa ponapensis*, NY); no locality given, July 1931, *Kanehira 1519* (NY); Mt. Tolotom, 200 ft., Aug. 12, 1949, *Glassman 2865* (US), liana, roadside, flowers greenish white, common.

Native name, *selinair*. Endemic.

## PIPERACEAE

**Peperomia breviramula** C. DC., Engl. Bot. Jahrb. **56**: 503, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 303, 1935.—Hosokawa, Kudoa **5**: 95, 1937.—Yuncker, B. P. Bishop Mus., Occ. Papers **14**(2): 22-23, fig. 8, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 120, 1943.

Mt. Nanalaut, 2,000 ft., rain forest, June 28, 1949, *Glassman 2386* (US), epiphyte.

Endemic.

**Peperomia palauensis** C. DC., Engl. Bot. Jahrb. **56**: 505, 1921.—Yuncker, B. P. Bishop Mus., Occ. Papers **14**(2): 20-21, fig. 7, 1938.

*Ledermann 13175* (BM); Mt. Sankaku, Aug. 12, 1929, *Kanehira 756* (NY); Mt. Tamatamansakir, 1,200 ft., rain forest, June 23, 1949, *Glassman 2328* (US), epiphyte, common; Mt. Tolenkiup, 400 ft., July 14, 1949, *Glassman 2530* (US); Mt. Tolotom, 1,200 ft., Aug. 11, 1949, *Glassman 2844* (US).

Type from Palau.

**Peperomia pellucida** (L.) H.B.K., Nov. Gen. Sp. Pl. **1**: 53, 1815.

Vicinity of Colonia, shade of banana tree, July 20, 1949, *Glassman 2584* (US), terrestrial.

Carolines, Guam; pantropical.

**Peperomia ponapensis** C. DC., Engl. Bot. Jahrb. **56**: 504, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 304, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **25**: 119, 1935; Jour. Jap. Bot. **13**: 200, 1937; Kudoa **5**: 95, 1937.—Yuncker, B. P. Bishop Mus., Occ. Papers **14**(2): 17, fig. 6, 1938.

Truk, Pingelap, Saligan.

**Piper betle** L., Sp. Pl., 28, 1753.

Observed. Christian confuses this species with *Piper ponapense* (*konok*).

Native name, *tuh*. Cultivated in Micronesia and in the Indo-Malayan region.

**Piper methysticum** Forst. f., Fl. Escul. Ins. Austral., 76, 1786.—Kanehira, Fl. Micronesica, 81-82, pl. 14, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 305, 1935.—Hosokawa, Kudoa 5: 95, 1937. (See figure 7.)

Colonia, planted in house garden, Aug. 9, 1929, *Kanehira 671* (NY); Mt. Seletereh, 500 ft., July 28, 1949, *Glassman 2725* (US).

Native names, *sakau*, Net District; *shakau*, Kiti District. Kusaie; Polynesia and Melanesia.

**Piper ponapense** C. DC., Engl. Bot. Jahrb. 56: 502, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 305, 1935.—Hosokawa, Jour. Jap. Bot. 13: 199, 1937; Kudoa 5: 95, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 120, 1943.

Colonia, Aug. 9, 1929, *Kanehira 672* (BM, NY); Palikir, Aug. 10, 1929, *Kanehira 721* (NY); Kiti, July 1931, *Kanehira 1539* (NY); outlet of Tawen-sokola River, July 5, 1949, *Glassman 2444* (US), epiphyte on *Ficus*.

Native name, *konok*. Plant parts are used to alleviate stomach aches. Also known from Truk and Ant.

## CAPPARIDACEAE

**Crataeva speciosa** Volken, Engl. Bot. Jahrb. 31: 463, 1902.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 321, 1935.

Native name, *apoot*. Planted; native to the Caroline Islands.

**Gynandropsis speciosa** (H.B.K.) DC., Prodr. 1: 238, 1824.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 322, 1935.

Pantropical.

**Polanisia icosandra** (L.) Wright and Arn., Prodr., 22, 1834.

Observed as a weed in waste places.

Native name, *kuh-yolung*. Pantropical.

## CRUCIFERAE

**Brassica integrifolia** (West) O. E. Schulz var. *timoriana* (DC) O. E. Schulz, Engl. Bot. Jahrb. 56: 507, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 322, 1935.

This entry is based on a specimen collected by Ledermann.

## POLYGALACEAE

**Polygala paniculata** L., Amoen. Acad. 5: 402, 1759.

Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2431* (US), weed in cultivated soil, flowers white.

Pantropical; native of South America?



**Polygala polyfolia** Presl, Reliq. Haenk. 2: 101, 1830. — Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 346, 1935.

Colonia, roadside, Aug. 9, 1929, *Kanehira 683* (NY); Mt. Tolotom, 1,100 ft., open grassland, Aug. 12, 1949, *Glassman 2863* (US), flowers blue, common.

Yap, Marianas; Amboina, Luzon (type), New Guinea.

#### CRASSULACEAE

**Bryophyllum pinnatum** (Lam.) Kurz, Asiatic Soc. Bengal, Jour. 40: 52, 1871.

Toletik, in palm forest, Feb. 7, 1936, *Takamatsu 937* (BM), abundant; Ronkiti, roadside, Aug. 9, 1949, *Glassman 2798* (US).

Pantropical.

#### PORTULACACEAE

**Portulaca oleracea** L., Sp. Pl., 445, 1753.

Nanuwe, Feb. 26, 1936, *Takamatsu 1001* (BM); Param Islet, waste place, Aug. 7, 1949, *Glassman 2795* (US), frequent.

Warmer parts of both hemispheres.

**Portulaca samoensis** v. Poelln., Fedde Repert. Sp. Nov. 33: 163, 1933.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 28: 154-155, 1938.

*Portulaca tuberosa* of Hosokawa, Jour. Jap. Bot. 13: 203, 1937; not Roxb., 1832.

Saputik Islet, along beach, Aug. 7, 1949, *Glassman 2787* (US), prostrate, flowers yellow, occasional.

Mokil, Truk, Palaus, Marshalls, Marianas; Samoa (type), Fiji, New Guinea.

In the specimen cited above, the axillary hairs are white rather than the brownish color given in the original description. After examining a series of specimens I found that the hair color ranges from brown to white. This species differs from *P. quadrifida* L. in the alternate rather than opposite leaves, and seed surface with smooth concentric lines rather than verrucose seeds.

#### POLYGONACEAE

**Antigonon leptopus** Hook. and Arn., Bot. Beechey Voy., 308, pl. 69, 1838.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 313, 1935.

Planted. Native of tropical America.

## AMARANTHACEAE

**Alternanthera sessilis** (L.) R. Br. Prodr., 417, 1810.

Vicinity of Colonia, roadside, July 20, 1949, *Glassman 2578* (US), bracts white; U District, July 28, 1949, *Glassman 2724* (US), procumbent.

Pantropical.

**Celosia argentea** L., Sp. Pl., 205, 1753.

Vicinity of Colonia, July 13, 1949, *Glassman 2519* (US), common in waste field, bracts rose and white.

Native name, *ropon-malek*. Native of southeastern Asia.

**Cyathula prostrata** (L.) Bl., Bijdr. Ned. Ind., 549, 1826.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 315, 1935.

Vicinity of Ronkiti, roadside, July 7, 1949, *Glassman 2454* (US), bracts pinkish.

Native name, *oson-likantikap*. This plant is used in relieving sting ray wounds. *Likantikap* is the vernacular name for sting ray.

Pantropical. Native of tropical Asia and Africa.

**Gomphrena globosa** L., Sp. Pl., 224, 1753.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 306, 1901.

Param Islet, Aug. 8, 1949, *Glassman 2791* (US), planted, bracts rose.

Native name, *pahwis*; *kapunior* (of Fosberg). Cultivated or naturalized in many warm and temperate countries.

## OXALIDACEAE

**Oxalis bahiensis** Prog. apud Mart., Fl. Bras. 12 (2): 501, pl. 105, 1877.

Agricultural Experiment Station grounds, grassy field, July 2, 1949, *Glassman 2429* (US), flowers pink, frequent; same data, Aug. 14, 1949, *Glassman 2839* (US).

Palaus and Tinian. Type from Brazil.

**Oxalis repens** Thunb., Nov. Gen. Pl., Diss. Oxalis, 16, 1781.

Colonia, roadside, Aug. 14, 1949, *Glassman 2840* (US), creeping, flowers yellow.

Paleotropics.

## BALSAMINACEAE

**Impatiens balsamina** L., Sp. Pl., 938, 1753.

Observed.

Cultivated in a number of warm countries; native of southeastern Asia.



## LYTHRACEAE

**Lagerstroemia indica** L., Syst. Nat. 10: 1076, 1759.

Osserved as a cultivated plant.

Native of tropical Asia.

**Pemphis acidula** Forst., Char. Gen. Pl., 68, pl. 34, 1776.—Kanehira, Bot. Mag. Tokyo 45: 331-332, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 375, 1935.

Metalanim District, on causeway, June 20, 1949, *Glassman 2304* (US), shrub, flowers white.

Native name, *ngi*. Wood is used for posts, rafters, and spears. East Africa and tropical Asia to tropical Australia.

## SONNERATIACEAE

**Sonneratia caseolaris** (L.) Engl., Natürl. Pflanzenfam., Nachtr. 1: 261, 1897.

—Kanehira, Fl. Micronesica, 251, fig. 117, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 375, 1935. (See figure 10.)

*Sonneratia alba* J. E. Sm. apud Rees, Cyclopedia 33: no. 2, 1816.—Kanehira, Jour. Jap. Bot. 14: 421-422, figs. A-E, 1938.

*Sonneratia acida* L. f., Suppl. Pl., 252, 1781.—Kanehira, Bot. Mag. Tokyo 45: 332, 1931.

Tidal outlet of Tawensokola River, July 5, 1949, *Glassman 2451* (US).

Native names, *kotoh*; *kwat* (of Kanehira).

Kusaie, Pingelap, Truk, Yap, Palaus, Marshalls.

## ONAGRACEAE

**Jussiaea erecta** L., Sp. Pl., 388, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 383, 1935.

Colonia, Aug. 9, 1929, *Kanehira 689* (NY); Agricultural Experiment Station grounds, in marsh, July 2, 1949, *Glassman 2422* (US).

Native name, *telurik*. Pantropical.

**Jussiaea linifolia** Vahl, Eclogae Americanae 2: 32, 1798.

Mt. Peipalap, 800 ft., marshy area, Aug. 23, 1949, *Glassman 2915* (US), flowers yellow, uncommon, shrub 3 feet tall.

Native name, *telurik*.

Pantropical.

## NYCTAGINACEAE

**Bougainvillea spectabilis** Willd., Sp. Pl. 2: 348, 1799.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 316, 1935.

Planted; native of Madagascar.

## PITTOSPORACEAE

**Pittosporum ferrugineum** Aiton, Hort. Kew., ed. 2, 2: 27, 1811.—Kanehira and Hatusima, Bot. Mag. Tokyo **54**: 436, 1940.

*Pittosporum ponapensis* Kanehira, Bot. Mag. Tokyo **45**: 281, 1931; Fl. Micronesica, 124, fig. 40, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 324, 1935.

Near Colonia, forest at low alt., tree 6-10 m., 20-30 cm., Aug. 8, 1929, Kanehira 659 (type collection of *P. ponapensis*, NY), all plant parts emit bad odor; Colonia, July 1931, Kanehira 1470 (NY); Mt. Nanalaut, Aug. 23, 1933, Hosokawa 5955 (US); Nipit, 450 m., Aug. 8, 1940, Hosokawa 9503 (US).

Native name, *kamal*. Wood yields a yellow dye, and the strong scented bark is used in ointments. Truk, Kusaie; Malaysia, New Guinea.

## BIXACEAE

**Bixa orellana** L., Sp. Pl., 512, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 372, 1935.

Auak, tree 15 ft. × 2 in., Aug. 20, 1949, Glassman 2901 (US), flowers pink, fruit dark red, planted.

Native of tropical America.

## FLACOURTIACEAE

**Flacourtia rukam** Zoll. and Mor., Syst. Verz., 33, 1854.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 373, 1935.

Kiti, forest at medium alt., July 1931, Kanehira 1542 (NY), sterile.

Carolines; Dutch East Indies, Samoa.

**Pangium edule** Reinw., Syll. Ratisb. 2: 12, 1828.—Kanehira, Bot. Mag. Tokyo **45**: 331, 1931; Fl. Micronesica, 246, fig. 115, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 373, 1935.

Nanuwe, Feb. 26, 1936, Takamatsu 1004 (BM), flowers white.

Native name, *durien*. Palau, Yap, Guam; Malayan region and New Guinea.

Fruits, which are edible, require about six months for maturation. This species should not be confused with the true durian, *Durio zibethianus* Murr.

## PASSIFLORACEAE

**Passiflora foetida** L. var. *hispida* (DC) Killip, Torr. Bot. Club, Bull. **58**: 408, 1931.

*Passiflora foetida* L., Sp. Pl., 959, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 374, 1935.



Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2409*, (US), climbing, flowers lavender.

Native name, *pompom*. Pantropical.

#### CUCURBITACEAE

***Luffa cylindrica*** (L.) Roem. var. ***insularum*** (A. Gray) Cogn., DC. Monogr. Phanerog. 3: 459, 1881.—Hosokawa, Jour. Jap. Bot. 13: 617, 1937.

U District, roadside, Aug. 23, 1949, *Glassman 2913* (US), climbing, flowers yellow.

Native name, *selinahp*. Truk, Kusaie; Celebes, Melanesia, Polynesia, Australia.

***Melothria guamensis*** Merr., Philippine Jour. Sci., Bot. 9: 151, 1914.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 24: 205, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 428, 1935.

Mt. Tolonkiup, 1,650 ft., rain forest, July 14, 1949, *Glassman 2535* (US), uncommon, flowers white.

Native name, *ohtah*. Guam (type) and Saipan.

#### CARICACEAE

***Carica papaya*** L., Sp. Pl., 1036, 1753.

Native name, *momiap*. Planted; native of tropical America.

#### THEACEAE

***Eurya nitida*** Korthals, Temminck Verh. Nat. Gesch. Ned., Bot. 3: 115, pl. 17, 1840.—Kobuski, Missouri Bot. Gard., Ann. 25: 310-314, 1938.

*Eurya japonica* Thunb., Fl. Jap., 191, pl. 25, 1784.—Diels, Engl. Bot. Jahrb. 56: 526, 1921.—Kanehira, Bot. Mag. Tokyo 45: 329, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 370, 1935.

*Eurya japonica* Thunb. var. *nitida* Thiselton-Dyer, Hook. f., Fl. Brit. Ind. 1: 284, 1874.—Kanehira, Bot. Mag. Tokyo 45: 329, 1931.

*Eurya ponapensis* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 32-33, 1935.

*Ledermann 13542, 13240* (BM); no locality given, Aug. 8, 1929, *Kanehira 640* (NY); Palikir, Aug. 10, 1929, *Kanehira 702* (BM, NY); no locality given, Aug. 14, 1929, *Kanehira 804* (NY); Palikir, July 1931, *Kanehira 1514* (BM, NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5781* (BM); Palikir-Colonia, Aug. 18, 1933, *Hosokawa 5883* (BM, US); Mt. Poaipoi, 1,500 ft., July 8, 1949, *Glassman 2479* (US), flowers white.

Native name, *pah-puh*. The wood is used for general construction purposes.

Carolines, Marianas; India, China, Dutch East Indies, Philippines.

## MYRTACEAE

- Psidium guajava** L., Sp. Pl., 470, 1753.—Kanehira, Bot. Mag. Tokyo 45: 336, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 381, 1935.  
Native name, *guahva*. Planted; native of tropical America.
- Syzygium aqueum** (Burm. f.) Alst., Roy. Bot. Gard. Peradeniya, Ann. 10: 204, 1929.  
*Jambosa aquca* Rumph., Herb. Amb. 1: 126, pl. 38, fig. 2, 1741.—Diels, Engl. Bot. Jahrb. 56: 532-533, 1921.  
Palaus; Malaya.
- Syzygium carolinense** (Koidz.) Hosokawa, Jour. Jap. Bot. 16: 542-543, 1940.  
*Eugenia carolinensis* Koidz., Bot. Mag. Tokyo 30: 402-403, 1916.—Kanehira, Bot. Mag. Tokyo 45: 334-335, 1931; Fl. Micronesica, 267, fig. 128, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 379, 1935.  
*Eugenia ponapensis* Merr. apud Kanehira, Nat. Hist. Soc. Formosa, Trans. 6: 43, 1916.  
*Syzygium ponapense* Diels, Engl. Bot. Jahrb. 56: 533-534, 1921.—Christoph., B. P. Bishop Mus., Bull. 154: 25-26, 1938.  
*Ledermann* 13539 (BM); Aug. 8, 1929, *Kanehira* 633 (NY); Palikir, Aug. 1929, *Kanehira* 711 (BM, NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa* 5738 (BM, US); Salabuk, Feb. 5, 1936, *Takamatsu* 591 (BM), flowers white, fruit purple, abundant.  
Native name, *kanpaap*. Also known from Samoa.
- Syzygium jambos** (L.) Alst. ex Trimen, Handb. Fl. Ceylon, Suppl. 6: 115, 1931.  
*Eugenia jambos* L., Sp. Pl., 470, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 380, 1935.  
*Jambosa vulgaris* DC., Prodr. 3: 286, 1828.—Diels, Engl. Bot. Jahrb. 56: 532, 1921.  
Native name, *you en wai* (of Gibbon). Planted; native of Malaya.
- Syzygium malaccense** (L.) Merr. and Perry, Arnold Arb., Jour. 19: 215, 1938.  
*Eugenia malaccensis* L., Sp. Pl. 470, 1753.—Kanehira, Bot. Mag. Tokyo 45: 334, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 380, 1935.  
*Jambosa malaccensis* (L.) DC., Prodr. 3: 286, 1828.—Diels, Engl. Bot. Jahrb. 56: 532, 1921.  
Colonia, planted on roadside, Aug. 9, 1929, *Kanehira* 693 (NY), sterile.  
Native name, *apel*. Native of the Malayan region.



**Syzygium samarangense** (Bl.) Merr. and Perry, *Arnold Arb.*, Jour. **19**: 115, 1938.

*Jambosa javanica* (Lam.) Diels, *Engl. Bot. Jahrb.* **56**: 532, 1921.

Native name, *murop* (of Ledermann). Planted; native of Malaya.

**Syzygium stelechanthum** (Diels) Glassman, new combination.

*Jambosa stelechantha* Diels, *Engl. Bot. Jahrb.* **56**: 533, 1921.—Hosokawa, *Jour. Jap. Bot.* **16**: 543-544, 1940.

*Eugenia stelechantha* (Diels) Kanehira, *Bot. Mag. Tokyo* **45**: 334, 1931; *Fl. Micronesica*, 273, pl. 19, fig. 132, 1933; Dept. Agric. Kyushu Imp. Univ., *Jour.* **4**: 381, 1935.

*Ledermann 13473* (BM); no locality given, Aug. 1929, *Kanehira 626* (BM, NY); Kiti, July 1931, *Kanehira 1530, 1547* (NY); Mt. Nanalaut, July 1931, *Kanehira 1621* (NY); Mt. Nanalaut, 1,600-2,200 ft., tree 20-60 ft., June 28, 1949, *Glassman 2364* (US), flowers white, fruit red, cauline; vicinity of Ronkiti, 300 ft., woodland, July 7, 1949, *Glassman 2469* (US).

Native names, *kartenviel*, Net District; *kirakinwahl*, Kiti District; *kah-karak* (of Kanehira). Also known from Truk.

#### BARRINGTONIACEAE

**Barringtonia asiatica** (L.) Kurz, *Asiatic Soc. Bengal, Jour.* **45**: 70, 1876.

Observed along the seashore. Native name, *we*.

Tropical Asia to Polynesia.

**Barringtonia racemosa** (L.) Bl., DC. *Prodr.* **3**: 288, 1828.—Lauterb., *Engl.*

*Bot. Jahrb.* **56**: 527, 1921.—Kanehira, *Bot. Mag. Tokyo* **45**: 332, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* **4**: 376, 1935.

Mt. Ninani, 2,000 ft., Aug. 15, 1929, *Kanehira 842* (NY), flowers pure white; Mt. Tolenkiup, 1,600 ft., rain forest, July 14, 1949, *Glassman 2534* (US), flowers white; 0.5 mile south of Agricultural Experiment Station, along stream, July 19, 1949, *Glassman 2570* (US), flowers white, common.

Native name, *winnarr*. Terminal buds are used in relieving pains after childbirth, and in alleviating earaches. India to Malaya and Polynesia.

#### MELASTOMACEAE

**Astronidium ponapense** (Kanehira) Markg., *Notizbl. Bot. Gart. Berlin* **12**: 49, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* **4**: 382, 1935.

*Astronia ponapensis* Kanehira, *Bot. Mag. Tokyo* **45**: 337-338, 1931; *Fl. Micronesica*, 280, fig. 138, 1933.

Mt. Ninani, Aug. 1929, *Kanehira 796* (type collection, BM, NY); Mt. Nanalaut, 600 m., July 1931, *Kanehira 1603, 1655* (NY); Mt. Ninani, Aug. 12, 1933, *Hosokawa 5702* (US); Mt. Ninani, Aug. 7, 1940, *Hosokawa 9520*

(US); Mt. Tamatamansakir, 1,300 ft., rain forest, tree 30 ft., June 23, 1949, *Glassman 2338* (US); Mt. Tolenwalik, 2,500 ft., shrub 7 ft., Aug. 18, 1949, *Glassman 2895* (US), flowers rose pink, exposed area of dwarf trees.

Endemic.

**Melastoma marianum** Naudin, Ann. Sci. Nat. Bot. III, 13: 276, 1849.—Kanehira, Fl. Micronesica, 284, fig. 141, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 383, 1935.

*Melastoma malabathricum* L., Sp. Pl., 390, 1753.—Mansf., Engl. Bot. Jahrb. 60: 108, 1925.

*Melastoma polyanthum* Bl., Flora 4: 480, 1831.—Mansf., Engl. Bot. Jahrb. 60: 108-109, 1925.—Kanehira, Bot. Mag. Tokyo 52: 240, 1938.

No locality given, Aug. 8, 1929, *Kanehira 665* (NY); Palikir, roadside, Aug. 10, 1929, *Kanehira 701* (NY); Colonia, in thickets, July 1931, *Kanehira 1471* (NY); Mt. Nanalaut, secondary forest, July 1931, *Kanehira 1629* (NY), flowers white; Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5764* (BM); Mt. Peipalap, 300 ft., along road, June 22, 1949, *Glassman 2312* (US), flowers pink; Mt. Tamatamansakir, 1,000 ft., rain forest, June 23, 1949, *Glassman 2337* (US), flowers lavender; Mt. Nanalaut, 2,000 ft., June 28, 1949, *Glassman 2358* (US); Mt. Seletereh, 700 ft., July 28, 1949, *Glassman 2736* (US), flowers white.

Native name, *kisetikumai*. Fruits are employed in the treatment of shingles, and the terminal buds are used to increase the appetite of young children. Carolines and Marianas; type from Guam.

#### COMBRETACEAE

**Lumnitzera littorea** (Jack) Voigt, Hort. Suburb. Calc., 39, 1845.

Tidal outlet of Tawensokola River, back of mangrove swamp, July 5, 1949, *Glassman 2452* (US), flowers scarlet.

Native name, *wengal*. Kusaie, Palaus, Yap, Marshalls; India through Malaya to Australia and Polynesia.

**Terminalia carolinensis** Kanehira, Bot. Mag. Tokyo 46: 672-673, 1932; Fl. Micronesica, 262, pl. 18, fig. 25, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 378, 1935.

Native name, *keima* (of Kanehira). Also known from Kusaie.

**Terminalia catappa** L., Mant. Pl. 1: 128, 1767.—Kanehira, Fl. Micronesica, 264, fig. 126, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 378, 1935. In strand, Aug. 1931, *Kanehira 1696* (NY).

Native name, *tipop*. The fruit contains an edible seed. Old world tropics.



## RHIZOPHORACEAE

- Bruguiera conjugata** (L.) Merr., Philippine Jour. Sci., Bot. 9: 118, 1914.—Kanehira, Bot. Mag. Tokyo 45: 332-333, 1931; Fl. Micronesica, 253, fig. 118, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 376-377, 1935. Metalanim District, mangrove swamp, June 20, 1949, *Glassman 2300* (US); tidal outlet of Tawensokola River, July 5, 1949, *Glassman 2450* (US). Native names, *shom*; *rhom* (of Kanehira); *lom* (of Hosaka). Tropical Asia and Africa through Malaya to tropical Australia.
- Gynotroches axillaris** Bl., Mus. Bot. Lugd.-Bat. 1: 127, pl. 31, 1849.—Kanehira, Bot. Mag. Tokyo 45: 333, 1931; Fl. Micronesica, 256, fig. 120, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 377, 1935. No locality given, Aug. 14, 1929, *Kanehira 799* (NY); Mt. Ninani, 2,300 ft., Aug. 14, 1929, *Kanehira 832* (BM, NY); Palikir, July 1931, *Kanehira 1481* (NY); Mt. Nanalaut, July 1931, *Kanehira 1601, 1602, 1632* (NY); Aug. 22, 1933, *Hosokawa 5911* (US); Mt. Nanalaut, 1,900 ft., June 28, 1949, *Glassman 2362, 2365* (US), flowers white, fruit bluish; Mt. Poaipoi, 1,700 ft., July 9, 1949, *Glassman 2494* (US); Mt. Beirut, 2,100 ft., open windy area, July 15, 1949, *Glassman 2550* (US). Native name, *pef* (of Kanehira). Malaysia.
- Rhizophora apiculata** Bl., Enum. Pl. Javae 1: 91, 1827.—Kanehira, Fl. Micronesica, 257, fig. 121, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 377, 1935. *Rhizophora candelaria* DC., Prodr. 3: 32, 1828.—Kanehira, Bot. Mag. Tokyo 45: 333, 1931. Tidal outlet of Tawensokola River, July 5, 1949, *Glassman 2448* (US). Native name, *aakapah*. Old World tropics.
- Rhizophora mucronata** Lam., Encycl. Méth. 6: 189, 1804.—Kanehira, Bot. Mag. Tokyo 45: 333, 1931; Fl. Micronesica, 257, fig. 122, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 377, 1935. Saputik Islet, Aug. 7, 1949, *Glassman 2783* (US). Native name, *aakalel*. Old World tropics.

## GUTTIFERAE

- Calophyllum inophyllum** L., Sp. Pl., 513, 1753.—Lauterb., Engl. Bot. Jahrb. 59: 19, 1924.—Kanehira, Fl. Micronesica, 234, fig. 106, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 371, 1935. Native names *isyo*; *lipas* (of Hosaka). India and Malaya to tropical Africa.
- Garcinia ponapensis** Lauterb., Engl. Bot. Jahrb. 59: 20-21, 1924.—Kanehira, Bot. Mag. Tokyo 45: 329, 1931; Fl. Micronesica, 237, fig. 108, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 371, 1935.

No locality given, Aug. 8, 1929, *Kanehira* 637 (BM, NY); no locality given, Aug. 1929, *Kanehira* 653 (NY); Colonia, July 1931, *Kanehira* 1479 (NY); Mt. Seletereh, 650 ft., rain forest, July 28, 1949, *Glassman* 2728 (US), common.

Native names, *konpuil*; *nigenpiri* (of Kanehira). An infusion of the inner bark is used in treatment of dysentery. Endemic.

**Ochrocarpus excelsus** (Planch. and Triana) Vesque, DC. Monogr. Phanerog. 8: 525, 1893.—Kanehira, Fl. Micronesica, 240, fig. 111, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 372, 1935.

*Ochrocarpus odoratus* (Raf.) Merr., Arnold Arb., Jour. 26: 94, 1945.

Kiti, forest at medium alt., July 1931, *Kanehira* 1533 (NY).

Native name, *luas*. Java, Christmas Island, and Borneo to New Guinea; Fiji and the Admiralties.

#### TILIACEAE

**Triumfetta procumbens** Forst. f., Prodr., 35, 1786.—Burret, Notizbl. Bot. Gart. Berlin 15: 96, 1940.

Carolines; Seychelles through Malaya to the Philippines and Polynesia.

#### ELAEOCARPACEAE

**Elaeocarpus carolinensis** Koidz., Bot. Mag. Tokyo 30: 403, 1916.—Kanehira, Bot. Mag. Tokyo 45: 295, 1931; Fl. Micronesica, 209, fig. 90, pl. 17, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 363, 1935.

*Elaeocarpus kanehirae* Merr. apud Kanehira, Nat. Hist. Soc. Formosa, Trans. 6: 43, 1916.

*Elaeocarpus joga* of Schltr., Engl. Bot. Jahrb. 56: 563, 1921; not Merr., 1914.

*Ledermann* 13515a (BM); Colonia, Aug. 8, 1929, *Kanehira* 650 (NY), abundant; Colonia, July 1931, *Kanehira* 1474 (BM, NY); Mt. Tolotom, 900 ft., tree 120 ft.  $\times$  1 ft., Aug. 3, 1949, *Glassman* 2768 (US), flowers white, fruit blue.

Native name, *syatak*. Kusaie, Palaus.

**Elaeocarpus kerstingianus** Schltr., Engl. Bot. Jahrb. 56: 563-564, 1921.—Kanehira, Bot. Mag. Tokyo 45: 295, 1931; Fl. Micronesica, 211, fig. 91, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 363, 1935.

Ninani, Aug. 1929, *Kanehira* 801 (BM, NY); Mt. Tolotom, 400 m., July 1931, *Kanehira* 1556, 1561 (NY); Ninani, Aug. 12, 1933, *Hosokawa* 5682 (BM); Mt. Tolotom, Aug. 13, 1933, *Hosokawa* 5713 (BM).

Also known from Kusaie.



**Elaeocarpus kusanoi** Koidz., Bot. Mag. Tokyo 31 : 232-233, 1917.—Kanehira, Bot. Mag. Tokyo 45 : 295, 1931; Fl. Micronesica, 213, fig. 93, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 363, 1935.

*Elaeocarpus gibboni* Schltr., Engl. Bot. Jahrb. 56 : 564, 1921.

*Ledermann* 13485 (BM); Colonia, Aug. 1929, *Kanehira* 745 (BM, NY); Colonia, primary forest, *Kanehira* 1472 (NY); Kiti, 120 m., July 1931, *Kanehira* 1541 (NY); Mt. Sankaku, Aug. 8, 1933, *Hosokawa* 5521 (BM).

Native names, *maratte* and *opop* (of Kanehira). Also from Kusaie.

#### STERCULIACEAE

**Commersonia bartramia** (L.) Merr., Interpret. Herb. Amb., 362, 1917.—Kanehira, Bot. Mag. Tokyo 45 : 328, 1931; Fl. Micronesica, 226, fig. 101, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 368, 1935.

No locality given, Aug. 17, 1933, *Hosokawa* 5865 (US); 2 miles south of Colonia, tree 20 ft. tall, woodland, July 5, 1949, *Glassman* 2443 (US), flowers white.

Native names, *kahil*; *acarido* (of Kanehira). Indo-China to Polynesia.

**Heritiera littoralis** Dryand., Hort. Kew. 3 : 546, 1789.—Kanehira, Bot. Mag. Tokyo 45 : 328, 1931; Fl. Micronesica, 228, fig. 102, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 368, 1935.

Colonia, Aug. 1929, *Kanehira* 766 (BM); Sabera, Metalanim District, frequent along strand, tree 50 ft., Aug. 2, 1949, *Glassman* 2757 (US), flowers greenish.

Native names, *marrup-winiship*, *marapinsat*. Wood is used for canoes and general construction purposes. India to tropical Africa through Malaya to Polynesia.

**Kleinhovia hospita** L., Sp. Pl., ed. 2 : 1365, 1763.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 369, 1935.

Owa, Metalanim, Aug. 1931, *Kanehira* 1698 (NY); U District, roadside, tree 30 ft.  $\times$  2 in., Aug. 20, 1949, *Glassman* 2902 (US), flowers pink, occasional.

Native names, *kohlon-ant*, *kalau-n-ant*. Malaya, Formosa, and India to tropical Africa.

**Melochia corchorifolia** L., Sp. Pl., 675, 1753.

*Melochia concatenata* L., loc. cit.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 369, 1935.

Pantropical.

**Melochia odorata** L. f., Suppl. Pl., 302, 1781.—Kanehira, Bot. Mag. Tokyo 45 : 328, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4 : 369, 1935.

U District, along road, tree 20-30 ft., July 13, 1949, *Glassman 2523* (US), flowers pink.

Native name, *kotol*. New Caledonia to Polynesia.

**Sterculia ponapensis** Kanehira, Bot. Mag. Tokyo 51: 910-912, fig. 66, 1937.

Mt. Nanalaut, 500 m., tree 7 m.  $\times$  40 cm., July 1931, *Kanehira 1620* (NY), sterile; Mt. Nanalaut, Sept. 14, 1940, *Hosokawa 9613* (US), sterile.

Endemic.

**Theobroma cacao** L., Sp. Pl., 782, 1753.

A native of tropical America, cocoa was introduced on Ponape during the Spanish period. In addition to a number of trees now growing at the Agricultural Experiment Station, there are some in the Kiti District.

#### BOMBACACEAE

**Ceiba pentandra** (L.) Gaertn., Fruct. et Semin. Pl. 2: 244, pl. 133, fig. 1, 1791.

—Kanehira, Bot. Mag. Tokyo 45: 327-328, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 367, 1935.

Native name, *cottin*. Planted; probably a native of tropical America.

#### MALVACEAE

**Gossypium brasiliense** Macfad., Fl. Jamaica 1: 72, 1837.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 366, 1935.

Planted; native of tropical America.

**Hibiscus abelmoschus** L., Sp. Pl., 696, 1753.

Observed as a weed. Native name, *metey*. Leaves are used for relieving pains after childbirth. Probably native of India.

**Hibiscus rosa-sinensis** L., Sp. Pl., 694, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 366, 1935.

Native name, *kalau-n-wai*. Planted; native of tropical Asia.

**Hibiscus schizopetalus** (Mast.) Hook. f., Curtis's Bot. Mag. 106: pl. 6524, 1880.

Observed as an ornamental plant. Native of tropical east Africa.

**Hibiscus tiliaceus** L., Sp. Pl., 694, 1753.—Kanehira, Bot. Mag. Tokyo 45: 327, 1931; Fl. Micronesica, 222, fig. 99, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 366, 1935.

One-half mile south of Agricultural Experiment Station, in field, July 19, 1949, *Glassman 2565* (US), flowers yellow, abundant.

Native name, *kalau*. Terminal buds are employed in relieving pains after childbirth. Pantropical.



**Sida acuta** Burm., Fl. Ind., 147, 1768.

Param Islet, Aug. 7, 1949, *Glassman 2789* (US), weed, flowers yellow, frequent.

Native name, *kahwinyotz*.

The specimen cited above appears to be a hybrid between *S. acuta* and *S. rhombifolia* L. The long pedicels (15-25 mm.) would warrant placing it in the latter species; but the narrow, acute- or obtuse-tipped leaves, which are slightly tomentose, and the distinct vein reticulation on the lower surface of the leaves would justify including it in *S. acuta*.

**Sida meyeniana** Walp. apud Meyen, Acad. Leop.-Carol. Nat. Cur., Acta Nova 19 (Suppl. 1): 307, 1843; Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 436, 1901.

Type from the Hawaiian Islands. This entry is based on the word of Finsch.

**Sida rhombifolia** L., Sp. Pl., 684, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 367, 1935.

Mt. Tolotom, waste places, July 1931, *Kanehira 1558* (NY); vicinity of Ronkiti, roadside, July 7, 1949, *Glassman 2462* (US), flowers yellowish; same data, Aug. 9, 1949, *Glassman 2801* (US).

Native names, *kahwinyotz*, *koyolung*. Pantropical.

**Thespesia populnea** (L.) Soland. ex Correa, Mus. Hist. Nat. Paris, Ann. 9: 290, 1807.—Kanehira, Bot. Mag. Tokyo 45: 327, 1931; Fl. Micronesica, 224, fig. 100, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 367, 1935. Langar Islet, tree 20 ft., July 1, 1949, *Glassman 2404* (US), flowers yellow red.

Native name, *pone*. Pantropical.

**Urena lobata** L., Sp. Pl., 692, 1753.—Kanehira, Bot. Mag. Tokyo 45: 327, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 367, 1935.

No locality given, Aug. 31, 1933, *Hosokawa 6154* (US); Ronkiti, roadside, July 7, 1949, *Glassman 2463* (US), flowers pink; Param Islet, Aug. 7, 1949, *Glassman 2790* (US); Winuh, Aug. 12, 1949, *Glassman 2866* (US).

Native name, *korop*. Pantropical.

## EUPHORBIACEAE

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

Observed as an ornamental plant. Native of Malaya.

**Acalypha ponapensis** Kanehira and Hatusima, Bot. Mag. Tokyo 54: 434-435, fig. 81, 1940.

Endemic.

**Acalypha** sp.

Mt. Peipalap, 400 ft., tree 20 ft., Aug. 23, 1949, *Glassman 2916* (US), flowers greenish.

Further study is necessary to determine the above-cited specimen. It does not, however, fit the description of *A. ponapensis*.

**Aleurites moluccana** (L.) Willd., Sp. Pl. 4: 590, 1805.—Kanehira, Bot. Mag. Tokyo 45: 289, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 347, 1935.

Ronkiti, woodland, tree 50 ft.  $\times$  1 ft., Aug. 12, 1949, *Glassman 2867* (US), flowers white, uncommon.

Native names, *sakan* in the Net District; *shakan* in the Kiti District. Oil from the seeds is used as an ointment, and it is burned for illumination. India to Polynesia.

**Antidesma ponapense** Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 347, 1935 (nom. nud.).

This species was published without an accompanying Latin description, and is therefore invalid.

**Claoxylon carolinianum** Pax and Hoffm., Pflanzenr. 68 (IV, 147, XIV): 16, 1919.—Kanehira, Bot. Mag. Tokyo 51: 909-910, 1937.

*Claoxylon longifolium* (Bl.) Miq., Fl. Ind. Bat. 1: 386, 1859.—Pax and Hoffm., op. cit. 63 (IV, 147, VII): 117, 1914.—Kanehira, op. cit. 45: 289, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 348, 1935.

Colonia, Aug. 8, 1929, *Kanehira 647* (BM, NY), latex poisons skin; July 1931, *Kanehira 1491* (NY); Sankaku, Aug. 8, 1933, *Hosokawa 5514*; Trirajuat, Aug. 22, 1933, *Hosokawa 5918* (US); Mt. Poaipoai, 500 ft., rain forest, tree 30 ft., July 8, 1949, *Glassman 2473* (US), flowers white to greenish; Mt. Seletereh, 1,500 ft., July 28, 1949, *Glassman 2751* (US).

Native names, *koy*, *koe*, *koyaet*. Plant parts are used as a medicine for healing broken limbs. Endemic.

**Codiaeum variegatum** (L.) Bl. var. **pictum** (Lodd.) Muell.-Arg., DC. Prodr. 15: 1119, 1866.

Observed as an ornamental. Native name, *kurutun*. Several forms are recognized. (See Neal, 49, pp. 447-448.)

**Croton ripense** Kanehira and Hatusima, Bot. Mag. Tokyo 54: 433, fig. 80, 1940.

Endemic.

**Euphorbia atoto** Forst. f., Prodr., 36, 1786.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 408, 1901.



This entry is based on the word of Finsch. Asia to Australia and Polynesia.

**Euphorbia hirta** L., Sp. Pl., 454, 1753.

*Euphorbia pilulifera* L., loc. cit.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 409, 1901.

Langar Islet, along strand, July 1, 1949, *Glassman 2397* (US).

Pantropical.

**Euphorbia thymifolia** L., Sp. Pl., 454, 1753.

Agricultural Experiment Station grounds, Aug. 15, 1949, *Glassman 2870* (US), weed, common.

Pantropical.

**Glochidion marianum** Muell.-Arg., *Linnaea* 32: 65, 1863.—Kanehira, Bot. Mag. Tokyo 45: 290, 1931.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 23, fig. I, c, 1935.

Mt. Tolotom, 600 m., July 1931, *Kanehira 1553* (NY); Ninani, Aug. 12, 1933, *Hosokawa 5655* (BM); Mt. Nanalaut, 1,600-2,200 ft., rain forest, tree 30-50 ft., June 28, 1949, *Glassman 2368* (US), fruit red; Mt. Poaipoai, 1,900 ft., July 8, 1949, *Glassman 2491* (US); Mt. Seletereh, 650 ft., July 28, 1949, *Glassman 2727* (US), fruit white.

Native name, *luhwikitoh-lol*. An infusion of plant parts is drunk by women shortly after marriage because it is believed to aid conception. Parts of this plant are also used to relieve emotional distress. Type from Guam.

**Glochidion ramiflorum** Forst., Char. Gen. Pl., 113, pl. 57, 1776.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 351, 1935.

*Glochidion ponapense* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 24, fig. I, e, 1935.—Kanehira, loc. cit.

*Glochidion puberulum* Hosokawa, op. cit., 23-24, fig. I, f, 1935.—Kanehira, loc. cit.

Colonia, Aug. 8, 1929, *Kanehira 663* (NY); July 1931, *Kanehira 1484* (NY, BM, US); Mt. Nanalaut, July 1931, *Kanehira 1641* (NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5737* (BM, US); Palikir, Aug. 18, 1933, *Hosokawa 5900* (BM); Mt. Peipalap, 500 ft., June 22, 1949, *Glassman 2306* (US), flowers cream; Mt. Poaipoai, 1,700 ft., July 9, 1949, *Glassman 2497* (US); Mt. Tolotom, 2,100 ft., Aug. 11, 1949, *Glassman 2852* (US).

Native name, *muek*. Terminal buds are used for increasing the appetite of young children, and other plant parts are used to alleviate a burning sensation in urination.

This species is quite variable. The branches, leaf veins, and capsules range from puberulent to glabrous. Croizat (11) discusses the difficulties involved in determining the limits of this species.

**Glochidion senyavinianum**, new species (fig. 17).

Frutex ca. 3 m. alt., ramulis novellis glaucis et puberulentis, ramulis majoribus glabris. Foliis alternis; stipulis triquetris, apicibus acuminatis, 1.5-3 mm. long.; petiolis rugosis vel tuberculatis, puberulentis, 1-3 mm. long.; laminis 4-5.2 cm. long., 2.5-3.2 cm. lat., coriariis, ovato-lanceolatis, fusco-viridibus glabrisque supra, pallido-viridibus infra, apicibus acutis, interdum mucronatis, basibus obtusis, paulo inaequalibus, marginibus integris crassioribus, nervis primis plerumque 5-paribus, costis et nervis primis pilosis infra. Floribus immaturis, fructis incognitis.

Shrub about 3 m. tall, younger branches glaucous and puberulent, older branches becoming glabrous with age. Leaves alternate; stipules triangular, acuminate tipped, 1.5-3 mm. long; petioles rugose or tuberculate, puberulent, 1-3 mm. long; blades 4-5.2 cm. long, 2.5-3.2 cm. wide, chartaceous, ovate-lanceolate, dark green, and glabrous above, light green below, tips acute, sometimes mucronate, base obtuse, slightly unequal, margins entire, thickened, main veins usually 5 pairs, purplish, pilose on midrib and main veins below. Flowers immature, fruit not known.



FIGURE 17.—*Glochidion senyavinianum*, type specimen.

Mt. Ninani, 2,400 ft., on edge of marsh, Aug. 17, 1949, *Glassman 2884* (US), occasional.

Native name, *muck-n-ant*.



Type in United States National Herbarium; cotypes in the herbarium of Bishop Museum and the Bebb Herbarium, University of Oklahoma. The species name is derived from the Senyavin Islands which include Ponape, Ant, and Pakin. The latter two islands are atolls within a 20-mile radius of Ponape.

Since flowers and fruit are not available for comparison, it is not possible to determine exact relationships; however, the shape and structure of the leaves resemble *G. marianum*.

**Homalanthus nutans** (Forst.) Pax var. **genuinum** Muell.-Arg., DC. Prodr. 15: 1146, 1866.—Pax and Hoffm., Pflanzenr. 68 (IV, 147, XIV): 57, 1919.—Kanehira, Bot. Mag. Tokyo 51: 910, 1937.

*Homalanthus populneus* of Kanehira, op. cit. 45: 290-291, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 351-352, 1935; not (Geisel.) Pax, 1890.

*Ledermann 13237* (BM); Colonia, Aug. 12, 1929, *Kanehira 748* (BM, NY); Mt. Seletereh, 1,100 ft., rain forest, tree 25 ft. × 2 in., July 28, 1949, *Glassman 2739* (US), milky juice, flowers green, common.

Native names *kuh-sawah*; *keishia* (of Kanehira). Melanesia and Polynesia.

**Jatropha curcas** L., Sp. Pl., 1006, 1753.

Observed as a cultivated plant. Native of tropical America.

**Macaranga carolinensis** Volkens, Engl. Bot. Jahrb. 31: 466, 1902.—Pax and Hoffm., Pflanzenr. 63 (IV, 147, VII): 371, 1914.—Kanehira, Fl. Micronesica, 177, fig. 69, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 352, 1935.

Aug. 26, 1933, *Hosokawa 6070* (US).

Native names *apuit*; *bet* (of Hosaka). Truk, Palaus, and Yap.

**Macaranga carolinensis** var. **grandiflora** Pax and Hoffm., Pflanzenr. 68 (IV, 147, XIV): 29, 1919.—Kanehira, Bot. Mag. Tokyo 51: 910, 1937.

*Macaranga kanehirae* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 27, 1935.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 352, 1935.

*Macaranga carolinensis* of Kanehira, Bot. Mag. Tokyo 45: 291, 1931; not Volkens, 1902.

No locality given, Aug. 8, 1929, *Kanehira 632* (BM, NY); Palikir, Aug. 10, 1929, *Kanehira 708*, (NY); Mt. Peipalap, 450 ft., June 22, 1949, *Glassman 2315* (US), flowers greenish; Mt. Tamatamansakir, 600 ft., woodland, June 23, 1949, *Glassman 2333* (US); 0.5 mile south of Agricultural Experiment Station, along stream, July 19, 1949, *Glassman 2567* (US).

Native name, *apuit*. The wood is considered excellent kindling; the inner bark is employed as a treatment for abscesses; and the fallen leaves are used to increase the appetite of young children. The variety is distinguished from

the species by six oblong linear glands at the base of the petiole insertion on the upper leaf surface. Also known from Kusaie.

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

*Manihot utilissima* Pohl, *Pl. Bras. icones et descr.* 1: 32, pl. 24, 1827.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 353, 1935.

Vicinity of Colonia, roadside, July 16, 1949, *Glassman 2554* (US), flowers white.

Native name, *kav-tuga*. Native of tropical America; pantropical in cultivation.

**Phyllanthus niruri** L., *Sp. Pl.*, 981, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 353, 1935.

Palikir, roadside, Aug. 10, 1929, *Kanehira 736* (NY); Agricultural Experiment Station grounds, roadside, July 16, 1949, *Glassman 2556* (US).

Native name, *limair-poh*. A boiled infusion of the whole plant is used as a cure for gonorrhoea. Pantropical.

**Phyllanthus urinaria** L., *Sp. Pl.* 982, 1753.

No locality given, Aug. 26, 1933, *Hosokawa 6076* (US).

Pantropical.

#### ROSACEAE

**Eriobotrya japonica** Lindl., *Linn. Soc., Trans.* 13: 102, 1822.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 324, 1935.

The loquat; planted. Japan to China.

**Parinarium glaberrimum** Hassk., *Tidschr. Nat. Ges.* 10: 147, 1843 (nom. nud.); *Cat. Hort. Bot. Bog.*, 269, 1844 (nom. nud.); *Flora* 27: 583-585, 1844.—Kanehira, *Bot. Mag. Tokyo* 45: 282, 1931; *Fl. Micronesica*, 127, fig. 42, 1933; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 324, 1935.

*Parinarium hahlii* Warb., *Tropenpfl.* 6: 370-371, 1902.

Kiti, July 1931, *Kanehira 1538* (BM, NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu 724* (BM), flowers white; Mt. Nanalaut, Feb. 17, 1936, *Takamatsu 1101* (BM); Mt. Tamatamansakir, 500 ft., woodland, June 23, 1949, *Glassman 2331* (US).

Native name, *ais*. Grated meat of the seed is used as a cure for dysentery and yaws. Kusaie, Palaus; Java, Borneo, Philippines to Polynesia.

#### LEGUMINOSAE

**Abrus precatorius** L., *Syst. Nat.*, ed. 12: 472, 1767.—Kanehira, *Bot. Mag. Tokyo* 45: 283, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 325, 1935.



Subtic, Aug. 31, 1933, *Hosokawa 6121* (US); Saputik Islet, climbing, Aug. 7, 1949, *Glassman 2781* (US), flowers purple, seeds red and black.

Native name, *kaigus*. Pantropical.

**Acacia confusa** Merr., Philippine Jour. Sci., Bot. 5: 27, 1910.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 325, 1935.

Planted. Moluccas to New Guinea.

**Adenantha pavonina** L., Sp. Pl., 384, 1753.

Metalanim District, Sabera, tree 20 ft., Aug. 2, 1949, *Glassman 2759* (US), seeds scarlet, planted. Native of tropical Asia.

**Aeschynomene indica** L., Sp. Pl., 713, 1753.

U District, Auak, roadside, Aug. 20, 1949, *Glassman 2899* (US), flowers lemon and golden yellow, occasional.

Paleotropics.

**Albizia acle** (Blanco) Merr., Philippine Jour. Sci., Bot. 5: 25, 1910.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 326, 1935. (Falso ut *Albizzia*.)

Colonia, Aug. 8, 1929, *Kanehira 667* (NY), planted avenue tree.

Native of the Philippines.

**Albizia lebbeck** (L.) Benth., Lond. Jour. Bot. 3: 87, 1844.

Colonia, July 13, 1949, *Glassman 2522* (US), planted tree, flowers white. Native of tropical Asia.

**Bauhinia monandra** Kurz, Asiatic Soc. Bengal, Jour. 42: 73, 1873.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 327, 1935.

Planted; native of tropical America.

**Cajanus cajan** (L.) Millsp., Field Columb. Mus., Bot. Ser. 2: 53, 1900.

Colonia, shrub 5 ft., roadside, Aug. 23, 1949, *Glassman 2914* (US), flowers yellow with red stripes, occasional.

Cultivated in many tropical countries.

**Canavalia maritima** (Aubl.) Thouars, Desv. Jour. Bot. 1: 80, 1813.

Langar Islet, along strand, July 1, 1949, *Glassman 2402* (US), decumbent, flowers purple.

Native name, *wahntal*. Paleotropics.

**Cassia alata** L., Sp. Pl., 378, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 329, 1935.

Native name, *truke-n-kili-n-wai*. This plant is used in the treatment of ringworm. Pantropical.

**Cassia fistula** L., Sp. Pl., 377, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 329, 1935.

Planted; native of tropical Asia.

**Cassia lechenaultiana** DC., Soc. Hist. Nat. Geneve, Mem. 2: 132, 1824.

Agricultural Experiment Station grounds, in field, July 2, 1949, *Glassman 2410* (US), flowers yellow, abundant.

India, Java, Mauritius, Hawaii. This species and *C. mimosoides* are common roadside weeds which form thickets.

**Cassia mimosoides** L., Sp. Pl., 379, 1753.

Vicinity of Colonia, roadside, June 12, 1949, *Glassman 2513* (US), shrub 5 ft., flowers yellow.

India to Japan, southward to Australia.

**Cassia occidentalis** L., Sp. Pl., 377, 1753.

Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2414* (US), shrub, flowers yellow.

Warmer parts of both hemispheres; of American origin.

**Cassia tora** L., Sp. Pl., 376, 1753.

Mt. Peipalap, 850 ft., open field, Aug. 6, 1949, *Glassman 2774* (US), flowers yellow, uncommon.

Pantropical; of American origin.

**Crotalaria saltiana** Andr., Bot. Repos. 10: pl. 648, 1811.

Vicinity of Colonia, roadside, July 2, 1949, *Glassman 2405* (US), flowers yellow, common.

Pantropical.

**Cynometra bijuga** Spanoghe, Linnaea 15: 201, 1841.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 32: 14-15, 1942.

*Cynometra ramiflora* of Kanehira, Bot. Mag. Tokyo 45: 283, 1931; not L., 1753.

*Cynometra carolinensis* Kanehira, op. cit. 46: 455-456, 1932; Fl. Micronesica 133, fig. 45, 1933.

*Cynometra hosinoi* Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 330, 1935 (nom. nud.).

No locality given, Aug. 8, 1929, *Kanehira 662* (NY); Mt. Sankaku, Aug. 8, 1933, *Hosokawa 5519* (US); Palikir-Colonia, Aug. 20, 1933, *Hosokawa 5904* (BM); Aug. 28, 1940, *Hosokawa 9563* (US); Mt. Seletereh, 700 ft., tree 30 ft., July 28, 1949, *Glassman 2730* (US), flowers white.

Native names, *kahsilah*, *kumoh*; *kammau* (of Fosberg). The wood is used in the construction of houses, axe handles, and machete handles; and as a source of oil.

Kusaie, Palaus, Yap; Ceylon, Malaya, Philippines, and Borneo to Timor.



**Dalbergia candenatensis** (Dennst.) Prain, Asiatic Soc. Bengal, Jour. 70: 49, 1901.—Kanehira, Bot. Mag. Tokyo 45: 283, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 330-331, 1935.

Colonia, Aug. 8, 1929, *Kanehira 670* (NY); Sabera, climbing, along strand, Aug. 2, 1949 *Glassman 2756* (US), flowers white, common; Saputik Islet, Aug. 7, 1949, *Glassman 2782* (US), common in secondary growth.

Native name, *kaigus*. Kusaie, Palaus, Yap; India to southern China, southward to New Guinea and Australia.

**Delonix regia** (Boj.) Raf., Fl. Tellur. 2: 92, 1836.

Observed as an ornamental. Native of Madagascar.

**Derris elliptica** (Roxb.) Benth., Linn. Soc. Bot., Jour., Suppl. 4: 111, 1860.—Kanehira, Bot. Mag. Tokyo 45: 284, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 331, 1935.

One-half mile south of Agricultural Experiment Station, along stream, July 19, 1949, *Glassman 2568* (US), climbing, sterile.

Native name, *up*. Three varieties are recognized by the natives, *upanyap*, *upanai*, and *upkisetik*. Roots are used for poisoning fish. Malaya to New Guinea and the Bismarck Archipelago.

**Derris ponapensis** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 287, 1941.

*Pericopsis ponapensis* (Hosokawa) Hosokawa, Acta Phytotax. Geobot. 13: 168-171, fig. 4, 1943.

Reitau, mangrove, Aug. 28, 1940, *Hosokawa 9565* (US).

Palaus, Yap.

This species resembles *D. trifoliata* closely, but further study is necessary to determine whether they are distinct or conspecific.

**Derris trifoliata** Lour., Fl. Cochinchinensis, 433, 1790.—Kanehira, Bot. Mag. Tokyo 45: 283, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 332, 1935.

U District, edge of mangrove swamp, July 19, 1949, *Glassman 2575* (US), liana, flowers pink, common; Saputik Islet, Aug. 7, 1949, *Glassman 2780* (US).

Native names, *keh-ohror*; *kanarai* (of Fosberg). Tropical East Africa and Asia through Malaya to Australia and Polynesia.

**Desmodium heterocarpum** (L.) DC., Prodr. 2: 337, 1825.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 332, 1935.

Palikir, July 1931, *Kanehira 1517* (NY); Colonia, July 1931, *Kanehira 1574* (NY, BM); Mt. Peipalap, 750 ft., along path, June 22, 1949, *Glassman 2316* (US), flowers purple; near outlet of Tawensokola River, in grassy field, July 5, 1949, *Glassman 2445* (US).

Native name, *kamelimel*. Tropical Asia and Africa through Malaya to tropical Australia and Polynesia.

**Desmodium triflorum** (L.) DC., Prodr. 2: 334, 1825.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 332, 1935.

Metalanim, roadside, Aug. 13, 1929, *Kanehira 780* (NY); Metalanim District, Sabera, on road, Aug. 2, 1949, *Glassman 2755* (US), prostrate, common.

Pantropical.

**Desmodium umbellatum** (L.) DC., Prodr. 2: 325, 1825.—Kanehira, Bot. Mag. Tokyo 45: 284, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 332-333, 1935.

Palikir, July 1931, *Kanehira 1511* (NY); Colonia, Aug. 26, 1933, *Hosokawa 6044* (US); Subtic, Aug. 31, 1933, *Hosokawa 6129* (US); Langar Islet, July 1, 1949, *Glassman 2400* (US), shrub, flowers pale yellow.

Native name, *likar-tikutik*.

Mascarene Islands to tropical Asia, Malaya, Australia, and Polynesia.

**Entada phaseoloides** (L.) Merr., Philippine Jour. Sci. Bot. 9: 86, 1914.—Kanehira, Bot. Mag. Tokyo 45: 284, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 333, 1935.

Metalanim, secondary forest, Aug. 1931, *Kanehira 1637* (NY).

Pantropical.

**Erythrina fusca** Lour., Fl. Cochinchinensis, 427, 1790.—Kanehira, Bot. Mag. Tokyo 45: 284, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 333, 1935.

Colonia, tree 20 m.  $\times$  100 cm., Aug. 12, 1929, *Kanehira 746* (NY); Kamal, Aug. 30, 1933, *Hosokawa 6085* (US); Auak, roadside and back of mangrove swamp, Aug. 20, 1949, *Glassman 2904* (US), common.

Native name, *pahr*. Plant parts are used in the treatment of shingles. India to Indo-China, southward to Malaya and Polynesia.

**Erythrina variegata** L. var. **orientalis** (L.) Merr., Interpret. Herb. Amb., 276, 1917.

Ronkiti, back of mangrove swamp, tree 40 ft.  $\times$  6 in., Aug. 9, 1949, *Glassman 2796* (US), seeds red.

Native name, *pahr*. India to southern Polynesia.

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

*Inocarpus edulis* Forst., Char. Gen. Pl., 66, pl. 33, 1776.—Kanehira, Bot. Mag. Tokyo 45: 285, 1931; Fl. Micronesica, 140, fig. 47, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 334, 1935.



No locality given, July 1931, *Kanehira 1687* (BM); Colonia, Aug. 26, 1933, *Hosokawa 6048* (US); Ronkiti, along outlet of Kapinpilap River, July 7, 1949, *Glassman 2458* (US); Pone-Aulong, Metalanim District, along strand, tree 50 ft.  $\times$  1 ft., Aug. 2, 1949, *Glassman 2761* (US), flowers white, frequent.

Native name, *marrup*. Fruits are edible when cooked, and the wood is excellent for kindling. Malayan Archipelago to Polynesia.

***Intsia bijuga*** (Colebr.) O.K., Rev. Gen. Pl. 1: 192, 1891.—Kanehira, Bot. Mag. Tokyo 45: 285, 1931; Fl. Micronesica, 142, fig. 48, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 335, 1935.

Takatik, Aug. 31, 1933, *Hosokawa 6160* (BM).

Native names, *choyo*; *show* (of Kanehira). Madagascar, India, Cochin-China, through Malaya and into Polynesia.

***Leucaena glauca*** (Willd.) Benth., London Jour. Bot. 1: 526, 1842.

Colonia, roadside, tree 15-20 ft., Aug. 3, 1949, *Glassman 2771* (US), flowers white, common.

Pantropical.

***Mimosa pudica*** L., Sp. Pl., 518, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 335, 1935.

No locality given, July 1929, *Kanehira 863* (BM); Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2432* (US).

Pantropical.

***Mucuna gigantea*** (Willd.) DC., Prodr. 2: 405, 1825.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 336, 1935.

Palikir, July 1931, *Kanehira 1504* (BM, NY); Mt. Peipalap, 500 ft., climbing, Aug. 6, 1949, *Glassman 2776* (US), flowers greenish, occasional.

India and Philippines to Polynesia.

***Mucuna ponapeana*** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 122, 1935; Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 336, 1935.

Metalanim, along Kitam River, Aug. 2, 1949, *Glassman 2765* (US), woody liana, flowers greenish white, common.

Native name, *ohtah*. Endemic.

This species is distinguishable from the preceding by the strongly pubescent leaves.

***Parkia korom*** Kanehira, Bot. Mag. Tokyo 45: 286-287, 1931; Fl. Micronesica, 145, fig. 50, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 337, 1935.

No locality given, July 1929, *Kanehira 673* (BM); Mt. Sankaku, Aug. 8, 1933, *Hosokawa 5493* (US).

Native name, *kurum* (Net District), *maruh-kuhlung* (Kiti District).  
Endemic.

**Pithecellobium dulce** (Roxb.) Benth., London Jour. Bot. 3:199, 1844.

Observed as a planted tree along road near Colonia.

Pantropical in cultivation; native of tropical America.

**Poinciana pulcherrima** L., Sp. Pl., 380, 1753.

*Caesalpinia pulcherrima* (L.) Sw., Observ. Bot., 166, 1791.—Kanehira,  
Dept. Agric. Kyushu Imp. Univ., Jour. 4: 328, 1935.

No locality given, July 1931, *Kanehira 1678* (NY), planted; Param Islet,  
Aug. 7, 1949, *Glassman 2793* (US), planted, shrub 10 ft., flowers yellow.

Native name, *sem-tah*. Native of tropical America.

**Sesbania grandiflora** (L.) Pers., Syn. Pl. 2: 316, 1807.—Kanehira, Dept.  
Agric. Kyushu Imp. Univ., Jour. 4: 339, 1935.

Planted. India to the Mascarene Islands through Malaya to tropical Aus-  
tralia.

**Tamarindus indica** L., Sp. Pl., 34, 1753.—Kanehira, Dept. Agric. Kyushu  
Imp. Univ., Jour. 4: 340, 1935.

Vicinity of Colonia, roadside, tree 30 ft., July 17, 1949, *Glassman 2561*  
(US), flowers pale yellow with red spots.

Planted. Native of tropical Asia.

**Vigna hosei** (Craib) Becker ex K. Heyne, Nutt. Pl. Ned. Ind., ed. 2, 2: 840,  
1927.

Ronkiti, roadside, climbing, Aug. 9, 1949, *Glassman 2800* (US), flowers  
yellow, abundant.

Type from Sarawak. This plant was probably introduced into Ponape  
during the Japanese period.

**Vigna marina** (Burm.) Merr., Interpret. Herb. Amb., 285, 1917.—Kanehira,  
Dept. Agric. Kyushu Imp. Univ., Jour. 4: 340, 1935.

Langar Islet, July 1, 1949, *Glassman 2398* (US), decumbent, flowers  
yellow.

Native name, *tansilituh*. Pantropical.

#### CASUARINACEAE

**Casuarina equisetifolia** L., Amoen. Acad. 4: 143, 1759.

Colonia, tree 50 ft. tall, Aug. 20, 1949, *Glassman 2912* (US), planted along  
road.

Paleotropics; apparently not native to eastern Carolines.



## ULMACEAE

**Gironniera celtidifolia** Gaud., Bot. Voy. Bonite, pl. 85, 1844.—Kanehira, Bot. Mag. Tokyo 45: 275, 1931; Fl. Micronesica, 83, fig. 15, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 306, 1935.—Hosokawa, Kudoa 5: 96, 1937.

No locality given, Aug. 1929, *Kanehira* 797 (BM, NY); Mt. Nanalaut, 500 m., July 1931, *Kanehira* 1626, 1651, 1654 (NY); Sankaku, July 1933, *Hosokawa* 5474 (US); Nanpil, Aug. 25, 1933, *Hosokawa* 6016 (BM, US); Mt. Nanalaut, 1,900 ft., rain forest, June 28, 1949, *Glassman* 2370 (US); Mt. Tolunkiup, 200-500 ft., tree 50 ft., July 14, 1949, *Glassman* 2527 (US).

Native name, *kehmüt*. Palaus; Philippines, Solomons, Fiji, Samoa.

## MORACEAE

**Artocarpus atilis** (Parkinson) Fosb., Wash. Acad. Sci., Jour. 31: 95, 1941.

*Artocarpus communis* Forst., Char. Gen. Pl., 102, pls. 51, 51a, 1776.  
—Kanehira, Bot. Mag. Tokyo 45: 276, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 306-307, 1935.

*Artocarpus incisus* (Thunb.) L. f., Suppl. Pl., 411, 1781.—St. John, Pacific Sci. 2: 109-110, 1948.

Native name, *mai*. Fermented breadfruit is designated as *maratan*, whereas the fresh fruit is called *marakup*. Bascom lists 78 varieties of breadfruit for Ponape. Bark of the roots is employed in relieving earaches. Probably a native of Malaysia.

**Ficus carolinensis** Warb. apud Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, Nachtr., 242, 1905.—Kanehira, Bot. Mag. Tokyo 45: 276, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 307, 1935.—Diels, Engl. Bot. Jahrb. 69: 398-399, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 120, 1943.

Colonia, Aug. 12, 1929, *Kanehira* 749, 771 (NY); Palikir-Colonia, Aug. 18, 1933, *Hosokawa* 5887 (BM).

Native name, *ayau*. The inner bark and branch roots are utilized in the treatment of tetanus and the inner bark is also used as a hemostatic in menstruation. Ant, Pingelap, Kusaie, Yap (type), and Marianas.

**Ficus elastica** Rosb., Hort. Beng., 65, 1814 (nom. nud.); Fl. Ind., ed. 2, 3: 541, 1832.

Colonia, along seashore, tree 100 ft. × 12 ft., July 17, 1949, *Glassman* 2560 (US).

Native name, *rapah*. Pantropical in cultivation.

?**Ficus philippinensis** Miq., London Jour. Bot. 7: 435, 1848.—Diels, Engl. Bot. Jahrb. 69: 400, 1938.

Diels cites no specimens and states that he has not seen this species from Ponape, yet he lists it for the island. It is possible that he based the entry on Kanehira's citations, but neglected to mention them. See *F. tinctoria*, below.

**Ficus tenuistipula** Merr., Philippine Jour. Sci., Bot. 9: 75, 1915.—Diels, Engl. Bot. Jahrb. 69: 399, 1938.

This entry is based on the word of Schnee. Guam, Saipan.

**Ficus tinctoria** Forst. f., Prodr., 76, 1786.—Diels, Engl. Bot. Jahrb. 69: 399, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 120, 1943.

*Ficus philippinensis* of Kanehira, Bot. Mag. Tokyo 45: 276, 1931 and Dept. Agric. Kyushu Imp. Univ., Jour. 4: 307, 1935; not Miq., 1848.

Colonia, Aug. 6, 1929, *Kanehira 648* (NY); Palikir, Aug. 10, 1929, *Kanehira 710* (BM, NY); Mt. Tamatamansakir, 700 ft., June 22, 1949, *Glassman 2324* (US); Mt. Tolenrahkiet, 1,250 ft., tree 50 ft.  $\times$  6 in., Aug. 3, 1949, *Glassman 2767* (US), receptacle yellow, frequent.

Native name, *neen*. Carolines and Marianas; Polynesia.

In *F. philippinensis*, the leaves are narrower with the tips more markedly acuminate than in *F. tinctoria*, and the leaves are also punctate, especially on the underside.

#### URTICACEAE

**Boehmeria virgata** (Forst. f.) Guillem., Ann. Sci. Nat. Bot. II, 7: 182, 1837.

*Boehmeria macrophylla* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 309, 1935; not D. Don, 1825.

Palikir, Aug. 10, 1929, *Kanehira 717* (NY); Mt. Peipalap, 700 ft., tree 30 ft., woodland, June 22, 1949, *Glassman 2314* (US); Mt. Nanalaut, 300 ft., June 23, 1949, *Glassman 2351* (US).

Native name, *kuhrahree*.

Kusaie; Melanesia and Polynesia.

This species is very variable. In the specimens cited above, leaves are oblong-lanceolate to oblong-ovate with serrate to crenate margins.

**Cypholophus moluccanus** (Bl.) Miq., Mus. Bot. Lugd.-Bat., Ann. 4: 305, 1869.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 309, 1935.

Mt. Ninani, Aug. 1929, *Kanehira 834* (NY); Mt. Tolotom, 400 m., July 1931, *Kanehira 1552* (NY); Mt. Nanalaut, 500 m., July 1931, *Kanehira 1645* (NY); Mt. Tolonkiup, 1,700 ft., rain forest, shrub 10 ft., July 15, 1949, *Glassman 2536* (US); Mt. Seletereh, 1,900 ft., rain forest, July 28, 1949, *Glassman 2746* (US), frequent.

Formosa, Sumatra, Philippines.

**Elatostema flumineo-rupestre** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 31: 286, 1941.



Mt. Tolotom, Aug. 16, 1940, *Hosokawa 9536* (type collection, US).

This species may be a diminutive form of *E. stoloniforme* Kanehira, but further study is necessary for final determination. Endemic.

**Fleurya interrupta** (L.) Gaud., Bot. Freyc. Voy., 487, 1826.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 309, 1935.

Metalanim, roadside, Aug. 13, 1929, *Kanehira 789* (NY).

Native name, *shoh-mahl*. Yap, Guam; Ethiopia to Australia and Polynesia.

**Laportea kusaiana** Kanehira, Bot. Mag. Tokyo 45: 449, 1932; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 310, 1935.

Native name, *leles*. Type from Kusaie. I have seen no Ponape plants, but I checked the native name and found it to apply to a plant with stinging hairs.

**Pilea microphylla** Liebm., Vidensk. Selsk. Skr. 5 (2): 302, 1851.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 310, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 120, 1943.

Colonia, Mar. 10, 1936, *Takamatsu 806* (BM); Colonia, on stone steps, July 5, 1949, *Glassman 2453* (US), flowers white; Nanpil, July 13, 1949, *Glassman 2525* (US).

Pantropical.

**Pipturus argenteus** (Forst. f.) Wedd., DC. Prodr. 16: 235, 1869.

Mt. Peipalap, 600 ft., woodland, June 20, 1949, *Glassman 2313* (US).

Kusaie; Marianas; Malaysia to Polynesia.

**Pipturus repandus** (Bl.) Wedd., Arch. Mus. Hist. Nat. Paris, Nouv. 9: 448, 1856.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 311, 1935.

*Ledermann 13257* (BM); Palikir, Aug. 10, 1929, *Kanehira 723* (NY), scandent; July 1931, *Kanehira 1487* (BM, NY); Metalanim, Aug. 1931, *Kanehira 1695* (NY); vicinity of Ronkiti, woodland, July 7, 1949, *Glassman 2460* (US), liana; Mt. Peipalap, 500 ft., tree 15 ft., July 12, 1949, *Glassman 2514* (US).

Native name, *katakzwot*. Truk; Philippines and Sumatra to the Moluccas.

Skottsberg (59) places this species in the genus *Pseudopipturus*, a generic segregate of *Pipturus*.

**Procris pedunculata** (Forst. f.) Wedd., DC. Prodr. 14: 191, 1869.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 311, 1935.

*Procris ponapensis* H. Schroter, Fedde Repert. Sp. Nov. 45: 271-272, 1938.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 120, 1943.

Mt. Sankaku, Aug. 1929, *Kanehira 758* (BM); Mt. Tamatamansakir, 600 ft., June 23, 1949, *Glassman 2327* (US); Mt. Nanalaut, 1,500 ft., rain forest, June 28, 1949, *Glassman 2536* (US), flowers white.

Native names, *puaket*, *pahkeh*. Terminal buds are used as a drug in relieving pains following childbirth, and as an abortifacient. Fruits are employed in the treatment of abscesses. Melanesia and Polynesia.

## AQUIFOLIACEAE

*Ilex volkensiana* (Loes.) Kanehira and Hatusima, Bot. Mag. Tokyo 50: 607, 1936.

*Ilex mertensii* Max. var. *volkensiana* Loes., Engl. Bot. Jahrb. 56: 523, 1921.—Kanehira, Bot. Mag. Tokyo 45: 292, 1931; Fl. Micronesica, 191, fig. 79, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 357, 1935.

Ninani, Aug. 1929, *Kanehira 802* (BM, NY); Mt. Tolotom, 650 m., July 1931, *Kanehira 1554* (NY); Mt. Nanalaut, July 1931, *Kanehira 1663* (NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5772* (BM, US); Mt. Poaipoi, 1,900 ft., rain forest, July 8, 1949, *Glassman 2487* (US), flowers white; Mt. Tolonkiup, 2,100 ft., open windy area, July 15, 1949, *Glassman 2548* (US); Mt. Tolonwalik, 2,450 ft., exposed windy area of dwarf trees, Aug. 17, 1949, *Glassman 2896* (US).

Endemic.

## LORANTHACEAE

*Amyema artensis* (Montr.) Danser, Jard. Bot. Buitenzorg, Bull. III, 10: 293, 1929; op. cit. 14: 89-91, 1936.

*Amyema bamleri* (Schum.) Danser, op. cit. 10: 293, 1929; op. cit. 11: 323-324, fig. 9, b, e, 1931.

*Loranthus ponapensis* Kanehira, Bot. Mag. Tokyo 46: 450-451, 1932; Fl. Micronesica, 98, fig. 25, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 312, 1935.

*Loranthus caudatifolius* Kanehira, Bot. Mag. Tokyo 46: 450, 1932; Fl. Micronesica, 98, fig. 24, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 312, 1935.

*Amyema ponapensis* (Kanehira) Hosokawa, Jour. Jap. Bot. 12: 419, 1936.

Mt. Nanalaut, 580 m., July 1931, *Kanehira 1637* (type collection of *L. ponapensis*, BM, NY), flowers pink, red, and yellow; Nanalaut, Aug. 24, 1933, *Hosokawa 5992* (BM); Tolomail, Feb. 11, 1936, *Takamatsu 974* (BM); Nanalaut, Feb. 17, 1936, *Takamatsu 1073* (BM); Mt. Tolonkiup, 1,700 ft., hemiparasite on *Astronidium*, July 15, 1949, *Glassman 2450* (US); Mt. Ninani, 2,550 ft., on wind-blown peak, Aug. 17, 1949, *Glassman 2885* (US), fruit dull red.

Native name, *tauerlung*. New Caledonia, New Britain, New Guinea, and Samoa.



## RHAMNACEAE

**Colubrina asiatica** (L.) Brogn., Ann. Sci. Nat. I, 10: 369, 1827.—Lauterb., Engl. Bot. Jahrb. 56: 525, 1921.—Kanehira, Bot. Mag. Tokyo 45: 294, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 361, 1935.

No locality given, Aug. 1929, *Kanehira* 860 (BM); Subtic, Aug. 31, 1933, *Hosokawa* 6133 (BM); Saputik Islet, along beach and secondary growth, Aug. 7, 1949, *Glassman* 2784 (US), subscaudent shrub, flowers greenish yellow.

Native name, *putaput*. Bark is used as a constituent of soap. Old World tropics.

**Smythea lanceata** (Tul.) Summerh., Kew Bull., 389, 1928.

Nanmatol Islet, *Fosberg* 26395 (US), epiphyte in mangrove swamp, 1946; no further data available.

Type from Seychelles.

## RUTACEAE

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

Observed.

Native name, *karrer*; the lime. The inner bark is used in the treatment of tetanus.

**Citrus sinensis** (L.) Osbeck, Reise Ostind. China, 250, 1765.

*Citrus aurantium* L. subsp. *sinensis* (Gall.) Engl., Natürl. Pflanzenfam., Nachtr. 3 (4): 198, 1897.—Diels, Engl. Bot. Jahrb. 56: 312, 1921.

Native name, *karrer*; the orange. Native of China.

**Evodia hortensis** Forst., Char. Gen. Pl., 14, pl. 7, 1776.—Kanehira, Bot. Mag. Tokyo 45: 287, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 342, 1935.

Colonia, planted in garden, Aug. 8, 1929, *Kanehira* 660 (NY).

Type from New Hebrides.

**Evodia ponapensis** Kanehira and Hatusima, Bot. Mag. Tokyo 54: 436-437, fig. 84, 1940.

Endemic.

**Melicope ponapensis** Lauterb., Engl. Bot. Jahrb. 56: 510-511, 1921.—Kanehira, Bot. Mag. Tokyo 45: 287, 1931; Fl. Micronesica, 155, fig. 56, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 342, 1935.

*Ledermann* 13545 (BM); Aug. 10, 1929, *Kanehira* 609 (BM); Palikir, Aug. 1929, *Kanehira* 698 (NY); Aug. 1929, *Kanehira* 793 (BM, NY); Palikir, July 1931, *Kanehira* 1509, 1518 (NY); Mt. Tolotom, July 1931, *Kanehira* 1562 (NY); Ninani, Aug. 12, 1933, *Hosokawa* 5676 (BM); Mt.

Tolotom, Aug. 13, 1933, *Hosokawa* 5784 (BM); Kuporujo, Mar. 13, 1936, *Takamatsu* 654 (BM); Mt. Poaipoai, 1,700 ft., tree 50 ft., July 9, 1949, *Glassman* 2495 (US), flowers white; Mt. Beirut, 2,100 ft., open windy area, tree 15-20 ft. × 6 in., July 15, 1949, *Glassman* 2545 (US); Mt. Tolotom, 2,100 ft., Aug. 11, 1949, *Glassman* 2853 (US).

Native names, *kahmet*; *painte* and *pehpe* (of Kanehira).

Endemic.

## SIMARUBACEAE

**Soulamea amara** Lam., *Encycl. Méth.* 1: 449, 1785.

Na Islet, along seashore, Feb. 24, 1936, *Takamatsu* 860 (BM).

Polynesia to New Guinea.

## BURSERACEAE

**Canarium commune** L., *Mant. Pl.* 1: 127, 1767.—Lauterb., *Engl. Bot. Jahrb.* 56: 515, 1921.—Kanehira, *Bot. Mag. Tokyo* 45: 288, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 344, 1935.

In village, Aug. 16, 1929, *Kanehira* 848 (BM, NY).

Native of Java.

**Canarium ovatum** Engl., DC. *Monogr. Phanerog.* 4: 110, 1883.—Kanehira, *Bot. Mag. Tokyo* 45: 288, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 344, 1935.

Planted; Philippines.

## MELIACEAE

**Aglaiia ponapensis** Kanehira, *Fl. Micronesica*, 163-164, fig. 62, 1933; *Bot. Mag. Tokyo* 47: 672, 1933; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 344, 1935.

*Aglaiia mariannensis* of Kanehira, *Bot. Mag. Tokyo* 45: 288, 1931; not Merr., 1914.

No locality given, Aug. 8, 1929, *Kanehira* 649 (BM); Colonia, July 1931, *Kanehira* 1488 (NY); Mt. Sankaku, July 8, 1933, *Hosokawa* 5524 (BM); Mt. Nanalaut, 1,900 ft., rain forest, tree 30-60 ft., June 28, 1949, *Glassman* 2371 (US), common; Mt. Poaipoai, 600 ft., July 8, 1949, *Glassman* 2475 (US).

Native names, *karasyu*, *marasaw*. Endemic.

**Melia azedarach** L., *Sp. Pl.*, 384, 1753.—Kanehira, *Bot. Mag. Tokyo* 45: 288, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 345, 1935.

Palikir, roadside, Aug. 10, 1929, *Kanehira* 700 (BM).

Native name, *lelah*. Native of tropical Asia; now pantropical in cultivation.



- Xylocarpus granatum** Koenig, Naturf. 20:2, 1784.—Kanehira, Bot. Mag. Tokyo 45:289, 1931; Fl. Micronesica, 166, fig. 64, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4:345, 1935.  
Tidal outlet of Tawensokola River, July 5, 1949, *Glassman 2449* (US).  
Native names, *ploek*; *brok* (of Kanehira). India to Malaya, Australia and Polynesia.

## SAPINDACEAE

- Allophylus ternatus** (Forst.) Radlk., Nat. Pflanzenfam. 3 (5):313, 1895.  
—Kanehira, Bot. Mag. Tokyo 45:293-294, 1931.—Radlk., Pflanzenr. 98 (IV, 165):575, 1933.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:359, 1935.  
*Ledermann 13596* (BM); no locality given, Aug. 8, 1929, *Kanehira 634* (NY), scandent; July 8, 1933, *Hosokawa 5525* (US); Nanuwe, seashore, Feb. 26, 1936, *Takamatsu 1019* (BM), shrub; vicinity of Ronkiti, 200 ft., woodland, July 8, 1949, *Glassman 2465* (US), climbing, flowers greenish.  
Native name, *ungeh*. Kusaie, Palau; Old World tropics exclusive of Africa.

- Allophylus timorensis** (DC.) Bl., Rumphia 3:130, 1847. — Radlk., Pflanzenr. 98 (IV, 165):592, 1933.  
This entry is based on a specimen collected by Ledermann in 1914. Eastern Carolines, Palau, Saipan, Marshalls; Formosa to the Nicobar Islands, through Malaya to Samoa and New Caledonia.

## ANACARDIACEAE

- Camposperma brevipetiolata** Volkens, Engl. Bot. Jahrb. 31:466, 1901.  
—Lauterb., Engl. Bot. Jahrb. 56:518, 1921.—Kanehira, Bot. Mag. Tokyo 45:292, 1931; Fl. Micronesica, 184, fig. 75 and pl. 17, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4:355, 1935.  
Colonia, July 1931, *Kanehira 1571* (NY); Ninani, Aug. 12, 1933, *Hosokawa 5684* (BM).  
Native name, *tong*. Carolines; New Guinea.  
A fungus, *Lentinus tuber regium* (*tong-we-usel*), grows on the roots of this tree. Kusano (44) gives a brief discussion of the relationship.

- Mangifera indica** L., Sp. Pl., 200, 1753.—Kanehira, Bot. Mag. Tokyo 45:292, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4:355, 1935.  
Native names, *kangit*, *kanit*. Bascom recognizes four varieties of mango, *kangit-n-ponape*, *kangit-n-salon*, *keevuk*, and *turion*. The first variety probably should be referred to the *M. minor*. Native of tropical Asia.

- Mangifera minor** Bl., Mus. Bot. Lugd.-Bat. 1:198, 1849.—Lauterb., Engl. Bot. Jahrb. 56:517, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:355, 1935.

*Ledermann 13597* (BM) ; primary forest at low altitude, July 1931, *Kanehira 1501* (NY), sterile.

Native name, *kanit* (of Kanehira). New Guinea, Melanesia, Polynesia.

**Rhus taitensis** Guill., Ann. Sci. Nat. Bot. II, 7: 361, 1837.—Kanehira, Fl. Micronesica, 185, fig. 76, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 356, 1935.

*Rhus simarubaefolia* A. Gray, U. S. Expl. Exped., Bot. 15 (1): 367, pl. 44, 1854; Lauterb., Engl. Bot. Jahrb. 56: 519, 1921.

Palikir, July 1931, *Kanehira 1505* (NY) ; Mt. Nanalaut, July 15, 1936, *Hosokawa 8226* (US).

Carolines; Philippines to Polynesia (type from Tahiti).

**Rhus succedanea** L. var. *japonica* Engl., DC. Monogr. Phanerog. 4: 399, 1883; Lauterb., Engl. Bot. Jahrb. 56: 519, 1921.

Cultivated. Japan and China.

**Spondias dulcis** Forst. f., Prodr., 34, 1786.—Lauterb., Engl. Bot. Jahrb. 56: 518, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 356, 1935.

Planted. Malaya to Polynesia.

#### ARALIACEAE

**Meryta senffiana** Volkens, Engl. Bot. Jahrb. 31: 471, pl. 14, 1902.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 384, 1935.

This entry is based on a sterile specimen which may be this species. ?Kusaie, Palaus, Yap (type), and Saipan.

**Nothopanax fruticosum** (L.) Miq., Fl. Ind. Bat. 1: 765, 1856.—Kanehira, Bot. Mag. Tokyo 45: 338, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 384, 1935.

Planted. Indo-Malayan and Polynesian regions.

**Nothopanax scutellarium** (Burm. f.) Merr., Interpret. Herb. Amb., 409, 1917.—Kanehira, Bot. Mag. Tokyo 45: 338, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 384, 1935.

Planted. Indo-Malayan and Polynesian regions.

**Nothopanax tricochleatum** Miq., Fl. Ind. Bat., Suppl., 340, 1860.—Kanehira, Bot. Mag. Tokyo 45: 338, 1931; Dept. Agric. Kyushu Imp. Jour. 4: 384, 1935.

Planted. Malayan region.



## UMBELLIFERAE

**Centella asiatica** (L.) Urban, Mart. Fl. Brasil. 11 (1): 287, pl. 78, fig. 1, 1879.

Param Islet, waste places, Aug. 7, 1949, *Glassman 2792* (US), prostrate, frequent.

Native name, *luwut-uwut-marek*. Pantropical.

## SAPOTACEAE

**Northiopsis hoshinoi** (Kanehira) Kanehira, Fl. Micronesica, 302, fig. 152, 1933; Bot. Mag. Tokyo 47: 677, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 388, 1935.—Lam, Blumea 4: 344-345, 1941; 5: 43, 1942.

*Northia hoshinoi* Kanehira, Bot. Mag. Tokyo 46: 489-490, 1932.

Colonia, Aug. 9, 1929, *Kanehira 695* (type collection, NY); Dec. 1930, *Hosino 1265* (type collection; BM, NY); Colonia, July 1931, *Kanehira 1572* (NY); Aug. 30, 1933, *Hosokawa 6113* (US); vicinity of Colonia, near bridge at Net District Headquarters, tree 70 ft., Aug. 17, 1949, *Glassman 2875* (US), flowers white, milky juice.

Native names, *kohreh*; *kohle* (of Kanehira). Besides being used for furniture, the wood is also utilized for walking canes. Also known from Samoa.

**Palaquium karrak** Kanehira, Bot. Mag. Tokyo 45: 339-340, 1931; Fl. Micronesica, 304, fig. 153, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 388, 1935.—Lam, Blumea 5: 34, 1942.

Ninani, Aug. 1929, *Kanehira 794* (type collection, BM); Nanpil, Aug. 25, 1933, *Hosokawa 6025* (BM).

Native name, *karrak* (of Kanehira). Endemic.

## MYRSINACEAE

**Discocalyx ponapensis** Mez, Engl. Bot. Jahrb. 56: 536-537, 1921.—Kanehira, Bot. Mag. Tokyo 45: 339, 1931; Dept. Agric. Kyushu Imp. Univ. Jour. 4: 386, 1935.

*Ledermann 13294* (BM); Colonia, Aug. 8, 1929, *Kanehira 646* (NY), flowers rose, fruit scarlet; July 1931, *Kanehira 1526* (BM, NY); Mt. Nana-laut, 400-500 m., July 1931, *Kanehira 1607* (NY); Mt. Poaipoi, 500 ft., tree 40 ft., July 8, 1949, *Glassman 2474* (US); Mt. Tolenkup, 700 ft., rain forest, July 13, 1949, *Glassman 2533* (US).

Native names, *kartiel*; *kachiel* (of Kanehira). Endemic.

**Embelia palauensis** Mez, Engl. Bot. Jahrb. 56: 537-538, 1921.—Hosokawa, Jour. Jap. Bot. 13: 613, 1937.

Truk and Palaus.

**Maesa carolinensis** Mez, Engl. Bot. Jahrb. **56**: 535, 1921.—Kanehira, Fl. Micronesica, 299, fig. 150, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 386-387, 1935.—Hosokawa, Jour. Jap. Bot. **13**: 612, 1937.

*Ledermann 13458, 13588* (BM); Mt. Tolotom, 400 m., July 1931, *Kanehira 1557* (NY); Mt. Nanalaut, 400 m., July 1931, *Kanehira 1633, 1634, 1666* (NY); Mt. Ninani, Aug. 12, 1933, *Hosokawa 5620, 5642* (US); Mt. Nanalaut, 700 ft., June 28, 1949, *Glassman 2359* (US), flowers white; U District, along road, July 13, 1949, *Glassman 2524* (US); Mt. Beirut, 2,100 ft., rain forest, tree 40 ft., July 15, 1949, *Glassman 2543* (US), flowers pink.

Truk, Kusaie, Palaus.

**Rapanaea carolinensis** Mez, Engl. Bot. Jahrb. **56**: 538, 1921.—Kanehira, Fl. Micronesica, 300, fig. 151, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 387, 1935.

*Rapanaea ledermanni* Mez, op. cit., 538-539.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 387, 1935.

Mt. Tolotom, tree 6 m.  $\times$  25 cm., July 1931, *Kanehira 1566* (NY, BM). Endemic.

#### LOGANIACEAE

**Fagraea sair** Gilg and Benedict, Engl. Bot. Jahrb. **56**: 555-557, fig. 3, 1921.—Kanehira, Bot. Mag. Tokyo **45**: 341, 1931; Fl. Micronesica, 318, fig. 162, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 391, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 120, 1943.

Colonia, Aug. 9, 1929, *Kanehira 686* (BM, NY); Palikir, July 1931, *Kanehira 1498* (NY); Aug. 1933, *Hosokawa 5834, 6050* (US); Ronkiti, tree 60 ft., July 7, 1949, *Glassman 2457* (US), flowers orange; Mt. Tolonkiup, 2,000 ft., rain forest, July 15, 1949, *Glassman 2541* (US), flowers white, turning orange.

Native names, *sair* (Net District), *pwurr* (Kiti District).

Truk and Kusaie.

**Geniostoma stenurum** Gilg and Benedict, Engl. Bot. Jahrb. **56**: 545-546, fig. 1, 1921.—Kanehira, Bot. Mag. Tokyo **45**: 341, 1931; Fl. Micronesica 323, fig. 166, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 392, 1935.

Forest at low altitude, Aug. 8, 1929, *Kanehira 638* (NY), flowers white; Colonia, July 1931, *Kanehira 1477, 1480* (BM, NY); Palikir, July 1931, *Kanehira 1522* (NY); Salabuk, Feb. 5, 1936, *Takamatsu 586* (BM); Mt. Seletereh, 1,900 ft., tree 15 ft., July 28, 1949, *Glassman 2747* (US), frequent.

Native name, *kannmant*. In former times, spears were made from the wood of this species. Endemic.



## APOCYNACEAE

- Allamanda cathartica** L., Mant. Pl. 2: 214, 1771.—Markgr., Engl. Bot. Jahrb. 63: 281, 1930.—Kanehira, Bot. Mag. Tokyo 45: 343, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 393, 1935.  
 Kiti, July 1931, *Kanehira 1535* (NY), cultivated in garden.  
 Native of Brazil.
- Allamanda cathartica** L. var. **hendersonii** (Bull.) Bailey and Raffill, Standard Cycl. Hort. 1: 247, 1914.  
 U District, shrub 5-6 ft., July 28, 1949, *Glassman 2721* (US), escaped cultivation, flowers yellow.  
 Native name, *pah-toh*.  
 The species, which is the less common of the two on Ponape, is distinguished from the variety by its much smaller leaves and flowers.
- Catharanthus roseus** (L.) G. Don, Gen. Hist. Dichl. Pl. 4: 95, 1838.  
 Nanuwe, Feb. 26, 1936, *Takamatsu 1005* (BM), cultivated, flowers white or red; vicinity of Colonia, waste place, July 13, 1949, *Glassman 2518* (US).  
 Native of tropical America.
- Cerbera dilatata** Markgr., Engl. Bot. Jahrb. 63: 285-286, 1930.  
 Saipan (type) and Tinian.
- Cerbera manghas** L., Sp. Pl., 208, 1753.—Kanehira, Bot. Mag. Tokyo 45: 343, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 394, 1935.  
 Tropical Asia through Malaya to tropical Australia.
- Ervatamia divaricata** (L.) Burkill, Bot. Surv. India, Rec. 10: 320, 1925.  
*Ervatamia coronaria* (Jacq.) Stapf ex Dyer, Fl. Trop. Africa 4: 127, 1902.  
 —Markgr., Engl. Bot. Jahrb. 63: 286, 1930.  
 Planted. Probably native of India.
- Lepinia ponapensis** Hosokawa, Bot. Mag. Tokyo 48: 529-530, fig. 1, 1934.  
 —Fukuyama and Suzuki-Tokio [?], Kudoa 3: 40, 1935.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 395, 1935.  
 Mt. Nanalaut, Aug. 24, 1933, *Hosokawa 5968* (type collection, US); Mt. Nanalaut, July 14, 1936, *Hosokawa 8221* (US); Mt. Nanalaut, 2,450 ft., wind-blown area of stunted trees, June 28, 1949, *Glassman 2353* (US), flowers white, milky juice.  
 Endemic. Apparently, known only from the type locality.
- Ochrosia oppositifolia** (Lam.) K. Schum., Nat. Pflanzenfam. 4 (2): 156, 1895.  
*Ochrosia parviflora* (Forst. f.) Henslow, Ann. Nat. Hist. 1: 345, 1838.  
 —Markgr., Engl. Bot. Jahrb. 63: 284, 1930.—Kanehira, Bot. Mag.

Tokyo 45: 343-344, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 396, 1935.

Colonia, Aug. 12, 1929, *Kanehira* 744 (NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu* 750 (BM); Dec. 7, 1936, *Takamatsu* 940 (BM); Ronkiti, along outlet of Kaetnpilap River, tree 50 ft., July 7, 1949, *Glassman* 2456 (US), flowers white, milky juice.

Native name, *kitee*. Carolines; Polynesia and Melanesia.

**Plumeria rubra** L., Sp. Pl., 209, 1753.

Observed as an ornamental.

Native name, *pomaria*. Native of tropical America. Flowers of this species may be yellow, white, or rose with various intergradations of these colors. Woodson (64) recognizes several color forms of this species.

**Thevetia peruviana** (Pers.) Merr., Schum., Nat. Pflanzenfam. 4 (2): 159, 1895.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 397, 1935.

Planted. Native of tropical America.

#### ASCLEPIADACEAE

**Asclepias curassavica** L., Sp. Pl., 215, 1753.—Schltr., Engl. Bot. Jahrb. 56: 566, 1921.

*Ledermann* 13480 (BM).

Pantropical; of American origin.

**Hoya schneei** Schltr., Engl. Bot. Jahrb. 56: 567-568, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 398, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 121, 1943.

Colonia, Aug. 8, 1929, *Kanehira* 658 (NY), epiphyte; same data, July 1931, *Kanehira* 1569 (BM, NY); Mt. Tamatamansakir, 500 ft., June 23, 1949, *Glassman* 2332 (US), climbing; Mt. Seletereh, 2,000 ft., rain forest, July 28, 1949, *Glassman* 2749 (US), flowers white, milky juice, abundant.

Native name, *takituk*. Leaves of this species are employed in the treatment of gonorrhoea. Endemic.

#### RUBIACEAE

**Borreria ocymoides** (Burm. f.) DC., Prodr. 4: 544, 1830.

Vicinity of Colonia, shade of banana tree, July 20, 1949, *Glassman* 2583 (US), flowers white.

Pantropical.

**Borreria rotundifolia** Val., Engl. Bot. Jahrb. 63: 323, 1930.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 417, 1935.

Endemic.



- Canthium barbatum** (Forst.) Seem. var. **korrorense** (Val.) Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 218, 1940.  
*Plectronia korrorensis* Val., Engl. Bot. Jahrb. 63: 311, 1930.  
*Canthium korrorense* (Val.) Kanehira, Bot. Mag. Tokyo 46: 671, 1932; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 416, 1935.  
*Plectronia oblonga* Val., op. cit., 310.  
*Canthium oblongum* (Val.) Kanehira, Bot. Mag. Tokyo 46: 671, 1932; Fl. Micronesica, 356, fig. 185, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 416, 1935.  
*Geniostoma niinoanensis* Kanehira, Bot. Mag. Tokyo 45: 341-342, 1931.  
 Colonia, July 1931, *Kanehira 1482* (NY); same data, *Kanehira 1489* (BM, NY); Palikir, July 1931, *Kanehira 1497, 1520, 1699* (NY); Param, Feb. 8, 1936, *Takamatsu 621* (BM); Toileailuka, Mar. 1936, *Takamatsu 815* (BM), flowers white; Toletik, Mar. 1936, *Takamatsu 941* (BM); Mt. Tolotom, Mar. 19, 1936, *Takamatsu 1060* (BM); Mt. Tean, Mar. 19, 1936, *Takamatsu 1761* (BM); Mt. Nanalaut, 1,600 ft., rain forest, June 28, 1949, *Glassman 2363* (US), flowers yellow; Mt. Poaipoai, 1,900 ft., July 8, 1949, *Glassman 2486* (US); Mt. Beirut, 2,100 ft., July 15, 1949, *Glassman 2542* (US); Mt. Tolonkiup, 2,100 ft., July 15, 1949, *Glassman 2547* (US), flowers white, turning yellow.  
 Endemic.
- Coffea arabica** L., Sp. Pl., 172, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 417, 1935.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 226, 1940.  
 Planted. Native of tropical Africa.
- Gardenia jasminoides** Ellis, Roy. Soc. Philos., Trans. 51 (2): 935, 1761.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 226, 1940.  
 Anapeng-pa, Feb. 6, 1936, *Takamatsu 768* (BM).  
 Native name, *yosef-sarawi* (of Fosberg). Planted; native of China.
- Geocardia herbacea** (L.) Standl., U. S. Nat. Herb., Contrib. 17: 445, 1914.  
*Geophila herbacea* (Jacq.) O. K., Rev. Gen. Pl. 1: 300, 1891.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 417, 1935.  
 Mt. Poaipoai, 700 ft., July 8, 1949, *Glassman 2476* (US), prostrate, flowers white.  
 Native name, *kapehr*. An infusion from the stems is used in the treatment of tetanus. Pantropical.  
 The generic name *Geophila* Don, 1825, is antedated by *Geophila* Bergeret, given in 1803 to a member of the Liliaceae.
- Guettarda speciosa** L., Sp. Pl., 991, 1753.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 216, 1940.

Na Islet, on seashore, Feb. 24, 1936, *Takamatsu 847* (BM); Taman, Feb. 26, 1936, *Takamatsu 874* (BM), common, flowers white.

Native names, *cet*; *ith* (of Fosberg). Paleotropical.

**Hedyotis biflora** (L.) Lam., Tabl. Encycl. 1: 272, 1791.

*Oldenlandia biflora* L., Sp. Pl., 119, 1753.—Hatusima, Nat. Hist. Soc. Formosa, Trans. 26: 220, 1936.

*Oldenlandia paniculata* L., op. cit., ed. 2, 1667, 1763.—Val., Engl. Bot. Jahrb. 63: 297, 1930.

India to China; Malaya and Polynesia.

**Hedyotis corymbosa** (L.) Lam., Tabl. Encycl. 1: 272, 1791.

*Oldenlandia corymbosa* L., Sp. Pl., 119, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 422, 1935.—Hatusima, Nat. Hist. Soc. Formosa, Trans. 26: 220, 1936.

Agricultural Experiment Station grounds, in field, July 2, 1949, *Glassman 2423* (US), creeping, flowers white; Colonia, July 28, 1949, *Glassman 2753* (US); Colonia, Aug. 15, 1949, *Glassman 2871* (US).

Pantropical.

**Hedyotis ponapensis** (Val.) Kanehira, Fl. Micronesica, 463, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 419, 1935; Nat. Hist. Soc. Formosa, Trans. 25: 3, 1935.—Hatusima, Nat. Hist. Soc. Formosa, Trans. 26: 225, 1936.

*Oldenlandia ponapensis* Val., Engl. Bot. Jahrb. 63: 296-297, 1930.

Mt. Nanalaut, July 1931, *Kanehira 1611, 1640* (NY); Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5792* (BM); Nanalaut, Feb. 17, 1936, *Takamatsu 1088* (BM); Mt. Nanalaut, 2,200 ft., cut over area, June 28, 1949, *Glassman 2360* (US), flowers white; Mt. Poaipoai, 1,500 ft., July 8, 1949, *Glassman 2481* (US); Mt. Beirut, 2,100 ft., burned area, July 15, 1949, *Glassman 2549* (US); Mt. Ninani, 2,550 ft., top of wind-blown peak, Aug. 17, 1949, *Glassman 2886* (US), common.

Endemic.

**Hedyotis uncinelloides** (Val.) Hosokawa, Nat. Hist. Soc. Formosa, Trans. 24: 204, 1934.—Kanehira, Nat. Hist. Soc. Formosa, Trans. 25: 3, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 419, 1935.—Hatusima, Nat. Hist. Soc. Formosa, Trans. 26: 224, 1936. (Falso ut *H. uncelloides*.)

*Oldenlandia uncinelloides* Val., Engl. Bot. Jahrb. 63: 295-296, 1930.

Palikir, waste places, July 1931, *Kanehira 1499* (NY).

Endemic.

This species is separated from *H. ponapensis* by having both terminal and axillary heads, and these are more densely flowered.



***Ixora casei*** Hance, Walp. Ann. Bot. Syst. 2:754, 1852.

*Ixora duffi* Baine, Garden 13: 312, April 6, 1878.

*Ixora carolinensis* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25:268, 1935.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:420, 1935.

*Ixora carolinensis* Hosokawa var. *parvifolia* Hosokawa, op. cit., 24:204, 1934.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20):222, 1940.

*Ixora carolinensis* Hosokawa var. *parviflora* Kanehira, loc. cit. (Sphalm).

*Ixora carolinensis* Hosokawa var. *ponapensis* Fosb., op. cit., 223.

*Ixora carolinensis* Hosokawa var. *typica* Fosb., op. cit., 221.

*Ixora confertifolia* Val., Engl. Bot. Jahrb. 63:313, 1930.—Kanehira, Bot. Mag. Tokyo 45:349, 1931; Fl. Micronesica, 362, fig. 189, 1933.

*Ixora volkensis* Hosokawa, op. cit., 25:269, 1935.

No locality cited, Aug. 1929, Kanehira 636 (BM, NY); no locality cited, July 1931, Kanehira 1469 (NY); Anapeng-pa, Feb. 6, 1936, Takamatsu 746 (BM); Nanuwe, Feb. 26, 1936, Takamatsu 1008 (BM); Wone, Feb. 14, 1936, Takamatsu 1031 (BM); Mt. Tamatamansakir, 600 ft., woodland, tree 30 ft., June 23, 1949, Glassman 2334 (US), flowers scarlet.

Native name, *kartieu*. Carolines (type from Kusaie). Roots are used as a hemostatic in menstruation. In former times, spears were made from the wood.

I am grateful to Dr. Fosberg for discovering this earlier, valid name. As all the varieties and species listed in synonymy are not distinctive enough to be considered separate entities, they are included here under one species.

***Ixora coccinea*** L., Sp. Pl., 110, 1753.—Schum. and Lauterb., Fl. Deutsch. Schutzg. Südsee, 570, 1901.

Kusaie; native of Dutch East Indies.

This entry is based on the word of Finsch. According to Fosberg, there is a yellow-flowered form of *I. coccinea* growing in the Agricultural Experiment Station. Perhaps this entry is based on that specimen, or perhaps Finsch confused *I. coccinea* with *I. casei*.

***Morinda citrifolia*** L., Sp. Pl., 176, 1753.—Kanehira, Bot. Mag. Tokyo 45:350, 1931; Fl. Micronesica, 364, fig. 191, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4:421, 1935; Fosb., B. P. Bishop Mus., Occ. Papers 15 (20):219, 1940.

No locality given, Aug. 26, 1933, Hosokawa 6045 (US); Na Islet, Feb. 24, 1936, Takamatsu 852 (BM); 0.5 mile south of Agricultural Experiment Station, along stream, tree 20 ft., July 19, 1949, Glassman 2566 (US), flowers white, common.

Native names, *weypul*; *wumpul* (of Riesenber). India to Polynesia. The leaves of this species are used in conjunction with other plants as a cure for rheumatism; the stipules are employed in treatment of wounds caused by scor-

pion fish; the terminal buds, on abscesses; the inner bark and roots, as a hemostatic in menstruation; the young flowers, to relieve pains after childbirth; and the young fruit, to alleviate pain in heart attacks.

**Morinda volubilis** (Blanco) Merr., Philippine Jour. Sci., Suppl. 1: 137, 1906.  
—Kanehira, Fl. Micronesica, 368, fig. 195, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 421, 1935.

Kiti, in forest, 100 m., July 1931, *Kanehira 1527* (BM, NY), large climber, flowers white.

Type from Philippines.

**Psychotria carolinensis** (Val.) Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 224, 1940.

*Amarocarpus carolinensis* Val., Engl. Bot. Jahrb. 63: 318, 1930.—Kanehira, Bot. Mag. Tokyo 49: 274, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 414, 1935.

*Amarocarpus carolinensis* Val. var. *squarrosa* Val., op. cit., 319.—Kanehira, Bot. Mag. Tokyo 49: 276, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 414, 1935.

*Amarocarpus kraemeri* Val., loc. cit.—Kanehira, op. cit., 414-415.

*Amarocarpus macrophyllus* Val., op. cit., 317-318.—Kanehira, Bot. Mag. Tokyo 49: 276, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 415, 1935.

Palikir, July 1931, *Kanehira 1506* (NY); Param, Feb. 8, 1936, *Takamatsu 638* (BM); Anapeng-pa, Feb. 1936, *Takamatsu 742* (BM); vicinity of Ronkiti, 200 ft., shrub, 10 ft., woodland, July 8, 1949, *Glassman 2468* (US), flowers white, berries orange; vicinity of Nanpil, along Filenkiup River, Aug. 15, 1949, *Glassman 2873* (US).

Native names, *kampaniel*; *kempeniel* (of Riesenbergl). Carolines and Marianas.

**Psychotria lasianthoides** Val., Engl. Bot. Jahrb. 63: 314, 1930.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 423, 1935.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 225, 1940.

No locality given, July 1931, *Kanehira 1476* (BM, NY); Colonia, July 1931, *Kanehira 1628* (NY); Kaporujo, shrub, Mar. 13, 1936, *Takamatsu 672* (BM), flowers red.

Endemic.

**Psychotria merrillii** Kanehira, Bot. Mag. Tokyo 46: 674, 1932; Fl. Micronesica, 371, fig. 197, 1933; Bot. Mag. Tokyo 53: 193, 1939.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 225, 1940.

*Plectronia polyneura* Val., Engl. Bot. Jahrb. 63: 309, 1930.

*Plectronia obovata* Val., op. cit., 311.



*Canthium polyneurum* (Val.) Kanehira, op. cit., **46**: 672, 1932; op. cit., **49**: 274, photo 3, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 416, 1935.

*Canthium valetonii* Kanehira, Bot. Mag. Tokyo **46**: 671, 1932; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 416, 1935.

Mt. Nanalaut, July 1931, *Kanehira 1618* (BM, NY); same data, *Kanehira 1661* (NY); Tolomail, Feb. 11, 1936, *Takamatsu 960* (BM); Toleailuka, Mar. 7, 1936, *Takamatsu 812* (BM), flowers white, fragrant; Mt. Poaipoi, July 9, 1949, *Glassman 2501* (US), berries orange.

Endemic. The distinguishing feature of this species is the inflorescence, which is reduced to a fascicle of pedicels and flowers.

**Psychotria ponapensis** Fosb., B. P. Bishop Mus., Occ. Papers **15** (20): 224, 1940.

*Amarocarpus hirtellus* Val., Engl. Bot. Jahrb. **63**: 320, 1930.—Kanehira, Bot. Mag. Tokyo **49**: 275, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 414, 1935.

*Amarocarpus heteropoides* Val., loc. cit.—Kanehira, loc. cit.

Mt. Nanalaut, July 1931, *Kanehira 1619, 1671* (NY).

Endemic.

**Psychotria rhombocarpoides** Hosokawa, Nat. Hist. Soc. Formosa, Trans. **31**: 287-288, fig. A, 1941.

Endemic.

**Randia cochinchinensis** (Lour.) Merr., Am. Philos. Soc., Trans., new ser. **24**: 265, 1935.—Fosb., B. P. Bishop Mus., Occ. Papers **15** (20): 216, 1940.

*Randia racemosa* F.-Vill., Novis. App. Fl. Filip., 108, 1880.—Val., Engl. Bot. Jahrb. **63**: 302-303, 1930.—Kanehira, Bot. Mag. Tokyo **45**: 349, 1931; Fl. Micronesica, 375, fig. 200, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 424, 1935.

Metalanim, seaside, Aug. 16, 1931, *Kanehira 850* (NY), bark used for medicine.

Native name, *kahmant* (of Kanehira). Carolines; Marianas; tropical Asia and Malaya to Australia.

**Timonius ledermannii** Val., Engl. Bot. Jahrb. **63**: 305-306, 1930.—Kanehira, Bot. Mag. Tokyo **45**: 350, 1931; Fl. Micronesica, 384, fig. 208, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 426, 1935.—Hosokawa, Jour. Jap. Bot. **13**: 284, 1937.—Fosb., B. P. Bishop Mus., Occ. Papers **15** (20): 217, 1940.

Ninani, Aug. 1929, *Kanehira 833* (BM, NY); Mt. Tolotom, 500 m., July 1931, *Kanehira 1564, 1565* (NY); Mt. Nanalaut, 500 m., July 1931, *Kanehira 1636, 1638* (NY); Ninani, Aug. 12, 1933, *Hosokawa 5673* (BM, US); Aug.

13, 1933, *Hosokawa 5705* (US); Mt. Tolotom, Aug. 1933, *Hosokawa 5769* (BM); Mt. Poaipoi, 2,100 ft., tree 60 ft., July 9, 1949, *Glassman 2500* (US), flowers white, fruit dark blue.

Endemic.

**Timonius ponapensis** Val., Engl. Bot. Jahrb. 63: 306-307, 1930.—Kanehira, Bot. Mag. Tokyo 45: 351, 1931; Fl. Micronesica, 388, fig. 210, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 426, 1935.—Fosb., B. P. Bishop Mus., Occ. Papers 15 (20): 217, 1940; Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 121, 1943.

No locality given, Aug. 8, 1929, *Kanehira 652* (NY); Colonia, July 1931, *Kanehira 1490, 1573* (NY). Toleailuka, Mar. 7, 1936, *Takamatsu 826* (BM), flowers white; near Colonia, Net District Headquarters, Aug. 17, 1949, *Glassman 2874* (US), flowers yellow.

Native name, *kehn*. Endemic.

#### COMPOSITAE

**Ageratum conyzoides** L., Sp. Pl., 839, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 429, 1935.

Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2408* (US), weed, flowers blue or white.

Native name, *pusen-koh*. Pantropical; native of tropical America.

**Elephantopus mollis** H.B.K., Nov. Gen. Sp. Pl. 4: 20, 1820.

Two miles south of Colonia, July 5, 1949, *Glassman 2442* (US), flowers white.

Pantropical; native of Mexico.

**Elephantopus scaber** L., Sp. Pl., 814, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 430, 1935.

Pantropical; native of tropical America.

**Emilia sonchifolia** DC., Prodr. 6: 302, 1838.

Colonia, weed in waste field, Aug. 1, 1949, *Glassman 2752* (US); Saputik Islet, Aug. 7, 1949, *Glassman 2777* (US), flowers pink to scarlet.

Old World tropics.

**Sonchus oleraceus** L., Sp. Pl., 794, 1753.

Vicinity of Colonia, waste field, July 20, 1949, *Glassman 2581* (US), flowers orange.

Temperate and tropical regions of both hemispheres.

**Spilanthes paniculata** Wall., DC. Prodr. 5: 625, 1836.

Auak, roadside ditch, Aug. 20, 1949, *Glassman 2906* (US), flowers orange, common.



Tropics and subtropics of both hemispheres. Koster and Philipson (43) discuss the validity of this name.

**Synedrella nodiflora** (L.) Gaertn., *Fruct. et Semin. Pl.* 2: 456, pl. 171, fig. 7, 1791.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 430-431, 1935.

No locality given, July 1929, *Kanehira 722* (BM); Ronkiti, roadside, Aug. 9, 1949, *Glassman 2799* (US), flowers yellow.

Pantropical; native of tropical America.

**Vernonia cinerea** (L.) Less., *Linnaea* 4: 291, 1829.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 431, 1935.

Vicinity of Colonia, July 19, 1949, *Glassman 2538a* (US).

Pantropical.

**Wedelia biflora** (L.) DC. ex Wight, *Contrib. Bot. Ind.*, 18, 1834.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 431, 1935.

No locality given, Aug. 1929, *Kanehira 647* (BM); Langar Islet, July 1, 1949, *Glassman 2399* (US), flowers yellow.

Native names, *ingkah, ungkeh*. Tropical Asia to Polynesia.

#### CAMPANULACEAE

**Hippobroma longiflora** (L.) G. Don, *Gen. Hist. Dichl. Pl.* 3: 717, 1834.

Colonia, Aug. 20, 1949, *Glassman 2910* (US), flowers white, common.

Planted and escaped; native of tropical America.

#### GOODENIACEAE

**Scaevola frutescens** (Mill.) Krause, *Pflanzenr.* 54 (IV, 277): 125, 1912.

—Diels, *Engl. Bot. Jahrb.* 56: 561, 1921.

Langar Islet, along strand, July 1, 1949, *Glassman 2401* (US), flowers white.

Native name, *eenut*. India to Madagascar, through Malaya to tropical Australia and Polynesia.

#### BORAGINACEAE

**Cordia subcordata** Lam., *Tabl. Encycl.* 1: 421, 1791.—Kanehira, *Bot. Mag. Tokyo* 45: 345-346, 1931; *Fl. Micronesica*, 336, fig. 174, 1933; *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 401, 1935.

Na Islet, Feb. 24, 1936, *Takamatsu 850* (BM), flowers yellowish red.

Native name, *eekoh-eeek*. East Africa and tropical Asia through Malaya to tropical Australia.

**Messerschmidia argentea** (L.) Johnston, *Arnold Arb., Jour.* 16: 164, 1935.

Na Islet, seashore, Feb. 24, 1936, *Takamatsu 861* (BM), flowers white;

Taman, Feb. 26, 1936, *Takamatsu* 879 (BM).

Native name, *titin*. Tropical Asia to Mauritius, Malaya, and tropical Australia.

## SOLANACEAE

**Capsicum frutescens** L., Sp. Pl., 189, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 407, 1935.

Taman, Feb. 26, 1936, *Takamatsu* 885 (BM), flowers white, fruit red.

Native name, *sele* (of Fosberg). Planted and escaped; native of tropical America.

**Cestrum nocturnum** L., Sp. Pl., 191, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 407, 1935.

Colonia, July 1931, *Kanehira* 1631 (NY), planted, sterile.

Native of tropical America.

**Datura metel** L., Sp. Pl., 179, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 407, 1935.

Pantropical; native of tropical America.

**Nicotiana tabacum** L., Sp. Pl., 180, 1753.

Observed as a cultivated plant. Native of tropical America.

**Physalis minima** L., Sp. Pl., 183, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 408, 1935.

Metalanim, Aug. 13, 1929, *Kanehira* 777 (NY).

Pantropical; native of tropical America.

**Solanum lycopersicon** L., Sp. Pl., 185, 1753.

Observed as a cultivated plant. Native of tropical America.

**Solanum nigrum** L., Sp. Pl., 186, 1753.

Anapeng-pa, Feb. 5, 1936, *Takamatsu* 772 (BM).

Temperate and tropical regions of both hemispheres.

## CONVOLVULACEAE

**Ipomoea batatas** (L.) Poir. ex Lam., Encycl. Méth. 6: 14, 1804.

The sweet potato. Observed as a cultivated and escaped plant. Native of tropical America.

**Ipomoea digitata** L., Syst. Nat., ed. 10, 2: 924, 1759.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 399, 1935.

Colonia, Aug. 2, 1929, *Kanehira* 688 (NY); Salabuk, Feb. 10, 1936, *Takamatsu* 612 (BM); Nanpil, Mar. 9, 1936, *Takamatsu* 840 (BM); 0.5 mile south of Agricultural Experiment Station, climbing in field, July 19, 1949,



*Glassman 2564* (US), flowers pink to rose, common.

Native name, *likam*. Leaves of this species are used in relieving pains after childbirth. Pantropical.

***Ipomoea gracilis*** R. Br., Prodr., 484, 1810.

Mt. Tolotom, Feb. 15, 1936, *Takamatsu 1052* (BM); vicinity of Colonia, July 5, 1949, *Glassman 2447* (US), climbing, flowers pink, milky juice; U District, roadside, July 19, 1949, *Glassman 2573* (US), common; Mt. Seletereh, 2,000 ft., July 28, 1949, *Glassman 2748* (US); Ronkiti, Aug. 9, 1949, *Glassman 2797* (US), flowers rose.

Native names, *sul-oomp*; *omp* (of Riesenbergl). Leaves are used in relieving pains after childbirth, and as an ingredient in soups; and the flowers are employed as a hemostatic in menstruation. Tropical Asia to the Seychelles, through Malaya to tropical Australia and Polynesia.

*Glassman 2748* is a hairy form, the leaves and stems being strigose.

***Ipomoea pes-caprae*** (L.) Roth, Nov. Sp. Pl., 109, 1821.

Taman, Feb. 26, 1936, *Takamatsu 881* (BM), flowers purple; Saputik Islet, Aug. 7, 1949, *Glassman 2778* (US), decumbent, flowers pink, occasionally white, abundant.

Native names, *sonsol*, *shonshol*. Pantropical.

***Ipomoea triloba*** L., Sp. Pl., 161, 1753.

Colonia, roadside, Aug. 5, 1949, *Glassman 2773* (US), flowers pink, occasional.

Pantropical; native of tropical America.

***Merremia peltata*** (L.) Merr., Interpret. Herb. Amb., 441, 1917.

Toleailuka, Feb. 7, 1936, *Takamatsu 828* (BM); Oa, in forest, Feb. 17, 1936, *Takamatsu 921* (BM); Mt. Nanalaut, Mar. 2, 1936, *Takamatsu 1102* (BM); Mt. Seletereh, 650 ft., climbing, July 28, 1949, *Glassman 2726* (US), flowers white, milky juice; Net District, 200 ft., Aug. 3, 1949, *Glassman 2769* (US), flowers yellow, abundant; Mt. Peipalap, 500 ft., Aug. 6, 1949, *Glassman 2775* (US).

Native name, *yol*. Pantropical. Christian says that the leaves and seeds are used as an abortifacient.

#### SCROPHULARIACEAE

***Angelonia gardneri*** Hook., Curtis's Bot. Mag. 66: pl. 3754, 1840.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 409, 1935.

Metalanim, cultivated, Aug. 13, 1929, *Kanehira 775* (NY); 0.5 mile south of Agricultural Experiment Station, in field, July 19, 1949, *Glassman 2563* (US), flowers purple, common.

Native name, *carmeena*. Native of Brazil.

- Bacopa procumbens** Greenm., Field Columb. Mus., Bot. Ser. 2: 261, 1907.  
Agricultural Experiment Station grounds, shade of trees, July 16, 1949, *Glassman 2555* (US), flowers yellow.  
Neotropical; in the Old World, otherwise known only from India.
- Lindenbergia peteloti** Bonati, Soc. Bot. France, Bull. 71: 1099, 1925.  
Agricultural Experiment Station grounds, Aug. 15, 1949, *Glassman 2869* (US), flowers blue, uncommon.  
Palaus. Type from Indo-China.
- Lindernia antipoda** (L.) Alst., Fl. Ceylon 6: 214, 1931.  
U District, in front of house, prostrate, July 28, 1949, *Glassman 2720* (US), flowers pink; Sabera, in mud puddle, Aug. 2, 1949, *Glassman 2758* (US), flowers light blue, frequent.  
Carolines and Guam; tropical Asia and Malaya to New Guinea.
- Lindernia crustacea** (L.) F. Muell., Syst. Census Austral. Plants 1: 97, 1882.  
—Schltr., Engl. Bot. Jahrb. 56: 572-573, 1921.  
Old World tropics.
- Lindernia pusilla** (Thunb.) Merr., Philippine Jour. Sci., Bot. 11: 312, 1916.  
—Schltr., Engl. Bot. Jahrb. 56: 573-574, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 410, 1935.  
Old World tropics.
- Scoparia dulcis** L., Sp. Pl., 116, 1753.—Schltr., Engl. Bot. Jahrb. 56: 575, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 410, 1935.  
Pantropical; native of tropical America.

## GESNERIACEAE

- Cyrtandra urvillei** C. B. Clarke, DC. Monogr. Phanerog. 5: 251, 1833.—  
Schltr., Engl. Bot. Jahrb. 56: 576, 1921.  
*Cyrtandra ponapensis* Kanehira, Bot. Mag. Tokyo 46: 492-493, 1932; Fl. Micronesica, 348, fig. 180, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 411-412, 1935.  
Ninani, Aug. 1929, *Kanehira 831* (type collection of *C. ponapensis*, BM, NY); Mt. Tolotom, 600 m., July 1931, *Kanehira 1550* (NY); Mt. Nanalaut, 600 m., July 1931, *Kanehira 1606, 1642* (NY); Aug. 12, 1933, *Hosokawa 5687* (US); Kuporujō, Mar. 13, 1936, *Takamatsu 660* (BM), flowers white; Mt. Seletereh, 1,900 ft., tree 15 ft., July 28, 1949, *Glassman 2743* (US).  
Native name, *ectin-wohl*. Type from Kusaie.  
Sufficient Kusaie material has been examined to determine that the two entities listed above are conspecific.



## BIGNONIACEAE

**Spathodea campanulata** Beauv., Fl. Oware Afr. 1: 47, 1804.

Colonia, planted along roadside, Aug. 15, 1949, *Glassman 2872* (US), flowers orange.

African tulip tree. Native of tropical Africa.

## ACANTHACEAE

**Barleria cristata** L., Sp. Pl., 636, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 413, 1935.

Planted in garden (no other locality given), July 1931, *Kanehira 1579* (NY); Nipit, Feb. 29, 1936, *Takamatsu 890* (BM).

Native of India.

**Blechnum brownei** Juss., Mus. Hist. Nat. Paris, Ann. 9: 270, 1807.

*Blechnum pyramidatum* (Lam.) Urb., Fedde Repert. Sp. Nov. 15: 323, 1918.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 413, 1935.

Colonia, roadside, Aug. 19, 1929, *Kanehira 864* (BM, NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu 763* (BM); Saputik Islet, Aug. 7, 1949, *Glassman 2779* (US), common.

Native of New World tropics.

**Graptophyllum pictum** (L.) Griff., Notulae, Pl. Asiatic 4: 139, 1854.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 413, 1935.

Planted; probably a native of New Guinea.

**Pseuderanthemum atropurpureum** (Bull) L. H. Bailey, Gentes Herb. 1: 130, 1923.

Observed as an ornamental. Probably native of southern Polynesia.

**Pseuderanthemum** sp.

U District, planted along roadside, July 19, 1949, *Glassman 2572* (US), flowers white, leaves purple.

This specimen resembles *P. sumatrense* (Ridl.) Merr., but further study is necessary for final determination.

**Ruellia repens** L., Mant. Pl. 1: 89, 1767.

Colonia, Mar. 10, 1939, *Takamatsu 804* (BM), abundant; Saputik Islet, Aug. 7, 1949, *Glassman 2785* (US), flowers pink-purple, decumbent.

Burma to China and Malaya.

## VERBENACEAE

**Callicarpa erioclona** Schau., DC. Prodr. 11: 643, 1847.

Jokaj, forest near coast, Mar. 8, 1936, *Takamatsu 796* (BM).

Carolines; tropical Asia to New Guinea.

**Clerodendrum inerme** (L.) Gaertn., Fruct. et Semin. Pl. 1: 271, 1788.—Lam, Verb. Malay. Arch., 254, 1919; Engl. Bot. Jahrb. 59: 28, 1924.

Vicinity of Ronkiti, woodland, July 8, 1949, *Glassman 2464* (US), flowers pink.

Native names, *ilau*, *ula* (of Hosaka). Leaves of this species are used in conjunction with other plants in the treatment of rheumatism, as a hemostatic in menstruation, and as an abortifacient.

India to Formosa through Malaya to tropical Australia.

**Clerodendrum thomsonae** Balf., Edinb. New Philos. Jour., new ser. 15: 233, 1862.—Lam, Verb. Malay. Arch., 255, 1919; Engl. Bot. Jahrb. 59: 28, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 403, 1935.

Planted; native of tropical Africa.

**Duranta repens** L., Sp. Pl., 637, 1753.

*Duranta plumieri* Jacq., Select. Am., 186, pl. 176, fig. 76, 1763.—Lam, Verb. Malay. Arch., 27-28, 1919; Engl. Bot. Jahrb. 59: 24, 1924.

Param, Feb. 8, 1936, *Takamatsu 628* (BM), cultivated, flowers purple.

Native of tropical America.

**Lantana camara** L. var. *aculeata* (L.) Moldenke, Torreya 34: 9, 1934.

Wone, in palm forest, Feb. 14, 1936, *Takamatsu 1029* (BM), common; Mt. Nanalaut, Feb. 17, 1936, *Takamatsu 1100* (BM); 2 miles south of Colonia, in cut over area, July 5, 1949, *Glassman 2435* (US), flowers yellow, pink, and purple, common.

Native names *rantana*; *tukasuweth* (of Fosberg). Native of tropical America.

**Premna corymbosa** (Burm. f.) Rottl. and Willd. var. *obtusifolia* (R. Br.) Fletcher, Roy. Bot. Gard. Edinb., Notes 19: 178, 1936.

Auak, planted, tree 25 ft.  $\times$  4 in., Aug. 20, 1949, *Glassman 2900* (US), flowers white.

Native name, *orr*. Leaves have soapy odor; used with coconut oil as hair-wash. Malay Archipelago and Australia.

**Premna gaudichaudii** Schau., DC. Prodr. 11: 631, 1847.—Kanehira, Bot. Mag. Tokyo 45: 347-348, 1931.—Moldenke, Known Geogr. Dist. Verb., 63, 1942.

*Premna integrifolia* L., Mant. Pl. 2: 252, 1771.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 404, 1935; Bot. Mag. Tokyo 52: 239-240, 1938.

*Premna integrifolia* L. subsp. *dentatolabium* Lam, Verb. Malay. Arch., 144, 1919; Engl. Bot. Jahrb. 59: 26, 1924.



Colonia, Aug. 9, 1929, *Kanehira 694* (NY); Metalanim, Aug. 14, 1929, *Kanehira 792* (NY); Palikir, secondary forest, July 1931, *Kanehira 1500* (NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu 695* (BM); Na Islet, Feb. 24, 1936, *Takamatsu 864* (BM); Oa, Mar. 2, 1936, *Takamatsu 917* (BM); Mt. Peipalap, 700 ft., June 20, 1949, *Glassman 2307* (US); 2 miles south of Colonia, tree 20 ft., July 5, 1949, *Glassman 2437* (US), flowers white; Mt. Tolokatar, 2,450 ft., rain forest, Aug. 18, 1949, *Glassman 2897* (US), fruit dark blue.

Native name, *tubuk*. Pulverized fruits are used in treatment of gonorrhoea, and in relieving pains after childbirth. In former times, the bark of this tree was utilized in making drums.

Carolines, Marianas; Fiji and New Guinea.

**Stachytarpheta jamaicensis** (L.) Vahl, Enum. Pl. 1: 206, 1804.

Agricultural Experiment Station grounds, small shrub, July 2, 1949, *Glassman 2424* (US), flowers purple.

Pantropical; native of tropical America.

**Vitex trifolia** L. var. **bicolor** Moldenke, Known Geogr. Dist. Verb., 79, 1942.

*Vitex negundo* L. var. *bicolor* Lam, Verb. Malay. Arch., 191, 1919; Engl.

Bot. Jahrb. 59: 27, 1924.

Jokaj, on seashore, Mar. 8, 1936, *Takamatsu 780* (BM), flowers purple.

Carolines, Marianas; Africa to western Polynesia.

#### LABIATAE

**Coleus scutellarioides** Benth., Wall. Pl. As. Rar. 2: 16, 1831.

*Coleus blumei* Benth., Labiat. Gen. and Spec., 56, 1832.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 406, 1935.

Salabuk, cultivated or escaped, Feb. 5, 1936, *Takamatsu 596* (BM); Param Islet, in waste places, Aug. 7, 1949, *Glassman 2794* (US), flowers blue, occasional; Auak, roadside, Aug. 20, 1949, *Glassman 2907* (US), leaves purple.

Native name, *koromaht*. Leaves are used as a cure for shingles. Malaya and Australia.

**Hyptis capitata** Jacq., Coll. Bot. 1: 102, 1786.

Agricultural Experiment Station grounds, waste field, July 2, 1949, *Glassman 2414* (US), flowers white.

Pantropical; native of tropical America.

**Ocimum sanctum** L., Mant. Pl. 1: 85, 1767.

Observed as a weed.

Native name, *kahterin*. Leaves are used in flavoring soups and as a constituent of hair oil. Pantropical.

**Orthosiphon stamineus** Benth., Wall. Pl. As. Rar. 2: 15, 1831.

*Orthosiphon aristatus* Miq., Fl. Ind. Bat. 2: 943, 1858.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 28: 156, 1938.

Anapeng-pa, Feb. 6, 1936, *Takamatsu 791* (BM), flowers white; Auak, roadside, Aug. 20, 1949, *Glassman 2903* (US), flowers pale blue.

Native name, *alisen-kaht*. India to Australia.

#### SUBCLASS MONOCOTYLEDONAE

##### HYDROCHARITACEAE

**Blyxa muricata** Koidz., Bot. Mag. Tokyo 31: 258, 1917.—Hosokawa, Jour. Jap. Bot. 13: 193, 1937; *Kudoa* 5: 81, 1937.

Native name, *ohlot-n-pil*. Plant parts are used for healing wounds of the head.

Truk, Palaus; Japan (type) and Ryukyus.

**Enhalus acoroides** (L. f.) Rich. ex Chatin, Anat. Pl. Aquat., 15, pl. 6, 1862.—Hosokawa, *Kudoa* 5: 81, 1937.

Native name, *ohlot*. Indo-Malayan region.

##### COMMELINACEAE

**Aneilema vitiense** Seem., Fl. Vit., 312, pl. 96, 1868.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 265, 1935; *Kudoa* 5: 89, 1937.

Kuporujō, Mar. 13, 1936, *Takamatsu 678* (BM), flowers white; Oa, abundant, Mar. 2, 1936, *Takamatsu 916* (BM); Mt. Tolotom, 1,300 ft., rain forest, Aug. 11, 1949, *Glassman 2846* (US), sterile.

Kusaie, Guam; Philippines, Moluccas, New Guinea, Fiji, and Samoa.

##### FLAGELLARIACEAE

**Flagellaria indica** L., Sp. Pl., 333, 1753.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 286, 1935.—Hosokawa, *Kudoa* 5: 88, 1937.

Native name, *itan-wal*. Old World tropics.

##### BROMELIACEAE

**Ananas comosus** (L.) Merr., Interpret. Herb. Amb., 133, 1917.—Hosokawa, *Kudoa* 5: 88, 1937.

The natives recognize three different varieties, *pineapple-n-songasailil*, *pineapple-n-ponape*, and *pineapple-n-shohtukah*.

Pantropical in cultivation; native of Brazil.



## MUSACEAE

**Musa paradisiaca** L., Sp. Pl., 1043, 1753.

Native name, *ut*. Bascom (2) lists 41 different varieties of banana for Ponape. The leaves are used in treatment of bruises and stomach aches. Probably a native of India.

Two subspecies are recognized, subsp. *normalis* O.K., which is a cooking banana or plantain, and subsp. *sapientum* (L.) O.K., the common eating banana.

**Musa textilis** Nee, Anal. Cienc. Nat. 4: 123, 1801.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 291, 1935.—Hosokawa, Kudoa 5: 90, 1937. Native name, *utun-we-usel*. Planted. Native of Malaya.

**Musa tikap** Warb., Tropenpfl. 7: 34, 1903.—Hosokawa, Jour. Jap. Bot. 13: 197, 1937.

Native name, *tikap*. Fruit is inedible; the succulent petioles are often used as a source of water. Endemic to the Caroline Islands; type from Ponape.

I have recorded *tikap* as the native name for one of the observed species of *Musa* on Mount Tamatamansakir. Since the vernacular name and the specific name are the same, I assume that *tikap* should be included under this species.

## ZINGIBERACEAE

**Alpinia carolinensis** Koidz., Bot. Mag. Tokyo 31: 233, 1917.—Hosokawa, Jour. Jap. Bot. 13: 198, 1937; Kudoa 5: 90, 1937.

*Langas carolinensis* (Koidz.) Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 292, 1935.

Near Colonia, Aug. 8, 1929, *Kanehira 656*; Palikir, July 1931, *Kanehira 1496* (NY); Mt. Nanalaut, 1,600 ft., 20 ft. tall, June 28, 1949, *Glassman 2391* (US), fruit red; Mt. Poaiipoai, 700 ft., rain forest, July 8, 1949, *Glassman 2477* (US); Nanpil, 200 ft., woodland, Aug. 17, 1949, *Glassman 2876* (US), flowers white, pink, and yellow.

Native name, *yuyu*. Truk, Palaus.

**Costus sericeus** Bl., Enum. Pl. Javae 1: 62, 1827.

Auak, along stream, 4 to 5 ft. tall, Aug. 20, 1949, *Glassman 2908* (US), bracts red, flowers white, inhabited by ants.

Cultivated and escaped; Palaus, Yap; Burma through Malaya and the Philippines to New Guinea.

**Curcuma domestica** Val., Jard. Bot. Buitenzorg, Bull. II, 27: 31, 1918.

*Curcuma longa* L., Sp. Pl., 2, 1753.—Hosokawa, Kudoa 5: 90, 1937.

Several varieties of turmeric are recognized: *ong-eh-tik*, *luh-aroo*, *ongalap*, *ongkol*, and *kisen-yong*. The roots of the first variety are used in curing gonorrhoea, and the roots of the others are used in flavoring soups.

**Curcuma** sp.

Vicinity of Ronkiti, 200 ft., woodland, July 7, 1949, *Glassman 2461* (US), frequent, flowers pink, root bulbous.

Native name, *aulong*. This plant is frequently found in the rain forest.

**Hedychium coronarium** Koenig apud Retz., *Observ. Bot.* 3: 73, 1783.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 292, 1935.—Hosokawa, *Kudoa* 5: 90, 1937.

Anapeng-pa, Feb. 6, 1936, *Takamatsu 743* (BM); Jokaj, Feb. 14, 1936, *Takamatsu 789* (BM); Mar. 8, 1936, *Takamatsu 1026* (BM); U District, roadside, July 19, 1949, *Glassman 2574* (US), flowers white, common.

Native name, *zinzzer*. Cultivated and escaped. Native of India.

**Zingiber zerumbet** Roscoe apud Sm., *Exot. Bot.* 2: 105, pl. 112, 1804.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 293, 1935.

Salabuk, Feb. 5, 1936, *Takamatsu 590* (BM); Oa, Mar. 2, 1936, *Takamatsu 919* (BM), abundant; Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2389* (US), flowers white, bracts green; vicinity of Ronkiti, woodland, July 8, 1949, *Glassman 2467* (US), bracts red.

Native names, *ong-n-pahlow* (Kiti District), *ong-n-penle* (Net District). Old World tropics. The root cortex is utilized in the treatment of tetanus.

## CANNACEAE

**Canna indica** L., *Sp. Pl.*, 1, 1753.

U District, roadside, July 19, 1949, *Glassman 2571* (US), flowers scarlet.

Native name, *yuyu-n-zwai*. Native of tropical America.

## LILIACEAE

**Cordyline terminalis** (L.) Kunth, *Berlin Akad. Abh.*, 30, 1820.

*Taetsia fruticosa* (L.) Merr., *Interpret. Herb. Amb.*, 137, 1917.—Hosokawa, *Kudoa* 5: 89, 1937.

Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2392* (US), fruit blue.

Native name, *ting*. The inflorescence and buds are used in the treatment of gonorrhoea; a mixture of pulverized buds and coconut oil is employed as an external application for abscesses.

Kusaie. Tropical Asia and Australia and eastward to Hawaii.

## PONTEDERIACEAE

**Eichhornia crassipes** (Mart.) Solms-Laub., *DC. Monogr. Phanerog.* 4: 527, 1883.

Oa, Mar. 2, 1936, *Takamatsu 908* (BM); in Nanpil River, July 15, 1949,



*Glassman 2553* (US), abundant, flowers lilac.

Native to the subtropics of the New World.

#### ARACEAE

***Alocasia macrorrhiza*** (L.) Schott, ex Schott and Endlicher, Melet. Bot. 1: 18, 1832. (See figure 6.)

Native name, *oht*. Bascom (2) recognizes nine varieties, of which *oht-n-mokil* is poisonous. This species is used in healing large wounds. Planted. Native of tropical Asia.

***Caladium bicolor*** (Ait.) Vent., Plant. Nouv. Jard. Cels., pl. 30, 1800.

Observed as an ornamental. Native of tropical America.

***Colocasia esculenta*** (L.) Schott, ex Schott and Endlicher, Melet. Bot. 1: 18, 1832.—Hosokawa, Kudoa 5: 88, 1937.

Native name, *sawah*. Bascom (2) records 17 varieties, of which *sawah-n-marramar* is poisonous. Planted; native of Old World tropics.

***Cyrtosperma chamissonis*** (Schott) Merr., Philippine Jour. Sci. Bot. 9: 65, 1914. (See figure 5.)

Native name, *muhng*. Bascom (2) lists 29 varieties from Ponape. New Guinea to the Carolines and Marianas, southward and eastward to Fiji, in cultivation.

***Epipremnum mirabile*** Schott forma ***eperforatum*** Engl., Engl. Bot. Jahrb. 25: 12, 1898.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 212, 1901.

Reported from Ponape by Schwabe, but no specimens are cited.

***Xanthosoma*** sp.

Observed as a cultivated plant.

Native name, *sawah-n-awai*. Native of New World tropics.

#### AMARYLLIDACEAE

***Crinum*** sp.

Observed behind a mangrove swamp near Ronkiti.

Native name, *kiup*. This specimen has purple flowers and the leaves are purple on the lower surface. It may be, however, a variety of *Crinum asiaticum* L.

***Hymenocallis littoralis*** (Jacq.) Salisb., Hort. Soc., Trans. 1: 338, 1812.

Native name, *kiup*. Leaves are used in the treatment of rheumatism, and for relieving centipede bites. Probably native of Mexico.

***Hypoxis aurea*** Lour., Fl. Cochinchinensis, 200, 1790.—Hosokawa, Kudoa 5: 89, 1937.

Guam; India to Japan, southward to the Philippines and Java.

**Zephyranthes grandiflora** Lindl., Bot. Register 11: pl. 902, 1825.

Observed as an ornamental.

Native name, *pileep*. Native of subtropical America.

#### DIOSCOREACEAE

Bascom (2) lists 156 cultivated varieties of yams for Ponape. Probably all are included in the first and third species listed below.

**Dioscorea alata** L., Sp. Pl., 1033, 1753.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 267, 1935; Kudoa 5: 89, 1937.

*Kaapin paniyou pwetetpwet* is one of the varieties recorded by Fosberg. Probably native to southeast Asia.

**Dioscorea bulbifera** L., Sp. Pl., 1033, 1753.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 266, 1935; Kudoa 5: 89, 1937.

*Dioscorea sativa* L., loc. cit.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 224, 1901.

No locality given, Aug. 13, 1929, *Kanehira* 785 (NY); vicinity of Ronkiti, 200 ft., woodland, July 8, 1949, *Glassman* 2466 (US), liana.

Native name, *palai*. Native of tropics of Eastern Hemisphere.

**Dioscorea esculenta** (Lour.) Burkill, Gard. Bull. Straits Settlement. 1 (11-12): 396, 1917.

*Kapniar kapmuas* is one of the varieties recorded by Fosberg.

#### PALMAE

**Areca cathecu** L., Sp. Pl., 1189, 1753.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 283, 1935; Jour. Jap. Bot. 12: 634, 1936. (Falso ut *A. catechu*.)

Native name, *poo*; the betle nut. Also cultivated in the Palaus, Yap, and Marianas; native of tropical Asia and Malaysia. Christian confused this species with *Exorrhiza* and *Ponapea*.

**Cocos nucifera** L., Sp. Pl., 1188, 1753.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 283, 1935.—Hosokawa, Kudoa 5: 87, 1937.

Native name, *ni*. Native of tropical Asia.

The following names are designated by the natives for various stages of development of the coconut fruit: *up* (drinking nut), *mangas* (mature nut for eating), *pahr* (sprouted nut), and *poton-pahran* (sprouted nut with two leaves showing).

Bascom (2) lists 14 varieties of coconut for Ponape. Of these, *atoll* has an edible husk, *kunk* has very small fruits without liquid endosperm, and *ni-wuluk*



is a very large fruited variety which produces an inferior grade of copra. The young petioles of a red variety (*ni-weyta*) are used in the treatment of gonorrhoea, and the bark from the root of this variety is utilized in curing dysentery. Juice from the exocarp of the young fruit is used in the treatment of yaws; grated coconut meat is one of the ingredients employed in the cure of rheumatism and dysentery; young roots are generally used for healing wounds; and petioles of young leaves are applied to infections of the eye.

**Coelococcus amicarum** (Wendl.) W. F. Warb., Bericht. Deutsch. Bot. Ges. 14: 140, 1896.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931; Fl. Micronesica, 74, pl. 13, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 283, 1935; Jour. Jap. Bot. 12: 635, 1936.—Hosokawa, Jour. Jap. Bot. 13: 194, 1937; Kudoa 5: 87, 1937.

Native name, *os*. Dried leaves are used in the treatment of tetanus. Endemic to the Caroline Islands; planted in Guam.

This species is apparently the tallest native Ponape tree. Several plants seen by me on Mount Tolenkup (1,800 ft.) reached a height of about 175 ft.

**Elaeis guineensis** Jacq., Select. Am., 280, pl. 172, 1763.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 283, 1935.—Hosokawa, Kudoa 5: 87, 1937.

African oil palm. Frequently planted along roadsides. Native of tropical Africa.

**Exorrhiza ponapensis** (Becc.) Burret, Fedde Repert. Sp. Nov. 24: 296, 1926.—Kanehira, Bot. Mag. Tokyo 48: 732, 1934; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 284, 1935; Jour. Jap. Bot. 12: 635, 1936.—Hosokawa, Kudoa 5: 87, 1937.

*Bentnickiopsis ponapensis* Becc., Webbia 5: 113, 1921.—Kanehira, Fl. Micronesica, 72, pl. 12, fig. 9, 1933; Bot. Mag. Tokyo 53: 189, 1939.—Burret, Notizbl. Bot. Gart. Berlin 5: 86, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943. (Falso ut *Bentinckiopsis*.)

*Bentnickiopsis carolinensis* Becc., loc. cit.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931.

Forest above 500 ft. (no further locality cited), Aug. 12, 1929, Kanehira 770 (NY); July 1931, Kanehira 1675 (NY).

Native name, *kotop*. Endemic.

**Nipa fruticans** Thunb., Vet. Akad. Nya Handl. Stockh. 3: 231, 1782.—Kanehira, Bot. Mag. Tokyo 45: 273, 1931; Jour. Jap. Bot. 12: 635, 1936.—Hosokawa, Kudoa 5: 87, 1937.

Native name, *pahrum*. Truk, Kusaie, Palaus, Yap, Guam; India through Malaya to tropical Australia.

**Ponapea hosinoi** Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 432, 1935 (nom. nud.); Jour. Jap. Bot. 12: 635, 1936 (nom. nud.); 12: 731, 1936 (Latin diagnosis).—Hosokawa, Kudoa 5: 88, 1937.—Burret, Notizbl. Bot. Gart. Berlin 15: 91-92, 1940.

Nanpil, Aug. 25, 1933, *Hosokawa 6034* (US); Colonia-Palikir, Aug. 23, 1940, *Hosokawa 9549* (US); Mt. Tolenkiup, 400 ft., rain forest, tree 40-50 ft., July 14, 1949, *Glassman 2549* (US), common.

Native name, *kattai*. Endemic.

This species differs from *P. ledermanniana* in the much broader leaves, the dark brown hairs on the inflorescence branches, and the smaller male flowers (7 mm.  $\times$  3 mm. vs. 10 mm.  $\times$  5 mm.).

**Ponapea ledermanniana** Becc., Engl. Bot. Jahrb. 59: 14, 1924.—Kanehira, Bot. Mag. Tokyo 45: 274, 1931; Fl. Micronesica, 78, fig. 13, 1933; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 284, 1935; Jour. Jap. Bot. 12: 635, 731, fig. 4, 1936.—Hosokawa, Kudoa 5: 88, 1937.—Burret, Notizbl. Bot. Gart. Berlin 15: 91, 1940.

Mt. Tolenkiup, 400 ft., rain forest, tree 50-60 ft., July 14, 1949, *Glassman 2528* (US), flowers white, inflorescence branches white, common.

Native name, *kattai*. The wood is used for house posts and canoe parts, and the nuts are edible. In contrast to *kotop*, the young leaf bases are not tender enough to be eaten. Also known from Kusaie.

**Roystonea elata** (Bartr.) Harper, Biol. Soc. Wash., Proc. 59: 29, 1946.

Royal palm. A number of these trees have been planted along the road in the vicinity of the Agricultural Experiment Station. Native of southern Florida and Cuba.

#### PANDANACEAE

**Freycinetia ponapensis** Martelli apud Kanehira, Bot. Mag. Tokyo 48: 129, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 259, 1935; Bot. Mag. Tokyo 51: 906, fig. 61, 1937.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.

*Freycinetia mariannensis* Merr., Philippine Jour. Sci., Bot. 9: 48, 1914.—

Hosokawa, Jour. Jap. Bot. 13: 191, 1937; Kudoa 5: 79, 1937.

*Freycinetia mariannensis* Merr. var. *microsyncarpia* Hosokawa, Jour. Jap. Bot. 13: 191, 1937; Kudoa 5: 79, 1937.

Mt. Nanalaut, July 1931, *Kanehira 1674* (NY).

Native name, *rahrah*. An infusion of the leaves is used by the native women as a contraceptive. Also known from Kusaie.

Dr. Fosberg is of the opinion that most of the species of *Pandanus* which Kanehira, Martelli, and Hosokawa have described from Ponape (principally those growing in the vicinity of the seashore) are probably horticultural forms of *P. tectorius* Parkinson. I believe that some of these species may also repre-



sent forms of *P. dubius* Spreng. In the field, most of the specimens of *Pandanus* growing near the seashore appear to constitute one or two species. On the other hand, type specimens (single phalanges) of each species examined at the New York Botanical Garden were distinct enough to be considered separate species. The question of whether the population of *Pandanus* growing in the vicinity of the seashore represents a number of distinct species, or a population of variable individuals, some of which have been cultivated in the past, can only be answered by additional field work and experimental study.

The native guides who accompanied me on collecting trips were able to recognize only four kinds of *Pandanus*: *kipar-n-ai*, which grows along the seashore, and *kipar-n-wahl*, *matal*, and *peet*, all of which occur in the mountains. None of the other native names recorded by Kanehira and Hosino were familiar to the guides. The flowers of *Pandanus* are called *mohtukul*, and the fruits are known as *taip*. Christian says that the local native name for *Pandanus* in the Metalanim District is *taip*.

***Pandanus cominsii*** Hemsl., Hook. *Icones Pl.* 27: pl. 2654, 1900.—Kanehira, Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 260, 1935; *Bot. Mag. Tokyo* 50: 544, 1936; *Jour. Jap. Bot.* 12: 501, 1936.—Hosokawa, *Kudoa* 5: 79, 1937.

Mt. Seletereh, 1,425 ft., rain forest, tree 8 ft.  $\times$  1 in., July 28, 1949, *Glassman* 2742 (US).

Native name, *matal*. Truk; Solomons (type), Bismarek Archipelago, New Hebrides.

***Pandanus cylindricus*** Kanehira, *Bot. Mag. Tokyo* 49: 63, fig. 3, 1935; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 260, 1935; *Biogeogr. Soc. Jap., Bull.* 6: 12, pls. 4, 5, 1935; *Jour. Jap. Bot.* 12: 500, 786, figs. 1, 2, 1936; *Bot. Mag. Tokyo* 50: 542, 1936.—Hosokawa, *Kudoa* 5: 80, 1937.

Jokaj, thickets near seashore, July 1933, *Hosino* 2810 (type collection, NY).

Native names, *silau*, *siraue*. Mokil.

***Pandanus dilatatus*** Kanehira, *Bot. Mag. Tokyo* 49: 63, fig. 4, 1935; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 260, 1935; *Biogeogr. Soc. Jap., Bull.* 6: 13, 1935; *Jour. Jap. Bot.* 12: 500, 787-788, fig. 4, 1936.—Hosokawa, *Kudoa* 5: 80, 1937.

Net, thickets at low altitude, Aug. 1933, *Hosino* 2808 (type collection, NY).

Native name, *kienpel*. Endemic.

***Pandanus dubius*** Spreng., *Syst.* 3: 897, 1826.—Kanehira, *Bot. Mag. Tokyo* 45: 273, 1931; Dept. Agric. Kyushu Imp. Univ., *Jour.* 4: 260, 1935.

Native name, *kipar-n-ai*.

In a later issue of the botanical magazine published by the Botanical Society

of Japan, Kanehira (37) discusses the confusion between *P. dubius* and *P. tetradon* Balf. He cites *P. dubius* from Kusaie, the Palaus, Yap, Rota, and Saipan; but not from Ponape.

**Pandanus hosinoi** Kanehira, Bot. Mag. Tokyo 49: 103, fig. 8, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 261, 1935; Biogeogr. Soc. Jap., Bull. 6: 13, 1935; Jour. Jap. Bot. 12: 500, 1936; Bot. Mag. Tokyo 50: 542, 1936.—Hosokawa, Kudoa 5: 80, 1937.

No locality given, Aug. 1933, *Hosino 2811* (type collection, NY).

Native name, *nane kejak*. Mokil.

**Pandanus jaluitensis** Kanehira, Bot. Mag. Tokyo 49: 103, fig. 9, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 261, 1935; Biogeogr. Soc. Jap., Bull. 6: 13, 1935; Jour. Jap. Bot. 12: 500, 1936; Bot. Mag. Tokyo 50: 542, 1936.—Hosokawa, Kudoa 5: 80, 1937.

Native name, *pacheren*. Mokil, Kusaie, and Jaluit.

**Pandanus macrocephalus** Kanehira, Bot. Mag. Tokyo 49: 428, 1935; Biogeogr. Soc. Jap., Bull. 6: 13, 1935.

Native name, *pasyure*. Mokil and Jaluit.

**Pandanus odontoides** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 24: 197-198, figs. 2, 4, 1934.—Kanehira, Biogeogr. Soc. Jap., Bull. 6: 14, 1935.

Type from Palaus.

**Pandanus palkilensis** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 24: 197, figs. 1, 3, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 263, 1935; Jour. Jap. Bot. 12: 500, 1936.—Hosokawa, Kudoa 5: 80, 1937. Endemic.

**Pandanus patina** Martelli apud Kanehira, Fl. Micronesica, 67, fig. 7, 1933 (Japanese description).—Martelli apud Kanehira, Bot. Mag. Tokyo 48: 127, fig. 8, 1934 (Latin description); Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 263, 1935; Biogeogr. Soc. Jap., Bull. 6: 15, 1935; Jour. Jap. Bot. 12: 501, 1936.—Hosokawa, Kudoa 5: 80, 1937. (See figure 14.)

Mt. Ninani, 2,500 ft., Aug. 15, 1929, *Kanehira 836* (NY); July 1931, *Kanehira 1668* (type collection, NY); Mt. Ninani, 2,400 ft., Aug. 17, 1949, *Glassman 2883* (US), dominant in several level areas, fruit wine colored, edible.

Native name, *pect*. Endemic.

**Pandanus ponapensis** Martelli apud Kanehira, Bot. Mag. Tokyo 48: 121, fig. 4, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 263, 1935; Biogeogr. Soc. Jap., Bull. 6: 14, 1935; Jour. Jap. Bot. 12: 500, 1936.—Hosokawa, Kudoa 5: 81, 1937.



Thickets at low altitude, Jan. 1933, *Hosino 2134* (type collection, NY).  
Native names, *taip* (of Hosino), *kipal* and *atwan* (of Kanehira). Endemic.

***Pandanus pulposus*** Martelli, *Webbia* 4: 409, pl. 38, figs. 1-3, 1914.—Kanehira, *Biogeogr. Soc. Jap.*, *Bull.* 6: 14, 1935; *Bot. Mag. Tokyo* 50: 542, 1936.

Native name, *jomineia*. Marshall Islands, Radak (type) and Jaluit.

***Pandanus rhombocarpus*** Kanehira, *Bot. Mag. Tokyo* 49: 426, fig. 33, 1935; *Biogeogr. Soc. Jap.*, *Bull.* 6: 14, 1935.

Type from Enchabi [Engebi?], Marshall Islands.



FIGURE 18.—*Pandanus tolotomensis*, type specimen.

***Pandanus rotundatus*** Kanehira, *Bot. Mag. Tokyo* 49: 427, fig. 35, 1935; *Dept. Agric. Kyushu Imp. Univ.*, *Jour.* 4: 264, 1935; *Biogeogr. Soc. Jap.*, *Bull.* 6: 14, 1935; *Jour. Jap. Bot.* 12: 501, 1936; *Bot. Mag. Tokyo* 50: 541, 1936.—Hosokawa, *Kudoa* 5: 81, 1937.

No locality given, Aug. 1934, *Hosino 3449* (type collection, NY).

Native name, *magojokojok*. Jaluit, Marshall Islands.

**Pandanus tolotomensis**, new species (figs. 18, 19).

Plantae 13-14 m. alt., truncis ramosis, ca. 0.18 m. diam.; foliis 0.9-1.2 m. long., 4-6 cm. lat., spinosis in mediis costis et marginibus; syncarpio subgloboso, 13 cm. long., 11 cm. diam., phalangibus inaequalibus, multis 4.5-5 cm. long., 2-2.5 cm. lat. (in partibus superioribus), obovatis ad oblanceolatis, cuneatis infra, trigonis vel quadrangularibus vel angulis inaequalibus; suturis rotundis, planis vel sulcatis, partibus superioribus subflavofuscis, partibus inferioribus luteis, succidis; portionibus superioribus mesocarpii 10-12 mm. long., fibratis portionibus inferioribus mesocarpii 20-22 mm. long., drupis 4-5, nonnumquam 3-6, apicibus convexis, rugosis; stigmatis ca. 1 mm. alt., apicibus planis vel sulcatis; seminibus 8-10 mm. long.

Plants 13-14 m. tall, trunk branched, about 0.18 m. in diameter; leaves 0.9-1.2 m. long, 5-6 cm. wide, spiny along median vein and margins; syncarpium subglobose, 13 cm. long, 11 cm. in diameter, phalanges 4-5 parted unequal, numerous, 4.5-5 cm. long, 2-2.5 cm. wide (in upper portions), obovate to oblanceolate, cuneate at base, triangular, quadrangular, or irregularly angled; sutures rounded, flat or grooved, upper half yellowish brown, lower half orange, succulent; apical mesocarp 10-12 mm. long, traversed by fibers, basal mesocarp 20-22 mm. long; carpels 4-5, sometimes 3-6, apex convex, rugose; stigmas about 1 mm. high, apex flattened or grooved; seeds 8-10 mm. long.

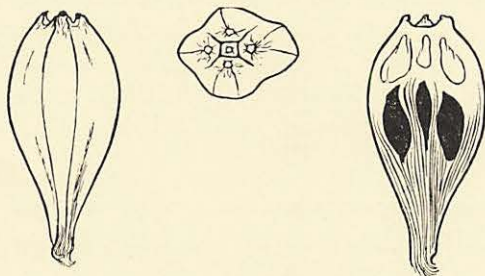


FIGURE 19.—*Pandanus tolotomensis*, fruit.

Mt. Tolotom, 1,100 ft., along edge of marshy area, Aug. 11, 1949, *Glassman 2842* (US), common. Type in the United States National Herbarium; duplicates in the herbarium of Bishop Museum and the Bebb Herbarium, University of Oklahoma.

Native name, *kipar-n-zahl*.

This species is in the section *Keura*, and the closest resemblance is to *P. papariensis* Martelli from Tahiti. Phalanges are about the same size but in this species they are more square in cross-section, and the apex is distinctly flattened instead of being convex.

***Pandanus utiyamai*** Kanehira, Bot. Mag. Tokyo **49**: 190, fig. 20, 1935; Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 264, 1935; Biogeogr. Soc. Jap., Bull. **6**: 14, 1935; Jour. Jap. Bot. **12**: 501, 1936. — Hosokawa, Kudoa **5**: 81, 1937.

Thickets along seashore (no other locality cited), Aug. 1933, *Hosino and Utiyama 2809* (type collection, NY).

Native name, *lajaperik*. Endemic.



## TACCACEAE

**Tacca leontopetaloides** (L.) O.K., Rev. Gen. Pl., 704, 1891.

*Tacca pinnatifida* Forst., Char. Gen. Pl., 70, pl. 35, 1776.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 290, 1935.—Hosokawa, Kudoa 5: 89, 1937.

Native name, *mokmok*. Planted. Probably native of southeastern Asia.

## ORCHIDACEAE

**Bulbophyllum micronesiacum** Schltr., Engl. Bot. Jahrb. 56: 482-483, 1921.

—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 295, 1935.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 32: 9, 1942; 33: 118, 1943.

Tolomail, 600 m., Feb. 11, 1936, *Takamatsu 959* (BM), epiphyte.

Endemic.

**Bulbophyllum ponapense** Schltr., Engl. Bot. Jahrb. 56: 484-485, fig. 2, 1921.

—Hosokawa, Kudoa 5: 91, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.

Salabuk, Feb. 10, 1936, *Takamatsu 604* (BM), epiphyte, flowers white;

Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2388* (US).

Endemic.

**Corybas ponapensis** (Hosokawa and Fukuyama) Hosokawa and Fukuyama ex Hosokawa, Jour. Jap. Bot. 13: 199, 1937; Kudoa 5: 91, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.

*Corysanthes ponapensis* Hosokawa and Fukuyama apud Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 17, 1935.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 296, 1935.

Mt. Nanalaut, 1,800 ft., rain forest, June 28, 1949, *Glassman 2357* (US), epiphyte, flowers pink; Mt. Tolenwalik, 2,100 ft., Aug. 17, 1949, *Glassman 2849a* (US).

Endemic.

**Dendrobium amesianum** Schltr., Engl. Bot. Jahrb. 56: 468-469, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 296, 1935.—Hosokawa,

Kudoa 5: 91, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.

Endemic.

**Dendrobium carolinense** Schltr., Engl. Bot. Jahrb. 56: 472-473, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 296, 1935.—Hosokawa, Kudoa 5: 92, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.

*Ledermann 13531* (BM); no locality cited, Aug. 14, 1929, *Kanehira 813* (BM); Mt. Tamatamansakir, 500 ft., woodland, June 23, 1949, *Glassman 2330* (US), epiphyte, flowers pale pink.

Native name, *rahnggh*. Also known from Kusaie.

- Dendrobium elongaticolle** Schltr., Engl. Bot. Jahrb. 56: 465-466, 1921.—Tuyama, Bot. Mag. Tokyo 54: 267, 1940.  
Palau and Yap.
- Dendrobium flavicolle** Schltr., Engl. Bot. Jahrb. 56: 466-467, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 297, 1935; Hosokawa, Kudoa 5: 92, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 118, 1943.  
Kuporujō, Feb. 11, 1936, *Takamatsu 661* (BM); Tolomail, Mar. 13, 1936, *Takamatsu 995* (BM); Mt. Tamatamansakir, 1,400 ft., rain forest, June 23, 1949, ?*Glassman 2340* (US), epiphyte.  
Endemic.
- Dendrobium nanarauticolum** Fukuyama, Bot. Mag. Tokyo 51: 900-901, fig. 1, 1937; L. O. Wms., Harvard Univ., Bot. Mus. Leaflet 7: 141, 1939.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.  
Kuporujō, Mar. 13, 1936, *Takamatsu 689* (BM); Mt. Tolenkup, 1,700 ft., rain forest, July 17, 1949, ?*Glassman 2539* (US), epiphyte.  
Endemic.
- Dendrobium ponapense** Schltr., Engl. Bot. Jahrb. 56: 471-472, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 297, 1935.—Hosokawa, Kudoa 5: 92, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.  
Endemic.
- Dendrobium pseudo-kraemeri** Fukuyama, Bot. Mag. Tokyo 51: 902-903, fig. 3, 1937.—Hosokawa, Kudoa 5: 92, 1937.  
Type from Kusaie.
- Dendrobium violaceo-miniatum** Schltr., Engl. Bot. Jahrb. 56: 470-471, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 297, 1935.—Hosokawa, Kudoa 5: 92, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.  
Endemic.
- Galeola ponapensis** (Kanehira and Yamamoto) Tuyama, Jour. Jap. Bot. 16: 631, 1940.  
*Vanilla ponapensis* Kanehira and Yamamoto, Nat. Hist. Soc. Formosa, Trans. 23: 21-22, fig. 2, 1933.—Fukuyama and Suzuki-Tokio[?], Kudoa 2: 41, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 303, 1935.—Hosokawa, Kudoa 5: 94, 1937.  
Mt. Seletereh, 110 ft., July 28, 1949, *Glassman 2740* (US), epiphyte, flowers greenish yellow with orange spots, uncommon.  
Native name, *lah-mahk*. Endemic.
- Glomera carolinensis** L. O. Wms., Harvard Univ., Bot. Mus. Leaflet 7: 142-143, 1939.  
Endemic.



Williams says that "this species is the only one of the genus reported for Micronesia, the nearest generic allies being in New Guinea."

**Liparis odorata** Lindl., Gen. and Sp. Orch., 26, 1830.—Tuyama, Bot. Mag. Tokyo 54: 271, 1940.

India, Indo-China, Malaysia, China, and Japan.

**Mediocalcar ponapense** Schltr., Engl. Bot. Jahrb. 56: 475, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 299, 1935.—Hosokawa, Kudoa 5: 93, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.

Kuporujō, Mar. 13, 1936, *Takamatsu 685* (BM), epiphyte.

Endemic.

**Microtatorchis hosokawae** Fukuyama, Bot. Mag. Tokyo 51: 903-905, figs. 4-5, 1937.—Hosokawa, Kudoa 5: 93, 1937; Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.

Mt. Tolotom, 2,100 ft., Aug. 11, 1949, ?*Glassman 2858* (US), epiphyte on *Melastoma*, flowers cream.

Endemic.

**Moerenhoutia leucantha** Schltr., Engl. Bot. Jahrb. 56: 450-451, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 299, 1935.—Hosokawa, Kudoa 5: 93, 1937.

Kuporujō, Feb. 11, 1936, *Takamatsu 674* (BM), flowers yellow, Tolomail, Mar. 13, 1936, *Takamatsu 947* (BM).

Endemic.

**Moerenhoutia leucantha** Schltr. var. **glabrata** Schltr., Engl. Bot. Jahrb. 56: 451, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 299, 1935.—Hosokawa, Kudoa 5: 93, 1937.

Endemic.

**Moerenhoutia leucantha** Schltr. var. **minor** Tuyama, Bot. Mag. Tokyo 54: 274, 1940.

Endemic.

**Oberonia hosokawae** Fukuyama, Nat. Hist. Soc. Formosa, Trans. 31: 290-291, 1941.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.

Endemic.

**Oberonia ponapensis** Tuyama, Bot. Mag. Tokyo 54: 275, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 33: 119, 1943.

Mt. Tolotom, 2,100 ft., Aug. 11, 1949, ?*Glassman 2857* (US), epiphytic on *Glochidion*, flowers light red, leaves reddish brown.

Endemic.

- Peristylus carolinensis** (Schltr.) Tuyama, Bot. Mag. Tokyo **54**: 276, 1940.  
*Habenaria carolinensis* Schltr., Engl. Bot. Jahrb. **56**: 445, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 298, 1935.—Hosokawa, Kudoa **5**: 92, 1937.  
Nanalaut, 700 m., Feb. 17, 1936, *Takamatsu 1077* (BM), flowers yellow.  
Endemic.
- Phajus amboinensis** Bl., Mus. Bot. Lugd.-Bat. **2**: 180, 1856.—Schltr., Engl. Bot. Jahrb. **56**: 479, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 300, 1935.—Hosokawa, Kudoa **5**: 93, 1937.  
Mt. Matante, Jan. 22, 1936, *Takamatsu 554* (BM); Kuporujō, Mar. 13, 1936, *Takamatsu 679* (BM); Tolomail, Feb. 11, 1936, *Takamatsu 968* (BM), common; Mt. Poaipoi, 1,800 ft., July 9, 1949, *Glassman 2499* (US), terrestrial, flowers white, yellow inside.  
Native name, *yosip*. Kusaie; Java, Celebes, Amboina, New Guinea, and Rarotonga.
- Phreatia carolinensis** Schltr., Engl. Bot. Jahrb. **56**: 486-487, 1921.—Hosokawa, Kudoa **5**: 94, 1937.—Tuyama, Bot. Mag. Tokyo **54**: 279, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 119, 1943.  
Endemic.
- Phreatia ponapensis** Schltr., Engl. Bot. Jahrb. **56**: 487-488, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 300, 1935.—Hosokawa, Kudoa **5**: 94, 1937; Nat. Hist. Soc. Formosa, Trans. **33**: 119, 1943.  
Endemic.
- Phreatia pseudo-thompsonii** Tuyama, Bot. Mag. Tokyo **54**: 278-279, fig. 7, B, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 119, 1943.  
Endemic.
- Phreatia thompsonii** Ames, Philippine Jour. Sci., Bot. **9**: 15, 1914.—Schltr., Engl. Bot. Jahrb. **56**: 486, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 300, 1935.—Hosokawa, Kudoa **5**: 94, 1937; Nat. Hist. Soc. Formosa, Trans. **33**: 119, 1943.  
Type from Guam.
- Pseuderia micronesiaca** Schltr., Engl. Bot. Jahrb. **56**: 473-474, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 300, 1935.—Tuyama, Bot. Mag. Tokyo **54**: 279-280, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 119, 1943.  
*Arundina kanehirae* Yamamoto, Nat. Hist. Soc. Formosa, Trans. **23**: 20-21, fig. 1, 1933.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 295, 1935.—Hosokawa, Kudoa **5**: 90, 1937.



No locality cited, Aug. 14, 1929, *Kanehira 815* (BM); Ninani, Aug. 12, 1933, *Hosokawa 5688* (BM); Tolomail, 600 m., Feb. 11, 1936, *Takamatsu 962* (BM); Mt. Tolonkiup, 2,200 ft., rain forest, July 15, 1949, *Glassman 2544* (US), common epiphyte, flowers cream, spotted with reddish brown.

Endemic.

**Taeniophyllum petrophilum** Schltr., Engl. Bot. Jahrb. **56**: 500, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 302, 1935.—Hosokawa, *Kudoa* **5**: 94, 1937; Nat. Hist. Soc. Formosa, Trans. **32**: 102, 1942; **33**: 119, 1943.

Native name, *paten-n-kowalik* (of Riesenbergl). Palaus.

**Thrixspermum arachnitiforme** Schltr., Engl. Bot. Jahrb. **56**: 493, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 302, 1935.—Hosokawa, *Kudoa* **5**: 94, 1937; Nat. Hist. Soc. Formosa, Trans. **33**: 120, 1943. Endemic.

**Thrixspermum ponapense** Tuyama, Bot. Mag. Tokyo **54**: 297-298, fig. 9, 1940.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. **33**: 120, 1933.

Mt. Tolotom, 2,100 ft., Aug. 11, 1949, ?*Glassman 2859* (US), epiphyte on *Glochidion*, flowers cream.

Endemic.

**Vrydagzynea micronesiaca** Schltr., Engl. Bot. Jahrb. **56**: 455, 1921.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. **4**: 303, 1935.—Hosokawa, *Kudoa* **5**: 94, 1937.

Ninani, Aug. 12, 1933, *Hosokawa 5696* (BM); Kuporujō, Mar. 13, 1936, *Takamatsu 675* (BM); Mt. Poaipoi, 1,900 ft., rain forest, July 8, 1949, *Glassman 2492a* (US), terrestrial; Mt. Tolotom, 1,400 ft., rain forest, Aug. 11, 1949, *Glassman 2860* (US), flowers cream, uncommon.

Native name, *reh-osup*. Kusaie and the Palaus.

#### CYPERACEAE

**Cladium ponapense** Ohwi, Jour. Jap. Bot. **18**: 136-137, 1942.

Endemic.

**Cyperus brevifolius** (Rottb.) Hassk., Cat. Hort. Bot. Bog., 24, 1844.

*Kyllingia brevifolia* Rottb., Descr. Icones. Pl., 13, pl. 4, fig. 3, 1786.—Kukenth., Engl. Bot. Jahrb. **59**: 2, 1924.

Agricultural Experiment Station grounds, grassy field, July 2, 1949, *Glassman 2419* (US), frequent.

Pantropical.

**Cyperus compressus** L., Sp. Pl., 46, 1753.—Kukenth., Engl. Bot. Jahrb. 59: 3, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 276, 1935.—Hosokawa, Kudoa 5: 84, 1937.

Pantropical.

**Cyperus cyperinus** (Retz.) Suringar, Het Gesl. Cyp. Mal. Archipel., 154, pl. 6, fig. 10, 1898.

*Cyperus cyperoides* (L.) O.K. subsp. *cyperinus* (Retz.) Kukenth., Engl. Bot. Jahrb. 59: 3, 1924.

Near Colonia, swampy places, Aug. 12, 1929, *Kanehira 768* (NY); Langar Islet, along strand, June 28, 1949, *Glassman 2396* (US); Agricultural Experiment Station grounds, grassy field, July 2, 1949, *Glassman 2425* (US); U District, secondary growth area, July 28, 1949, *Glassman 2722* (US).

Native name, *reh-likarik*. Palaus, Yap; tropical Asia to Polynesia.

**Cyperus cyperoides** (L.) O.K., Rev. Gen. Pl. 3: 333, 1898.—Hosokawa, Kudoa 5: 84, 1937.

*Cyperus cyperoides* (L.) O.K. subsp. *cyperinus* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 276, 1935; not (Retz.) Kukenth., 1924.

Temperate and tropical regions of Old World; also from the West Indies.

**Cyperus odoratus** L., Sp. Pl., 46, 1753.

*Cyperus ferax* L.C. Rich., Act. Soc. Hist. Nat. Paris 1: 106, 1792.—Kukenth., Engl. Bot. Jahrb. 59: 3, 1924.—Hosokawa, Kudoa 5: 84, 1937.—Ohwi, Jour. Jap. Bot. 18: 132, 1942.

*Torulinum ferax* (L.C. Rich.) Ham., Prodr. Pl. Ind. Occidentalis, 15, 1825.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 283, 1935.

*Cyperus ferax* L.C. Rich. var. *novae-hannoverae* (Boeck.) Kukenth., Engl. Bot. Jahrb. 59: 4, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 276, 1935.

Metalanim, in swamp, Aug. 15, 1929, *Kanehira 851* (NY); Mt. Tolotom, 600 ft., cultivated soil, Aug. 12, 1949, *Glassman 2864* (US).

Native name, *use-n-ant*. Palaus, Saipan; pantropical.

**Cyperus javanicus** Houtt., Nat. Hist. 2 (13): pl. 88, fig. 1, 1782.

*Cyperus stuppeus* Forst. f., Prodr., 89, 1786 (nom. nud.)—Kukenth., Engl. Bot. Jahrb. 59: 3, 1924.

*Mariscus pennatus* (Lam.) Merr., Enum. Phil. Fl. Pl. 1: 113, 1922.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 280, 1935.

Subtic, Aug. 31, 1933, *Hosokawa 6139* (US); Langar Islet, July 1, 1949, *Glassman 2403* (US), abundant.

Native name, *use*. Micronesia; Malaysia.

**Cyperus kyllingia** Endl., Cat. Hort. Acad. Vindob. 1: 94, 1842.

*Kyllingia monocephala* Rottb., Descr. Icones. Pl., 13, pl. 4, fig. 4, 1786.—



Kukenth., Engl. Bot. Jahrb. 59:2, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:280, 1935.—Ohwi, Jour. Jap. Bot. 18:131, 1942.

*Kyllingia brevifolia* of Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:280, 1935; not Rottb., 1786.

Palikir, swampy field, Aug. 10, 1929, *Kanehira 733* (NY); vicinity of Colonia, in lawn, July 20, 1949, *Glassman 2582* (US), common.

Pantropical.

**Cyperus polystachyos** Rottb., Descr. Icones. Pl., 39, 1786.—Kukenth., Engl. Bot. Jahrb. 59:3, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:277, 1935.—Ohwi, Jour. Jap. Bot. 18:132, 1942.

Agricultural Experiment Station grounds, roadside, July 2, 1949, *Glassman 2418* (US), frequent.

Truk, Saipan, Tinian. Pantropical.

**Cyperus tenuispicus** Steud., Syn. Pl. Glum. 2:11, 1855.—Ohwi, Jour. Jap. Bot. 18:131, 1942.

Palaus.

**Diplacrum caricinum** R. Br., Prodr., 241, 1810.—Kukenth., Engl. Bot. Jahrb. 59:9, 1924.—Hosokawa, *Kudoa* 5:85, 1937.

*Ledermann 13554* (BM).

Kusaie, Palaus, Yap, Guam; India to Australia.

**Eleocharis laxiflora** (Thwaites) H. Pfeiff., Mitt. Inst. Bot. Hamburg 7:169, 1928.

*Eleocharis variegata* Presl var. *laxiflora* (Thwaites) C. B. Clarke ex Hook. f., Fl. Brit. Ind. 6:626, 1893.—Kukenth., Engl. Bot. Jahrb. 59:4, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:277, 1935. Hosokawa, *Kudoa* 5:85, 1937.

*Eleocharis ochrostachys* Steud., Syn. Pl. Glum. 2:80, 1855.—Ohwi, Jour. Jap. Bot. 18:132, 1942.

Colonia, Aug. 9, 1929, *Kanehira 679* (NY); Palikir, July 1931, *Kanehira 1515* (NY); Mt. Poaipoai, 1,600 ft., open marsh, July 8, 1949, *Glassman 2485* (US), common.

Native name, *mahtamat*. Palaus, Yap; Japan and India to Polynesia.

**Fimbristylis dichotoma** (L.) Vahl, Enum. Pl. 2:287, 1806.

*Fimbristylis annua* (All.) Roem. and Schult., Syst. Veg. 2:95, 1817.—Hosokawa, *Kudoa* 5:85, 1937.

*Fimbristylis annua* (All.) Roem. and Schult. var. *podocarpa* (Nees and Meyen) Kukenth., Engl. Bot. Jahrb. 59:5, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:278, 1935.

*Fimbristylis annua* (All.) Roem. and Schult. var. *pseudoferruginea* Kukenth., Engl. Bot. Jahrb. 59: 5, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 278, 1935.

*Fimbristylis annua* (All.) Roem. and Schult. forma *tomentosa* (Vahl) Kukenth., Engl. Bot. Jahrb. 59: 4, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 278, 1935.

*Fimbristylis dichotoma* (L.) Vahl forma *annua* (All.) Ohwi, Jour. Jap. Bot. 14: 577, 1938; 18: 135, 1942.

Colonia, roadside, Aug. 9, 1929, *Kanehira 680* (NY); Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2428, 2430* (US); Auak, roadside ditch, Aug. 20, 1949, *Glassman 2905* (US), common.

Paleotropics.

As the characters of the varieties and forms of this species overlap, there is no justification for retaining them as separate entities.

**Fimbristylis globulosa** Kunth, Enum. Pl. 2: 231, 1837.—Kukenth., Engl. Bot. Jahrb. 59: 6, 1924.—Ohwi, Jour. Jap. Bot. 18: 134, 1942.

Mt. Poaipoi, 1,600 ft., open marsh, July 8, 1949, *Glassman 2484* (US), common.

Palaus, Yap, Guam; India to Malaya.

**Fimbristylis miliacea** (L.) Vahl, Enum. Pl. 2: 287, 1806.—Kukenth., Engl. Bot. Jahrb. 59: 6, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 279, 1935.—Hosokawa, Kudoa 5: 85, 1937.—Ohwi, Jour. Jap. Bot. 18: 133, 1942.

No locality given, July 1929, *Kanehira 678* (BM); Agricultural Experiment Station grounds, in marsh, July 2, 1949, *Glassman 2413* (US), frequent.

Native name, *likarak-n-wahl*. Palaus, Marianas; Japan.

**Fimbristylis spathacea** Roth, Nov. Sp. Pl., 24, 1821.

*Fimbristylis glomerata* (Retz.) Nees forma *spathacea* (Roth) Kukenth., Engl. Bot. Jahrb. 59: 5-6, 1924.

Palaus, Yap, Marshalls, Marianas.

**Fuirena umbellata** Rottb., Descr. Icones. Pl., 70, pl. 19, fig. 3, 1786.—Kukenth., Engl. Bot. Jahrb. 59: 6, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 279, 1935.—Hosokawa, Kudoa 5: 85, 1937.—Ohwi, Jour. Jap. Bot. 18: 135, 1942.

No locality cited, Aug. 1929, *Kanehira 681* (BM); Mt. Tolotom, 1,100 ft., marshy area, Aug. 11, 1949, *Glassman 2841* (US), frequent.

Palaus, Yap, Marianas. Paleotropics.

**Hypolytrum dissitiflorum** Steud., Syn. Pl. Glum. 2: 132, 1855.—Kukenth., Engl. Bot. Jahrb. 59: 7, 1924.—Kanehira, Dept. Agric. Kyushu Imp.



Univ., Jour. 4: 279, 1935.—Hosokawa, Kudoa 5: 85, 1937.—Ohwi, Jour. Jap. Bot. 18: 137, 1942.

*Hypolytrum oligostachyum* Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 190, 1901.

*Hypolytrum dissitiflorum* Steud. var. *oligostachyum* (Schum. and Lauterb.) Kukenth., Engl. Bot. Jahrb. 59: 8, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 279, 1935.

No locality given, Aug. 8, 1929, *Kanehira 630* (BM, NY); Mt. Ninani, 1,500 ft., Aug. 14, 1929, *Kanehira 807* (NY); Mt. Tamatamansakir, 500 ft., woodland, June 23, 1949, *Glassman 2320, 2321* (US).

Native name, *sapasap*. Kusaie, Marshalls.

**Rhynchospora corymbosa** (L.) Britt., New York Acad. Sci., Trans. 11: 84, 1892.—Kukenth., Engl. Bot. Jahrb. 59: 7, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 280, 1935.—Ohwi, Jour. Jap. Bot. 18: 136, 1942.

Palikir, July 1931, *Kanehira 1513* (NY); Palikir, Aug. 18, 1933, *Hosokawa 5902* (BM); Agricultural Experiment Station grounds, in marsh, July 2, 1949, *Glassman 2453* (US), common.

Truk, Palaus, Yap, Marianas. Pantropical.

**Rhynchospora ponapensis** Hosokawa, Nat. Hist. Soc. Formosa, Trans. 25: 263, 1935.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 432, 1935.—Hosokawa, Kudoa 5: 86, 1937.—Ohwi, Jour. Jap. Bot. 18: 136, 1942.

Mt. Trunanshapoi, Aug. 24, 1933, *Hosokawa 5981* (US); Mt. Ninani, 2,450 ft., marshy area, Aug. 17, 1949, *Glassman 2891* (US), common.

Native name, *mahtamat*. Endemic.

**Schoenus melanostachys** R. Br., Prodr., 231, 1810.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 28: 153, 1938.

*Schoenus laevinux* (Kukenth.) Ohwi, Jour. Jap. Bot. 18: 136, 1942.

Mt. Ninani, 2,550 ft., on wind-blown peak, associated with dwarf trees, Aug. 17, 1949, *Glassman 2889* (US).

Native name, *mahtamat*. Malaysia, New Guinea, Australia.

**Scirpodendron ghaeri** (Gaertn.) Merr., Philippine Jour. Sci. Bot. 9: 269, 1914.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 281, 1935.—Hosokawa, Kudoa 5: 86, 1937.—Ohwi, Jour. Jap. Bot. 18: 137, 1942.

No locality given, July 1931, *Kanehira 1685* (BM, NY); Mt. Tolénrahkiet, 300 ft., Aug. 2, 1949, *Glassman 2766* (US), leaves 6 ft. long, common.

Native name, *pohkee*. Yap; Ceylon through Malaya to Australia, Philippines, Melanesia, and Polynesia.

**Scleria margaritifera** Willd., Sp. Pl. 4: 312, 1805.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 282, 1935.—Hosokawa, Kudoa 5: 86, 1937.—Ohwi, Jour. Jap. Bot. 18: 138, 1942.

Mt. Tamatamansakir, 1,100 ft., rain forest, June 22, 1949, *Glassman* 2323 (US), frequent.

Palaus, Yap, Guam, Saipan; New Guinea, Australia, Polynesia.

**Scleria merrillii** Palla, Allg. Bot. Zeitschr. 17, Beil.: 8, 1911.—Kukenth., Engl. Bot. Jahrb. 59: 10, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 282, 1935.—Hosokawa, Kudoa 5: 86, 1937.—Ohwi, Jour. Jap. Bot. 18: 138, 1942.

Palaus, Guam; Philippines (type).

**Scleria multifoliata** Boeck., Linnaea 38: 510, 1874.—Kukenth., Engl. Bot. Jahrb. 59: 9, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 282, 1935.—Hosokawa, Kudoa 5: 87, 1937.

Palaus.

**Thoracostachyum pandanophyllum** (F. Muell.) Domin, Biblioth. Bot. 85: 484, 1915.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 28: 151-152, 1938.

*Thoracostachyum hypolytroides* (F. Muell.) C. B. Clarke var. *immensum* Kukenth., Engl. Bot. Jahrb. 59: 8, 1924.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 282, 1935.—Ohwi, Jour. Jap. Bot. 18: 137, 1942.

*Thoracostachyum pandanophyllum* (F. Muell.) Domin var. *immensum* (Kukenth.) Hosokawa, Kudoa 5: 87, 1937; Nat. Hist. Soc. Formosa, Trans. 28: 152, 1938.

*Thoracostachyum pacificum* Hosokawa, Nat. Hist. Soc. Formosa, Trans. 32: 6-7, 1942.

No locality given, July 1931, *Kanehira* 1673 (BM); Nipit-One, Aug. 16, 1933, *Hosokawa* 5816 (US); Mt. Nanalaut, 2,200 ft., rain forest, 4-5 ft. tall, Aug. 17, 1949, *Glassman* 2882 (US), abundant, inflorescence pale yellow.

Native name, *pohkee*; *pohge* (of Kanehira). Leaves are used for healing infections. Palaus; Malaya to Australia.

#### GRAMINEAE

**Andropogon glaber** Roxb., Fl. Ind. 1: 271, 1820.

Vicinity of Colonia, roadside, July 2, 1949, *Glassman* 2406 (US), common. Native name, *reh-inta*. Yap; Malaysia.

**Axonopus compressus** (Sw.) Beauv., Ess. Agrost., 12, 1812.—Ohwi, Bot. Mag. Tokyo 55: 547, 1941.



Agricultural Experiment Station grounds, in road and hard-packed soil, July 2, 1949, *Glassman 2426* (US).

Native name, *reh-maikol*. Kusaie. Pantropical.

This species is a pioneer in disturbed areas, and forms a dense cover in coconut groves.

**Bambusa vulgaris** Schrad. apud Wendl., Coll. Pl. 2: 26, pl. 47, 1808.—Kanehira, Bot. Mag. Tokyo 45: 273, 1931; Dept. Agric. Kyushu Imp. Univ., Jour. 4: 267, 1935.—Hosokawa, Jour. Soc. Trop. Agric. 7: 324, 1935; Kudoa 5: 81, 1937.

Native name *pah-ree*. Pantropical in cultivation.

**Cenchrus echinatus** L., Sp. Pl., 1050, 1753.

Mt. Peipalap, 600-800 ft., roadside, July 12, 1949, *Glassman 2517* (US), frequent.

Pantropical.

**Centotheca lappacea** Desv., Soc. Philom. Paris, Nouv. Bull. 2: 189, 1810.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 184, 1901.

*Centotheca latifolia* (Osbeck) Trin., Fund. Agrost., 141, 1820.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 267, 1935.—Hosokawa, Jour. Soc. Trop. Agric. 7: 323, 1935; Kudoa 5: 81, 1937.—Ohwi, Bot. Mag. Tokyo 55: 539, 1941.

Metalanim, 100 m., July 1931, *Kanehira 1692* (NY); Anapeng-pa, Feb. 6, 1936, *Takamatsu 729* (BM); Mt. Peipalap, 400 ft., woodland, June 22, 1949, *Glassman 2308* (US).

Old World tropics.

**Chrysopogon aciculatus** (Retz.) Trin., Fund. Agrost., 188, 1820.

*Andropogon aciculatus* Retz., Observ. Bot. 5: 22, 1789.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 172, 1901.

*Rhaphis aciculatus* (Retz.) Honda, Bot. Mag. Tokyo 40: 103, 1926.—Hosokawa, Jour. Soc. Trop. Agric. 7: 313, 1935; Kudoa 5: 84, 1937.

*Ledermann 13588a* (BM).

Native name, *reh-takai*. Old World tropics.

**Coix lachryma-jobi** L., Sp. Pl., 972, 1753.

Vicinity of Colonia, along marsh, July 2, 1949, *Glassman 2412* (US), frequent.

Old World tropics.

**Cynodon dactylon** (L.) Pers., Syn. Pl. 1: 85, 1805.—Hosokawa, Jour. Soc. Trop. Agric. 7: 324, 1935.

Planted. Pantropical.

**Cyrtococcum patens** (L.) A. Camus, Mus. Hist. Nat. Paris, Bull. 27: 118, 1921.—Ohwi, Bot. Mag. Tokyo 55: 545, 1941.

Mt. Poaipoi, 500 ft., open area, July 8, 1949, *Glassman 2472* (US), common; Mt. Tolotom, 300 ft., cut over area, Aug. 11, 1949, *Glassman 2836* (US).

Native names, *solmaleh*, *reh-maikol*. This plant is used for curing dysentery. Palau; China to India and Malaysia.

**Dactyloctenium aegyptium** (L.) Richt., Pl. Eur. 1: 68, 1890.—Hosokawa, Jour. Soc. Trop. Agric. 7: 324, 1935.

Mt. Peipalap, 800 ft., grassy area, July 12, 1949, *Glassman 2515* (US), frequent.

Warmer parts of both hemispheres.

**Digitaria chinensis** Hornem., Hort. Hafn. Suppl., 8, 1819.—Ohwi, Bot. Mag. Tokyo 55: 542, 1941.

Langar Islet, July 1, 1949, *Glassman 2395a* (US); 2 miles south of Colonia, roadside, July 5, 1949, *Glassman 2439* (US), frequent.

Palau; India to Japan, Philippines, East Indies and Polynesia.

**Digitaria longiflora** (Retz.) Pers., Syn. Pl. 1: 85, 1805.

*Syntherisma longiflora* (Retz.) Skeels, U. S. Dept. Agric., Bur. Pl. Ind., Bull. 261: 30, 1912.—Hosokawa, Nat. Hist. Soc. Formosa, Trans. 24: 200, 1934.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4: 274, 1935.—Hosokawa, Jour. Soc. Trop. Agric. 7: 314, 1935; *Kudoa* 5: 84, 1937.

Warmer parts of Old World.

**Digitaria pruriens** Buse, Miq. Pl. Jungh., 379, 1854.—Ohwi, Bot. Mag. Tokyo 55: 542, 1941.

India to New Guinea and the Hawaiian Islands.

**Digitaria sanguinalis** (L.) Scop., Fl. Carn., ed. 2, 1: 52, 1772.

*Panicum sanguinale* L., Sp. Pl., 57, 1753.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 176, 1901.

*Syntherisma sanguinalis* (L.) Dulac, Fl. Haut. Pyr., 77, 1867.—Hosokawa, Jour. Soc. Trop. Agric. 7: 315, 1935; *Kudoa* 5: 84, 1937.

*Digitaria adscendens* (H. B. K.) Henr., Blumea 1: 92, 1934.—Ohwi, Bot. Mag. Tokyo 55: 542, 1941.

Langar Islet, along strand, July 1, 1949, *Glassman 2395* (US).

Warmer parts of both hemispheres.

**Echinochloa colonum** (L.) Link, Hort. Bot. Berol. 2: 209, 1833.—Ohwi, Bot. Mag. Tokyo 55: 545, 1941.



Agricultural Experiment Station grounds, roadside, July 2, 1949, *Glassman 2427* (US).

Warmer parts of both hemispheres.

Spikelets in typical specimens are 2.5-3 mm. long. In above specimen, spikelets are only 2 mm. in length.

**Eleusine indica** (L.) Gaertn., *Fruct. et Semin. Pl.* 1: 8, 1788.—Hosokawa, *Jour. Soc. Trop. Agric.* 7: 324, 1935.

Salabuk, in moist field, Feb. 10, 1936, *Takamatsu 606* (BM).

Native name, *reh-takai*. Warmer parts of both hemispheres.

**Eragrostis amabilis** (L.) Wight and Arn. ex Hook. and Arn., *Bot. Beechey Voy.* 251, 1841.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 269, 1935.—Ohwi, *Bot. Mag. Tokyo* 55: 537, 1941.

*Ledermann 13510* (BM); Colonia, sandy soil near seashore, Mar. 10, 1936, *Takamatsu 805* (BM); Agricultural Experiment Station grounds, roadside, July 2, 1949, *Glassman 2420, 2421* (US), frequent; same data, Aug. 15, 1949, *Glassman 2868* (US).

Native name, *shoh-maleh*. Pantropical.

**Isachne carolinensis** Ohwi, *Bot. Mag. Tokyo* 55: 540, 1941.

*Isachne firmula* of Hosokawa, *Jour. Soc. Trop. Agric.* 7: 317, 1935; Kudoa 5: 82, 1937; not Buse, 1851.

Ninani, Aug. 12, 1933, *Hosokawa 5666* (BM); Mt. Nanalaut, 1,800 ft., on slopes of open area, June 28, 1949, *Glassman 2366* (US).

Endemic.

*Glassman 2366* fits the original description of this species, except that the leaves are longer and broader and the glumes are lanceolate rather than ovate. This species is closely related to *I. commelinifolia* Warb., but in the latter species the first glume is twice as broad as the second. In *I. schmidtii* Hack., which *I. carolinensis* also resembles, the spikelets are smaller and the glumes are less scabrous and more hispid on the tips and margins.

**Isachne confusa** Ohwi, *Tokyo Sci. Mus., Bull.* 18: 14, 1947.

*Isachne rigida* Nees apud Steud., *Syn. Pl. Glum.* 1: 95, 1854.—Hosokawa, *Jour. Soc. Trop. Agric.* 7: 317, 1935; Kudoa 5: 82, 1937.

*Isachne rhignon* (Steud.) Ohwi, *Bot. Mag. Tokyo* 55: 541, 1941.

Malayan region.

**Isachne ponapensis** Hosokawa, *Nat. Hist. Soc. Formosa, Trans.* 24: 200, 1934.—Kanehira, *Dept. Agric. Kyushu Imp. Univ., Jour.* 4: 270, 1935.—Ohwi, *Bot. Mag. Tokyo* 55: 540, 1941.

*Isachne globosa* of Hosokawa, *Jour. Soc. Trop. Agric.* 7: 317, 1935; Kudoa 5: 82, 1937; not (Thunb.) O. K., 1891.

Spikelets 2-2.5 mm. long, male florets pubescent, sessile, female florets sericeous-villous, pedicels 1 mm. long; branchlets of the panicle somewhat pubescent. *I. globosa*, which this species resembles, is differentiated by the glabrous florets, glabrous panicle branchlets, and glandular bands on the pedicels.

Mt. Seletereh, 1,900 ft., in open area, July 28, 1949, *Glassman 2741* (US) common.

Endemic.



FIGURE 20.—*Isachne purpurascens*, type specimen.



***Isachne purpurascens***, new species (figs. 20, 21).

Plantae annuae, 15-23 cm. alt., culmis erectis, parte superiore ramoso; laminis 12-17 mm. long., 1.5-3 mm. lat., purpurascens, ovatis-lanceolatis, basibus angustioribus, apicibus acuminatis, marginibus serratis-ciliatis, venis prominentibus, scabro-hispidis supra, glabris infra; vaginis inflatis, 3-5 mm. long., sine ligulis; paniculis 6-11 mm. long., ramis paucis, circa tam latis quam longis; nonnullis pedicellis zonis oblongis subflavis glanduliferis; spiculis subglobosis, 1.2-1.4 mm. long., glumis ovatis hirsutis, purpurascens, flosculis paulo inaequalibus, planoconvexis, strigulosis laterarius, aliter puberulentibus.

Plants annual, 15-23 cm. tall, culms erect, upper part branched; blades 12-17 mm. long, 1.5-3 mm. wide, purplish, ovate-lanceolate, narrower at base, tips acuminate, margins serrate-ciliate, veins prominent, scabrous-hispid above, glabrous below; sheaths inflated, 3-5 mm. long, ligule absent; panicle 6-11 mm. long, sparsely branched, about as wide as long, some pedicels with yellowish, oblong, glandular bands; spikelets subglobose, 1.2-1.4 mm. long, glumes ovate, hirsute, purplish, florets slightly unequal in size, plano-convex, strigulose on the sides, puberulent otherwise.

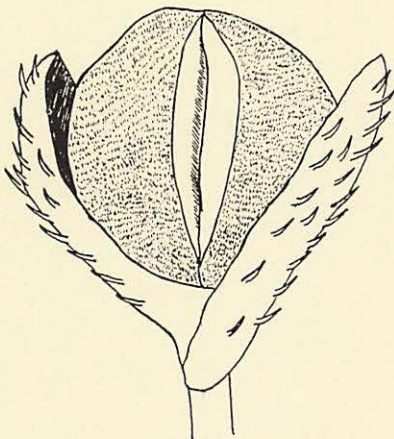


FIGURE 21.—*Isachne purpurascens*, spikelet.

Mt. Ninani, 2,550 ft., Aug. 17, 1949, *Glassman 2888* (US), common on wind-blown peak, associated with dwarf trees. The type is in the United States National Herbarium. The duplicates are in the herbarium of Bishop Museum and the Bebb Herbarium, University of Oklahoma.

This species is most closely related to *I. confusa* Ohwi, but the following characters clearly distinguish the latter from *I. purpurascens*: the spikelets are smaller (1 mm.), the hairs on the glumes are much finer and more numerous, and the plant is more robust.

***Ischaemum chordatum*** (Trin.) Hack. ex Warb., Engl. Bot. Jahrb. 13: 260, 1891 (fig. 11).

Mt. Peipalap, 900 ft., open grassy area, June 22, 1949, *Glassman 2317* (US), abundant.

Native name, *reh-patil*. Carolines and Marianas; ?New Guinea.

- Ischaemum intermedium** Brogn., Voy. Coq. Bot., 73, 1829.—Hosokawa, Jour. Soc. Trop. Agric. 7: 311, 1935; Kudoa 5: 82, 1937.  
*Ischaemum polystachyum* Presl, Reliq. Haenk. 1: 328, 1828.—Ohwi, Bot. Mag. Tokyo 55: 551, 1941.  
 Carolines; Malaya, Java, Philippines, Bismarck Archipelago.
- Ischaemum muticum** L., Sp. Pl., 1049, 1753.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 170, 1901.—Hosokawa, Jour. Soc. Trop. Agric. 7: 311, 1935; Kudoa 5: 82, 1937.  
 India to Formosa and Malaysia.
- Lepturus repens** (Forst. f.) R. Br., Prodr., 207, 1810.—Ohwi, Bot. Mag. Tokyo 55: 540, 1941.  
 Micronesia; Ceylon to Australia.
- Microstegium glabratum** (Trin.) A. Camus, Soc. Linn. Lyon, Ann., new ser. 68: 201, 1921.—Ohwi, Bot. Mag. Tokyo 55: 549, 1941.  
 U District, secondary growth area, July 28, 1949, *Glassman 2723* (US), common.  
 Kusaie, Palaus, Yap; Fiji, Societies, New Caledonia.
- Microstegium spectabile** (Trin.) A. Camus, Soc. Linn. Lyon, Ann., new ser. 68: 200, 1921.—Hosokawa, Jour. Soc. Trop. Agric. 7: 310, 1935; Kudoa 5: 82, 1937.—Ohwi, Bot. Mag. Tokyo 55: 549, 1941.  
 Carolines.
- Microstegium spectabile** (Trin.) forma **cryptochaetum** Ohwi, Bot. Mag. Tokyo 55: 550, 1941.  
 Endemic.
- Miscanthus floridulus** (Labill.) Warb. ex Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 166, 1901.  
*Miscanthus japonicus* (Thunb.) Anderss., Ofv. K. sven.-vet. Akad., Forhandl. 12: 166, 1855.—Hosokawa, Jour. Soc. Trop. Agric. 7: 310, 1935; Kudoa 5: 82-83, 1937.—Ohwi, Bot. Mag. Tokyo 55: 549, 1941.  
 Mt. Tolotom, 400 ft., tree 10 ft. tall, Aug. 11, 1949, *Glassman 2837* (US), common.  
 Native name, *sapalang*. Stems are used as spears in game similar to javelin throwing. Old World tropics.
- Oplismenus compositus** (L.) Beauv., Ess. Agrost., 54, 1812.—Hosokawa, Jour. Soc. Trop. Agric. 7: 319, 1935; Kudoa 5: 83, 1937.—Ohwi, Bot. Mag. Tokyo 55: 547, 1941.  
 Vicinity of Colonia, shaded woodland, July 20, 1949, *Glassman 2579* (US), common.  
 Truk, Kusaie, Saipan; Old World tropics.



- Oplismenus imbecillis** (R. Br.) Roem. and Schult., Syst. Veg. 2: 487, 1817.  
*Oplismenus undulatifolius* (Arduin.) Roem. and Schult. var. *imbecillis*  
 (R. Br.) Hack., Gov. Lab. Pub. Manila 35: 81, 1906.—Ohwi, Bot.  
 Mag. Tokyo 55: 546, 1941.  
 Mt. Tolotom, 1,200 ft., open area, Aug. 11, 1949, *Glassman 2843* (US),  
 occasional.  
 Palaus; New Holland.
- Oryza sativa** L., Sp. Pl., 333, 1753.—Hosokawa, Jour. Soc. Trop. Agric. 7:  
 320, 1935.  
 Pantropical in cultivation.
- Panicum maximum** Jacq., Coll. Bot. 1: 76, 1786.  
 Vicinity of Colonia, roadside, July 9, 1949, *Glassman 2506* (US), occa-  
 sional.  
 Palaus, Guam; native of Africa.
- Paspalum auriculatum** Presl, Reliq. Haenk. 1: 217, 1828.—Ohwi, Bot. Mag.  
 Tokyo 55: 545, 1941.  
 Yap.
- Paspalum cartilagineum** Presl, Reliq. Haenk. 1: 216, 1828.  
 Two miles south of Colonia, roadside, July 5, 1949, *Glassman 2438* (US),  
 frequent.  
 Old World tropics.
- Paspalum conjugatum** Berg., Act. Helvet. Phys. Math. 7: 129, pl. 8, 1762.—  
 Hosokawa, Jour. Soc. Trop. Agric. 7: 315, 1935; Kudoa 5: 83, 1937.  
 Nanuwe, Feb. 26, 1936, *Takamatsu 1010* (BM), common; vicinity of  
 Colonia, shaded woodland, July 20, 1949, *Glassman 2579a* (US), common.  
 Native name, *reh-n-wai*. Pantropical; type from Dutch Guiana.
- Paspalum longifolium** Roxb., Fl. Ind. 1: 283, 1820.—Hosokawa, Nat. Hist.  
 Soc. Formosa, Trans. 24: 201, 1934; Jour. Soc. Trop. Agric. 7: 316, 1935;  
 Kudoa 5: 83, 1937.  
 Palaus; Old World tropics.
- Paspalum orbiculare** Forst. f., Prodr., 7, 1786.  
 Param, Feb. 8, 1936, *Takamatsu 629* (BM); Sapalap, Metalanim District,  
 4-5 ft. tall, in marsh, Aug. 2, 1949, *Glassman 2764* (US), common.  
 Native name, *reh-inta*. This plant is used for increasing the appetite of  
 young children, and for relieving babies' coughs.  
 Old World tropics.
- Paspalum scrobiculatum** L., Mant. Pl. 1: 29, 1767.—Hosokawa, Jour. Soc.  
 Trop. Agric. 7: 316, 1935; Kudoa 5: 83, 1937.  
 Old World tropics.

**Paspalum vaginatum** Sw., Pl. Veg. Ind. Occidentalem, 21, 1788.—Hosokawa, Jour. Soc. Trop. Agric. 7: 316, 1935; Kudoa 5: 84, 1937.

Nanpil, along Filenkiup River, Aug. 18, 1949, *Glassman 2898* (US), frequent.

Native name, *timoor*. Plant parts are used to check diarrhoea. Kusaie; pantropical, type from Jamaica.

**Pennisetum purpureum** Schumach., Beskr. Guin. Pl., 64, 1827.—Ohwi, Bot. Mag. Tokyo 55: 548, 1941.

Oa, Mar. 2, 1936, *Takamatsu 907* (BM); Agricultural Experiment Station grounds, 10-15 ft. tall, July 13, 1949, *Glassman 2520*; vicinity of Colonia, roadside, July 20, 1949, *Glassman 2580* (US).

Native name, *puk-soh*. Tropics of both hemispheres (native of Africa).

**Phragmites karka** (Retz.) Trin. ex Steud., Nomencl. Bot. 2: 324, 1841.—Hosokawa, Jour. Soc. Trop. Agric. 7: 322, 1935; Kudoa 5: 84, 1937.

*Phragmites roxburghii* Steud., Nomencl. Bot. 2: 324, 1841.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 183-184, 1901.

Mt. Tolotom, Aug. 13, 1933, *Hosokawa 5775* (BM); vicinity of Colonia, marshy area, July 9, 1949, *Glassman 2507* (US); Net District, along Kamar River, 4-5 ft. tall, Aug. 3, 1949, *Glassman 2770* (US), abundant.

Native names, *rau*; *liura* (of Fosberg). A steaming infusion of the leaves is inhaled through a grass stem to relieve headaches. Paleotropics.

**Saccharum officinarum** L., Sp. Pl., 54, 1753.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 166, 1901.

Native name, *seu*. The natives recognize 11 varieties of sugar cane: *seu-foot*, *seu-n-wai*, *seu-n-tuh*, *seu-n-air*, *seu-n-palau*, *seu-n-japan*, *seu-n-okonee*, *seu-wahlak*, *seu-n-formosa*, *kahlak*, and *rohahn-pohk*. Pantropical in cultivation.

**Saccharum spontaneum** L., Mant. Pl. 2: 183, 1771.

Vicinity of Colonia, abundant in cutover areas, 10-20 ft. tall, July 3, 1949, *Glassman 2434* (US).

Native name, *ahlec*. Buds of this plant are chewed as a cure for tetanus, and leaves are used for treating wounds inflicted by scorpion fish. Distance runners chew the stem of this plant in order to increase their endurance. Palau; tropical Asia to Polynesia.

**Sorghum halepense** (L.) Pers., Syn. Pl. 1: 101, 1805.

Colonia, waste places, Aug. 20, 1949, *Glassman 2909* (US), common.

Warmer parts of both hemispheres.



**Zea mays** L., Sp. Pl., 971, 1753.—Kanehira, Dept. Agric. Kyushu Imp. Univ., Jour. 4:275, 1935.

Temperate and tropical regions in cultivation.

**Zoysia matrella** (L.) Merr., Philippine Jour. Sci. Bot. 7:230, 1912.—Hosokawa, Jour. Soc. Trop. Agric. 7:313, 1935.

*Zoysia pungens* Willd., Ges. Nat. Freunde Berlin, Neue Schrift. 3:441, 1801.—Schum. and Lauterb., Fl. deutsch. Schutzg. Südsee, 174, 1901.

Planted. Yap; tropical Asia and Africa through Malaya to Australia and Polynesia (native of India).

**Zoysia tenuifolia** Willd. apud Trin., Acad. St. Petersburg., Sci. Nat., Mem. VI, 2:96, 1836.

Agricultural Experiment Station grounds, July 2, 1949, *Glassman 2417* (US), planted and escaped, forms low mats.

Saipan; introduced into Florida and southern California. Type from the Mascarene Islands.

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