

# An Enumeration of the Plants of Batan Island, N. Philippines

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In November 1964 it was my privilege to botanize on two islands north of Luzon, namely Batan Island in the Batanes and Camiguin Island in the Babuyan group. I was a member of a cooperative, joint biological expedition from Kagoshima University in Japan and the National Museum in Manila, Philippine Islands. In company with Mr. M. Sato, a botany student of my university, and other workers, we first visited the National Museum to make arrangements and to obtain assistance for this expedition. Subsequently we spent eight days on Batan Island and four on Camiguin, collecting 1054 numbers totaling 2122 specimens, thus obtaining a fairly complete representation of their flora. The present paper is an enumeration of our collections.

Previous to our expedition several collectors from the former Bureau of Science in Manila have made botanical collections in these islands. The first was E. Fenix who spent most of June and July 1907 in this area collecting on Y'ami, Batan, Sabtan, Babuyan, and Camiguin. Among the species named for him are *Radermachera fenicis* Merr., *Begonia fenicis* Merr. and *Cyathea fenicis* Copel. His collections were mainly studied by E. D. Merrill. In June of the same year the prominent zoologist E. A. Mearns added a few specimens from Batan. The next expedition was that of M. Ramos in April and May, 1930. *Dryopteris ramosii* Christ and other Philippine species have been named for him.

Batan Island, at 20° 26' N. lat., 121° 57' E. long. is the second largest of the group of 11 islands comprising the Batanes. It lies about 250 km. north of Luzon Island and 140 km. southeast of South Cape, Formosa or of Botel Tobago just east of that point. The land area is about 63 square km. and the surrounding shore line is 47 km. long. The terrain is rather mountainous so that most of the farms are on hillsides, the area for paddy field being very scarce. The hillsides are mainly utilized for grazing and for cultivation of yams, *Dioscorea esculenta* and *D. alata*, which are among the most important foods of the inhabitants. There are no large rivers, but only small streams, which are dry during the greater part of the year. The coast is mostly fringed with high, rocky cliffs so there are no docks for large commercial ships.

No geological survey of the island has been seen. The entire area, except in the north, consists of deposits of Tertiary sandstone, conglomerate and slate. At the northern end the volcano, Mt. Iraya, 1008 m. high, the highest peak in the Batan Islands, has been extruded above this Tertiary foundation. Its upper part above 800 m. elevation is densely covered with *Miscanthus sinensis* var. *condensatus*, this suggesting that a relatively recent eruption has occurred. In the middle and southern parts of the islands are found uplifted coral limestone formations reaching 400 m. elevation. These may belong to the late or middle Pleistocene.

The climate is purely tropical. At Basco of Batan Island meteorological data were recorded from 1927-1937, as shown in the following table.

Table showing the monthly distributions of temperature in °C

Localities	Months												Mean annual
	1	2	3	4	5	6	7	8	9	10	11	12	
Basco	22.3	22.7	23.7	25.7	27.6	28.4	28.2	27.9	27.5	26.3	24.6	23.1	25.8
Luzon { Aparri	23.2	23.8	25.0	26.8	28.0	28.6	28.0	27.9	27.5	26.4	25.2	23.9	26.2
{ Baguio	16.6	16.9	18.0	18.8	18.8	18.4	17.9	17.6	17.9	17.9	17.7	17.3	17.8
{ Manila	24.8	25.3	26.6	28.1	28.4	27.8	27.0	27.0	26.8	26.6	25.8	25.1	26.6

Table showing the monthly distributions of rainfall in mm.

Localities	Months												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Basco	255	105	143	63	226	226	338	456	398	428	390	311	3338
Luzon { Aparri	147	75	64	38	134	146	217	211	288	432	357	202	2311
{ Baguio	17	23	40	127	371	335	1091	973	546	374	201	55	4153
{ Manila	25	12	18	32	130	255	431	420	362	195	144	63	2085

In my collecting work I was attended by the native assistants F. Mercado and A. Zabala. For identification of a few species I am grateful to Dr. E. H. Walker of the Smithsonian Institution. My thanks are also due to Dr. K. Iwatsuki and Dr. M. Tagawa of Kyoto University for the pteridophytes. Furthermore, I am greatly indebted to Dr. C. Tanaka of the Ôsaka Prefectural University for the *Citrus*. Finally, I wish to thank Dr. J. Ohwi of the National Science Museum in Tokyo for his assistance in identifying the specimens of *Digitaria*.

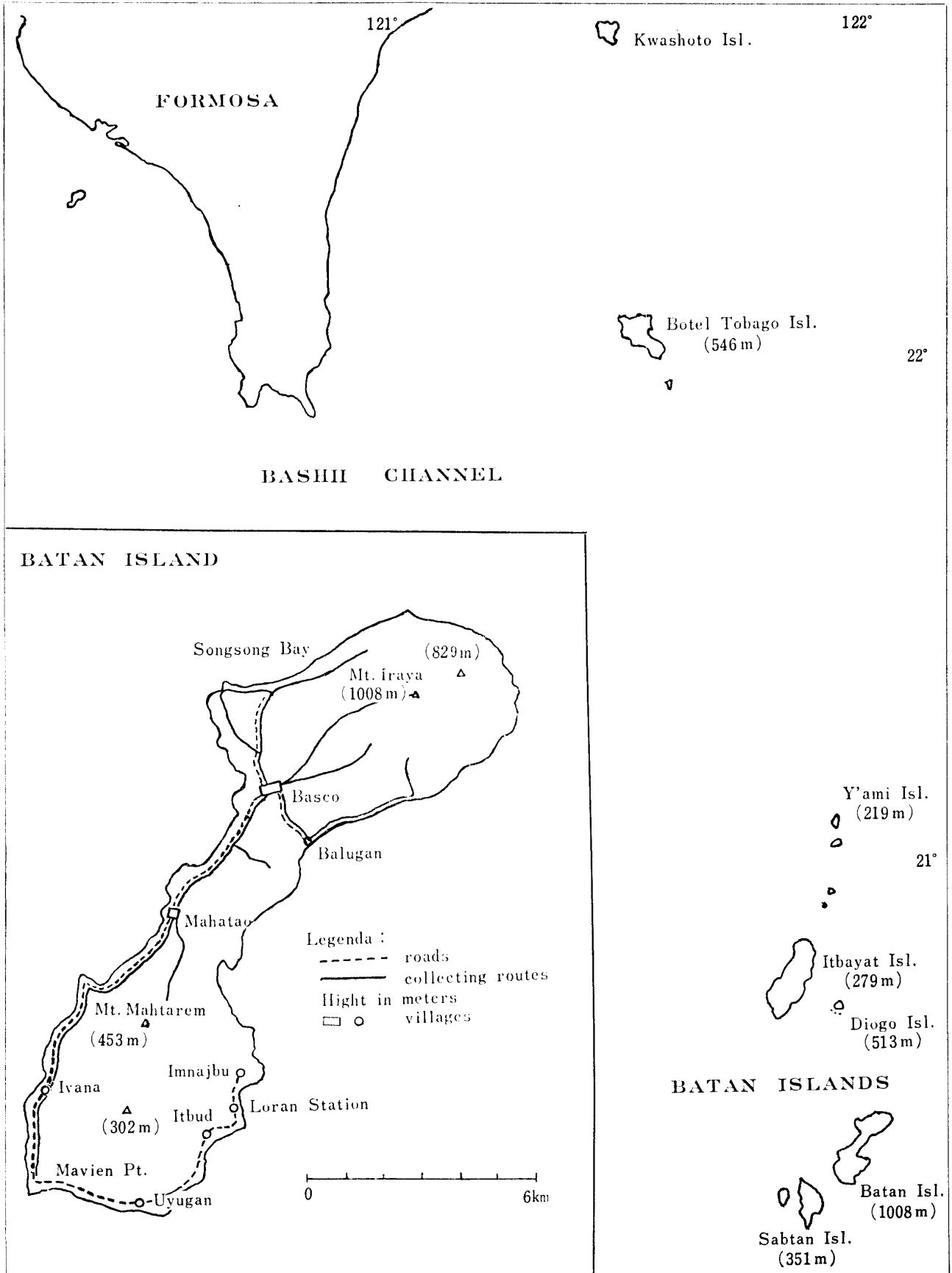
Notes: An asterisk\* designate a species observed, but not collected. A circle ○ indicates a collected species, the specimen of which was lost through decay in the zinc box, through lack of adequate alcohol for its preservation pending drying operations. The numbers after the botanical names are my field collecting numbers. The designations v. a, a, f, o, r, and v.r. in parentheses ( ) after the field numbers stand for very abundant, abundant, frequent, occasional, rare, and very rare, respectively. They give some indication of the specie's abundance according to A. G. Tansley<sup>1</sup>.

### Vegetation

Songsong Bay district.

Littoral thicket. First stratum (10-15 m. high): *Terminalia catappa* (f), *Calophyllum inophyllum* (r), *Artocarpus altilis* (f), *Pometia pinnata* (f), *Ficus stipulosa* (f), *Trema orientalis* (r), *Pterocarpus indicus* (r), *Erythrina variegata* var. *orientalis* (r). *Pongamia pinnata* (r). Second stratum: (3-10 m. high.) *Aglaiia elliptifolia* (a), *Ficus septica* (f), *Diospyros maritima* (f), *Homalanthus fastuosus* (f), *Glochidion lanceolatum* (f), *Litsea glutinosa* (f), *Morus australis* (r), *Diospyros ferra* var. *buxifolia* (r), *Bischoffia javanica* (r), *Areca catechu* var. *bata-nensis* (r), *Clerodendron trichotomum* var. *esculentum* (f), *Ardisia squamulosa* (f), *Diospyros discolor* (r), *Morinda citrifolia* (f), *Semecarpus gigantifolia* (r), *Champereia manilana* (f), *Clao-*

1. A. G. Tansley and T. E. Chip: Aims and methods in the study of vegetation (1926) 10



*xylon brachyandrum* (f), *Gonocaryum calleyanum* (r), *Antidesma pentandrum* var. *barbatum* (r), *Macaranga tanarius* (r), *Hibiscus tiliaceus* (r), *Clerodendron inerme* (f), *Leea manillensis* (r), *Leea philippinensis* (f), *Planchonella obovata* (v. r), *Gelonium glomeratum* (v. r), *Euonymus cochinchinensis* (v. r.), lianes: *Wattakaka volubilis* (a), *Toxocarpus batanensis* (f), *Cynanchum liukiense* (f), *Paederia scandens* (f), *Parsonsia helicandra* (f), *Ipomoea indica* (f), *Capparis lanceolaris* (r), *Capparis zeylanica* (r), *Piper nigrum* (f), *Piper* spp. (f), *Pueraria lobata* (f), *Flagellaria indica* (r), *Epipremniopsis hugeliana* (f), *Stephania japonica* (f), *Bryonopsis laciniosa* (f), *Wedelia biflora* (f), forest floor: *Geophila herbacea* (v. r), *Ruellia repens* (v. r). Littoral rocky cliff: *Carex sociata* (v. r), *Liriope nuscari* (r), *Vernonia maritima* (f), *Euphorbia atoto* (r), *Hedyotis biflora* (f), *Indigofera hendecaphylla* (f), *Wikstroemia retusa* (f), *Fimbristylis cymosa* ssp. *umbellato-capitata*. Strand: *Ipomoea pes-caprae* (v. a), *Pandanus tectorius* (a), *Vitex trifolia* ssp. *litoralis* (a), *Cassytha filiformis* (f). Lowland thicket at about 100 m. altitudes: *Boerlagiodendron pectinatum* (r), *Persea thunbergii* (f), *Ficus stipulosa* (f), *Ficus longipedunculata* (r), *Erythrina variegata* var. *orientalis* (r), *Ficus lum caudatifolia* (r), *Cyathea lepifera* (f), *Citrus mitis* (r), *Elaeocarpus multiflorus* (r), *Zanthoxyailanthoids* (r), *Villebrunnea trinervis* (f). etc., lianes: *Smilax bracteata* (r), *Elaeagnus philippinensis* (r), *Ficus megacarpa* (r) *Pothoideum lobbianum* (f), etc.

Littoral cliff of the eastern side of Mt. Iraya (north of Bulgan). *Artemisia japonica* (f), *Crepidiastrum lanceolatum* (a), *Coleus formosanus* (f), *Gynula elliptica* (f), *Hedyotis biflora* (f) *Miscanthus sinensis* var. *condensatus* (r), *Phaseolus minimus* (r), *Indigofera trifoliata* (f), *Fimbristylis cymosa* ssp. *umbellato-capitata* (f), *F. dichotoma* ssp. *boninensis* (f), *Vigna marina* (f), *Wedelia biflora* (f), *Wikstroemia retusa* (f), *Leucas mollissima* (f), *Zoisia matrella* (a), *Galactia tashiroi* (v. r), *Abrus precatorius* (r).

Lowland thicket in the valley behind Mahatao. First stratum (about 10-20 m. high): *Laportea batanensis* (a), *Ficus stipulata* (f), *Celtis philippensis* (r), *Artocarpus altilis* (f), *Artocarpus lanceolata* (r), *Pometia pinnata* (f), *Cedrela calanthus* (r), *Premna obtusifolia* (f), *Premna nauseosa* (r), *Vitex quinata* (r), *Cocos nucifera* (f), *Ficus nuda* (r), *Ficus garciae* (r), *Ficus vasculosa* (f), *Ficus ampelos* (r), *Albizia retusa* (r), *Linociera coriacea* (r), *Murraya crenulata* (f), *Micromelum minutum* (f), *Zanthoxylum integrifolium* (r), *Drypetes littoralis* (r), *Neotrewia cumingii* (v. r), *Turpinia sambucifolia* (r), *Glochidion lanceolatum* (f), *Cyathea lepifera* (f), *Canthium gynochthodes* (r), *Pipturus arboreescens* (f), *Tarenna incerta* (r), *Dasy-maschalon clussiflorum*, *Syzygium kusukusense* (r), *Melicope triphylla* (f), *Leucocyke quadriner-via* (r), *Allophylus timorensis* (f). Second stratum: *Maesa denticulata* (f), *Tarenna kotoensis* (r), *Psychotria manillensis* (f), *Acalypha angatensis* (f.), *Acalypha cardiophylla* (f). Forest floor: *Elatostema edule* (f), *Elatostematoides manillense* (f), *Angiopteris palmiformis* (f), *Athyrium japonicum* (f), *Alpinia flabellata* (f), *Selaginella philippinensis* (f), *Centotheca lappacea* (f), *Aneilema vitiense* var. *petiolata* (f), *Polia sorzogonensis* (r), *Cyrtococcum accrescens* (f), *Cyrtococcum patens* (f), *Microstegium ciliatum* (f), *Bolbitis heteroclita* (f), *Cyclosorus parasiticus* (f), *Cyclosorus subpubescens* (f), *Cyclosorus latipinna* (f), *Diplazium esculentum* (f), *Ctenitopsis dissecta* (f), *Pteris tripartita* (f), *Pteris ensiformis* (f), *Crepidopteris humilis* (f), *Cyathula prostrata* (r), *Ophiorrhiza kuroiwai* (f). Lianes: *Cissus adnata* (f), *Ampelopsis brevipedunculata* var. *hancei* (r), *Elaeagnus philippinensis* (f), *Ipomoea congesta* (f), *Strictocardia tilifolia* (r), *Stephania japonica* (f), *Batania insignis* (r), *Canavallia microcarpa* (r), *Piper* sp. (f), *Lygodium circinatum* (f), *Lygodium japonicum* var. *microstachyum* (r), *Dioscorea cumingii* var. *ramosii* (r), *Smythea pacifica* (r), *Trichosanthes quinqueangularis* (r), *Mikania scandens* (f), *Flagellaria indica* (r).

Littoral road on the rocky cliff between Basco and Mahatao. *Artemisia japonica* (f), *Crepidiastrum lanceolatum* (f), *Glossogyne tenuifolia* (r), *Ficus microcarpa* (r), *Wikstroemia retusa* (f), *Sphenomeris chusana* var. *littoralis* (f), *Ficus swinhoei* (f), *F. pedunculosa* (r), *Pemphis acidosa* (r), *Cleome rutidosperma* (f), *Sedum formosanum* (r), *Portulaca pachyrrhiza* (r), *Portulaca quadrifida* (r), *Boehmeria villosa* (f), *Begonia fenicis* (f), *Peucedanum japonicum* (v. r), *Lysimachia mauritiana* (r), *Indigofera trifoliata* (r), *Gymnosporia spinosa* (r), *Leucas mollissima* (f), *Lepturus repens* (f), *Zoisia matrella* (a), *Digitaria henryi* (f), *Arundo formosana* (r), *Capillipedium kwashotense* (f), *Dianella nemorosa* (v. r), *Themeda triandra* (a), *Coleus formosanus* (r), *Hedyotis biflora* (f), *Callicarpa denticulata* (r), *Canscora diffusa* (r), *Ehretia microphylla* (f), *Gynura elliptica* (r), *Fimbristylis cymosa* ssp. *umbellato-capitata* (f), *Alysicarpus nummularifolius* (f), *Desmodium triflorum* (f), *Christia obcordata* (r), *Phaseolus adenanthus* (r), etc.

Mt. Iraya. Forest on the ridge at alt. 200-500 m. First stratum (about 10-15 m. high): *Clethra philippinensis*, *Litsea perrottetii* (r) *Schefflera octophylla* (v. r), *Astronia ferruginea* (r), *Wendlandia luzonensis* (r), *Persea thunbergii* (r), *Linociera ramiflora* (r), second stratum: *Hydrangea lobbi* (f), *Maesa tenera* (r), *Melastoma membranaceum* (f), *Dracaena angustifolia* (r), epiphytes: *Dendrobium crumentatum* (fls. white), *D. ventricosum* (fls. white), *D. miyakei* (fls. rose), *Ophioderma pendulum* (r), *Asplenium nidus* (r), *Humata trifoliata* (r), *Asplenium laserpitifolium* (r) *Nephrolepis biserrata* (f), *Davallia sorida* (r), lianes: *Stephania merrillii* (r), *Pothoideum lobbianum* (f), *Raphidophora liukiensis* (r), *Schizostachyum textorium* (f). Forest floor: *Cephalomanes oblongifolium* (f), *Selenodesmium obscurum* (f), *Lindsaea davallioides* (f), *Calanthe furcata* (r). Forest at alt. 500-800 m. (mossy forest). First stratum (3-10 m. ht.): *Myrsine philippinensis* (f), *Clethra philippinensis* (f), *Eurya nitida* (r), *Astronia ferruginea* (r), *Geniostoma batanense* (f), *Schefflera odorata* (a), *Freycinetia formosana* (a), *F. williamsii* (f), *Fagraea obovata* (r, occasionally epiphytic), forest floor: *Lasianthus fordii* (v. r), *Ophiorrhiza oblongifolia* (r), *O. kuroiwai* (r), *Argostemma solaniflorum* (f), *Hedyotis radicans* (a), *Curculigo capitulata* (f), *Carex sociata* (a), *Medinilla parvibracteata* (a), *Hydrocotyle javanica* (v. r), *Dryopteris sparsa* (a), *Diplazium doederleinii* (f), *Lindsaea davallioides* (f), *Hetaeria oblongifolia* (f), *Chrysoglossum villosum* (v. r), *Microstylis* sp. (f), *Blechnum egregium* (r), epiphytes: *Meringium denticulatum* (f), *Mecodium badium* (r), *Gonocormus minutus* (a), *Crepidomanes bipunctatum* (a), *Meringium holochilum* (r), *Mecodium polyanthos* (v. r), *Crypsinus iaeniatus* (a), *Grammitis fenicii* (a), *Lycopodium pinifolium* (v. r), *L. fordii* (v. r), *Antrophyum sessilifolium* (r), *Lindsaea yaeyamensis* (f), *Asplenium vulcanicum* (f), *Appendicula fenicii* (r), *Dendrobium miyakei* (f), *Dischidia* aff. *hirsuta* (f), *Hoya odorata* (f). Upper part above alt. 800 m. (*Miscanthus* association). First stratum: *Miscanthus sinensis* var. *condensatus* (v. a). Second stratum: *Diplazium doederleinii* (f), *Dipteris conjugata* (r).

Thicket on the eastern slope of Mt. Iraya at alt. about 50-100 m.: *Pterocarpus indicus* (f), *Boelagiodendron pectinatus* (f), *Neonauclea reticulata* (f), *Villebrunnea trinervis* (a), *Mallotus ricinioides* (a), *Homalium multiflorum* (f), *Pterospermum niveum* (r), *Radermachera fenicis* *Wendlandia luzonensis* (f), *Ficus harlandii* (r), *Ficus garciae* (f), *Melanolepis mutiglandulosa* (r), *Cyathea lepifera*, lianes: *Erythropalum scandens* (r), *Aristolochia tagala* (r), *Stephania japonica* (f), *Deeringia polysperma* (f), *Cynanchum liukiense* (f), *Cyclea insularis* var. *luxurians* (f), *Tylophora hispida* (r).

## ENUMERATION OF THE PLANTS COLLECTED.

## LYCOPODIACEAE

**Lycopodium Fordii** Baker, Fern Allies (1887) 17.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29128 (r). India to S. Japan, new? to the flora of the Philippines.

**Lycopodium pinifolium** Bl., Enum. (1828) 264.

In the mossy forest of Mt. Iraya, alt 700 m., *No.* 29051 (r). Malaysia and New Caledonia.

## SELAGINELLACEAE

**Selaginella ciliaris** (Retz.) Spring in Bull. Acad. Bruxelles **10** (1843) 231.

In the lowland thicket, *No.* 28834, 28976, ? 28601 (r). India to S. China and Formosa, through Malaysia to N. Australia.

**Selaginella delicatula** (Desv. ex Poir.) Alston in Journ. Bot. **70** (1932) 282; Philip. Journ. Sci. **58** (1935) 366-*S. poulzoliana* (Gaud.) Spring in Bull. Acad. Bruxelles **10** (1843) 145.

In the lowland thicket, *No.* 28879, 28973, 28973, 28997, 29039, 29110 (f). India to Indo-China, the Yangtse Valley and southwards Formosa, south to the Philippines, Borneo, and the Moluccas.

**Selaginella moellendorffii** Hieron. in Engl. & Prantl, Nat. Pflanzenfam. **1** (4) (1901) 680.

On the cliff on the slope of Mt. Iraya, alt. 100 m., *No.* 28781, 28873 (r). Yangtse Valley and southward; Formosa, Ryukyus (Yaeyama Islands), Indo-China, and the Philippines.

**Selaginella ramosii** Hieron. in Fedde, Rept. **10** (1911) 52.

In the lowland thicket, *No.* 28601, 28735 (f). Philippines.

## OPHIOGLOSSACEAE

**Ophioderma pendulum** (L.) Pr., Suppl. Tent. Pter. (1845) 56.

In the mossy forest of Mt. Iraya, alt. 500 m., *No.* 29098 (v. r). Old World tropics generally.

## MARATTIACEAE

**Angiopteris palmiformis** (Cavan.) Christ., Dansk. Bot. Arki **3-9** (1937) 30, pl. 3, f. 8-9; Copel., Fern Fl. Philip. **1** (1958) 22.

In the lowland thicket, *No.* 28827, 28899, 29010, 29015 (f). Philippines to Indo-China, Formosa (Isl. Kwasyoto and Isl. Botel Tobago) and the Ryukyus (Is. Yaeyama and Isl. Amami-oshima)

## SCHIZAEACEAE

**Lygodium circinatum** (Burm. f.) Sw., Syn. Fil. (1806) 156.

In the lowland thicket, *No.* 28667, 28880 (f). India to S. China and Malaysia.

**Lygodium japonicum** (Thunb.) Sw. var. **microstachyum** (Desv.) Tard. & C. Chr., Fl. Gen. 1-C (1939) 38.

In the lowland thicket, *No.* 28505, 28582 (f). India to Malaysia and the Ryukyus.

#### HYMENOPHYLLACEAE

**Cephalomanes oblongifolium** Presl, Epim. Bot. (1849) 19, Pl. 10; Copel., 1. c. 78-*C. javanicum* sensu auct non v. d. Bosch.

In the mossy forest of Mt. Iraya, alt. 500 m., *No.* 29125 (f). New Guinea, Philippines, Formosa and the Ryukyus.

**Crepidopteris gracillima** (Copel.) Copel. in Philip. Journ. Sci. 67 (1938) 58; Fern Fl. Philip. 1 (1958) 70.

In the lowland thicket, *No.* 29108 (f). Philippines to Formosa (Botel Tobago) and the S. Ryukyus.

**Crepidopteris humilis** (Forst.) Copel. in Philip. Journ. Sci. 67 (1938) 58; Fern Fl. Philip. 1 (1958) 70.

In the lowland thicket, *No.* 28842, 28975, 28956 (a). Malaysia to Tahiti and the S. Ryukyus.

**Crepidomanes bipunctatum** (Poir.) Copel. in Philip. Journ. Sci. 67 (1938) 59; Fern Fl. Philip. 1 (1958) 42.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29042, 29108 (f). East African Islands, Malay Peninsula to Indo-China, the Philippines, Admiralty Islands, New Zealand, Polynesia.

**Gonocormis minutus** (Bl.) v. d. Bosch, Hymen. Javan. (1861) 7, pl. 3; Copel., Fern Fl. Philip. 1 (1858) 68.

In the mossy forest of Mt. Iraya alt. 700 m., *No.* 29040, 29084 (a). Japan to tropical Asia, Malaysia, Polynesia, Africa.

**Mecodium badium** (Hook. & Grev.) Copel. in Philip. Journ. Sci. 67 (1938) 23; Fern Fl. Philip. 1 (1958) 53.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29101 (r). Hymalayas to New Guinea and S. Japan.

**Mecodium polyanthos** (Sw.) Copel. in Philip. Journ. Sci. 67 (1938) 19; Fern Fl. Philip. 1 (1958) 49.

In the mossy forest of Mt. Iraya, alt. 600 m., *No.* 29045A (r). Pantropic.

**Meringium denticulatum** (Sw.) Copel. in Philip. Journ. Sci. 67 (1938) 42; Fern Fl. Philip. 1 (1958) 42.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29050, 29053 (f). Fiji to Ceylon, Formosa and the Ryukyus.

**Meringium holochilum** (v. d. Bosch) Copel. in Philip. Journ. Sci. 67 (1938) 41; Fern Fl. Philip. 1 (1958) 62.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29041 (r). New Guinea to Sumatra, Philippines, Formosa.

**Nesopteris grandis** (Copel.) in Philip. Journ. Sci. 67 (1938) 77; Fern. Fl. Philip. 1 (1958)

76.

In the lowland thicket, *No.* 28858, 28955 (f). Philippines to Java.**Selenodesmium obscurum** (Bl.) Copel. in *Philip. Journ. Sci.* **67** (1938) 81; *Fern Fl. Philip.* **1** (1958) 79.In the mossy forest of Mt. Iraya, alt. 500 m., *No.* 29045 (f). India to New Guinea and the Ryukyus.

## PTERIDACEAE

**Adiantum caudatum** L., *Mant.* (1771) 308; Copel., *Fern Fl. Philip.* **1** (1958) 161.On the shady stone-wall in Basco, *No.* 29128, 29197 (f). Malaysia to Africa and Formosa.**Adiantum capillus-veneris** L., *Sp. Pl.* (1753) 1096; Copel., l. c. 161.On the shady littoral rocky cliff, *No.* 28570 (r). All warm countries.**Cheilanthes densa** (J. Sm.) Fée, *Genera* (1850-1852) 156; Copel., l. c. 152.On the summit of rocky peak, alt. 200 m., *No.* 28608 (r). Formosa and the Philippines.**Lindsaea davallioides** Bl., *Enum.* (1828) 218; Copel., l. c. 112.In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29105 (f). Malaysia.**Lindsaea yaeyamensis** Tagawa in *Act. Phytotax. Geobot.* **6** (1937) 31.In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29118 (f). S. Ryukyus, Formosa and the Philippines. This may be same with *L. macraeana* Copel. credited to the Batanes Islands.**Microlepia pyramidata** Wall. ex Lacaita in *Journ. Linn. Soc.* **43** (1916) 486-*M. speruncae* sensu Copel., *Fern Fl. Philip.* **1** (1958) 96, p.p., non Moore.In the lowland thicket, *No.* 28702, 29185 (f). India to Malaysia and the S. Ryukyus.**Microlepia strigosa** (Thunb.) Presl, *Epim.* (1849) 95; Copel., l. c. 98.In the lowland thicket, *No.* 28698, 28698A (f). Fiji to Malaysia and Japan.**Pityrogramma calomelanos** (L.) Link, *Handb.* **3** (1833) 20; Copel., *Fern Fl. Philip.* **1** (1958) 158.On the sunny stream bank, *No.* 28966 (r). A native of tropical America, now found in most warm countries.**Pteris ensiformis** Burm., *Fl. Ind.* (1768) 230; Copel., l. c. 131.In the lowland thicket, *No.* 28541, 28611 (f). Samoa to India and S. Japan.**Pteris fauriei** Hieron., *Hedwig.* **55** (1914) 345-*P. rigidula* Copel., *Fern. Fl. Philip.* **1** (1958) 137, syn. nov.In the lowland thicket, *No.* 28699 (f). S. Japan to the Philippines (Batan Island)**Pteris ryukyuensis** Tagawa in *Acta Phytotax. Geobot.* **4** (1935) 204-? *P. cretica* sensu Copel., l. c. 129, p.p. quoad pl. ex Batanes Islands, non L.On the stone-wall in Basco, *No.* 28497, 28611, 28811, 28960, 29154 (f.) S. Japan and the Ryukyus, new to the flora of the Philippines.**Pteris tripartita** Sw., *Schrader's Journ.* II of **1800** (1801) 67; Copel. l. c. 137.In the lowland thicket, *No.* 29179 (f). Malaysia to Polynesia and Africa.**Pteris vittata** L., *Sp. Pl.* (1753) 1074; Copel., l. c. 128.



On the littoral rocky cliff, *No.* 28695 (r). Warm countries of the Old World.

**Sphenomeris chusana** (L.) Copel., Bishop Mus. Bull. **59** (1929) 69; Fern Fl. Philip. **1** (1958) 115, p.p.

On the littoral cliff, *No.* 29091, 29166 (f). Polynesia to Japan and Madagascar.

var. **littoralis** (Tagawa) H. Ito ex Mizushima, Misc. Rept. Inst. Natur. Resources **38** (1955) 115.

On the littoral cliff, *No.* 28553, 28683 (f). S. Japan to S. China and the Philippines.

**Sphenomeris retusa** (Cav.) Maxon in Journ. Washing. Acad. Sci. **3** (1913) 144; Copel., l. c. 115.

On the shady stream bank, *No.* 28806 (f). Philippines and New Guinea.

#### DAVALLIACEAE

**Davallia solida** (Forst.) Sw., Schrader's Journ. II of **1800** (1801) 87; Copel., Fern Fl. Philip. **1** (1958) 173.

In the mossy forest of Mt. Iraya, alt. 500 m., *No.* 28720 (f). Formosa (Botel Tobago) to Malaysia and Polynesia.

**Humata trifoliata** Cavan., Descr. (1802) 273; Copel., l. c. 177.

In the mossy forest of Mt. Iraya, alt. 600 m., *No.* 29127 (r). Ryukyus, Formosa and the Philippines.

**Nephrolepis biserrata** (Sw.) Schott, Gen. Fil. (1834) text to Pl. 3; Copel., l. c. 187.

In the lowland thicket, *No.* 28963, 29162 (f). Pantropic.

**Nephrolepis hirsutula** (Forst.) Presl, Tent. (1836) 79; Copel. l. c. 188.

In the open lowland thicket, *No.* 29106, 29162 (f). Pantropic.

#### CYATHEACEAE

**Cyathea fenicis** Copel. in Philip. Journ. Sci. **3C** (1908) 354; **4C** (1909) 61; Fern Fl. Philip. **2** (1960) 232-Iwatsuki in Acta Phytotax. Geobot. **19** (1963) 134-*Alsophila fujitana* Nakai in Bot. Mag. Tokyo **41** (1927) 72.

In the forest of Mt. Iraya, alt. 100-600 m., *No.* 29062, 29049 (f). Formosa (Botel Tobago) and the Philippines (Batan Island).

**Cyathea lepifera** (J. Sm.) Copel. in Philip. Journ. Sci. **4C** (1909) 40; **56** (1935) 98, Pl. 3, f. 5-7; Fern Fl. Philip. **2** (1960) 228.

In the lowland thicket, *No.* 28881 (f). Bonins?, Ryukyus to the Philippines.

#### ASPIDIACEAE

**Athyrium grammitoides** (Presl) Milde, Bot. Zeit. **29** (1870) 353; Copel. Fern. Fl. Philip. **3** (1960) 385.

In lowland thicket, *No.* 28911, 28959 (f). S. Japan to the Philippines.

**Athyrium japonicum** (Thunb.) Copel. in Philip. Journ. Sci. **3C** (1908) 290; Fern Fl. Philip. **3** (1960) 385.

In the lowland thicket, *No.* 28870, 29001 (f). India to Malaysia and Japan.

**Bolbitis heteroclita** (Presl) Ching in Christ., Suppl. **3** (1934) 48; Copel., Fern Fl. Philip. **2**

- (1960) 257.  
In the lowland thicket, *No.* 28854, 28887, 28889, 29007 (f). India to Polynesia, northwards to the S. Ryukyus.
- Ctenitis eatoni** (O. K.) Ching in Bull. Fan. Mem. Inst. Biolog. **8** (1938) 291.  
On the shady limestone cliff in the lowland thicket, *No.* 28845, 28971 (r).  
S. China to Formosa, the Ryukyus and ? Annam, new to the flora of the Philippines.
- Ctenitopsis dissecta** (Forst.) Ching in Bull. Fan. Mem. Inst. Biol. **8** (1938) 421-*Ctenitis dissecta* (Forst.) H. Ito in Nakai, Nov. Fl. Jap. **4** (1939) 91; Copel., l. c. 286.  
In the lowland thicket, *No.* 28786, 28839, 29192 (f). India to Formosa, tropical Australia and Polynesia.
- Cyclosorus acuminatus** (Houtt.) Nakai in Thunb., Miscel. Papers regard. Jap. Pl. (1935); Copel., l. c. 369-? *C. irayensis* Copel. in Philip. Journ. Sci. **81** (1952) 28; Fern Fl. Philip. **3** (1960) 340.  
In the lowland thicket, *No.* 28531 (f). Japan to Formosa, China and the Philippines.
- Cyclosorus adenophorus** (Christ) Copel., Gen. Fil. (1947) 142; Fern Fl. Philip. **3** (1960) 343.  
In the lowland thicket, *No.* 29081, 29123 (f). Celebes and the Philippines.
- Cyclosorus ? christii** Copel., Fern Fl. Philip. **2** (1960) 362.  
In the lowland thicket, *No.* 29092 (r). Philippines.
- Cyclosorus ? dentataus** (Forsk.) Ching in Bull. Fan. Bot. **8** (1938) 206; Copel., l. c. 337.  
In the lowland thicket, 29093 (r). S. Japan to the Philippines and the other tropics.
- Cyclosorus latipinnus** (Hook.) Tardieu-Blot in Not. Syst. **7** (1938) 73-*C. dentatus* (Forsk.) sensu Copel., l. c. **2** (1960) 377, p.p.  
In the lowland thicket, *No.* 29568 (f). Ceylon, Assam and S. China, southwards to Malaysia.
- Cyclosorus loherianus** (Christ) Copel., Gen. Fil. (1947) 142; Fern Fl. Philip. **2** (1960) 342.  
In the lowland thicket, *No.* 29021 (r). Philippines.
- Cyclosorus nitidulus** (Presl) Copel., Fern. Fl. Philip. **2** (1960) 364.  
In the lowland thicket, *No.* 28789, 28884, 28623, 29016 (r). Philippines.
- Cyclosorus parasiticus** (L.) Farw., Amer. Midl. Natur. **12** (1931) 259.  
In the lowland thicket *No.* 28593, 28823 (f). S. E. Asia
- Cyclosorus subpubescens** (Bl.) Ching in Bull. Fan. Bot. **8** (1938) 211; Copel., l. c. 338.  
In the lowland thicket, *No.* 28951, 29246, 29287 (f). Java to S. Japan.
- Diplazium doederleinii** (Luerss.) Makino in Bot. Mag. Tokyo **13** (1899) 15-*Athyrium irayense* Copel., Fern Fl. Philip. **3** (1960) 399, syn. nov.  
Near the summit of Mt Iraya, alt. 900-1000 m. *No.* 29048 (f). S. Japan to Formosa and the Philippines (Batan Island).
- Diplazium esculentum** (Retz.) Sw., Schrader's Journ. **1801** (1803) 312-*Athyrium esculentum* (Retz.). Copel. in Philip. Journ. Sci. **3C** (1908) 295; Fern Fl. Philip. **3** (1960) 405.  
In the lowland thicket, *No.* 28974, 29134 (f). India to Fiji through Malaysia, northwards to S. Japan.
- Dryopteris sparsa** (Don) O. Kuntze, Rev. Gen. Pl. **2** (1891) 813; Copel., l. c. **2** (1960) 283.  
In the mossy forest of Mt. Iraya, alt. 800 m., *No.* 29055 (f). India to New Guinea

and Japan.

**Elphoglossum** sp. aff. **basilanicum** Copel. in Philip. Journ. Sci. **11** (1916) 41; Fern Fl. Philip. **2** (1960) 277.

Epiphytic in the mossy forest of Mt. Iraya, alt. 800 m., *No.* 29085 (r). Philippines.

**Thelypteris torresiana** (Guad.) K. Iwatsuki in Journ. Jap. Bot. **38** (1963) 314.-*Lastrea torresiana* (Guad.) Moore, Index (1858) 106; Copel., l. c. 320.

In the lowland thicket, *No.* 29183 (f). India to Polynesia and the Ryukyus.

#### BLECHNACEAE

**Blechnum egregium** Copel., Perkins' Fragmenta (1905) 187; Copel., Fern Fl. Philip. **3** (1960) 422.

In the mossy forest of Mt. Iraya, alt. 800 m., *No.* 29115 (r). Philippines.

**Woodwardia orientalis** Sw. var. **formosana** Ros., Hedwig. **56** (1914) 334-*W. orientalis* sensu Copel. l. c. 426, non Sw.

In the thicket of Mt. Iraya, alt. 200 m., *No.* 28799 (r). Japan to Formosa, S. China and the Philippines (Batan Island).

#### ASPLENIACEAE

**Asplenium laserpitifolium** Lamk., Encycl. **2** (1786) 310; Copel., Fern Fl. Philip. **3** (1960) 446.

In the mossy forest of Mt. Iraya, alt. 500 m., *No.* 29088 (r). India to Polynesia, Seychelles and the Ryukyus.

**Asplenium nidus** L., Sp. Pl. (1753) 1079; Copel., l. c. 450.

In the thicket of Mt. Iraya, alt. 100-400 m., *No.* 29080, 29131 (f). Tropical Asia to Polynesia and Africa. Specimens from Batan Island are characterized in having a narrow keel running longitudinally on the center of the underside of lower midrib when dried. This character is also observed in the specimens from the S. Ryukyus.

**Asplenium unilaterale** Lamk., Encycl. **2** (1786) 305; Copel., l. c. 432.

In the thicket of Mt. Iraya, alt. 200 m., *No.* 28851 (f). India to Africa, Polynesia through Malaysia, Japan. The specimen cited above differs from the normal form in having broader obtuse pinnules and approaches to *A. subnormale* Copel.

**Asplenium vulcanicum** Bl., Enum. (1828) 176; Copel., l. c. 440-*A. matsumurae* Christ ex. Matum. in Bot. Mag. Tokyo **24** (1910) 241.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29130 (f). Java to Indo-China, Caroline Islands (Truk), Philippines, Formosa (Botel Tobago).

#### POLYPODIACEAE

**Crypsinus taeniatus** (Sw.) Copel., Genera Fil. (1947) 206; Fern Fl. Philip. **3** (1960) 502-*Polypodium falcato-pinnatum* Hay., Icon. **4** (1914) 247.

In the mossy forest of Mt. Iraya, alt. 700 m., *No.* 29103 (a). Malaysia to Formosa (Botel Tobago).

**Dipteris conjugata** Reinw., Sylloge 2 (1824) 3, pl. 2; Copel., l. c. 455.

Near the summit of Mt. Iraya, alt. 1000 m., No. 29119 (r). Malaysia to Fiji and the S. Ryukyus.

**Microsorium punctatum** (L.) Copel., Univ. Calif. Publ. Bot. 16 (1929) 111; Fern Fl. Philip. 3 (1960) 483.

In the lowland thicket, No. 29029 (r). Old World tropics generally.

**Phymathodes scolopendria** (Burm. f.) Ching, Contrib. Inst. Bot. Nat. Acad. Peiping 2 (1963) 63-*Microsorium scolopendria* (Burm.) Copel., Univ. Calif. Publ. Bot. 16 (1929) 112; Copel., l. c., 477.

In the lowland thicket, No. 28750, 28772, 29018 (f). Tropical Asia to Africa and Polynesia.

**Pyrrosia adnascens** (Sw.) Ching in Bull. Chin. Bot. Soc. 1 (1935) 45; Copel., l. c. 471.

In the lowland thicket, No. 29193A (f). India to Samoa and the Ryukyus.

#### GRAMMITIDACEAE

**Grammitis fenicis** Copel. in Univ. Calif. Publ. Bot. 18 (1942) 224; Fern Fl. Philip. 3 (1960) 516.

In the mossy forest of Mt. Iraya, alt. 700 m., No. 29052 (a). Philippines (Batan Island). This may be nothing but a form of *G. dorsipila* C. Chr. et Tard.

**Antrophyum sessilifolium** (Cavan) Spring, Syst. Veg. 4 (1827) 67; Copel. l. c. 546.

In the thicket of Mt Iraya, alt. 100-700 m., No. 28646, 29096 (f). Philippines.

**Vittaria ensiformis** Sw., Ges. Nat. Fr. Berl. Neu-Schr. 2 (1799) 134, t. 7, f. 1; Copel., l. c. 551.

In the mossy forest of Mt. Iraya, alt. 700 m., No. 29089 (f). Malaysia to Madagascar and Polynesia.

#### ULMACEAE

**Celtis philippensis** Blanco, Fl. Philip. (1837) 197; Merr., Enum. 2 (1923) 32.

In the lowland thicket, No. 28640 (r). Formosa (Botel Tobago and Isl. Kwasyoto) and the Philippines.

**Trema orientalis** (L.) Bl., Mus. Bot. Lugd. Bat. 2 (1856) 62; Merr., l. c. 34.

In the littoral thicket, No. 28836 (r). India, Malaysia, to Australia and the Ryukyus.

#### MORACEAE

**Artocarpus altilis** (Park.) Forsberg in Journ. Washing. Acad. Sci. 31 (1941) 95-*A. communis* Forst., Char. Gen (1776) 101-*A. incisa* var. *blancoi* Elm., Leaf. 2 (1909) 617-*A. treculiana* Elm., Leaf. 2 (1909) 617; Merr. Enum. 2 (1923) 43-*A. blancoi* (Elm.) Merr, l. c. 40. In the lowland thicket, No. 28935 (f). Philippines to Polynesia though Malaysia.

**Artocarpus lamellosa** Blanco, Fl. Philip. (1837) 667-Merr., l. c. 41.

Cultivated in the village of Basco, but may be native to the island, No. 29032 (r). Philippines.

**Artocarpus lanceolata** Trec. in Ann. Sci. Nat. Bot. III, 8 (1847) 121; Merr. l. c. 42.

In the lowland thicket, *No.* 28600, 28989 (r). Formosa (Botel Tobago and S. Cape) and the Philippines.

**Ficus ahernii** Merr. in Philip. Journ. Sci. **18** (1921) 61; Enum. **2** (1923) 44.

Scandent on the tree at alt. 100 m., *No.* 28724 (r). Formosa (Botel Tobago) and the N. Philippines.

**Ficus ampelos** Burm. f., Fl. Ind. (1768) 226, excl. syn.; Merr., l. c. 44.-*F. kingiana* Hemsl. in Hook. f., Icon. Pl. t. 2535 (1899).

In the lowland thicket, *No.* 28780, 28690 (f). Ryukyus to Formosa, Philippines, Moluccas and Sumatra.

**Ficus caudatifolia** Warb. in Perk., Frag. Fl. Philip. (1905) 194; Merr., l. c. 48.-*F. caudatolongifolia* Sata in Journ. Trop. Agric Formos. **6** (1936) 26, syn. nov.

In the thicket of Mt. Iraya, alt. 100 m., *No.* 28846 (r). Formosa (Botel Tobago) and the Philippines.

**Ficus cuningii** Miq in Lond. Journ. Bot. **8** (1848) 232; Merr., l. c. 50.-*F. kusanoi* Hay Mater. Fl. Formos. (1911) 275

In the lowland thicket, *No.* 28712, 28812, 29195 (f). Formosa (Isls. Kwasyoto and Botel Tobago) and the Philippines.

**Ficus garciae** Elm. Leaf. **2** (1908) 550.-*F. konishii* Hay., Mater. Fl. Formos. (1911) 273.-*F. glochidiifolia* Hay., Icon. **8** (1918) 126.

In the lowland thicket, *No.* 29153 (f). Formosa and the Philippines.

**Ficus harlandii** Benth., Fl. Hongk. (1861) 330.-*F. satterthwaiteri* Elm., Leaf. **1** (1906) 119, **2** (1908) 543, **4** (1911) 1264, 1320, **7** (1914) 2392, syn. nov.-*F. miyagii* Koidz. in Bot. Mag. Tokyo **27** (1913) 184, syn. nov.-*F. ochobiensis* Hay., Icon. **7** (1918) 36; **8** (1919) 127, f. 55.-*F. kotoensis* Hay., Icon. **8** (1918) 126, f. 53.-*F. harlandii* var. *kotoensis* Sata in Journ. Soc. Trop. Agric. Formos. **6** (1934) 21

In the thicket of Mt. Iraya, alt. 200 m., *No.* 28749, 28534 (r). Ryukyus to Formosa, S. China and the Philippines.

**Ficus irisana** Elm., Leaf. **1** (1906) 45, **2** (1908) 535; Merr., l. c. 55.-*F. sibuyanensis* Elm., l. c. **4** (1911) 1319; Merr., l. c. 65.-*F. fachikogi* Koidz. in Bot. Mag. Tokyo **27** (1913) 185.-*F. hayatae* Sata, l. c. **6** (1934) 28.-*F. rigida* sensu Kanehira, Formos. Trees rev. ed. (1936) 159, non Bl.

In the lowland thicket, *No.* 28815 (r). Ryukyus to Formosa and the Philippines.

**Ficus longipedunculata** (Merr.) Elm., Leaf. **1** (1907) 50, 244; Merr., l. c. 55.-*F. chrysolepis* var. *longipedunculata* Merr. in Govt. Lab. Publ. (Philip.) **25** (1905) 11.-*F. magallamensis* Elm. l. c. **4** (1911) 1315.

In the forest of Mt. Iraya at alt. 100 m., *No.* 28846A (r). Philippines.

**Ficus megacarpa** Merr. in Gov. Lab. Publ. (Philip.) **17** (1904) 14; l. c. 57.-*F. elliptica* Miq. in Hook. Lond. Journ. Bot. **7** (1848) 440, non H B K.-*F. terasoensis* Hay., Icon. **8** (1919) 116. Climbing in the low land thicket, *No.* 28888, 29056 (r). Formosa and the Philippines.

**Ficus microcarpa** L. f., Suppl. (1781) 441.-*F. retusa* sensu Merr., l. c. 63, non L.

On the littoral rocky cliff, *No.* 28458 (r). India to New Caledonia, Australia and to the Ryukyus through Malaysia.

**Ficus minahasae** (Teysm. et DeVr.) Miq. Mus. Bot. Lugd. Bat. **3** (1867) 231, 296.-Merr., l.

c. 57.

In the lowland thicket of Mt. Iraya, *No.* 28944 (r). Celebes and the Philippines.

**Ficus nuda** Miq. in in Ann. Mus. Bot. Lugd. Bat. **3** (1867) 288; Merr., l. c. 57.-*F. cuspidato-caudata* Hay., Icon. **8** (1919) 119, f. 43, syn. nov.

In primary forest at medium altitudes, *No.* 28673 (r). India to S. China, Formosa and the S. Ryukyus.

**Ficus pedunculosa** Miq. in Hook. Lond. Journ. Bot. **7** (1848) 442, t. 7, a-f.-*F. garanbiensis* Hay., Icon. **8** (1918) 118.

On the littoral rocky cliff, *No.* 28505 (r). Formosa and the Philippines.

**Fics septica** Burm. f., Fl. Ind. (1768) 226.-*F. hauili* sensu Liu et al. in Quart. Journ. Taiwan Mus. **8** (1955) 286, non Blanco.

In the littoral thicket *No.* 87552 (f). Bonins, Ryukyus, Formosa to Malaysia.

**Ficus stipulosa** Miq. Ann. Mus. Bot. Lugd. Bat. **3** (1867) 289; Merr., l. c. 65.

In the lowland thicket, *No.* 28903, 28646 (f). Ryukyus to the Philippines.

**Ficus swinhoei** King in Ann. Bot. Gard. Calc. **1** (1888) 81, t. 101, c-f.-*F. tinctoria* sensu Merr., l. c. 2 (1923) 66, non Forst.-*F. tinctoria* ssp. *swinhoei* Corner in Gard. Bull. Singapore **17** (1959) 476.

On the littoral rocky cliff, *No.* 28526 (f). Formosa and the Philippines.

**Ficus vasculosa** Wall. ex King in Ann. Bot. Gard. Calc. **1** (1888) 65, t. 86.-*F. tinctoria* sensu Merr., l. c. 66, non Forst.

In the littoral and lowland thicket, *No.* 29171 (v. a). Ryukyus to Formosa, S. China, Malay Peninsula and Java.

**Morus australis** Poir. in Lamk., Encycl. Meth. **4** (1783) 380.-*Morus alba* sensu Merr., l. c. 36, non L.

In the lowland thicket, *No.* 28796, 28550, 28551 (f). Ryukyus, Formosa, S. China, Philippines (Batan Islands).

#### URTICACEEA

**Boehmeria nivea** (L.) Gaudich. Bot. Freyc. Voy. (1826) 499; Merr., Enum. **2** (1923) 90.

In the lowland thicket, *No.* A native of S. China, now naturalized in many warm countries.

**Boehmeria villosa** C. B. Rob. in Philip. Journ. Sci. **6** (1911) Bot. 3; Merr., l. c. 91.

On the littoral cliff, *No.* 28518 (f). Endemic to the Batan Islands.

**Cypholophus moluccanus** (Bl.) Miq. in Ann. Mus. Bot. Lugd. Bat. **4** (1869) 305; Merr., l. c. 93.

In the valley of Mt. Iraya, alt. 100 m., *No.* 29003 (r). Formosa (Botel Tobago) to Malaysia and Polynesia.

**Elatostema edule** C. B. Rob. in Philip. Journ. Sci. **5** (1910) 531; Merr., l. c. 81.

In the lowland thicket, *No.* 28819 (f). Philippines.

**Elatostematoides manillense** (Wedd.) C. B. Rob. in Philip. Journ. Sci. **5** (1910) Bot. 501; Merr., l. c. 87.-*Elatostema manillense* Wedd. in Ann. Sci. Nat. Bot. **4** (1854) 189.

In the lowland thicket, *No.* 28877 (f). Philippines.

**Pilea microphylla** (L.) Liebm. in Vidensk. Selsk. Skr. **5**<sup>2</sup> (1851) 302; Merr., l. c. 76.

- On the stone-wall, *No.* 29023, 29138 (a). A native of tropical America, now in most tropical countries.
- Pilea peploides** (Gaud.) Hook. et Arn., Bot. Beechey Voy. (1832) 96.  
On the wet littoral cliff, *No.* 29141 (r). India to Japan and Polynesia. New to the flora of the Philippines.
- Pipturus arborescens** (Link) C. B. Rob. in Philip. Journ. Sci. 6 (1911) Bot. 13; Merr., l. c. 94.  
In lowland thicket, *No.* 29175, 29268 (f). Ryukyus, Formosa, and the Philippines.
- Pouzolzia zeylanica** (L.) Benn., Pl. Jav. Rar. (1838) 67; Merr., l. c. 92.  
On the lowland wayside, *No.* 28603 (f). India to Malaysia and the Ryukyus.
- Leucocyke quadrinervia** C. B. Rob. in Philip. Journ. Sci. 6 (1911) Bot. 28; Merr. l. c. 98.  
In the lowland thicket, *No.* 28596 (r). Formosa (Botel Tobago and Isl. Kwasyoto) and the Philippines (Batan and Babuyan Islands).
- Maoutia setosa** Wedd. in Sci. Nat. Bot. 4<sup>1</sup> (1854) 194; Merr., l. c. 98.  
On the cliff of Mt. Iraya, alt. 100 m., *No.* 28726, 28987 (f). Formosa (Botel Tobago) and the Philippines.
- Laportea batanensis** C. B. Rob. in Philip Journ. Sci. 5 (1910) Bot. 481; Merr., l. c. 72- *L. kotoensis* Hay. ex Kanehira, Formos. Trees (1917) 529  
In the lowland thicket, *No.* (f). Philippines (Batan Island) and Formosa (Botel Tobago)
- Villebrunea trinervis** Wedd. in Ann. Sci. Bot. 41 (1854) 196-*Oreocnide trinervis* Miq. Fl. Ind. Bat. 12 (1859) 270; Merr., l. c. 96.  
In the thicket of Mt. Iraya at alt 100 m., *No.* 28996, 28760 (f). Formosa (Botel Tobago)? and the Philippines.

#### OPILIACEAE

- Champereia manilana** (Bl.) Merr. in Philip. Journ. Sci. 7 (1912) Bot 233; Enum. 2 (1923) 116.  
In the littoral thicket, *No.* 28901 (f). India to the Moluccas and S. Formosa.

#### OLACACEAE

- Erythralum scandens** Bl., Bijdr. (1826) 921; Merr., Enum. 2 (1923) 118.  
In the thicket of Mt. Iraya at alt. 100 m., *No.* 28641 (r). India to Indo-China and Malaysia.

#### ARISTOLOCHIACEAE

- Aristolochia tagala** Cham. in Linnaea 7 (1832) 207, t. 5, f. 3; Merr., Enum. 2 (1923) 120-*A. kankaoensis* Sasaki in Trans. Nat. Hist. Soc. Formos. 21 (1931) 251-*A. roxboughiana* ssp. *kankaoensis* Kitamura in Act Phytotax. et Geobot. 20 (1962) 135.  
In the littoral thicket, *No.* 28743 (r). India to Malaysia, Formosa and the Ryukyus (Yaeyama Islands).

#### POLYGONACEAE

- Polygonum barbatum** L., Sp. Pl. (1753) 362; Merr., Enum. 2 (1923) 122.

Along the stream at lowland, *No.* 28631 (r). India to Africa, Malaysia and the Ryukyus.

**Polygonum chinense** L., *Sp. Pl.* (1753) 363; Merr., l. c. 122.

In the lowland thicket, *No.* 28569 (f). India to Malaysia and Japan.

#### CHENOPODIACEAE

**Chenopodium ambrosioides** L., *Sp. Pl.* (1753) 219; Merr., *Enum.* 2 (1923) 125.

On the wayside, *No.* 28483 (r). A native of tropical America, now naturalized in most warm countries.

#### AMARANTHACEAE

**Achyranthes bidentata** Bl., *Bijdr.* (1825) 545; Merr., *Enum.* 2 (1923) 131.

On the wayside, *No.* 29374, 29158 (r). India to tropical Africa and Malaysia.

**Alternanthera ficoidea** (L.) R. Br. var. **bettzickiana** (Nich.) Backer in *Fl. Malesiana Ser. 1*, 42 (1949) 93-A. *bettzickiana* Nich., *Gard. Dict.* ed. 1 (1884) 59-A. *ficoidea* sensu Merr., l. c. 131, non R. Br.

On the wayside, *No.* 29187 (a). A native of tropical Africa, now pantropic.

**Amaranthus spinosus** L., *Sp. Pl.* (1753) 991; Merr., l. c. 128.

On the wayside, *No.* 29137 (f). Pantropic.

\***Amaranthus viridis** L., *Sp. Pl.* ed. 2 (1763) 1405; Merr., l. c. 128

On the wayside, *No.* (f). All warm countries.

**Cyathula prostrata** (L.) Bl., *Bijdr.* (1825) 549; Merr., l. c. 129.

In the lowland thicket, *No.* 28635, 28753 (r). Africa to Formosa through Malaysia and Australia.

**Deeringia polysperma** (Roxb.) Moq. in *DC. Prodr.* 132 (1849) 236; Merr., l. c. 126.

In the lowland thicket, *No.* 29186 (f). Malaysia to Formosa and the Ryukyus.

#### PORTULACACEAE

\***Portulaca oleracea** L., *Sp. Pl.* (1753); Merr., *Enum.* 2 (1923) 136.

On wayside, *No.* (f). All warm countries.

**Portulaca pachyrrhiza** Gagnep. in *Bull. Soc. Bot. France* 56 (1909) 41; Merr., l. c. 136.

On the littoral cliff, *No.* 28657 (r). Indo-China and the Philippines.

**Portulaca quadrifida** L., *Mant.* 1 (1767) 73; Merr., l. c. 136.

On the littoral cliff, *No.* 28692, 28586 (r). Tropical Asia and Africa to Malaysia, Marianne and Caroline Islands.

#### NYCTAGINACEAE

**Boerhaavia diffusa** L., *Sp.*, *Pl.* (1753) 3; Merr., *Enum.* 2 (1923) 133.

On the stone-wall, *No.* 28692 (r). Pantropic.

**Pisonia umbellifera** (Forst.) Seem. in *Bonplandia* 10 (1862) 154; Merr., l. c. 134.

In the lowland thicket, *No.* 28918 (r). Malaysia to the Ryukyus, Australia and Polynesia.



## CARYOPHYLLACEAE

**Drymaria cordata** (L.) Willd. subsp. **diandra** (Bl.) I. Duke in Ann. Missouri Bot. Gard. **48** (1961) 253, fig. 18, D-E; *D. cordata* sensu Merr., Enum. **2** (1923) 139, non Willd. In the lowland thicket, No. 28982, 28905 (f), India to Polynesia, Australia, Africa and the Ryukyus.

## MENISPERMACEAE

**Batania** (§*Triclisieae*) Hatusima, gen nov.

Frutex scandens, flores ignoti. Folia ovato-cordata, coriacea, utrinque valde reticulata. Inflorescentiae fructiferae axillares rarius terminales pseudoumbellato-decompositae ambitu subglobosae. Drupae plerumque 5, sessiles, ellipsoideae, exocarpium subcoriaceum rubrum, mesocarpium carnosopulposum, endocarpium subfabiforme carnosum sublaeve in facie ventrali excavatum. Condylus obsoletus.

The present new genus is most closely related to *Pycnarrhena* and *Albertisia* in its fruit structure, though I have seen no flowers, but differs from them by its ovate to cordate leaves with subpalmate nerves and longer petioles.

**Batania insignis** Hatusima gen. et sp. nov., Fig. 1.

Frutex scandens circ. 10 m. altus. Ramuli in sicco longitudinaliter dense striati, glabri, circ. 2-3 mm. crassi. Folia ovata vel ovato-cordata, apice breviter acuminata ad summum obtusa, basi truncato-cordata vel cordata, margine integra, plerumque 10-13 (9-16) cm. longa et 8-10 (6-12) cm. lata, coriacea, glaberrima, supra lucida, nervi primarii 3-5 palmati cum secundariis et nervulis reticulatis utrinque prominuli. Petioli basi geniculati 3-4 cm. longi in sicco 1.5-2 mm. crassi, glabri, basi incrassati, cicatrice petiolus prominens suborbicularis 3-4 mm. in diam. 1-2 mm. alta. Inflorescentiae fructiferae axillares rarius terminales, pseudoumbellato-decompositae ambitu subglobosae circ. 5-7 cm. in diam. fusco-pubescentes, pedunculi fructiferi lignosi 1-2 cm. longi, 2-3 mm. crassi umbellam fructum brevi ( $\pm 2$  cm.) pedicellatorum secundarum gerentes, pedicello circ. 5-10 mm. longo apice valde tumido et 4-5 drupas gerente. Drupae sessiles, ellipsoideae, plerumque circ. 2 cm. longae et 1.5 cm. latae, epicarpium tenuiter coriaceum rubrum glabrum, mesocarpium carnosopulposum circ. 1 mm. crassi, endocarpium subfabiforme carnosum sublaeve in facie ventrali  $\pm$  excavatum circ. 1.5 cm. longum et 8-9 mm. latum. Condylus obsoletus.

In the thicket of valley near Mahatao at alt. 100 m., fruits red, No. 28662 (r).

**Cocculus trilobus** (Thunb.) DC., Syst. **1** (1818) 232; Merr., Enum. **2** (1923) 149.

On the littoral cliff, No. (v. r). Japan to the N. Philippines.

**Cyclea insularis** (Mak.) Hatusima, comb. nov. *Cissampelos insularis* Mak. in Bot. Mag. Tokyo **24** (1910) 227-*Paracyclea insularis* (Mak.) Yamamoto et Kudo in Bot. Mag. Tokyo **46** (1932) 157.

var. **luxurians** Hatusima, var. nov., Pl. 4, A.

A typo differt foliis majoribus ad 5-10 cm. longis et 7-12 cm. latis, paniculae majores ad 14 cm. longae, rami primarii inferiores usque ad 1.5 cm. longi.

A rare scandent shrub in the thicket of Mt. Iraya at alt. 100 m., fruits pale purplish

white in mature, *No. 28723* (f). Species: S. Japan, Ryukyus, Formosa (Botel Tobago).

I am not sure whether the specimen from Botel Tobago identified with typical species of this species by Y. Yamamoto represents the present variety or not.

**Stephania japonica** (Thunb.) Miers in Ann. Nat. Hist. **3** (1866) 14; Merr., l. c. 149.

In the lowland thicket, *No. 28575, 28532, 28765, 29182* (a). India to Japan, China and Formosa.

**Stephania merrillii** Diels in Engl. Pflanzenreich **46** (1910) 268; Merr., l. c. 150-*S. sasakii* Hay. ex Yamamoto, Suppl. Icon. Pl. Formos. **4** (1928) 14.

In the thicket of Mt. Iraya, alt. 500 m., *No. 29122* (v. r). Formosa (Botel Tobago) and the Philippines.

**Tinospora reticulata** Miers in Ann. Nat. Hist. **3**<sup>13</sup> (1864) 322; Merr., l. c. 146.

In the lowland thicket, *No. 28723, 29168* (f). Philippines.

#### ANONACEAE

**Dasymaschalon clusiflorum** Merr. in Philil. Journ. Sci. **10** (1915) Bot. 237; Enum. **2** (1923) 175.

In the thicket of valley, *No. 28653* (r). Philippines.

#### LAURACEAE

**Cassytha filiformis** L., Sp. Pl. (1753) 35; Merr., Enum. **2** (1923) 204.

In the littoral grass field, *No. 28476* (f). Pantropic.

**Litsea glutinosa** (Lour.) C. B. Robin. in Philip. Journ. Sci. **6** (1911) Bot. 321; Merr., l. c. 194.

In the littoral thicket, *No. 29120, 28908, 28510, 28771*, (f). India to S. China through Malaysia to tropical Australia.

**Litsea perrottetii** (Bl.) F. Vill. Novis. App. (1880) 180; Merr., l. c. 196.

In the thicket of Mt. Iraya at alt. 300 m., *No. 29111, 29025* (f). Philippines, Moluccas, Celebes.

**Persea thunbergii** (S. et Z.) Kostermans in Commun. For. Res. Inst. Bogor. **57** (1957) 35-*Machilus thunbergii* S. et Z., Fl. Jap. (1836) 704.

In the thicket of Mt. Iraya at alt. 300 m., *No. 28868, 28775* (f). Japan to Formosa, New to the flora or the Philippines.

#### CAPPARIDACEAE

**Cleome rutidosperma** DC., Prodr. **1** (1824) 241

On the littoral cliff, *No. 28620* (f). A native of west tropical Africa, now naturalized in Malaysia.

**Cleome viscosa** L., Sp. Pl. (1753) 672-*C. icosandra* L., Sp. Pl. (1753) 672-*Polanasia icosandra* (L.) W. & A., Prodr. (1834) 22; Merr., Enum. **2** (1923) 209.

On the littoral cliff, *No. 28492* (f). A native of the Old World tropics, now in tropical Africa, S. Arabia, Malaysia Australia and northward to the Ryukyus.

**Capparis lanceolaris** DC., Prodr. **1** (1824) 248-*C. oblongata* Merr., Gov. Lab. Publ. (Philip.)

35 (1906) 15; Enum. 2 (1923) 212.

In the littoral thicket *No. 28979* (f). Java, Celebes, New Guinea and the Philippines.

**Capparis zeylanica** L., Sp. Pl. ed. 2 (1762) 720-*C. horrida* L. f., Suppl. (1781) 264; Merr., l. c. 211.

In the lowland thicket, *No. 28477* (f). India to Hainan, Java, Lesser Sunda Islands, Celebes and the Philippines.

#### CRUCIFERAE

**Rorippa dubia** (Pers.) Hara in Journ. Jap. Bot. 30 (1955) 197-*Nasturtium indicum* (L.) sensu Merr., Enum. 2 (1923) 208, non DC., p. p.

Around the building, *No. 28463* (f). Japan to India and Malaysia, naturalized in the New World.

#### CRASSULACEAE

**Sedum formosanum** N. E. Br. in Gard. Chron. 24 (1884) 134.

On the littoral cliff, *No. 28624* (f). S. Japan to Formosa, new to the flora of the Philippines.

#### SAXIFRAGACEAE

**Hydrangea lobbii** Max. in Mem. Akad. Sci. St. Petersburg. 8<sup>10</sup> (1867) 15; Merr., Enum. 2 (1923) 219-*H. macrosepala* Hay., Icon. 3 (1913) 108.

In the thicket on the ridge of Mt. Iraya at alt. 300 m., *No. 29117* (f). Formosa and the Philippines.

#### PITTOSPORACEAE

**Pittosporum moluccanum** (Lamk.) Miq., Illustr. 1 (1870) 76-*P. littorale* Merr. Philip. Journ. Sci. 5 (1908) Bot. 406; Enum. 2 (1923) 222.

In the littoral thicket, *No. 28728, 28895* (r). Formosa, Philippines, Moluccas, Celebes, Lesser Sunda Islands.

#### ROSACEAE

**Rubus fraxinifolius** Poir. in Lamk., Encycl. 6 (1804) 242; Merr., Enum. 2 (1923) 227.

In the thicket of Mt. Mahatam at alt. 350 m., *No. 28652* (r). Malaysia to Formosa.

#### CONNARACEAE

**Rourea minor** (Gaertn.) Leenhouts in Fl. Males. 1<sup>5</sup> (1957) 514-*R. volubilis* (Blanco) Merr. in Gov. Lab. Publ. (Philip.) 27 (1905) 36; Enum. 2 (1923) 240.

In the littoral thicket, *No. 28885* (r). Formosa (Botel Tobago) and the Philippines.

#### LEGUMINOSAE

**Abrus precatorius** L., Syst. ed. 12 (1767) 472; Merr., Enum. 2 (1923) 303.

- On the littoral cliff, *No. 28613, 28740* (r). Pantropic, although probably a native of tropical Asia.
- Albizia retusa** Benth. in Hook. Lond. Journ. Bot. **3** (1844) 90; Merr., l. c. 247.  
In the hillside thicket, *No. 28605* (r). Nicobar Islands, across Malaysia to the Caroline Islands and the S. Ryukyus.
- Alysicarpus nummularifolius** (L.) DC., Prodr **2** (1825) 353; Merr., l. c. 292.  
In the wayside grass field, *No. 28470, 28637, 28750* (a). Old World tropics.
- Caesalpinia crista** L., Sp. Pl. (1753) 380; Merr., l. c. 267.  
On the littoral beach, *No. 28494* (r). Pantropic.
- Canavalia microcarpa** (DC.) Piper in Proc. Biol. Soc. Wash. **30** (1917) 177; Merr., l. c. 313  
-*C. turgida* Grah. in Wall. Cat. (1832) No. 5534.  
On the littoral beach, *No. 28783, 28812, 28829* (f). India to Malaysia, S. China, and the S. Ryukyus.
- Cassia occidentalis** L., Sp. Pl. (1753) 377; Merr., l. c. 264.  
On the wayside, *No. 28866, 29157* (f). A native of tropical America, now pantropic.
- Cantharospermum volubile** (Blanco) Merr. in Philip. Journ. Sci. **5** (1910) Bot. 127; Enum. **2** (1923) 315-*Atylosia crassa* Prain in Journ. As. Soc. Beng. **66**<sup>2</sup> (1897) 45.  
In the lowland thicket, *No. 29184* (r). India to Malaysia.
- Christia obcordata** (Poir.) Bakh. f. in Backer & Bakh. f., Flora Java **1** (1963) 612-*Lourea obcordata* (Poir.) DC., Prodr. **2** (1825) 324; Merr., l. c. 293.  
On the wayside on the littoral rocky cliff, *No. 28478* (r). Burma to S. China, Formosa and the Ryukyus, through Malaysia to tropical Australia.
- Crotalaria mucronata** Desv. in Journ. Bot. **3** (1814) 76-*C. saltiana* sensu Merr., l. c. 273, non Andr.  
On littoral wayside, *No.* (r). Pantropic.
- Crotalaria retusa** L., Sp. Pl. (1753) 715; Merr., l. c. 273.  
On the littoral wayside, *No. 28577* (f). Pantropic.
- Desmodium gangeticum** (L.) DC., Prodr **2** (1825) 327; Merr., l. c. 285.  
On the rocky cliff, *No. 28636* (r). A native of tropical America, now pantropic of the Old World.
- Desmodium laxiflorum** DC., Prodr. **2** (1825) 335; Merr., l. c. 286.  
On the wayside of hillside, *No. 28650* (f). India to Formosa, southwards to Malaysia.
- Desmodium scorpiurus** (Sw.) Desv in Journ. Bot. **1** (1813) 122; Merr., l. c. 289.  
On the wayside of hillside, *No. 28694, 28874* (f). A native of tropical America, now also in the Ryukyus, Malaysia and Polynesia.
- Desmodium triflorum** (L.) DC., Prodr. **2** (1825) 334; Merr., l. c. 289.  
In the wayside grass field, *No. 28480, 28502, 29176* (a). Pantropic.
- Desmodium umbellatum** (L.) DC., Prodr. **2** (1825) 325; Merr., l. c. 290.  
On the littoral cliff, *No. 28802* (f). Asia through Malaysia to N. Australia and Polynesia.
- Erythrina variegata** L. var. **orientalis** (L.) Merr., Interpret. Herb. Amb. (1917) 276; Enum. **2** (1923) 306.  
In the lowland thicket, *No. 28849* (r). India to Polynesia, northwards to the Ryukyus.

- Galactia tashiroi** Max. in Bull. Acad. Sci. St. Petersb. **31** (1886) 34.  
On the littoral cliff of the eastern side of Mt. Iraya, *No. 28719* (v. r). Formosa and the Ryukyus, new to the flora of the Philippines.
- Glycine tomentella** Hay., Icon. **9** (1920) 29 Hermann, Rev. Glycine (1962) 23, f. 6.-*G. tomentosa* Benth., Fl. Austr. **2** (1864) 245, non L. (1753); Merr., l. c. 304.  
On the littoral rocky wayside, *No. 28516* (f). S. China, Formosa, the Philippines and N. Australia.
- Indigofera hendecaphylla** Jacq. Coll. **2** (1788) 259; Merr., l. c. 275.  
On the littoral rocky cliff facing Songsong Bay, *No. 28855* (f). India to S. China, tropical and southern Africa.
- Indigofera suffruticosa** Mill., Gard. Dict. ed. 8 (1768) No. 2; Merr., l. c. 275.  
On the wayside at Basco, possibly introduced, *No. 28795*. Pantropic.
- Indigofera trifoliata** L., Amoen. Acad. **4** (1759) 327; Merr., l. c. 276-*I. trifoliata* var. *liukiuensis* Matsum. in Ito & Matsum., Tent. Fl. Liukiu. (1899) 404.  
On the littoral rocky cliff, *No. 28769* (f). India to the Ryukyus and Australia.
- Indigofera zollingeriana** Miq., Fl. Ind. Bat. **1** (1855) 310; Merr., l. c. 276-*I. galeoides* var. *liukiuensis* Matsum. in Ito & Matsum., l. c. 402-*I. kotoensis* Hay., Mater. Fl. Formos. (1911) 75-*I. okinawae* Ohwi in Journ. Jap. Bot. **12** (1936) 659- *I. kotoensis* var. *liukiuensis* (Matsum.) Ohwi in Act. Phytotax. et Geobot. **12** (1943) 111.  
In the arable land, *No. 28649* (f). S. Ryukyus, Formosa (Botel Tobago), S. China, Indo-china, Malaysia to New Caledonia.
- Pachyrrhizus erosus** (L.) Urb., Sym. Antill. **4** (1905) 311; Merr., l. c. 321.  
On the wayside along the arable land, *No. 28460* (r). A native of tropical America, now pantropic in cultivation.
- Phaseolus minimus** Roxb., Fl. Ind. ed. 2, **3** (1832) 290; Merr., l. c. 319.  
On the littoral cliff, *No. 28734* India to the Ryukyus and the Philippines.
- Phaseolus adenanthus** G. W. F. Mey., Prim. Fl. Esseq. (1818) 239; Merr., l. c. 318.  
In the littoral thicket, *No. 28645* (r). Pantropic.
- Pithecelobium prainianum** (Merr.) Merr. in Philip. Journ. Sci. **1** (1906) Suppl. 61; Enum. **2** (1923) 244.  
On the ridge of Mt. Iraya, alt. 300 mm., *No. 29114* (v. r). Philippines, Borneo and Java.
- Pongamia pinnata** (L.) Pierre in Fl. For. Cochinch. **5** (1907) t. 384, sub textu in nota; Merr., Enum. **2** (1923) 298  
In the littoral thicket, *No. 29163* (f). Mascaren Islands, tropical Asia, across Malaysia to Australia and Polynesia.
- Psophocarpus tetragonolobus** (L.) DC., Prodr. **2** (1825) 403; Merr., l. c. 322.  
On the wayside on the hill, naturalized, *No. 28578, 28986, 29164* (f). India to Malaysia in cultivation.
- Pterocarpus indicus** Willd., Sp. Pl. **3** (1800) 904; Merr., l. c. 297-*P. vidalianus* Rolfe in Journ. Linn. Soc. Bot. **21** (1884) 309; Merr., l. c. 297.  
In the thicket of Mt. Iraya at alt. 300 m., *No. 28805* (r). Tenasserim to New Guinea and Caroline Islands, northwards to the S. Ryukyus.

- Pueraria lobata** (Willd.) Ohwi in Bull. Tokyo Sci. Mus. **18** (1947) 16-*P. thunbergiana* Benth. in Journ. Linn. Soc. **9** (1867) 122-*P. phaseoloides* (Roxb) Benth. sensu Merr., l. c. 311. In the lowland thicket, No. 28542, 28875, 29002 (f). Japan, Formosa?, China, Philippines, New Guinea. This species apparently differs from *P. montana* (Lour.) Merr. from S. China, Formosa and the Ryukyus in its form of leaflets, its indumentum, and its size and color of flowers.
- Rhynchosia volubilis** Lour., Fl. Cochinchin (1790) 460; Merr., l. c. 316. In the lowland thicket, No. 28474 (r). Japan to Formosa, China and the Philippines.
- Sophora tomentosa** L., Sp. Pl. (1753) 373; Merr., l. c. 270. On the littoral sandy beach, No. 28457 (r). Pantropic.
- Vigna marina** (Burm.) Merr., Interpret. Herb. Amb. (1917) 285; Enum. **2** (1923) 320. On the littoral grass field, No. 28816 (f). A pantropic strand plant.

## OXALIDACEAE

- Oxalis corniculata** L., Sp. Pl. (1753) 435-*O. repens* Thunb., Diss. Oxal. (1781) 16, t. 1.; Merr., Enum. **2** (1933). On the wayside, No. 28619 (a). Warmer parts of the Old World.

## RUTACEAE

- Citrus aurantium** L., Sp. Pl. (1753) 782; Merr., Enum. **2** (1923) 342. On edge of the clearing, planted?, No. 29026 (r). A native of the Old World.
- Citrus limonia** Osbeck, Reise Ostind. & China (1765) 250. On the wayside, planted, No. 29005 (r). A native of China.
- Citrus limonimedica** Lush. in Indian Forester **36** (1910) 348-*C. medica* sensu Merr., l. c. 344, p. p. In the thicket of Mt. Iraya, nearly spontaneous, No. 28714 (f). India to S. China and Malaysia.
- Citrus madurensis** Lour., Fl. Cochinch. (179) 467-*C. mitis* Blanco, Fl. Filip. (1837) 610; Merr., l. c. 344. In the thicket of Mt. Iraya at alt. 200 m., spontaneous, No. 28914 (r). S. China, Indo-China to the Philippines.
- Glycosmis citrifolia** (Willd.) Lindley in Trans. Hort. Soc Lond. **6** (1826) 72-*G. pentaphylla* (Retz.) sensu Merr., l. c. 334, non Correa p. p.-*G. cochinchinensis* (Lour.) sensu Kanehira, Formos Trees rev. ed. (1936) 314, f. 261, non Pierre. In the lowland thicket, No. 29196 (r). India to Malaysia, S. China, Formosa and the Ryukyus.
- Melicope triphylla** (Lam.) Merr. in Philip. Journ. Sci. Bot. **7** (1912) 375; Enum. **2** (1923) 331-*M. Awadan* (Hatusima) Hatusima & Ohwi in Journ. Jap. Bot. **16** (1940) 527, syn. nov. In the lowland thicket, No. 28923, 29075, 29112 (f). Ryukyus, Formosa (Botel Tobago) and the Philippines.
- Micromelum minutum** (Forst. f.) Seem., Mission Fiji (1862) 434; Merr., l. c. 335. In the thicket of valley, No. 28595 (f). India to S. China, through Malaysia to Micronesia, N. Australia and Polynesia.

- Murraya crenulata** (Turcz.) Oliv. in Journ. Linn. Soc. Bot. **5** (1861) 337-C. *euchrestifolia* (Hay.) Kanehira, Formos. Trees rev. ed. (1936) 308, f. 263,  
In the lowland thicket, No. 28661 (f). Formosa, Philippines. New Caledonia, N. Australia.
- Murraya paniculata** (L.) Jack in Malay Miscel. **1** (1820) 31; Merr., l. c. 336.  
In the littoral thicket, No. 28830 (v. r.). India to Malaysia and the Ryukyus.
- Zanthoxylum ailanthoides** S. et Z., Fl. Jap. (1846) 138-*Fagara ailanthoides* (S. et Z.) Engler in Engl. & Prantl, Nat. Pflanzenfam. **34** (1897) 118.  
In the thicket of Mt Iraya, alt 100-300 m., No. 28862, 29124 (r).  
S. China to Japan, new to the flora of the Philippines.
- Zanthoxylum integrifolium** (Merr.) Merr., Enum. **2** (1923) 327-*Fagara integrifolia* Merr. in Philip. Journ. Sci. 1, Suppl. 68, **3** (1906) Bot. 411.  
In the thicket of valley, No. 28660 (f). N. Philippines and Formosa (Botel Tobago).

## MELIACEAE

- Aglaia elliptifolia** Merr. in Philip. Journ. Sci. **3** (1908) Bot. 413; Enum. **2** (1923) 374.  
In the littoral thicket, No. 28462, 28899 (a). Philippines and Formosa.
- Aglaia formosana** (Hay.) Hay., Icon. **3** (1913) 52; Merr., l. c. 374-A. *elaegnoides* var. *formosana* Hay in Matsum. & Hay., Enum. Pl. Formos. (1906) 78.  
In the littoral thicket, No. 28472 (f). N. Philippines and Formosa.
- Cedrela calantas** (Merr. & Rolfe) Burkill in Bull. Straits Sett. **5** (1930) 121, in obs.-*Toona calantas* Merr. & Rolfe in Philip. Jour. Sci. **3** (1908) Bot. 105; Merr., l. c. 357.  
In the thicket of valley, No. 28668 (v. r.). Philippines.

## EUPHORBIACEAE

- Acalypha angatensis** Blanco, Fl. Filip. ed. 1 (1837) 750; Merr., Enum. **2** (1923) 445-A. *stipulacea* Klotzsch in Nova Act. **19** (1) (1843) 416-A. *amentacea* sensu Merr., l. c. 444 non Roxb.-A. *formosana* Hay., Mater. Fl. Formos. (1911) 267-A. *grandis* var. *formosana* (Hay.) Hurusawa in Journ. Fac. Sci. Univ. Tokyo III, **66** (1954) 301.  
In the lowland thicket, No. 28527, 28528 (f). Formosa and the Philippines.
- Acalypha cardiophylla** Merr. in Philip. Journ. Sci. **1** (1906) Suppl. 80-A. *caturus* sensu Merr., Enum. **2** (3923) 445, non Bl.-A. *kotoensis* Hay., Icon. **9** (1920) 99.  
In the lowland thicket, No. 28968 (r). Formosa (Botel Tobago) and the Philippines.
- Acalypha grandibracteata** Merr. in Philip. Journ. Sci. **5** (1910) 191; Enum. l. c. 445. S. Domingo de Basco (fide Merrill). N. Philippines.
- Acalypha indica** L., Sp. Pl. (1753) 1003; Merr., l. c. 446.  
On the wayside at low altitudes, No. 28865, 28564 (f). Old World tropics.
- Antidesma pentandrum** (Blanco) Merr. var. *barbatum* (Presl) Merr. in Philip. Journ. Sci. **9** (1914) Bot. 463; Enum., l. c. 417-A. *barbatum* Presl, Epim. Bot. (1851) 233.  
In the littoral thicket, No. 28704 (f). N. Philippines, Formosa, and the Ryukyus.
- Bischoffia javanica** Bl., Bijdr. (1826) 1168; Merr., l. c. 418.

- In the thicket of valley, *No.* 28688 (r). India to the Ryukyus, through Malaysia to tropical Australia and Polynesia.
- Breynia rhamnoides** (Retz.) Muell.-Arg. in DC. Prodr. **15**<sup>2</sup> (1866) 440; Merr., l. c. 404.  
In the lowland thicket, *No.* 28891 (f). India to the Ryukyus and Malaysia.
- Briedelia glauca** Bl. f. **balansae** (Tutchter) Hatusima, comb. nov.-*B. glauca* Bl. f. *laurifolia* (Elm.) Jabl. in Engl., Pflanzenr. **65** (1915) 75-*B. laurifolia* Elm. ex Jabl., l. c. in syn.-*B. balansae* Tuchter in Journ. Linn. Soc. Bot. **37** (1905) 66.  
In the the thicket of Mt. Iraya at alt. 300 m., *No.* 28993 (r). Indo-China, S. China, Formosa and the Ryukyus (Yaeyama), species: Java to the Philippines. A new addition to the flora of the Philippines.
- Claoxylon brachyandrum** Pax & Hoffm. in Engl., Pflanzenr. **63** (1914) 115; Merr., l. c. 430-*C. kotoensis* Hay., Icon. **9** (1920) 101.  
In the littoral thicket, *No.* 28559, 28705, 28835 (f). Formosa (Botel Tobago) and the Philippines.
- Drypetes littoralis** (C. B. Rob.) Merr. in Philip. Journ. Sci. **29** (1926) Bot. 280-*Cyclostemon littoralis* C. B. Rob. in Philip. Journ. Sci. **3** (1908) Bot. 198; Merr., Enum., l. c. 407.  
In the thicket of Valley, *No.* 28680 (r). S. Formosa and the Philippines.
- Euphorbia atoto** Forst. f., Prodr. (1786) 207; Merr., l. c. 461.  
On the littoral rocky cliff of Songsong Bay, *No.* 28907 (v. r.). India to the Ryukyus, Malaysia, Australia, Polynesia.
- Euphorbia hirta** L., Sp. Pl. (1753) 454; Merr., l. c. 462.  
In the arable land, *No.* 28479 (f). Pantropic.
- Euphorbia prostrata** Ait., Hort. Kew. **2** (1789) 136; Merr., Enum. **2** (1923) 463.  
On the sunny rock on the hill, *No.* 28612 (r). Pantropic.
- Gelonium glomerulatum** (Bl.) Hassk., Cat. Hort. Bogor. (1844) 237; Merr. l. c. 455.  
In the littoral thicket of Songsong Bay *No.* 28921 (v. r.). Malaysia.
- Glochidion lanceolatum** Hay. in Journ. Coll. Sci. Univ. Tokyo **20** (1904) 16, t. 20-? *G. urophyloides* Elm., Leaf. **1** (1908); Merr., l. c. 403-*G. kotoense* Hay., Icon. **9** (1920) 96.  
In the lowland thicket, *No.* 28543, 28763, 29046, 29156, 29199 (a). Ryukyus to the Philippines.
- Glochidion rubrum** Bl., Bijdr. (1825) 586; Merr., l. c. 402.-*G. fortunei* sensu auct. jap., non Hance  
Mt. Iraya, alt. 800 m., *No.* 29044 (f). Malaysia to the S. Ryukyus.
- Homalanthus fastuosus** F.-Vill., Nvis. App. (1880) 196; Merr., l. c. 459-*H. rotundifolius* sensu Sasaki, List Pl. Formos. (1928) 264, non Merr.  
In the lowland thicket, *No.* 28594, 28741, 28742 (f). Formosa (Botel Tobago) and the Philippines.
- Macaranga sinensis** (Baill.) Muell.-Arg. in DC., Prodr. **15** (1866) 1001-*M. dipterocarpifolia* Merr. in Journ. Sci Philip. **1** (1906) Suppl. 205, **5** (1910) Bot. 357; Enum., l. c. 441.  
In the lowland thicket, *No.* 28992 (v. r.) S. China, Formosa (Botel Tobago and Isl. Kwasyoto) and the Philippines.
- Macaranga tanarius** (L.) Muell.-Arg. in DC., Prodr. **15**<sup>2</sup> (1866) 997; Merr. l. c. 443.  
In the littoral thicket, *No.* 28892 (f). S. Asia to Australia, northwards to the Ryukyus.



- Mallotus ricinioides** (Pers.) Muell.-Agr. in *Linnaea* **34** (1865) 187; Merr., l. c. 436.  
In the lowland thicket, *No.* 28776 (f). India through Malaysia to N. Australia.
- Melanolepis multiglandulosa** (Reinw.) Reichb. f. & Zoll. in *Linnaea* **28** (1856) 324; Merr., l. c. 431.  
In the lowland thicket, *No.* 28820 (r). Indo-China to the Ryukyus, through Malaysia to the Caroline Islands.
- Neotrewia cumingii** (Muell.-Arg.) Pax & Hoffm. in Engl., *Pflanzenr.* **63** (1914) 212, f. 31, A-E; Merr., l. c. 437-*Mallotus cumingii* Muell.-Arg. in *Linnaea* **34** (1866) 195.  
In the thicket of the valley, *No.* 28648 (v. r). Celebes and the Philippines.
- Phyllanthus amarus** Schum. & Thonn., *Kongl. Danske Vidensk. Selsk. Skr.* **4** (1829) 195; Webster in *Journ. Arn. Arb.* **38** (1957) 313-*P. niruri* sensu Merr., l. c. 394, non L.  
On the wayside, *No.* 29135 (f). Pantropic.
- Phyllanthus urinaria** L., *Sp. Pl.* (1753) 982; Merr., l. c. 396.  
In the arable land, *No.* 28861 (f). Pantropic.
- Securinega virosa** (Roxb.) Pax & Hoffm. in Engl. & Prantl, *Nat Pflanzenfam.* **2.** Aufl. **19c** (1921) 60, f. 27D-*Flueggea virosa* (Roxb.) Basill., *Etud. Gen. Euphorb.* (1858) 593; Merr., l. c. 390.  
In the lowland thicket, *No.* 28682 (r). Tropical Africa through Malaysia to Australia, India, S. China and Formosa.
- Trigonostemon** sp. In the thicket of the E. slope of Mt. Iraya, alt. 200 m., *No.* 28950, 29433 (r).

## ANACARDIACEAE

- Mangifera indica** L., *Sp. Pl.* (1753) 200; Merr., *Enum.* **2** (1923) 468.  
In the thicket of valley, escaped from cultivation?, *No.* 28707 (v. r.). A native of Indo-Malayan region, now cultivated in most tropical countries.
- Semecarpus gigantifolia** Vidal, *Syn. Atlas* (1883) 22, t. 36, f. A; Merr., l. c. 474-*S. vernifera* Hay. & Kawakami in Hay., *Icon.* **2** (1912) 108.  
In the littoral thicket, *No.* 28707 (f). S. Formosa and the Philippines.

## AQUIFOLIACEAE

- Ilex kusanoi** Hay., *Mater. Fl. Formos.* (1911) 55; Hu in *Journ. Arn. Arb.* **34** (1954) 143, excl. syn. *I. poneantha* Koidz.  
In the thicket of Mt Iraya, alt 100 m., *No.* 28729 (f). Formosa, new to the flora of the Philippines. Hu reduced *I. poneantha* Koidz. from the Ryukyus to a synonym of this species, but it differs in having flowers twice as large as the present species.

## CELASTRACEAE

- Euonymus cochinchinensis** Pierre, *Fl. Forest. Cochinch.* **4** (1894) 4, t. 309; Merr., *Enum.* **2** (1923) 480.  
In the littoral thicket of Songsong Bay, *No.* 28854 (v. r.). Indo.China, the Philippines,

and Formosa (Botel Tobago).

**Gymnosporia spinosa** (Blanco) Merr & Rolfe in Philip. Journ. Sci. **3** (1908) Bot. 109; Merr. l. c. 483-*G. trilocularis* Hay, Icon. **3** (1913) 59, syn. nov.

On the littoral rocky cliff, No. 28475 (r). Formosa (Botel Tobago), Philippines and New Guinea.

#### HIPPOCRATEACEAE

**Hippocratea obtusifolia** Roxb., Hort Beng. (1814) 5, nomen nud., Fl. Ind. **1** (1820) 170; Merr., Enum. **2** (1923) 486.

In the lowland thicket, No. 28934 (r). India to S. China, Malaysia and tropical Australia.

#### STAPHYLEACEAE

**Turpinia sambucifolia** Elm., Leaf. **9** (1934) 3217; Merr & Perry in Journ. Arn. Arb. **22** (1941) 547-*T. pomifera* sensu Merr., Enum. **2** (1923) 488, non DC.

In the lowland thicket, No. 28995, 28626 (r). Philippines.

#### ICACINACEAE

?**Chariessa philippinensis** (Merr.) Sleumer in Notzizbl. Bot. Gart. Mus. Berlin-Dahlem **15** (1940) 229-*Villaresia philippinensis* Merr. in Philip. Journ. Sci. **14** (1919) 414; Enum. **2** (1923) 488.

In the thicket of valley, No. 28585, 28642 (r). Philippines.

**Gonocaryum calleryanum** (Baill.) Becc., Malesia **1** (1877) 123; Merr., l. c. 491.

In the littoral thicket, No. 28388 (r). S. Formosa and the Philippines.

#### RHAMNACEAE

**Smythea pacifica** Seem. in Bomplandia **9** (1861) 255; Merr., Enum. **2** (1923) 521.

In the lowland thicket, No. 28592 (v. r.). Malaysia to Micronesia and Polynesia.

#### VITACEAE

**Ampelopsis brevipedunculata** (Max.) Traut. var. **hancei** (Planch.) Rehd. in Journ. Arn. Arb. **2** (1922) 177-*A. heterophylla* var. *hancei* Planch. in DC., Monogr. Phan. **5** (1887) 457; Merr., Enum. **3** (1923) 5.

In the lowland thicket, No. 28616 (r). Philippines, Indo-China, S. China, Formosa and the Ryukyus.

**Cissus adnata** Roxb., Fl. Ind. **1** (1820) 405; Merr., l. c. 6.

In the thicket of valley, No. 28710, 28847, 28587 (f). India to Madagascar, Malaysia and Formosa.

**Cayratia tenuifolia** (Heyne) Gagnep. in Lecomte, Not. Syst. **1** (1911) 348-*Columella tenuifolia* (Heyne) Merr. in Philip. Journ. Sci. **11** (1916) Bot. 134; Enum., l. c. 9-*Cissus japonica* var. *dentata* Mak. in Bot. Mag Tokyo **23** (1909) 249, syn. nov.

In the lowland thicket, *No.* 28481 (f). Ryukyus, Formosa, S. China, Indo-China, the Philippines and the Andaman Islands.

**Leca manillensis** Walp. in Nov. Act. Acad. Nat. Cur. **19** (1743) Suppl. 1. 314; Merr., l. c. 12.

In the littoral thicket, *No.* 28666, 29174 (f). Formosa and the Philippines.

**Leca philippinensis** Merr. in Philip. Journ. Sci. **1** (1906) Suppl. 89; **3** (1908) Bot. 419; Enum. l. c. 13.

In the littoral thicket, *No.* 28929, 28930. (f). Formosa (Botel Tobago) and the Philippines.

**Tetrastigma hermandii** Planch. in DC., Monogr. **5** (1887) 436; Merr., l. c. 3.

On the rocky cliff on the hill at alt. 400 mm., *No.* 28659 (r). Indo-China and the Philippines.

#### SAPINADACEAE

**Allophylus timorensis** (DC.) Bl., Rumphia **3** (1847) 129; Merr., Enum. **3** (1923) 497.

On the thicket of valley, *No.* 28599 (f). Malaysia to Polynesia, northwards to the Ryukyus.

**Cardiospermum halicacabum** L. var. **microcarpum** (HBK) Bl., Rumphia **3** (1847) 185; Merr., l. c. 493.

In the littoral thicket, *No.* 28521 (f). Pantropic.

**Pometia pinnata** Forst., Car. Gen. (1776) 109, t. 55; Merr. l. c. 505.

In the lowland thicket, *No.* 28625, 28808 (f). Malaysia to Polynesia, northwards to Formosa.

#### ELAEOCARPACEAE

**Elaeocarpus multiflorus** (Turcz.) F.-Vill., Novis. App. (1880) 31; Merr., Enum. **3** (1923) 18  
-*E. arthropus* Ohwi in Journ. Jap. Bot **8** (1951) 230, syn. nov.

In the thicket of Mt. Iraya, alt. 100 m., *No.* 28867 (r). S. Ryukyus, Formosa (Isl. Kasyoto), the Philippines, Celebes.

#### TILIACEAE

**Corchorus aestuans** L., Syst. ed. **10** (1774) 1079-*C. acutangulus* L. Encycl **2** (1786): Merr., Enum. **3** (1923) 23

On the wayside, *No.* 28793 (r). Pantropic, but probably a native of tropical Asia.

**Triumfetta semitriloba** Jacq., Enum. Pl. Carib. (1760) 22; Merr., l. c. 31.

On the wayside, *No.* 28515, 28538 (f). Pantropic.

#### MALVACEAE

**Abutilon indicum** (L.) Sweet Hort. Brit. (1826) 54; Merr., Enum **3** (1923) 32.

On the wayside, *No.* 28686, 29169 (f). Pantropic.

**Sida acuta** Burm. f., Fl. Ind. (1868) 147; Merr., l. c. 33.

On the wayside, *No.* 29020, 29116 (r). Pantropic.

**Sida insularis** Hatusima in Journ. Jap. Bot. **35** (1960) 351, f. 1.

On the wayside on the littoral rocky cliff, *No.* 28568 28737, 28853 (f). Formosa and the Ryukyus, new to the flora of the Philippines.

**Sida retusa** L., Sp. Pl. ed. 2 (1763) 961; Merr., l. c. 35.

On the wayside, *No.* 29191 (f). India to Malaysia, recently naturalized in Okinawa.

**Sida rhombifolia** L., Sp. Pl. (1753) 684; Merr., l. c. 35.

On the wayside, *No.* 28535 (f). Pantropic.

**Hibiscus tiliaceus** L., Sp. Pl. (1753) 694; Merr., l. c. 39

In the littoral thicket, *No.* (r). Pantropic.

**Malvastrum coromandelianum** (L.) Garcke in Bonplandia **5** (1857) 297; Merr., l. c. 33.

On the wayside, *No.* 29147 (f). Pantropic, probably of American origin.

**Thespesia populnea** (L.) Soland ex Corr. in Ann. Mus. Hist. Nat. Paris **9** (1807) 290, t. 8, f. 2; Merr., l. c. 42.

In the littoral thicket, *No.* 28828 (r). Tropics of the Old World.

**Urena lobata** L., Sp. Pl. (1953) 692; Merr., l. c. 36.

On the wayside, *No.* 28751, 29150 (f). Pantropic.

#### STERCULIACEAE

**Abroma angusta** (L.) L. f., Suppl. (1781) 341; Merr., Enum. **3** (1923) 48.

In the secondary lowland thicket, *No.* 29173 (r). India to S. China and Malaysia.

**Melochia corchorifolia** L., Sp. Pl. (1753) 675-*M. concatenata* L., Sp. Pl. (1753) 675; Merr., l. c. 46

On the wayside, *No.* (f). Pantropic.

**Pterospermum niveum** Vidal, Rev. Pl. Vas. Filip. (1816) 67; Merr., l. c. 562.

In the thicket on the hill, *No.* 28598, 28998 (r). Formosa (Botel Tobago) and the Philippines.

**Sterculia ceramica** R. Br. in Benn., Pl. Jav. Rar. (1844) 233; Merr., l. c. 53.

In the thicket of the valley, *No.* 28675, 28864 (r). Formosa (Botel Tobago) and the Philippines.

Remarks: Merrill admits the occurrence of *S. oblongata* R. Br. in the Batan Islands though I have not collected.

#### THEACEAE

**Eurya nitida** Korthals in Temminck, Verh. Nat. Gesch. Bot. **3** (1840) 115, f. 17; Kobuski in Ann. Missouri Bot. Gard. **25** (1938) 310-*E. japonica* sensu Merr., Enum. **3** (1923) 74, non Thunb.

In the mossy forest of Mt Iraya at alt. 800 m., *No.* 29109 (f). India to S. China, Malaysia, Caroline and Mariana Islands.

#### GUTTIERAE

**Calophyllum inophyllum** L., Sp. Pl. (1753) 513; Merr., Enum. **3** (1923) 79.

In the littoral thicket, *No.* 28556 (r). India to tropical east Africa, through Malaysia

to Polynesia and the Ryukyus.

#### FLACOURTIACEAE

**Homalium multiflorum** Merr. in Philip. Journ. Sci. **13** (1918) 34; Enum. **3** (1923) 111-Sleumer in Fl. Malesiana Ser. 1, **5**<sup>1</sup> (1954) 56.

In the thicket of the eastern slope of Mt. Iraya at alt. 100 m., *No.* 28761 (f). Philippines (Luzon).

#### PASSIFLORACEAE

**Passiflora foetida** L. var. **hispida** (DC) Killip in Bull. Torrey Bot. Club **58** (1931) 408.

On the wayside, *No.* 29319 (r). A native of tropical America, now widely spread in most tropical countries.

#### BEGONIACEAE

**Begonia fenicis** Merr. in Philip. Journ. Sci. **3** (1908) Bot. 421, **6** (1911) Bot. 401; Enum. **3** (1923) 122-*B. kotoensis* Hay., Mater. Fl. Formos. (1911) 124.

On the littoral shady cliff, *No.* 28485, 28964 (f). S. Ryukyus, Formosa (Botel Tobago), the Philippines (Batan and Babuyan Islands).

#### THYMELAEACEAE

**Wikstroemia retusa** A. Gray in Journ. Bot. Brit & For. **3** (1865) 303-*W. indica* sensu Merr., Enum. **3** (1923) 132, non C. A. Mey., quoad pl. ex Batan Islands.

In the rocky littoral meadow, *No.* 28482, 28754 (f). The Ryukyus, new to the flora of the Philippines. I am not sure whether *W. indica* L. credited to Botel Tobago of Formosa by Liu et al. is *W. retusa* or not as I have never seen the specimen from the Botel Tobago. *W. retusa* is very closely related to *W. indica* L., from which differs by its broader leaves not turning to reddish brown but to green when dried and its tomentose branchlets.

#### ELAEAGNACEAE

**Elaeagnus philippinensis** Perr. in Mem. Soc. Linn. Paris **3** (1824) 114; Merr., Enum. **3** (1923) 134-*E. kotoensis* Hay., Icon. **9** (1919) 90, syn. nov.-*E. macrophylla* sensu Li, woody Fl. Taiwan (1963) 624, non Thunb.

In the lowland thicket, *No.* 28522 28559 (f). Formosa (Botel Tobago) and the Philippines.

#### LYTHRACEAE

**Pemphis acidula** Forst., Char. Gen. (1886) 68, t. 34; Merr., Enum. **3** (1923) 136.

On the littoral rock, *No.* 28525 (r). Tropical coasts of the Old World.

#### COMBRETACEAE

**Quisqualis indica** L., Sp. Pl. ed. 2 (1762) 556; Merr., Enum. **3** (1923) 154.

In the lowland thicket, *No.* 29170 (r). India to Malaysia, introduced in most tropical countries.

**Terminalia catappa** L., *Mant.* 1 (1767) 128; Merr., l. c. 150.

In the littoral thicket, *No.* 28555 (f). Old World tropics generally.

#### MYRTACEAE

**Psidium guajava** L., *Sp. Pl.* (1753) 470; Merr., *Enum.* 3 (1923) 155.

In the littoral meadow near Songsong, *No.* 28882 (a). A native of tropical America, now naturalized in most tropical countries.

**Syzygium calubcob** (C. B. Rob.) Hatusima, comb. nov.-*Eugenia calubcob* C. B. Robin. in *Philip. Journ. Sci.* 4 (1909) Bot. 364; Merr., l. c. 161-*Eugenia suzukii* Kanehira in *Bot. Mag. Tokyo* 46 (1932) 335, syn. nov.

In the lowland thicket, *No.* 28639 (r). Caroline Islands (Isl. Palau) and the Philippines.

**Syzygium kusukusense** (Hay.) Mori in *Trans. Nat. Hist. Soc.* 28 (1938) 504-*Eugenia kusukusensis* Hay., *Icon.* 3 (1913) 119.

In the thicket of valley, *No.* 28591 (r). Formosa, new to the flora of the Philippines unless identical with *S. fastigiatum* (Bl.) Merr. & Perry from the Philippines.

**Syzygium samarangense** (Bl.) Merr. & Perry in *Journ. Arn. Arb.* 19 (1938) 115-*E. javanica* Lam., *Encycl.* 3 (1789) 200.

In the village of Basco, escaped from cultivation?, *No.* 29172 (f). A native of Malaya, now widely cultivated in most tropics.

#### MELASTOMATACEAE

**Astronia ferruginea** Elm., *Leafl.* 4 (1911) 1205; Merr., *Enum.* 3 (1923) 208-*A. pulchra* sensu Hayata in *Mater. Fl. Formos.* (1911) 114, non Vidal-*A. formosana* Kanehira, *Formos. Trees* (1917) 258-*A. cumingiana* sensu Kanehira, *Formos. Trees rev. ed.* (1936) 507, f. 469, non Vidal.

In the thicket on the ridge of Mt. Iraya alt. 400 m., *No.* 29058 (f). S. Formosa and the Philippines.

**Astronia** sp. aff. **ramosii** Merr. in *Philip. Journ. Sci.* 8 (1913) Bot. 343; *Enum.*, l. c. 210.

In the thicket of valley, *No.* 28670 (v. r.), young sterile plant about 1 m. ht. The Philippines.

**Medinilla parvibracteata** Merr. in *Philip. Journ. Sci.* 12 (1917) Bot. 348; *Enum.*, l. c. 202.

In the mossy forest of Mt. Iraya at alt. 800 m., *No.* 29291 (f). Endemic to the Philippines unless identical with *M. magnifica* Lindl.

**Melastoma membranaceum** Merr. in *Philip. Journ. Sci.* 3 (1908) Bot. 423; *Enum.*, l. c. 187.

In the open thicket on the hill, *No.* 28988, 29121 (f). Endemic to the Batan and Babuyan Islands unless identical with *M. polyanthum* Bl.

#### ARALIACEAE

**Boerlagiodendron pectinatum** Merr. in *Philip. Journ. Sci.* 3 (1908) Bot. 253, 424; *Enum.*, l. c. 224.

In the thicket of Mt. Iraya at alt. 100 m., *No.* 28897, 29090 (f). Formosa (Botel Tobago) and the N. Philippines (Batan Island).

**Schefflera octophylla** (Lour.) Harms in Engl. & Prantl, Nat. Pflanzenfam. 3<sup>n</sup> (1894) 38; Li Sargentia 2 (1940) 20.

Mt. Iraya, alt. 300 m., *No.* 29057 (v. r). Indo-China to Formosa and the S. Ryukyus, new to the flora of the Philippines.

**Schefflera odorata** (Blanco) Merr. & Rolfe in Philip. Journ. Sci. 3 (1908) Bot. 117, 424; Merr., l. c. 230.

In the open mossy forest of Mt. Iraya, alt. 700 800 m., *No.* 29057, 29067, 28589 (f). Caroline Islands (Isl. Palau) and the Philippines.

#### UMBELLIFERAE

**Centella asiatica** (L.) Urban in Mart., Fl. Bras. 11<sup>1</sup> (1879); Merr., Enum. 3 (1923) 238.

In the lowland grass field, *No.* 29019 (f). Pantropic.

**Hydrocotyle javanica** Thunb., Diss. Hydrocot. (1798) No. 17, t. 2; Merr., l. c. 237.

In the mossy forest of Mt. Iraya at alt. 700 m., *No.* 29126 (v. r). India to Japan, Malaysia and N. Australia.

**Hydrocotyle sibthorpioides** Lam., Encycl. 3 (1789) 153 Merr., l. c. 237.

On the wet stone-wall in Basco, *No.* 28949 (f). India to Japan, Malaysia, and the Mascarene Islands.

**Peucedanum japonicum** Thunb., Fl. Jap. (1784) 117.; Merr. in Philip. Journ. Sci. 30 (1926) 418.

On the littoral rocky cliff, *No.* (r). Japan to Formosa and the Philippines (Batan Islands)

#### CLETHRACEAE

**Clethra lancifolia** Turcz. in Bull. Sci. Nat. Mosc. 36<sup>2</sup> (1863) 231; Merr., Enum. 3 (1923) 242.

In the mossy forest of Mt. Iraya, alt. 400-800 m., *No.* 29068 (f). Celebes? and the Philippines.

#### MYRSINACEAE

**Ardisia squamulosa** Presl, Rel. Haenk. 2 (1830) 65; Merr., Enum. 3 (1923) 263-A. *kotoensis* Hay., Mater. Fl. Formos. (1911) 180.

In the lowland thicket, *No.* 28557, 28926 (a). Formosa (Isl. Kwasyoto and Botel Tobago), Philippines, Probably southern Asia.

**Maesa denticulata** Mez in Engl., Pflanzenr 9 (1902) 48; Merr., l. c. 253.

In the lowland thicket, *No.* 28562 (f). The Philippines.

**Maesa tenera** Mez in Engl., Pflanzenr. 9 (1902) 28; Walker in Quart. Journ. Taiwan Mus. 12 (1959) 166.

In the thicket on the ridge of Mt. Iraya at alt. 400 m., *No.* 29109 (r). S. Japan, Ryukyus, Formosa, S. China to Indo-China, new to the flora of the Philippines.

- Myrsine philippinensis** A. DC. Prodr. **8** (1844) 94. - *Rapanea philippinensis* (DC). Mez in Engl. Pflanzenr. **9** (1902) 564; Merr., l. c. 273.  
In the low mossy forest of Mt. Iraya at alt. 800 m, No. 29059 (f). Philippines.

#### PRIMULACEAE

- Lysimachia mauritiana** Lam. Encycl. **3** (1789) 592; Merr., Enum. **3** (1923) 275.  
On the littoral rocky cliff, No. 28560 (v. r). Mauritius, India to Japan, New Caledonia, Mariana Islands, Hawaii.

#### SAPOTACEAE

- Palaquium formosanum** Hay., Mater. Fl. Formos. (1911) 184; Merr., Enum. **3** (1923) 280.  
In the lowland thicket, No. 29031 (r). Formosa and the N. Philippines (Batan and Babuyan Islands).  
**Planchonella obovata** (R. Br.) Lam in Bull. Jard. Bot. Buitenz. ser. 3, **8** (1925) 209, f. 58-  
*Sideroxylon ferrugineum* Hook. et Arn. Bot. Beechy Boy. (1841) 266, t. 55; Merr., l. c. 285-  
*Pouteria obovata* (R. Br.) Baehni in Candollea **9** (1943) 324.  
In the littoral thicket of Songsong, No. 28838 (v. r). Malaysia to Australia, northwards to the Ryukyus and the Bonins.

#### EBENACEAE

- Diospyros discolor** Willd. Sp. Pl. (1805) 1108; Merr., Enum. **3** (1923) 291-*D. utilis* Hemsl. in Ann. Bot. **9** (1896) 154.  
In the lowland thicket, No. 28924 (f). Formosa and the Philippines.  
**Diospyros ferra** (Willd.) Bakh. var. **buxifolia** (Rottb.) Bakh. in Gard. Bull. Straits Settlements **7** (1933) 192-*Maba buxifolia* (Rottb) Pers., Syst. **2** (1807) 606; Merr., l. c. 289.  
In the littoral thicket, No. 28952 (r). Tropical Africa and Asia through Malaysia to tropical Australia, Micronesia, and the Ryukyus.  
**Diospyros maritima** Bl., Bijdr. (1825) 669; Merr., l. c. 292-*D. liukiensis* Mak. in Bot. Mag. Tokyo **22** (1908) 159-*D. kusanoi* Hay., Mater. Fl. Formos. (1911) 186.  
In the littoral thicket, No. 28893, 28941 (f). Malaysia to tropical Australia, Micronesia, Samoa, and the Ryukyus.

#### OLEACEAE

- Linociera coriacea** Vidal, Rev. Vasc. Filip. (1886) 181; Merr., Enum. **3** (1923) 303.  
In the thicket of valley, No. 28647 (r). Philippines.  
**Linociera ramiflora** (Roxb.) Wall. Cat. (1831) No. 2824; Merr., l. c. 303.  
In the thicket of Mt. Iraya at alt. 300 m, No. 29066 (r). India to Malaysia, tropical Australia and Formosa (Botel Tobago).

#### LOGANIACEAE

- Buddleia asiatica** Lour., Fl. Cochinch. (1790) 72; Merr., Enum. **3** (1923) 316.  
On the wayside at low altitudes, No. 28825 (r). India to China, Formosa, Malaysia.



- Fagraea obovata** Wall. in Roxb., Fl. Ind. 2 (1824) 33; Merr., l. c. 315.-*F. Sasakii* Hay., Icon. 3 (1913) 151, t. 29.  
Epiphytic in the mossy forest of Mt. Iraya at alt. 600~700 m, No. 29035 (r). India to S. China, Formosa (Botel Tobago), Malaysia.
- Geniostoma batanense** Merr. in Philip. Journ. Sci. 3 (1908) Bot. 427; Enum. 3 (1923) 309-*G. kasyotense* Kaneh. et Sasaki in Trans. Nat. Hist. Soc. Formos. 24 (1934) 400, f. 3-*G. glabra* sensu Li, Woody Fl. Taiwan (1963) 778, f. 312, non Matsum.  
In the mossy forest of Mt. Iraya at alt. 800 m, No. 29129 (f). Formosa (Is. Kwasyoto and Botel Tobago) and the Philippines (Isl. Batan).
- Mitrasacme pygmaea** R. Br., Prodr. Fl. Nov. Holl. 1 (1810) 453; Hara in Journ. Jap. Bot. 30 (1955) 25-*Mitrasacme nudicaulis* Reinw. ex Bl., Bijdr. (1826) 849; Merr., l. c. 311.  
On the rocky summit of the peak at alt. 200 m, No. 28630 (f). India to Malaysia, Micronesia, Australia, New Caledonia, Japan.

## GENTIANACEAE

- Canscora diffusa** (Vahl) R. Br. ex Wall. Cat. (1831) No. 4361; Merr., Enum. 3 (1923) 318.  
On the wet littoral rocky cliff, No. 28491 (r). Tropical Asia through Malaysia to tropical Australia.

## APOCYNACEAE

- Cerbera manghas** L., Sp. Pl. (1753) 208; Merr., Enum. 3 (1923) 330.  
In the littoral thicket, No. 28459 (r). Tropical Asia through Malaysia to tropical Australia, Polynesia, the Ryukyus.
- Parsonsia helicandra** Hook. et Arn., Bot. Beechey Voy. (1836) 197-*P. cumingiana* A. DC., Prodr. 8 (1844) 402; Merr., l. c. 338.  
In the littoral thicket, No. 28508, 28563, 28936, 28937 (a). Ryukyus, Formosa, S. China to Malaysia.
- Tabernaemontana subglobosa** Merr. in Philip. Journ. Sci. 7 (1912) Bot. 242; Enum., l. c. 326-*T. dichotoma* sensu Hay., Icon. 3 (1913) 151, non Roxb.  
In the lowland thicket, No. 28672, 28824 (f). Formosa and the Philippines.

## ASCLEPIADACEAE

- Asclepias curassavica** L., Sp. Pl. (1753) 215; Merr., Enum. 3 (1923) 341.  
On the wayside, No. 28715 (f). A pantropic weed of American origin.
- Cynanchum liukuense** Warb. in Rept. Sp. Nov. Fedde 3 (1907) 305-*C. denigratum* Elm., Leaf. Philip. Bot. 10 (1938) 3549.  
In the littoral thicket, No. 28523, 28679, 28843, 29027 (f). Ryukyus and the Philippines.
- Dischidia** aff. *hirsuta* (Bl.) Decne. in DC. Prodr. 8 (1844); Merr., l. c. 348.  
In the mossy forest of Mt. Iraya, alt. 700 m, No. 29086 (r). Burma to Malaysia.
- Dischidia oiantha** Schltr. in Perk., Frag. Fl. Philip. (1904) 127; Merr., l. c. 348.  
On the rocky cliff of Mt. Mahatam at alt. 400 m, No. 28655 (f). Philippines.

**Hoya meliflua** (Blanco) Merr., Sp. Blancoanae (1918) 318; Enum., l. c. 352.

In the lowland thicket, No. 28876 (v. r). Philippines.

**Hoya odorata** Schltr. in Philip. Journ. Sci. 1 (1906) Suppl. 303; Merr., l. c. 352.

In mossy forest of Mt. Iraya at alt. 700 m, No. 29076 (f). Philippines.

**Hoya** sp.

On the rocky cliff of Mt. Mahatam at alt. 400 m, No. 28656 (r).

**Toxocarpus batanensis** Hatusima, sp. nov., Pl. 5, B.

? *Ichnocarpus volubilis* (Lour.) sensu Merr. in Enum. Philip. Fl. Pl. 3 (1923) 336, non Merr., quoad pl. ex Batan Islands.

Frutex scandens glaberrimus, rami rubro-fusci plerumque 3 mm crassi. Folia opposita, ovato-elliptica plerumque 8-9 cm longa et 5-6 cm lata, apice breviter acuminata, basi subrotundata, margine integra, coriacea in sicco utrinque viridis, nervis lateralibus utrinque plerumque 5, divaricatis, nervulis reticulatis in sicco subtus distinctis sed vix elevatis. Petioli 1.5-4 cm longi. Flores ignoti. Infructescentiae circ. 10 cm longae, pedunculi 2.5-3 cm longi, cetera ignoti. Folliculus linearilanceolatus circ. 13 cm longus 1.5 cm crassus, semina complanata lanceolato-oblonga utrinque obtusa glabra circ. 4 mm longa et 2 mm lata, coma alba circ. 2-3 cm longa.

A frequent climber in the littoral thicket, No. 28634 (type), 28782, 28831 (f).

This may be a species from Batan Islands identified by E. D. Merrill in his Enum. Philip. Fl. Pl. 3 (1923) 336 with *Ichnocarpus volubilis* Merr. This new species somewhat resembles *T. rubricaulis* Elm. from Luzon, but differs from it by its much broader leaves with fewer lateral nerves and reticulated undersurfaces, and its larger follicles.

**Tylophora hispida** Decne. in DC. Prodr. 8 (1844) 610.

In the open thicket on the eastern slope of Mt. Iraya at alt. 100 m, No. (r) Ryukyus, Formosa, S. China, new to the flora of the Philippines.

**Wattakaka volubilis** (L. f.) Stapf in Bot. Mag. 149 (1923) sub t. 8976-*Dregea volubilis* (L. f.) Benth. ex Hook. f., Fl. Brit. Ind. 4 (1883) 46; Merr., l. c. 354.

In the littoral thicket, No. 28790, 28927 (f). India to Java, Philippines, Formosa.

#### CONVOLVULACEAE

**Dichondra repens** Forst., Char. Gen. (1776) 39, t. 20; Merr., Enum. 3 (1923) 357.

On the wayside, No. 28810 (f). Pantropic.

**Ipomea congesta** R. Br., Prodr. (1810) 485-? *I. indica* (Burm.) Merr., Interpret. Herb. Amb. (1917) 445; Enum. l. c.-*Pharabitis congesta* (R. Br.) Hara, Spermatophyt. Jap. 1 (1949) 166.

In the lowland thicket, No. 29000 (f). S. Japan to Malaysia, N. Australia, Polynesia.

**Ipomoea pes-caprae** (L.) Sweet ssp. **brasiliensis** (L.) Ooststr. in Blume 3 (1940) 533-*I. pes-caprae* sensu Merr., l. c. 366, non Roth.

On the strand sandy beach, No. (f). Circum tropical.

**Stictocardia tiliifolia** (Desr.) Hall. f. in Bot. Jahrb. 18 (1894) 159-*S. campanulata* (L.) House in Muhlenbergia 5 (1909) 72; Merr., l. c. 372.

In the lowland thicket, No. 28567 (r). India to Malaysia and the Ryukyus.

## BORRAGINACEAE

- Ehretia microphylla** Lamk., Encycl. Meth. **1** (1783) 425; Merr., Enum. **3** (1923) 375-*Carmona microphylla* (Lam.) Johnst. in Journ. Arn. Arb. **32** (1951) 17.  
In the littoral bush, No. 28491 (f). India to S. China, Formosa, Ryukyus, Malaysia.
- Heliotropium indicum** L., Sp. Pl. (1753) 130; Merr., l. c. 377.  
On the wayside, No. (v. r). Pantropic.
- Messerschmidia argentea** (L. f.) Johnston in Journ. Arn. Arb. **16** (1935) 164-*Tournefortia argentea* L. f., Suppl. Pl. (1781) 133; Merr., l. c. 376.  
In the littoral thicket, No. (r). Tropical Asia to Mauritius, Malaysia, Micronesia and the Ryukyus.

## VERBENACEAE

- Callicarpa denticulata** Merr. in Philip. Journ. Sci. **3** (1908) Bot. 430; Enum., l. c. 383-*C. kotoensis* Hay., Mater. Fl. Formos. (1911) 219-*C. japonica* var. *kotoensis* (Hay.) Masamune in Trans. Nat. Hist. Soc. Formos. **30** (1940) 63-*C. longifolia* sensu Li, Woody Fl. Taiwan (1963) 821, non Lamk.  
In the littoral bush, No. 28691, 29198 (r). Formosa (Botel Tobago) and the N. Philippines (Batan and Babuyan Islands).
- Clerodendron inerme** (L.) Gaertn., Fruct. **1** (1788) 271, t. 57; Merr., l. c. 401.  
In the littoral bush, No. 28506 (f). India to N. Australia, Polynesia through Malaysia, northwards to the Ryukyus.
- Clerodendron trichotomum** Thunb. var. *esculentum* Mak. in Journ. Jap. Bot. **1** (1917) 29-*C. trichotomum* sensu Merr., l. c. 405, non Thunb., quoad pl. ex Isl. Batan.  
In the lowland thicket, No. 29190, 29030 (f). Japan to the Ryukyus, new to the flora of the Philippines.
- Lantana camara** L., Sp. Pl. (1753) 627; Merr., l. c. 380.  
On the wayside, No. 29144 (f). A native of tropical America, now pantropic.
- Lippia nodiflora** (L.) Rich. in Michx. Fl. Bor. Am. **2** (1803) 15; Merr., l. c. 381-*Phyla nodiflora* (L.) Greene in Brittonia **4** (1899) 46.  
On the littoral rocks, No. 29161 (f). Pantropic.
- Premna nauseosa** Blanco, Fl. Filip. (1837) 489; Merr., l. c. 391.  
In the thicket of valley, No. 28552, 28597 (r). Ryukyus (Yaeyama), Formosa (Botel Tobago), the Philippines.
- Premna obtusifolia** R. Br., Prodr. Fl. Nov. Holland. (1810) 512; Merr., l. c. 392.  
In the lowland thicket, No. 28484, 28604, 29030 (f). Malaysia to Australia and the Ryukyus.
- Stachytarpheta jamaicensis** (L.) Vahl, Enum. **1** (1804) 206; Merr., l. c. 381.  
On the wayside, No. 29198 (f). A native of tropical America, now pantropic.
- Vitex quinata** (Lour.) F. N. Will. in Bull. Herb. Bois. II, **5** (1905) 431; Merr., l. c. 396.  
In the thicket of Valley, No. (v. r). India to S. China, Formosa, Malaysia.
- Vitex trifolia** L. subsp. *litoralis* v. Steenis in Blumea **8** (1957) 516-*V. rotundifolia* L. f., Suppl. (1781) 294-*V. trifolia* var. *ovata* (Thunb.) Mak. in Bot. Mag. Tokyo **17** (1903) 92;

Merr., l. c. 397.

On the littoral sandy beach, *No.* 28565 (f). Japan to Malaysia, Australia and Polynesia.

#### LABIATAE

**Ajuga bracteosa** Wall. ex Benth. in Wall., *Pl. As. Rar.* 1 (1830) 59; Merr., *Enum.* 3 (1923) 408.

On the shady stone-wall in Basco, *No.* 29142 (r). Afganistan to the Ryukyus.

**Anisomeles indica** (L.) O. K., *Rev. Gen. Pl.* (1891) 512; Merr., l. c. 412.

On the wayside, *No.* 28539 (f). India to Malaysia, S. China, Formosa and the Ryukyus.

**Coleus formosanus** Hay. in Matsum. & Hay., *Enum. Pl. Formos.* (1906) 320-*C. pubescens* Merr. in *Philip. Journ. Sci.* 3 (1908) Bot. 432; *Enum.*, l. c. 420.

On the littoral rocky cliff, *No.* 28629 (f). Ryukyus (Isl. Yonakuni), Formosa (Botel Tobago) and the Philippines (Batan and Babuyan Islands).

**Hyptis suaveolens** Poir. in *Ann. Mus. Paris* 7 (1806) 472, t. 29, f. 2; Merr., l. c. 417.

On the wayside, *No.* 28798, 28915 (f). A native of tropical America, now pantropic.

**Leonurus sibiricus** L., *Sp. Pl.* (1753) 584; Merr., l. c. 412.

On the wayside, *No.* 29155 (r). A native of Asia, now in all warm countries.

**Leucas javanica** Benth., *Lab. Gen. Sp.* (1836) 641; Merr., l. c. 410.

In the lowland meadow, *No.* 28961 (r). Java to the Philippines.

**Leucas mollissima** Wall. *Pl. As. Rar.* 1 (1830) 62; Merr., l. c. 411.

On the littoral rocks, *No.* 28519, 28708, 28489 (f). India to S. China, the Philippines, Formosa and the Ryukyus.

#### SCROPHULARIACEAE

**Lindernia crustacea** (L.) F. Muell., *Census* (1882) 97; Merr., *Enum.* 3 (1923) 437.

On the wayside, *No.* 28910 (f). Warm countries of the Old World.

**Scoparia dulcis** L., *Sp. Pl.* (1753) 116; Merr., *Enum.*, l. c. 441.

On the wayside, *No.* 29180 (f). A native of tropical America, now pantropic.

#### SOLANACEAE

**Datura metel** L., *Sp. Pl.* (1753) 179; Merr., *Enum.* 3 (1923) 430.

In the waste places in Basco, *No.* (f). A native of tropical Asia, now pantropic.

**Lycopersicum esculentum** Mill., *Gard. Dict.* ed. 8 (1768) No. 2; Merr., l. c. 429.

On the wayside, escaped, *No.* 29006 (r). A native of tropical America, now pantropic in cultivation.

**Physalis minima** L., *Sp. Pl.* (1753) 183; Merr., l. c. 423.

On the littoral wayside, *No.* 28716, 28529 (f). Pantropic.

**Solanum ferox** L., *Sp. Pl.* ed. 2 (1762) 267; Merr., l. c. 426.

In the open littoral thicket, *No.* 28922 (r). Pantropic.

**Solanum indicum** L., *Sp. Pl.* (1753) 187; Merr., l. c. 426.

On the wayside, *No.* 28801 (r). India to Malaysia, S. China, Formosa and the S.

Ryukyus.

**Solanum melongena** L., Sp. Pl. (1753) 186; Merr., l. c. 427.

On the wayside, escaped, *No.* 28800 (r). A native of India, now cultivated in all warm countries.

**Solanum nigrum** L., Sp. Pl. (1753) 186; Merr., l. c. 427.

On the wayside, *No.* 28939, 28778 (f). Cosmopolitan.

**Tubocapsicum anomalum** (Fr. et Sav.) Makino in Bot. Mag. Tokyo **22** (1908) 19-*Capsicum anomalum* Fr. et Sav., Enum. Pl. Jap. **2** (1879) 452; Merr., l. c. 424.

In the thicket of Mt. Iraya at alt. 200 m, *No.* 28977 (r). Himalayas to China, Korea (Isl. Querpaert), Japan, the Philippines.

#### BIGNONIACEAE

**Radermachera fenicis** Merr. in Philip. Journ. Sci. **3** (1908) Bot. 335, 434; Enum. **3** (1923) 446.

In the thicket of Mt. Iraya at alt. 300 m, *No.* 29073 (f). Philippines (Batan and Babuyan Islands).

#### GESNERIACEAE

**Cyrtandra cumingii** C. B. Clarke in DC. Monogr. Phan. **5** (1883) 263; Merr., Enum. **3** (1923) 458-*C. yaeyamana* Ohwi in Joun. Jap. Bot. **13** (May 1937)-*C. iriomotensis* Masamune in Not. Syst. (Paris) **6** (June 1937) 38.

In the thicket of Mt. Iraya at alt. 300 m, *No.* 25011 (f). Philippines and the S. Ryukyus.

**Cyrtandra umbellifera** Merr. in Philip. Journ. Sci. **3** (1908) 435; Enum., l. c. 465-? *C. kotoensis* Hosokawa in Trans. Nat. Hist. Soc. Formos. **25** (1935) 412, syn. nov. (ex descr.)

In the thicket of Mt. Iraya at alt. 300 m, *No.* 29009 (r). Philippines (Batan Island) and Formosa (Botel Tobago).

**Rhynchotechum discolor** (Max.) Burtt in Notes Roy. Bot. Gard. Edinb. **24** (1962) 37-*Isanthera discolor* Max. in Bull. Acad. Petersb. **19** (1874) 523-Merr., l. c. 455.

In the mossy forest of Mt. Iraya at alt. 800 m, *No.* 28954 (r). S. Japan to the Philippines.

#### LENTIBULARIACEAE

**Utricularia orbiculata** Wall., Cat. (1829) No. 1500, nomen nudum; DC., Prodr. **8** (1844) 18; Merr. **3** (1923) 467.

Epiphytic in the mossy forest of Mt. Iraya at alt. 700 m, *No.* 29083 (r). India to S. China, Formosa and Malaysia.

#### ACANTHACEAE

**Blechum brownii** Juss. in Ann. Mus. Nat. Paris **9** (1807) 270; Merr., Enum. **3** (1923) 471.

In the lowland thicket, *No.* 29095 (r). A native of Mexico, now naturalized in most tropical countries.

- Dicliptera contorta** (Blanco) Merr., Sp. Blancoanae (1918) 355; Enum., l. c. 486.  
In the lowland thicket, No. 28774, 28942, 28980 (f). The Philippines.
- Justicia procumbens** L., Sp. Pl. (1753) 15; Merr., l. c. 490.  
On the wayside, No. 28545, 28932, 29145, 29024 (f). India to Australia and Japan.
- Lepidagathis inaequalis** C. B. Clarke ex Elm., Leaf. 5 (1913) 1695; Merr., l. c. 477-*L. tawadae*  
Ohwi in Journ. Jap. Bot. 12 (1936) 385.  
In the open thicket of Mt. Iraya at alt. 100 m., No. 28969 (r). Philippines and the Ryukyus (Yaeyama).
- Ruellia repens** L., Mant. 1 (1767) 89; Merr., l. c. 476.  
In the littoral thicket of Songsong, No. 28933 (r). Burma to S. China and Malaysia.

## RUBIACEAE

- Argostemma solaniflorum** Elm., Leaf. 1 (1906); 5 (1913) 1855; Merr., Enum. 3 (1923) 504-  
*A. iriomotensis* Masamune in Trans. Nat. Hist. Soc. Formos. 25 (1935) 248.  
In the mossy forest of Mt. Iraya at alt. 800 m, No. 29064 (f). Celebes, the Philippines, Formosa (Botel Tobago) and the Ryukyus (Isl. Iriomote).
- Borreria articularis** (L. f.) F. N. Will. in Bull. Herb. Boiss. 2<sup>5</sup> (1905) 956-*B. hispida* (L.) K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. 4<sup>4</sup> (1891) 144, non Spruce 1888; Merr., l. c. 574.  
On the wayside, No. 28644, 28890 (r). India to China, Formosa, the Ryukyus, Malaysia and the Caroline Islands (Yap).
- Canthium gynochthodes** Bail., Adansonia 12 (1878) 199-*Plectronia gynochthodes* (Bail.) Merr., Enum. 3 (1923) 536.  
In the lowland thicket, No. 28654 (v. r). Philippines.
- Dentella repens** (L.) Forst., Char. Gen. (1776) 26, t. 13; Merr., l. c. 492.  
On the shady stone-wall in Basco, No. 29146 (r). India to S. China, through Malaysia to tropical Australia and Polynesia. Introduced in Mexico.
- Gardenia rolfei** (Vidal) Hatusima, comb. nov.-*Villaria rolfei* Vidal, Phan. Cuming. Philip. (1885) 180; Merr., l. c. 532.  
In the littoral thicket, No. 29082 (r). Formosa (Botel Tobago) and the Philippines.
- Geophila herbacea** (Jacq.) O. K., Rev. Gen. Pl. (1891) 300; Merr., l. c. 565.  
In the littoral thicket, No. 28940 (r). Pantropic.
- Hedyotis biflora** (L.) Lamk., Tabl. Encycl. 1 (1791) 272-*Oldenlandia biflora* L., Sp. Pl. (1753) 119; Merr., l. c. 492.  
On the littoral rocky cliff, No. 28572, 28762, 28978 (f). India to S. China, Formosa, Malaysia, Polynesia.
- Hedyotis corymbosa** Lamk., Tabl. Encycl. 1 (1791) 272-*Oldenlandia corymbosa* L., Sp. Pl. (1753) 119; Merr., l. c. 493.  
On the wayside, No. 28813, 29022 (f). Pantropic.
- Hedyotis radicans** (DC.) Miq., Fl. Ind. Bat. 2 (1857) 181; Merr., l. c. 499.  
In the mossy forest of Mt. Iraya at alt. 700 m, No. 29063 (f). Philippines.
- Hedyotis tenelliflora** Bl., Bijdr. (1826) 19; Merr., l. c. 500.  
On the sunny rocky peak, No. 28699 28860 (r). Malaysia to the Ryukyus.

- Lasianthus fordii** Hance in Journ. Bot. **23** (1885) 324; Yamazaki in Journ. Jap. Bot. **39** (1964) 352-*Lasianthus tashiroi* Matsum. in Bot. Mag. Tokyo **15** (1901) 37; Merr., l. c. 567.  
In the mossy forest of Mt. Iraya at alt. 800 m, No. 29043 (r). Ryukyus, Formosa, S. China and the Philippines.
- Lasianthus obliquinervis** Merr. in Philip. Journ. Sci. **1** (1906) Suppl. 136, **2** (1907) Bot. 306, **3** (1908) Bot. 438; Enum., l. c. 567.-*L. chinensis* sensu Maxim. in Bull. Akad. Sci. St.-Pet. **29** (1883) 173, non Benth.-*L. nigrocarpus* Masamune ex Shimizu in Trans. Nat. Hist. Soc. Formos. **34** (1944) 240-*L. obliquinervis* var. *nigrocarpus* Hatusima in Sci. Bull. Agric. & Home Economic Univ. Ryukyu **3** (1956) 23.  
In the thicket of Mt. Iraya at alt. 100 m, No. 28871 (r). Ryukyus, Formosa and the Philippines.
- Morinda citrifolia** L., Sp. Pl. (1753) 176; Merr., l. c. 573.  
In the littoral thicket, No. 28925 (f). India to the Ryukyus and Polynesia.  
var. *bracteata* Hook. f., Fl. Brit. Ind. **3** (1880) 156-*M. bracteata* Roxb., Hort. Beng. (1814) 15, nomen nud., Fl. Ind. **2** (1824) 198; Merr., l. c. 572.  
In the thicket on the hill, No. 28896, 28632 (f). Malaysia to Micronesia and the S. Ryukyus.
- Morinda umbellata** L., Sp. Pl. (1753) 176; Merr., l. c. 574.  
On the rocky peak at alt. 200 m., No. 28674 (r). India to the Ryukyus and Malaysia.
- Mussaenda macrophylla** Wall. in Roxb. Fl. Ind. **2** (1824) 228; Merr., l. c. 518-*M. kotoensis* Hay., Mater. Fl. Formos. (1911) 143.  
In the lowland thicket, No. 28953 (r). India to the Malay Peninsula, S. W. China, Philippines and Formosa (Botel Tobago). According to Jayaweera (Journ. Arn. Arb. **44** (1963) 245) the Philippine form differs sufficiently from the typical to be treated as a variety.
- Neonauclea reticulata** (Havil.) Merr. in Journ. Washin. Acad. Sci. **5** (1915) 542; Enum. l. c. 514-*Nauclea reticulata* Havil. in Journ. Linn. Soc. Bot. **33** (1897) 62.  
In the lowland thicket, No. 28758 (f). Formosa and the Philippines.
- Ophiorrhiza kuroiwai** Mak. in Bot. Mag. Tokyo **20** (1906) 5; Hatusima in Rept. Cooper. Invest. Sci. and Indust. Ryukyu Isls. by Kagoshima Univ. and Ryukyu Univ. **1** (1961) 62-*O. parviflora* Hay., Icon. **2** (1912) 20-*O. mungos* sensu Merr., Enum. **3** (1923) 502, non L.-*O. kotoensis* Hatusima in Journ. Jap. Bot. **14** (1938) 239-*O. kuroiwai* var. *camiguinensis* (Elm.) Hatusima, l. c. (1961) 62, syn. nov.  
In the lowland thicket, No. 28537, 28628 (f). Ryukyus, S. Formosa and the Philippines.
- Ophiorrhiza oblongifolia** DC., Prodr. **4** (1830) 415; Merr., l. c. 502.  
In the mossy forest of Mt. Iraya at alt. 700 m, No. 29102, 29076 (r). Philippines.
- Paederia scandens** (Lour.) Merr. in Contr. Arnold Arb. **8** (1934) 163-*P. tomentosa* Bl., Bijdr. (1826) 968-*P. foetida* sensu Merr., l. c. 570, non L.  
In the lowland thicket, No. 28580, 28767, 29152 (f). Japan to Korea, China, Formosa and the Philippines.
- Psychotria manillensis** Bartl. ex DC., Prodr. **4** (1830) 522; Merr., l. c. 559-*P. liukiensis* Hatusima in Journ. Jap. Bot. **13** (1937) 674, f. 1, syn. nov.  
In the lowland thicket, No. 28643, 28678, 28727, 28730, 28809 (f). Ryukyus, Formosa

(Botel Tobago) and the Philippines.

**Tarenna incerta** Koord. & Val., Bijdr. Boom. Java **8** (1902) 269; Merr., l. c. 526.

In the thicket of valley, *No.* 28676 (r). Formosa (Botel Tobago), Philippines and E. Malaysia.

**Tarenna kotoensis** (Hay.) Masamune in Trans. Nat. Hist. Soc. Formos. **20** (1932) 462-*T. zeylanica* sensu Li, Woody Fl. Taiwan (1963) 873, non Gaertn.

In the thicket of valley, fruits orange coloured, *No.* 28663 (f). Formosa (Botel Tobago) and the N. Philippines (Batan Island), new to the flora of the Philippines. This is well distinguishable from *T. zeylanica* by its different stipules and its not black but orange coloured fruits.

**Timonius arboreus** Elm., Leaf. **1** (1906) 72; Merr., l. c. 541.

In the littoral thicket, *No.* 28850 (r). Formosa (Botel Tobago) and the Philippines.

**Wendlandia luzonensis** DC., Prodr. **4** (1880) 412; Merr., l. c. 506.

In the thicket of Mt. Iraya at alt. 100 m, *No.* 28721 (f). Formosa (Isls. Kwasyoto and Botel Tobago) and the Philippines.

#### CAPRIFOLIACEAE

**Sambucus javanica** Reinw. ex Bl., Bijdr. (1825) 657-Merr. Enum., **3** (1923) 576.

Cultivated in the village of Basco, *No.* 28863 (r). India to S. China and Malaysia.

#### CUCURBITACEAE

**Bryonopsis laciniosa** (L.) Naud. in Ann. Sci. Nat. Bot. **5**<sup>o</sup> (1886) 30; Merr., Enum. **3** (1923) 583.

In the littoral thicket, *No.* 28840 (f). Tropical Africa and Asia through Malaysia to Australia.

**Gynostemma pentaphyllum** (Thunb.) Mak. in Bot. Mag. Tokyo **16** (1902) 179; *G. pedata* Bl., Bijdr. (1825) 23; Merr., l. c. 586.

In the lowland thicket, *No.* (v. r). Japan to S. E. Asia.

**Melothria mucronata** (Bl.) Cogn. in DC., Monogr. Phan. **3** (1881) 608; Merr., l. c. 581.

In the lowland thicket, *No.* 28700 (r). India to Formosa and Malaysia.

**Trichosanthes quinquangulata** A. Gray, Bot. Wilkes U. S. Explor. Exped. (1854) 645; Merr., l. c. 585.

In the lowland thicket, *No.* 28607, 28912 (r). Formosa (Isl. Kwasyoto and Isl. Botel Tobago) and the Philippines.

#### GOODENIACEAE

**Scaevola sericea** Vahl, Symb. Bot. **2** (1791) 37-Forsberg & Sachet in Taxon **5** (1956) 7-*S. frutescens* (Mill.) Krause in Engl., Pflanzenr. **54** (1912) 125, f. 25; Merr., Enum. **3** (1923) 590.

On the littoral sandy beach, *No.* 28471 (glabrous form, f). India to Madagascar, through Malaysia to tropical Australia, Polynesia and the Ryukyus.



## COMPOSITAE

- Ageratum conyzoides** L., Sp. Pl. (1753) 839; Merr., Enum. 3 (1923) 597.  
On the wayside, *No.* (f). A pantropic weed of American origin.
- Artemisia asiatica** Nakai ex Pampanini in Nuovo Giorn. Bot. Ital. n. s. 36 (1930) 383, pro syn.-*A. vulgaris* sensu Merr., l. c. 616, non L.  
Naturalized in the village of Basco, *No.* (r). A native of E. Asia.
- Artemisia japonica** Thunb., Fl. Jap. (1784) 310; Merr., l. c. 616.  
On the littoral rocky cliff, *No.* 28759, 28581 (f). Japan, Korea, China, Formosa, the N. Philippines.
- Bidens pilosa** L., Sp. Pl. (1753) 832-Merr., l. c. 614.  
On the wayside, *No.* 28533 (f). Pantropic.  
var. **minor** (Bl.) Scherff in Bot. Gaz. 80 (1925) 387.  
On the wayside, *No.* (r). Pantropic.
- Blumea lacera** (Burm. f.) DC., Prodr. 5 (1836) 436; Merr., l. c. 602.  
On the wayside on the hill, *No.* (f). Tropical Africa, through Malaysia to the Ryukyus.
- Blumea lanceolaria** (Roxb.) Druce, Rept. Bot. Exch. Club. Brit. Isles 4 (1917) 609; Randeria in Blumea 10 (1960) 218-*B. spectabilis* DC., Prodr. 5 (1836) 446; Merr., l. c. 604-*B. conspicua* Hay., Mater. Fl. Formos. (1911) 151.  
In the lowland thicket, *No.* 28787 (r). India to Java, Philippines, S. China, Formosa and the Ryukyus.
- Crepidiastrum lanceolatum** (Houtt.) Nakai in Bot. Mag. Tokyo 34 (1920) 150; Kitamura, Comp. Jap. 4 (1955) 106.  
On the littoral rocky cliff, *No.* 28681 (f). Japan to S. Korea, China, Formosa, new to the flora of the Philippines.
- Crossocephalum crepidioides** (Benth.) S. Moore in Journ. Bot. 1 (1912) 211.  
On the wayside, *No.* (f). A native of tropical Africa, now in most warmer regions of the Old World.
- Dichrocephala biflora** Schlecht. in Linnaea 25 (1852) 209-*D. latifolia* DC. in Wight, Contrib. Bot. Ind. (1834) 11; Merr., l. c. 599.  
On the wayside, *No.* (f). Tropical and subtropical Africa and Asia, through Malaysia.
- Eclipta prostrata** (L.) L., Mant. Pl. 2 (1771) 286-*E. alba* (L.) Hassk., Pl. Jav. Rar. (1848) 528; Merr., l. c. 610.  
On the wayside, *No.* 28744 (f). Cosmopolitan.
- Elephantopus scaber** L., Sp. Pl. (1753) 814; Merr., l. c. 596; Koster in Blumea 1 (1935) 463 (form of var. *sinuatus* Miq.).  
On the wayside, *No.* 28549, 28739 (f). Pantropic.
- Elephantopus spicatus** Aubl., Pl. Guin. 2 (1775) 808; Merr., l. c. 596-*Pseudoelephantopus spicatus* (Juss.) Rohr. in Skrivt. Nat. Selsk. Kiob. 2 (1792) 213; Koster, l. c. 466.  
On the wayside on the hill, *No.* 28665 (r). Pantropic weed of Mexican origin.
- Emilia sonchifolia** DC., Prodr. 6 (1837) 302; Merr., l. c. 620.  
On the wayside, *No.* (f). Pantropic weed of the Old World origin.

- Erigeron sumatrensis** Retz., Obs. **5** (1789) 28; Merr., l. c. 600.  
On the wayside in Basco, No. (f). Possibly may be native of tropical America.
- Eupatorium formosanum** Hay. var. **quasitripartitum** (Hay.) Kitamura in Acta Phytotax. et Geobot. **1** (1932) 284; Comp. Jap. **1** (1936) 295-? *E. japonicum* sensu Merr., l. c. 597, non Thunb.-*E. reevesii* sensu Merr., l. c. 597, non Wall., quoad pl. ex Batan Islands. In the grass field on the hill, No. 28651, 28725, 28872 (f). Ryukyus, Formosa, new to the flora of the Philippines.
- Glossogyne tenuifolia** Cass., Dict. Sci. Nat. **51** (1827) 475; Merr., l. c. 613.  
On the littoral rocky cliff, No. 28487, 28610 (r). Formosa, S. China, the Philippines, Micronesia (Marianne and Caroline Islands), Australia and New Caledonia.
- Gynura elliptica** Yabe & Hayata in Journ. Coll. Sci. Tokyo **18**<sup>8</sup> (1904) 25, f. 2; Merr., l. c. 617. On the littoral cliff, No. 29178 (f). N. Philippines (Batan Islands) and Formosa (Isl. Botel Tobago and Isl. Kwasyoto).
- Ixeris laevigata** (Bl.) Sch.-Bip. var. **oldhami** (Max.) Kitamura in Mem. Coll. Sci. Univ. Kyoto, Ser. B., **28**<sup>1</sup>, Art. 14 (1956) (Compos. Jap. **5**) 111-*Lactuca dentata* sensu Merr., l. c. 621, non C. B. Robin.  
On the littoral cliff, No. 28509 (f). Formosa, S. China and the Philippines, species: Indo-China, Java and New Guinea.
- Lactuca indica** L., Mant. **2** (1771) 278; Merr., l. c. 621.  
On the wayside, No. (r). India to Japan and Malaysia.
- Mikania cordata** (Burm.) B. L. Robins. in Contr. Gray Herb. **104** (1934) 65; Koster in Blumea **1** (1935) 504-*M. scandens* Clarke, Comp. Ind. (1876) 35; Merr., l. c. 598.  
In the lowland thicket, No. (f). India to Formosa, Malaysia and tropical Africa.
- Siegesbeckia orientalis** L., Sp. Pl. (1753) 900; Merr., l. c. 610.  
On the wayside, No. (f). Common in the warmer regions of the Old World.
- Synedrella nodiflora** (L.) Gaertn., Fruct. **2** (1791) 456, f. 171; Merr., l. c. 612.  
On the wayside, No. 28739A (f). A ubiquitous pantropic weed of American origin.
- Tridax procumbens** L., Sp. Pl. (1753) 900.  
In the playground in Basco, No. 28888 (r). A weed of tropical American origin.
- Vernonia arborea** Ham. in Trans. Linn. Soc. **14** (1825) 218; Merr., l. c. 592; Koster in Blumea **1** (1935) 382.  
In the thicket on the hill at alt. 300 m, No. 28709 (r). India to S. China and Malaysia. The form from Batan Island may belong to var. *obovata* Moore in Journ. Bot. **61** (1923) Suppl. 27.
- Vernonia cinerea** Less. in Linnaea **4** (1829) 291; Merr., l. c. 592.  
On the wayside, No. 28675 (f). Old World tropics.
- Vernonia maritima** Merr. in Philip. Journ. Sci. **3** (1908) Bot. 440; Merr., Enum. l. c. 593; Kitamura, Comp. Jap. **2** (1940) 291; Koster, l. c. 443-*V. kawakamii* Hay., Mater. Fl. Formos. (1911) 649.  
On the littoral rocky cliff of Songsong Bay, No. 28909 (f). Formosa and the N. Philippines (Batan Islands). According to Koster (opt. cit.) this is very closely related to *V. zollingeriana* Sch.-Bip. from Java.
- Vernonia patula** (Dry.) Merr. in Philip. Journ. Sci. **3** (1908) Bot. 439; Enum., l. c. 594;

Kitamura, l. c. 290.

On the wayside, *No.* 28971, 29008 (r). Malaysia to Formosa.

**Wedelia biflora** DC. in Wight, Contr. Bot. Ind. (1834) 18; Merr., l. c. 611.

On edge of the littoral thicket, *No.* (r). India to S. Japan, Malaysia, Australia and Polynesia.

**Wedelia chinensis** (Osbeck) Merr. in Philip. Journ. Sci. 12 (1917) 111; Enum., l. c. 611.

In the wet grass field, *No.* (f). S. Japan to Formosa and S. E. Asia.

**Youngia japonica** (L.) DC., Prodr. 7 (1838) 194; Kitamura, Comp. Jap. 4 (1955) 117-*Crepis japonica* (L.) Benth., Fl. Hongk. (1861) 194; Merr., l. c. 622.

On the wayside, *No.* 28498 (f). India to Japan, Malaysia, Australia and Polynesia.

#### PANDANACEAE

**Freycinetia formosana** Hemsl. in Kew Bull. (1896) 166-*F. batanensis* Martelli in Webbia 3 (1910) 29, 309; Merr., Enum. 1 (1923) 9.

In the mossy forest of Mt. Iraya at alt. 800 m, *No.* 29070 (v. a). S. Ryukyus, Formosa and the N. Philippines.

**Freycinetia williamsii** Merr. in Philip. Journ. Sci. 3 (1908) Bot. 315, 394; Enum., l. c. 14-*F. tawadana* Kimura in Journ. Jap. Bot. 17 (1941) 262, syn. nov.

In the mossy forest of Mt. Iraya at alt. 600 m, *No.* 29077 (a). Ryukyus (Isl. Iriomote) and the N. Philippines.

**Pandanus tectorius** Solander in Perkins, Journ. Voy. H. M. S. Endeav. (1773) 46; Merr., l. c. 21.

On the littoral shore, *No.* 28920 (a). India to the Ryukyus, through Malaysia to tropical Australia and Polynesia.

#### GRAMINEAE

**Apluda mutica** L., Sp. Pl. (1753) 82; Merr., Enum. 1 (1923) 36.

On the wayside, *No.* 28514 (f). India to the Ryukyus, through Malaysia to Australia and Polynesia.

**Arundo formosana** Hackel in Bull. Herb. Boiss. 7 (1899) 724; Ohwi in Acta Phytotax. et Geobot. 10 (1941) 265-*A. parviflora* Ohwi in Fedde Rept. 36 (1934) 40.

On the littoral cliff, *No.* 28495 (r). Ryukyus (Isl. Iriomote) and Formosa, new to the flora of the Philippines.

**Axonopus compressus** (Sw.) Beauv., Ess. Agrost. (1812) 12.

In the playground of Basco, *No.* 28499A (f). Origin of tropical America.

**Brachiaria distachya** (L.) Stapf in Prain, Fl. Trop. Afr. 9 (1919) 565-*Panicum distachyon* L., Mant. Alt. (1771) 183; Merr., l. c. 63.

On the wayside, *No.* 28507, 29159 (f). India to the Ryukyus, through Malaysia.

**Capillipedium kwashotense** (Hay.) Hsu in Journ. Jap. Bot. 37 (1962) 280-*Bothriochloa kwashotensis* (Hay.) Ohwi in Acta Phytotax. et Geobot. 11 (1942) 168.

On the littoral rocky cliff, *No.* 28496, 28818 (f). S. Ryukyus and Formosa, new to the flora of the Philippines.

- Cenchrus viridis** Spreng., Syst. Veg. **1** (1825) 301; Merr., l. c. 74.  
In the village of Basco, No. (r). A native of tropical America, now widely distributed in the Old World tropics.
- Centotheca lappacea** (L.) Desv. in Nouv. Bull. Soc. Philom. **2**(1810) 189-*C. latifolia* (Osbeck) Trin. Fund. Agrost. (1820) 141; Merr., l. c. 91.  
In the lowland thicket, No. 28696 (f). Old World tropics generally.
- Chloris barbata** Sw., Fl. Ind. Occ. **1** (1797) 200; Merr., l. c. 84.  
On the wayside, No. 28466 (r). A pantropic weed of American origin.
- Chrysopogon aciculatus** (Retz.) Trin., Fund. Agrost. (1820) 188-*Andropogon aciculatus* Retz., Obs. **5** (1789) 22; Merr., l. c. 42.  
In the grass field at low altitudes, No. 28738, 28852 (a). India to the Ryukyus, through Malaysia to Micronesia and Polynesia.
- Cymbopogon tortilis** (Presl) Hitchc. in Lingn. Sci. Journ. **7** (1931) 246-*Andropogon nardus* L. var. *tortilis* (Presl) Merr., l. c. 46.  
In the grass field on the hill, No. 28821 (r). Philippines, Indo-China, S. China and Formosa.
- Cynodon dactylon** (L.) Presl, Syn. **1** (1804) 85; Merr., l. c. 83.  
On the wayside, No. 28990 (f). Pantropic.
- Cyrtococcum accrescens** (Trin.) Stapf in Hook. Icon. Pl. (1922) sub tab. 3096-*C. patens* var. *latifolia* (Honda) Ohwi in Act. Phytotax. et Geobot. **11** (1942) 47.  
In the lowland thicket, No. 28547, 28788 (f). India to Malaysia and the Ryukyus.
- Cyrtococcum patens** (L.) A. Camus in Bull. Mus. Hist. Nat. Paris **27** (1921) 118-*Panicum patens* L., Sp. Pl. (1753) 86; Merr., l. c. 66.  
In the lowland thicket, No. 28773 (f). India to Malaysia and the Ryukyus.
- Dactyloctenium aegypticum** (L.) Richt., Pl. Europ. **1** (1889) 68; Merr., l. c. 86.  
On the Wayside, No. 28517, 28745 (f). Pantropic.
- Dichanthium aristatum** (Poir.) C. E. Hubb. in Kew Bull. **1939** (1939) 654-*Andropogon nodosus* (Willem) Nash in N. Amer. Fl. **17** (1912) 122.  
In the abandoned arable land, No. 28520 (r). A native of India, introduced in Australia, Africa and America.
- Digitaria henryi** Rendle in Journ. Linn. Soc. Bot. **36** (1904) 323-? *D. chinensis* sensu Merr., l. c. 53, p. p., non Nees.  
In the littoral grass field, No. 28571 (f). S. Japan to Formosa, new to the flora of the Philippines. Bor reduces this species to a synonym of *D. adscendens* Henr., but it differs from that species.
- Digitaria microbachne** (Pr.) Henr. in Meded. Rijks. Herb. n. **16** (1930) 13-*D. corymbosa* (Roxb.) Merr., Enum. **1** (1923) 53, excl. syn., p. p.  
In the arable land, No. 28617, 28747 (a). Tropical Asia generally.
- Digitaria timorensis** (Kunth) Bal. in Morot, J. de Bot. **4** (1890) 138-? *D. chinensis* sensu Merr., l. c. 53, non Nees.  
In the arable land, No. 28755, 28770 (f). India to Japan, through Malaysia to Polynesia.
- Eleusine indica** (L.) Gaertn., Fruct. **1** (1788) 8; Merr., l. c. 85.

- On the wayside, *No.* 28773 (f). All warm countries.
- Eragrostis multicaulis** Steud., Syn. Pl. Glum. **1** (1855) 426-*E. pilosa* sensu. Merr., l. c. 90, p. p., non Beauv.  
On the wayside, *No.* (f). S. E. Asia to Japan.
- Eragrostis nutans** (Retz.) Nees ex Steud., Nom. Bot. ed. **2** (1840) 563-*E. elongata* (Willd.) Jacq., Ecolog. Gram. (1818) 3, t. 3, Merr., l. c. 88.  
In the air port at Basco, *No.* 29099 (r). India to Formosa and Malaysia.
- Eragrostis tenella** (L.) P. Beauv. ex Roem. et Schult., Syst. Veg. **2** (1817) 576-*E. amabilis* (L.) Wight et Arn. ex Hook. et Arn., Bot. Beechey Voy. (1838) 251; Merr., l. c. 88.  
On the wayside, *No.* 28606, 29140 (f). Old World tropics generally.
- Eriochloa procera** (Retz.) C. E. Hubbard in Kew Bull. **1930** (1930) 256-*E. ramosa* (Retz.) O. K., Rev. Gen. Pl. **2** (1891) 775; Merr., l. c. 58.  
On the Wayside, *No.* 28684 (f). India to tropical Africa, Malaysia and the Ryukyus.
- Imperata cylindrica** Beauv. var. **major** (Nees) C. E. Hubb. ex Hubb. et Vanghan, Grass. Maur. (1940) 96-*I. cylindrica* Beauv. var. *koenigii* (Retz.) Dur. et Schinz, Consp. Fl Afr. **5** (1894); Merr., l. c. 30.  
On the lowland hill, *No.* (v. a). Warm countries of the Old World.
- Isachne debilis** Rendle ex Forbes et Hemsl. in Journ. Linn. Soc. Bot. **36** (1904) 322; Merr., l. c. 58.  
In the thicket of Mt. Iraya at alt. 200 m, 28948 (f). Formosa and the Philippines.
- Ischaemum setaceum** Honda in Bot. Mag. Tokyo **38**(1924) 54; Monogr. (1930) 360-*I. ciliare* sensu Merr., l. c. 37, quoad pl. ex Isl. Batan, non Retz.  
On the wet littoral cliff, *No.* 29167 (r). Formosa (Botel Tobago and South Cape), new to the flora of the Philippines.
- Lepturus repens** (G. Forst.) R. Br., Prodr. Fl. Nov. Holl. (1810) 207.  
On the littoral beach, *No.* 28493, 28500 (f). Ceylon through Malaysia to tropical Australia, Polynesia, and the Ryukyus.
- Microstegium ciliatum** (Trin.) A. Camus in Ann. Soc. Linn. Lyon, n. s. **68** (1921) 201.  
In the lowland thicket, *No.* 28546, 29017 (f). India to Malaysia and S. Japan.
- Miscanthus floridulus** (Labill.) Warb. ex Schum. et Lautb., Fl. Deutsch. Schutzgeb. Südsee (1901) 166-*M. japonicus* (Thunb.) Anders. in Oefv. Vet. Akad. Forhandl. Stockh. (1855) 166; Merr., l. c. 31.  
On the way side on the hill, *No.* 28844, 29189 (r). Japan to the Moluccas and Polynesia.
- Miscanthus sinensis** Anders. var. **condensatus** (Hack.) Makino in Bot. Mag. Tokyo **27** (1913) 254-*M. sinensis* sensu Merr., l. c. 31, non Anders.  
Near the summit of Mt. Iraya, above 800 m above sea level, *No.* 28764, 29038 (a). Bonins, S. W. Japan to Formosa. Species: Japan to China, the Philippines, Celebes.
- Oplismenus compositus** (L.) P. Beauv. Ess. Agrost. (1812) 54, 168, 169; Merr., l. c. 71.  
In the low land thicket, *No.* 28764, 28970 (f). Pantropic.
- Oplismenus undulatifolius** (Ard.) Beauv. var. **imbecillis** (R. Br.) Hackel in Gov. Lab. Publ. (Philip.) **35** (1906) 81; Merr., l. c. 72.  
In the lowland thicket, *No.* 29100 (f). Ryukyus to Formosa, Malaysia, Micronesia,

tropical Australia.

**Panicum maximum** Jacq., Collect. Bot. **1** (1786); Merr., l. c. 65.

In the abandoned arable land, *No.* 28536 (r). A native of tropical Africa, now cultivated in most tropical countries for forage purposes.

**Pogonontherum crinitum** (Thunb.) Kunth, Enum. Pl. **1** (1833) 478-*P. paniceum* (Lam.) Hack. in Allgem. Bot. Zeitschr. **12** (1906) 178; Merr., l. c. 35.

On the cliff along the road, *No.* 28520, 29194 (f). India to Japan, through Malaysia to New Hebrides.

**Paspalum conjugatum** Berg. in Act. Helvet **7** (1772) 129, t. 8; Merr., l. c. 56.

In the grass field at low altitudes, *No.* 28499 (f). A native of tropical America, now pantropic.

**Paspalum orbiculare** G. Forst., Fl. Insul. Austr. Prodr. **7** (1786)-*P. scrobiculatum* sensu Merr., l. c. 56, non L.

In the grass field at low altitudes, *No.* 28717 (f). India to Japan, through Malaysia to Polynesia.

**Paspalum vaginatum** Sw., Prodr. Veg. Ind. Occ. (1788) 21; Merr., l. c. 57.

In the littoral wet grass field, *No.* (r). Pantropic.

**Rottboellia exaltata** L. f., Nov. Gram. Gen. (1779) 40, t. 1; Merr., l. c. 39.

In the grass field in Basco, *No.* 28544 (f). Common in tropical Asia, Africa, Malaysia, Australia.

**Saccharum spontaneum** L., Mant. **2** (1771) 183-*S. spontaneum* var. *indicum* Hack. in DC., Monogr. Phan. **6** (1889) 117; Merr., l. c. 32.

On the littoral wayside, *No.* 28504 (f). India to S. Japan, through Malaysia to Micronesia and Polynesia.

**Schizostachyum lima** (Blanco) Merr. in Am. Journ. Bot. **3** (1916) 62; Enum., l. c. 98.

In the thicket of Mt. Iraya at alt. 100 m, a shrub 5 m ht., *No.* 28664, 28983, 29065 (f). Philippines and the Caroline Islands (Isl. Palau).

**Schizostachyum textorium** (Blanco) Merr. in Am. Journ. Bot. **3** (1916) 64; Enum., l. c. 99.

In the mossy forest of Mt. Iraya at alt. 300-700 m *No.* 28878 (f). Philippines.

**Setaria pallide-fusca** (Schumach.) Stapf et C. E. Hubb. in Kew Bull. **1930** (1930) 259-*S. geniculata* sensu Merr., l. c. 72, non Beauv.

On the wayside, *No.* (r). Old World tropics.

**Setaria palmifolia** (Koenig) Stapf in Journ. Linn. Soc. Bot. **42** (1914) 186; Merr., l. c. 73.

In the lowland thicket, *No.* 28985 (f). India to S. Japan and Malaysia.

**Sorghum nitidum** (Vahl) Pers., Syn. Pl. **1** (1805) 101-*Andropogon nitidus* (Vahl) Kunth, Rev. Gram. **1** (1829) 166; Merr., l. c. 47.

In the grass field on the hill, *No.* 28618, 28822 (r). India to Malaysia and the Ryukyus.

**Sporobolus diander** (Retz.) Beauv., Agrost. (1812) 26; Merr., l. c. 80.

On the wayside, *No.* 28767, 29148, 29177 (f). India to the Ryukyus, through Malaysia to tropical Australia.

**Themeda triandra** Forsk., Fl. Aegypt.-Arb. (1775) 178; Merr., l. c. 50.

On the littoral cliff, *No.* 28513, 28733 (a). Tropical Asia and Africa through Malaysia to Australia.

- Themeda villosa** (Poir.) A. Camus in Lecomte, Fl. Gen. de Indo-Chine 7 (1922) 364-T.  
*gigantea* (Cav.) Hack. in DC. Monogr. Phan. 6 (1889) 670, p. p.; Merr., l. c. 50.  
On the littoral wayside, No. 28468, 28579 (f). India to Malaysia.
- Thuarea involuta** (Forst.) Roem. et Schult., Syst. 2 (1817) 782; Merr., l. c. 75.  
On the littoral sandy beach, No. 29149 (f). Ceylon to Madagascar, through Malaysia to Australia, Polynesia, the Ryukyus.
- Vetiveria zizanioides** (L.) Nash in Small, Fl. South-east U. S. (1903) 67-*Andropogon zizanioides* (L.) Urban, Symb. Antil. 4 (1903) 79; Merr., l. c. 49.  
On the wayside, No. 28540 (r). A native of tropical Asia, now pantropic, cultivated for perfume purposes, but is occasionally naturalized.
- Zoisia matrella** (L.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 230; Enum., l. c. 51.  
On the littoral rocky places, No. 28746 (a). Tropical Asia and Africa through Malaysia to Australia and western Polynesia.

## CYPERACEAE

- Carex sociata** Boott in A. Gray, Bot. Jap. (1859) 420 et Illustr. 4 (1867) 200; Ohwi, Cyperac. Jap. 2 (1943) 376-C. *ligata* Boott var. *nexa* (Boott) Kükenth. in Engl., Pflanzenr. 38 (1909) 474; Merr., Enum. 1 (1923) 139.  
On the littoral rocky cliff of Songsong Bay, No. 28969 (r). S. Japan, Formosa, S. China and the Philippines. A sedge growing abundantly in the mossy forest of Mt. Iraya at about 500-600 m., though I have collected no fruiting specimens, may belong to this species.
- Cyperus brevifolius** (Rottb.) Hassk., Cat. Hort. Bog. (1844) 24-*Kyllinga brevifolia* Rottb., Descr. et Icon. (1773) 13, t. 4, f. 3; Merr., l. c. 114.  
In the open grass field, No. 28685 (r). Pantropic.
- Cyperus compressus** L., Sp. Pl. (1753) 46; Merr., l. c. 103.  
On the wayside, No. No. 28748 (f). Warm countries of the World.
- Cyperus cyperinus** (Retz.) Suringer, Het. Gesl. Cyp. Mal. Archip. (1898) 154, f. 6, f. 10-*Mariscus cyperinus* (Retz.) Vahl, Enum. Pl. 2 (1806) 377; Merr., l. c. 113.  
On the wayside, No. 28573, 28701, 28777, 28803, 28965 (f). India to Malaysia and Polynesia, northwards to Japan.
- Cyperus cyperoides** (L.) O. K., Rev. Gen. Pl. 3<sup>3</sup> (1898) 333-*Mariscus sieberianus* Nees in Linnaea 9 (1834) 286, nomen; Merr., l. c. 114.  
On the wayside, No. 28548 (r). Pantropic.
- Cyperus distans** L. f., Suppl. (1781) 103; Merr., l. c. 105.  
In the arable land, No. 29165 (r). Pantropic.
- Cyperus javanicus** Houtt., Nat. Hist. 2<sup>13</sup> (1782), t. 88, f. 1-C. *pennatus* Lam., Illustr. 1 (1791) 144-*Mariscus pennatus* (Lam.) Merr., Enum. 1 (1923) 113.  
In the littoral grass field, No. 28469 (r). Tropical Africa, through Malaysia to Polynesia and the Ryukyus.
- Cyperus kyllinga** Endl., Cat. Hort. Ac. Vind. 1 (1842) 94-*Kyllinga monocephala* Rottb., Descr. et Icon. (1773) 13, t. 4 f. 4; Merr., l. c. 115.  
On the humid wayside, No. 28833 (f). Pantropic.

- Cyperus pumilus** L., Cent. Pl. **2** (1756) 6-C. *uncinatus* sensu Merr., l. c. 108, non Poir.  
On the littoral wayside, No. 28473 (r). Tropical Asia.
- Cyperus rotundus** L., Sp. Pl. (1753) 45; Merr., l. c. 45.  
On the wayside, No. 29136 (f). All warm countries.
- Cyperus polystachyos** Rottb., Descr. et Icon. (1773) 39, t. 11, f. 1-*Pycreus odoratus* (L.) Urban, Symb. Antil. **2** (1900) 164; Merr., l. c. 110.  
On the wayside, No. 28994 (r). All warm countries.  
var. **leptostachys** Boeck. in Linnaea **35** (1868) 478-*Pycreus odoratus* var. *holosericeus* (Link) Merr. in Journ. Str. Branch. Roy. As. Soc. **76** (1917) 79; Enum., l. c. 111.  
In the lowland thicket, No. 28779, 28886 (f). Tropical Asia.
- Fimbristylis dichotoma** (L.) Vahl, Enum. Pl. **2** (1806).  
In the open grass field, No. 28566, 28602, 28916 (f). Japan to Malaysia, S. E. Asia and Africa.  
var. **annua** (All.) T. Koyama in Journ. Fac. Sci. Univ. Tokyo, Sect. 4, Vol. **8**<sup>3</sup> (1961) 111-*F. annua* (All.) Roem. et Schult., Syst. **2** (1817) 95; Merr., l. c. 121.  
On the wayside, No. 28467, 28614 (f). Japan, Korea, Manchuria, China, Kamtschatka, Europe, Malaysia, Australia.  
ssp. **longispica** (Steud.) Koyama var. **boninensis** (Hay.) Koyama, l. c. 113-*F. boninensis* Hay., Icon. **6** (1916) 109-*F. urakasiana* Kükenth. in Engl. Bot. Jahrb. **59** (1924) 5-*F. longispica* var. *boninensis* (Hay.) Ohwi, Cyper. Jap. **2** (1944) 80.  
On the littoral cliff on the eastern foot of Mt. Iraya, No. 28713 (f). Bonins and the Mariana Islands, new to the flora of the Philippines.
- Fimbristylis cymosa** R. Br. ssp. **umbellato-capitata** (Hillebr.) T. Koyama in Micronesica **1** (1964) 82-*F. cymosa* R. Br. var. *umbellato-capitata* Hillebr., Fl. Hawaii Isls. (1888) 473-*F. capitulifera* Merr. in Philip. Journ. Sci. **9** (1914) Bot. 265; Enum., l. c. 122.  
On the littoral rocky cliff, No. 28501, 28771 (f). Ceylon to Malaysia, Pacific Islands, the S. Ryukyus.
- Scleria terrestris** (L.) Fassett in Rhodora **26** (1924) 159-*S. luzonensis* Palla in Allg. Bot. Zeitschr. **13** (1906) 49; Merr., l. c. 134.  
In the grass field on the hill, No. 28627 (r). S. E. Asia, Malaysia to Australia and the Ryukyus.

## PALMAE

- Areca catechu** L. var. **batanensis** Becc. in Philip. Journ. Sci. **14** (1919) 304; Merr., l. c. 168.  
In the littoral thicket of Songsong, No. 28841 (r). Philippines.
- Calamus siphonopathus** Mart. var. **batanensis** Becc. in Philip. Journ. Sci. **3** (1908) Bot. 342, **14** (1919) 355; Merr., l. c. 153.  
In the lowland thicket, No. 28883 (f). Endemic, Species: Philippines.
- Cocos nucifera** L., Sp. Pl. (1753) 1188; Merr., l. c. 170.  
In the lowland thicket, cultivated or naturalized, No. (f). A native of Polynesia, now in most tropical countries in cultivation.

## ARACEAE

- Alocasia macrorrhiza** (L.) Schott, Melet. (1832) 18; Merr., Enum. **1** (1923) 185.



In the lowland thicket, No. (f). India to Malaysia and S. Japan.

**Dieffenbachia picta** Schott in Oestr. Bot. Wochenbl. (1852) 68.

Naturalized in the valley of Mt. Iraya, No. 29014 (r). A native of tropical America, usually cultivated for ornament.

**Epipremniopsis huegeliana** (Schott) Engl. in Engl. & Krause, Pflanzenr. 37 (1908) 138; Merr., l. c. 177.

In the lowland thicket, No. 28894 (f). Philippines.

**Homalomena philippinensis** Engl. ex Engl. & Krause in Pflanzenr. 55 (1912) 55, f. 33; Merr., l. c. 180.

In the thicket of Mt. Iraya at alt. 200 m, No. 28736 (f). Philippines.

**Pothoidium lobbianum** Schott in Oestr. Bot. Wochenbl. 7 (1857) 70; Merr., l. c. 174.

In the thicket of Mt. Iraya at alt. 100-300 m, No. 28856, 2905, 29107 (f). Celebes, Ternate and the Philippines.

**Raphidophora liukuensis** Hatusima in Acta Phytotax. et Geobot. 20 (1962) 57, fig. 1.

In the thicket of Mt. Iraya at alt. 300 m, No. 28919 (f). Ryukyus (Yaeyama), ? Formosa (Botel Tobago) and the Philippines.

#### FLAGELLARIACEAE

**Flagellaria indica** L., Sp. Pl. (1753) 333; Merr., Enum. 1 (1923) 191.

In the lowland thicket, No. 28669 (f). Tropical Africa and Asia through Malaysia to Australia and the Ryukyus.

#### COMMELINACEAE

**Aneilema malabaricum** (L.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 232; Enum., 1 (1913) 196.

On the wayside, No. 28620 (f). India to China, the Ryukyus, Malaysia.

**Aneilema vitiense** Seem. var. **petiolata** C. B. Clarke in DC. Monogr. Phan. 3 (1881) 220; Merr., l. c. 197.

In the lowland thicket, No. 28671, 28857, 28984 (f). Formosa, Philippines, Moluccas, Micronesia. Species: Samoa and Fiji.

**Commelina auriculata** Bl., Enum. Pl. Jav. 2 (1830) 146.

On the wayside, No. 28817, 28947 (f). Malaysia to Australia and S. Japan.

**Cyanotis capitata** (Bl.) C. B. Clarke in DC., Monogr. Phan. 3 (1881) 198; Merr., l. c. 198.

On the wayside, No. 28524 (r). Formosa to Indo-China and Malaysia.

**Pollia sorzogonensis** (E. Meyer) Steud., Nomencl. ed. 2, 2 (1841) 368; Merr., l. c. 194-P. *minor* Hayata ex Honda in Bot. Mag. Tokyo 45 (1931) 2, syn. nov.

In the lowland thicket No. 28638, 28731 (r). S. Japan to Formosa, Malaysia.

#### LILIACEAE

**Dracaena angustifolia** Roxb., Hort. Beng. (1814) 24-*Pleomele angustifolia* (Roxb.) N. E. Br. in Kew Bull. (1914) 277; Merr., Enum. 1 (1923) 205.

In the thicket of Mt. Iraya at alt. 300 m., No. 29074 (r). India to Indo-China, Formosa, through Malaysia to Micronesia and Australia.

- Dianella nemorosa** Lam., Encycl. **2** (1786) 276; Schlittler in *Blumea* **6** (1947) 209.  
On the littoral rocky cliff, *No. 28486* (v. r). Malaysia to S. Japan.
- Lilium longifolium** Thunb. in Trans. Linn. Soc. **2** (1794) 333; Merr., l. c. 204.  
On the littoral rocky cliff, *No. 28633* (v. r). Ryukyus to Formosa, S. China and the Philippines (Batan Island).
- Liriope muscari** (Decne.) Bailey, Gentes Herb. **2**, fasc. 1 (1929) 33, fig. 18-*L. graminifolia* (L.) Bak. in Journ. Soc. Bot. **17** (1879) 499; Merr., l. c. 207, excl. syn.  
On the rocky littoral cliff of Songsong Bay, *No. 28913* (v. r). Japan to S. China and the Philippines.
- Smilax bracteata** Presl, Rel. Haenk. **1** (1827) 131-Merr., l. c. 207.  
In the thicket of Mt. Iraya at alt. 100 m., *No. 28869* (r). S. Japan to Formosa, S. China, Indo-China, Philippines, Caroline Islands (Isl. Truk).

## AMARYLLIDACEAE

- Crinum asiaticum** L., Sp. Pl. (1753)292; Merr., Enum. **1** (1923) 210.  
On the littoral sandy beach, *No. 28590* (f). India to Japan and W. Polynesia.
- Curculigo capitulata** (Lour.) O. K., Rev. Gen. Pl. (1891) 703; Merr., l. c. 213.  
In the mossy forest of Mt. Iraya at alt. 700 m., *No. 29087* (f). India to S. China and Formosa, through Malaysia to tropical Australia.
- Curculigo orchioides** Gaertn. Fruct. **1** (1788) 63, t. 16; Merr., l. c. 213.  
In the open grass field, *No. 28848* (r). India to Japan and Malaysia.

## DIOSCOREACEAE

- Dioscorea alata** L., Sp. Pl. (1753) 1033; Merr., Enum. **1** (1923) 215.  
Cultivated, *No. 28766, 29094* (f). A native of the Old World tropics, now cultivated in most tropical countries.
- Dioscorea cumingii** Prain et Burk. var. **ramosii** Burkill in Fl. Malesiana Ser. I. **4** (1951) 317  
-? *D. heptaphylla* Sasaki in Trans Nat. Hist. Soc. Formos. **21** (1931) 47.  
In the lowland thicket, *No. 28584* (r). N. Philippines (Batan and Babuyan Islands) and Formosa (Botel Tobago).
- Dioscorea esculenta** (Lour.) Burk., Gard. Bull. S. S. **1** (1917) 396, 3 pl.; Fl. Malesiana, l. c. 307; Merr., l. c. 216.  
Cultivated, *No. 287922* (a). A native of Siam and Indo-China, now cultivated in most tropical countries.
- Dioscorea flabellifolia** Prain & Burk. in Elmer, Leaflet. **5** (1913) 1593; Merr., l. c. 217; Burk. in Fl. Malesiana, l. c. 309.  
In the lowland thicket, *No. 28982* (r). Philippines, N. Borneo, Caroline Islands (Isl. Palau).
- Dioscorea luzonensis** Schauer, Nov. Act. Nat. Cur. **19**, Suppl. 1 (1843) 444; Merr., l. c. 21; Burk. in Fl. Malesiana, l. c. 325.  
In the lowland thicket, *No. 28642A* (r). Philippines.

## ZINGIBERACEAE

**Alpinia flabellata** Ridl. in Philip. Journ. Sci. **4** (1909) Bot. 188-*Languas flabellata* (Ridl.) Merr., Enum. **1** (1923) 231-*A. yaeyamensis* Masamune in Trans. Nat. Hist. Soc. Formos. **24** (1934) 208, syn. nov.-*A. pubiflora* sensu Hatusima in Journ. Jap. Bot. **24** (1934) 84, 84, non K. Schum.

In the lowland thicket, No. 28794, 29028 (f). S. Ryukyus (Yaeyama) and the Philippines.

**Costus sericeus** Bl., Enum. Pl. Jav. **1** (1827) 62: Merr., l. c. 246.

In the thicket of Mt Iraya at alt. 100 m., No. 29013 (r). Burma through Malaysia to New-Guinea.

## MARANTHACEAE

**Donax cannaeformis** (Forst. f.) K. Schum. in Engl. Bot. Jahrb. **15** (1893) 440; Merr., Enum. **1** (1924) 249.

In the lowland thicket, No. 28935 (r). Java and Borneo to New Guinea, the Aru and Admiralty Islands, New Hebrides, the Mariana Islands, and Formosa (Botel Tobago)

## ORCHIDICEAE

**Appendicula fenixii** (Ames) Schltr. in Fedde, Rept. Beih. **1** (Orch. Deutsch-New-Guinea) (1912) 336; Ames in Merr., Enum. **1** (1924) 325-*Podochilus fenixii* Ames in Philip. Journ. Sci. **6** (1911) Bot. 48.

In the mossy forest of Mt. Iraya at alt. 600 m., No. 29069 (r). Philippines (Batan Island).

**Calanthe furcata** Batem. ex Lindl. in Bot. Reg. **24** (1838) Misc. 28; Ames in Merr., l. c. 333. In the mossy forest of Mt. Iraya, alt. 500 m., No. 29037 (f). Malaysia to Polynesia, Micronesia, Ryukyus, Bonins and S. China.

**Chrysoglossum villosum** Bl., Bijdr. (1825) 338, f. 7; Ames in Merr., l. c. 280.

In the mossy forest of Mt. Iraya, alt. 800 m., No. 29060 (r). Malaysia.

**Dendrobium crumentatum** Sw. in Schrad. Journ. Bot. **2** (1799) 237; Ames in Merr., l. c. 346.

In the thicket of Mt. Iraya, alt. 100-400 m., No. 29072 (f). India to S. China, Formosa.

**Dendrobium miyakei** Schltr., Orch. Sino-Jap. (1919) 64.

In the mossy forest of Mt. Iraya, alt. 500 m., No. 29091 (f). Formosa (Kwasyoto and Botel Tobago Islands), new? to the flora of the Philippines.

**Dendrobium ventricosum** Kränzl. in Engl. Pflanzenr. IV, **50**, II, B. 21 (1910) 209; Ames in Merr., l. c. 357-? *D. equitans* Kränzl., l. c. 228.

In the forest of Mt. Iraya, alt. 100-500 m., No. 29079 (f). Formosa (Botel Tobago and Kwasyoto Islands) ? and the Philippines.

**Goodyera rubicunda** Lindl. in Bot. Reg. **25** (1839) Misc. 61-*Epipactis rubicunda* (Bl.)

A. A. Eaton in Proc. Biol. Soc. Wash. **21** (1908) 65; Ames in Merr., l. c. 271-*Goodyera longicolumna* Hay., Icon. **6** (1916) 92, syn. nov.-*G. yayeyamae* Ohwi in Journ. Jap. Bot. **13** (1937) 439, syn. nov.

In the thicket of Mt. Iraya alt. 100 m., No. 28826 (r). Malaysia to the S. Ryukyus.

**Habenaria cirrhifera** Ohwi in Acta Phytotax. et Geobot. **1** (1932) 141.

In the thicket of Mt. Iraya at alt. 100 m., *No. 28891, 29061* (r). Rhykyus, new? to the flora of the Philippines.

**Habenaria goodyeroides** D. Don. Prodr. Fl. Nepal. (1825) 25; Ames in Merr., l. c. 257.

In the open grass field on the hill at alt. 200 m., *No. 28687* (r). India to Malaysia and Formosa.

**?Hetaeria oblongifolia** Bl., Fl. Jav. Orch. (1858) 85; Ames in Merr., l. c. 278.

In the mossy forest of Mt. Iraya alt. 700 m., *No. 29036* (f). Java, Moluccas, New Guinea, Philippines.

**Microstylis** sp.

In the mossy forest of Mt. Iraya, alt. 800 m., *No. 29047* (f).

**Spathoglottis plicata** Bl., Bijdr. (1825) 401, f. 76; Ames in Merr., l. c. 336.

On the cliff of Mt. Iraya at alt. 100 m., *No. 28784* (r). Malaysia to Micronesia, Formosa and the S. Ryukyus.

### Explanation of Plates

#### Plate 1.

- A. Mt. Iraya (alt. 1008 m.) seen from the hill behind Basco. Most slopes are intensively grazed. Phot. by J. Amamia.
- B. *Freycinetia formosana* (*F. batanensis*) association on Mt. Iraya at about 800 m. above the sea level. Phot. by J. Amamia.

#### Plate 2.

- A. Eastern part of Mt. Iraya seen from the summit, grasses in the background are *Miscanthus sinensis* var. *condensatus* Mak. Phot. by J. Amamia.
- B. Littoral road leading to the Songsong Bay. Phot. by J. Amamia.

#### Plate 3.

- A. Eastern part of Mt. Iraya seen from the summit, white patches on the ridge are *Miscanthus sinensis* var. *condensatus* Mak. association. Phot. by J. Amamia.
- B. Eastern valley of Mt. Iraya seen from the summit. Phot. by J. Amamia.

#### Plate 4.

- A. A view of valley behind Mahatao, six palms in the center are cocos palm. Phot. by M. Sato.
- B. Littoral road cut opened the steep rocky slope near Mahatao. Phot. by M. Sato.

#### Plate 5.

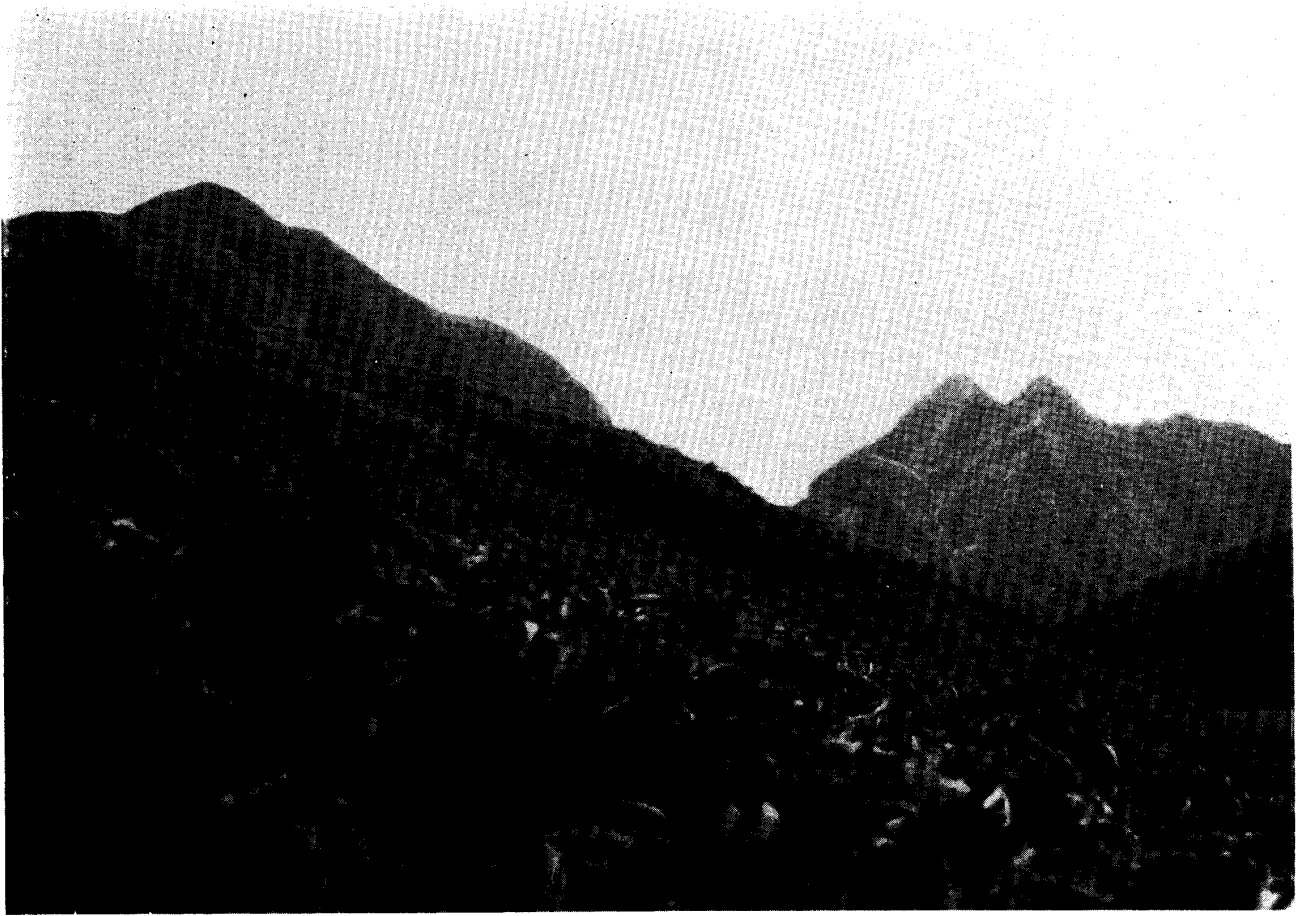
- A. *Cyclea insularis* var. *luxurians* Hatusima (type).
- B. *Toxocarpus batanensis* Hatusima (type).

Plate I A



B





B



Plate 3 A



B

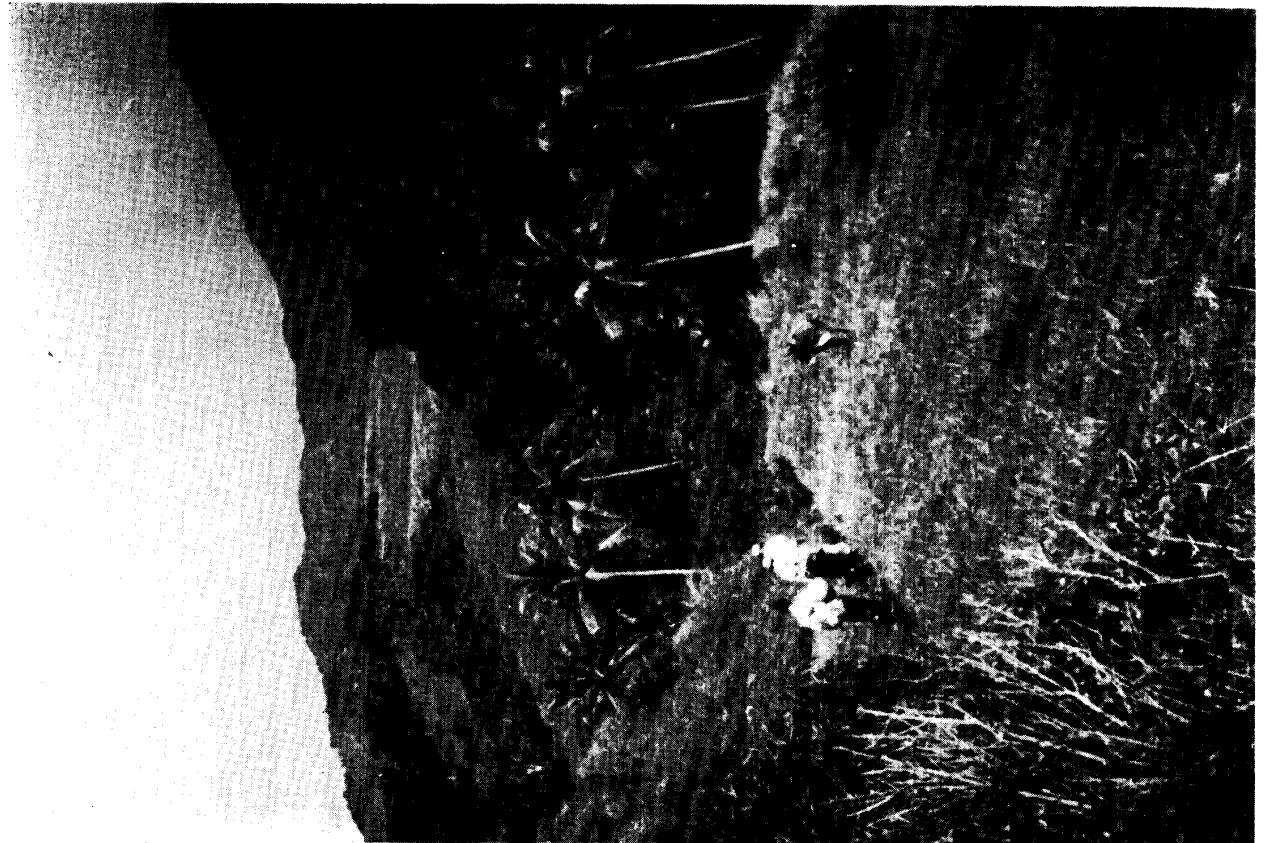


B



Plate 4

A





B

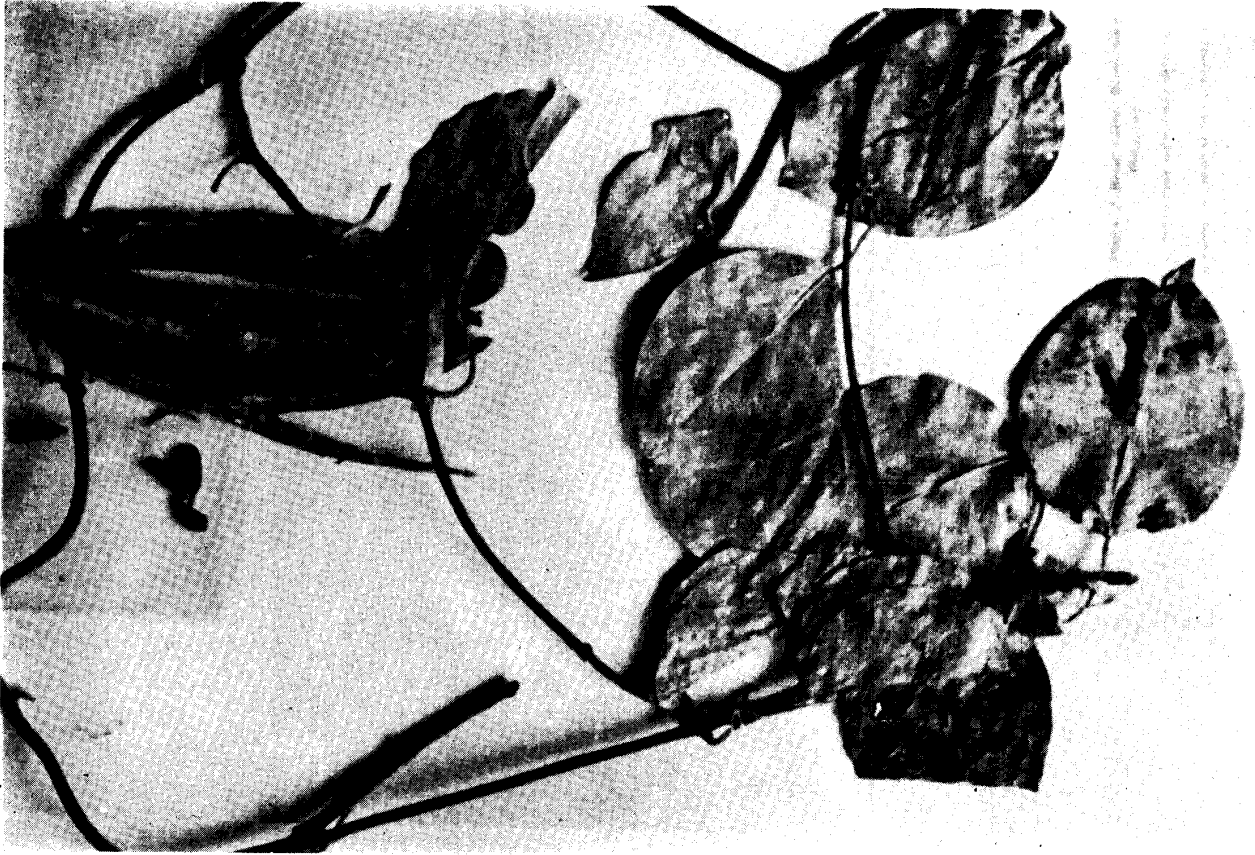
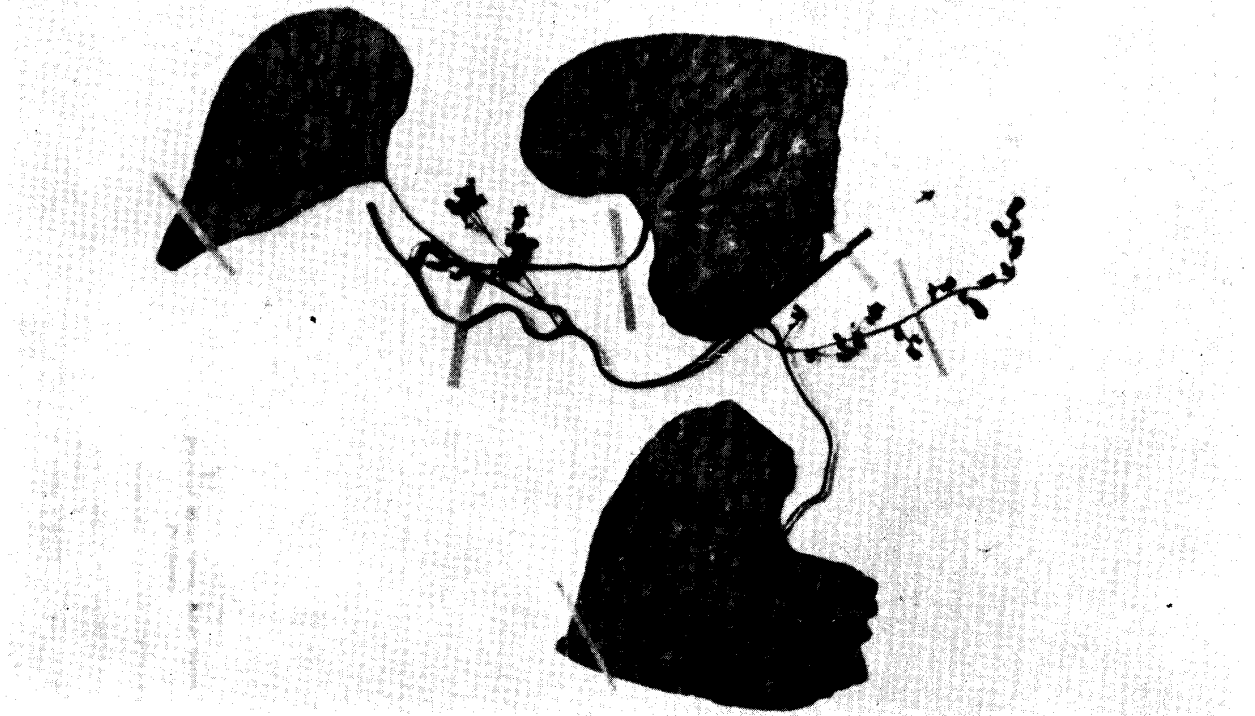


Plate 5

A



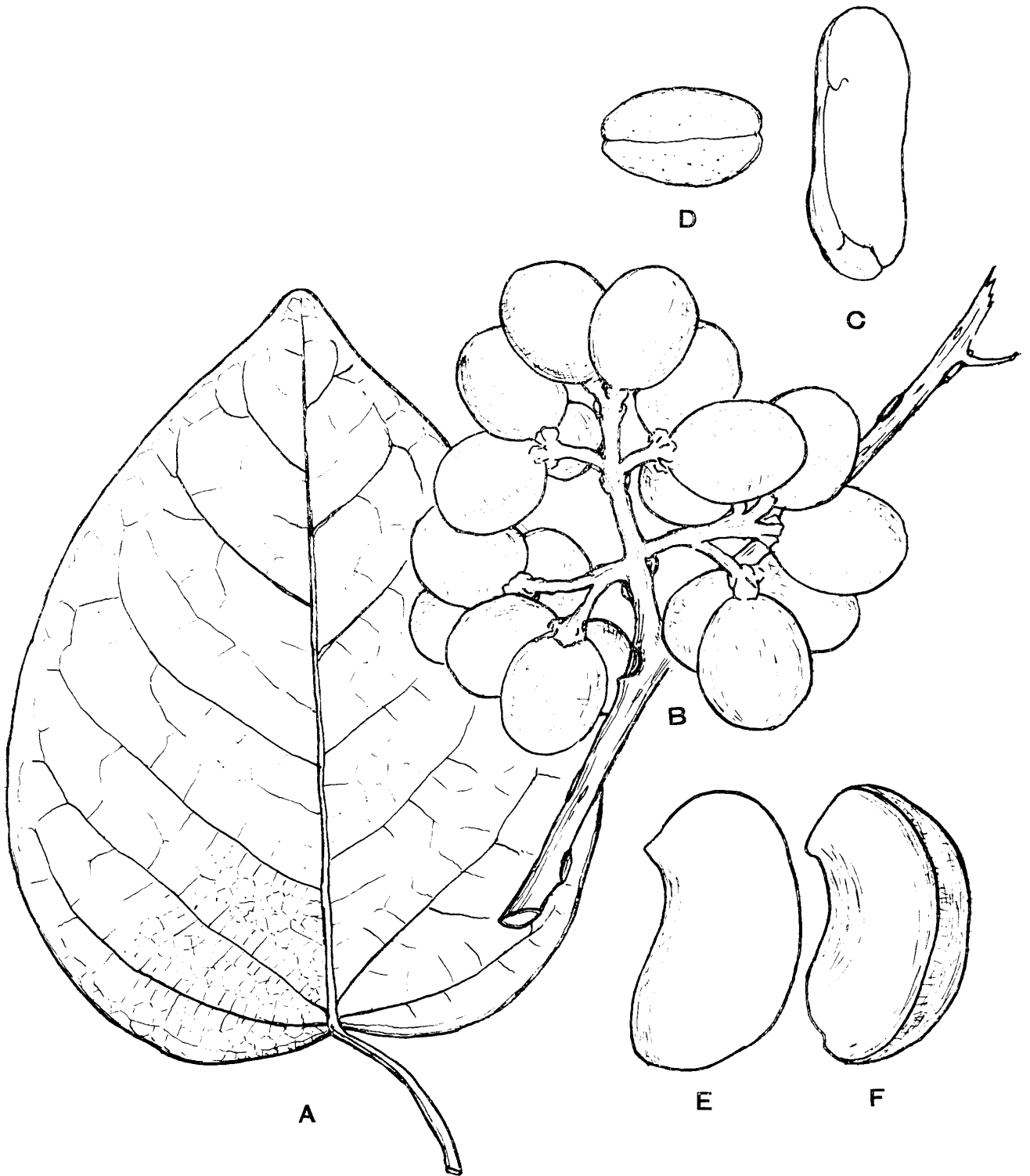


Fig. 1. *Batania insignis* Hatusima. A, a leaf  $\times 0.9$ ; B, infructescence  $\times 0.9$ ; C, endocarp  $\times 2.9$ ; D, the same in cross section  $\times 3$ ; E, a piece of the endocarp seen from inside  $\times 2.9$ ; F, the opposite piece of the same endocarp seen from oblique inside  $\times 2.9$ .