RECORD

3 717

F. R. Fosberg

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31155 - 31782

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* * *

Look up A.L.

32039-40

32041-52

32491-93

look on Rota
map for

loc. of
airstrip

and

Meringa plantation
on road up to
airstrip.

Write her kinds of labels that
it may be necessary to bring
to Dupont for replacing
bad ones, a missing one.

PH, 6.5 soil on lava
7 much
7 ash in canyon
7.5 ash in canyon

Begin with
no. 31155

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Ms. 76

31155 - 31782

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A BOORUM & PEASE PRODUCT

1950 Haw. Is.

Jan. 15 Mokuape Peninsula,
n. side

Pyramid rock 80° w. of N.

High pt. Moku Manu 47° e. of N.

Site #1 sea level,

flat coral rock

no soil, awash with
sea water, belt about

10 m wide or less. perfectly

flat in general topography
"solution bench" awash
with water and top roughness
almost closed veg.largely brown algae,
rather unevenly closed,
Sargassum (2 sp.), Ectocarpus,
Lithothrix (?), Padina,
and another brown alga,
dominants, but in
different proportions
on inner and outer
parts of belt, no place
with more than 3-4
actually dominant.2 layers, 1-2 cm, other, 4-10
cm.

2-3 m. + strand

Site #2 Flat but rough
coral rock with gravelly
soil in pockets,
mixture of "black sand"
and coral limestone debris
Very sparse stand
of Sesuvium portulacastrum
- nanophyll, succulent
leaves, herbaceous stems
1 layer 5 cm. thick
(no associated species except
ecological belt | occasional
keakola from next
belt above, not enough
to constitute a shrub
layer, even scattered.Belt about 10-15 m.
wide on limestone
bench just at foot
of steep bluffsObviously very frequently
subject to spray.

1950 Johnston Island

Jan. 19 Looked around at night. Tried to check occurrences reported in Pac. Sci. 3:338-9, 1949. Of the plants seen that were previously reported only *Eleusine indica* deserves any note. It is abundant rather than rare.

31155 *Setaria verticillata* Beauv.
occasional around buildings

56 *Eleusine indica* (L.) Gaertn.
abundant around edges of air strip and around paths.

57 *Pandanus tectorius* Paul.
planted around houses (1 plant)

58 *Nicotiana glauca* Graham
1 plant seen, planted

59 *Coccolobis uvifera* L.
commonly planted around houses

60 *Schinus terebinthifolius* Raddi
planted around houses

unusually robust form, culms spreading from root crown.

small plant 1 m. tall.

shrub 1 1/2 m. tall, leaves pale glaucous green, sub-fleshy; flowers yellow.
sterile shrubs 1-2 m. tall.
sterile shrub 1 m. tall.

1950 ^{Marshall Is.} Kwajalein Atoll

Jan. 19 general inspection of islet with attention to vegetation and to species unrecorded from Atoll; changes since 1946.

The island is still barren-looking, though considerably more luxuriant than in 1946. Principal conspicuous vegetation is *Messerschmidia*, average trees of which are 3-4 m. tall. Shrub layer of *Scaevola* (sometimes forming small tree).

Wedelia, *Pluchea indica* ~~taberna~~ (common), *P. odorata* (common locally).

Pioneer herb layer by far the most diversified and widespread - found everywhere around establishments, air strip, etc. Esp. on lagoon beach a sterile grass that must be *Paspalum vaginatum* covers large areas almost exclusively. In the wetter places away from the beach *Cyperus ferox* (?) forms dense patches.

On freshly exposed coral, *Phyllanthus niruri* and *Euphorbia hirta* come up in

Kwajalein Islet

Kodachrome roll 1 B+W. roll A.

1-2

growth of *Wedelia biflora* on recently disturbed ground

3-4

Wedelia biflora plant

5-6

same, closer.

7-8

strip of *Messerschmidia* and *Scaevola* e. of air strip, showing some wind-shear effects.

9-14

pioneer vegetation of shallow-rooted plants on new coral rubble surface.

15-16

Well-grown *Messerschmidia* grove about center of islet.

great abundance. In most weedy patches *Cenchrus*, *Chloris inflata*, *Cenchrus echinatus*, *Fimbristylis cymosa*.

Conyza canadensis + *C. bonariensis* are common toward av. end.

The laws of *Cenchrus* are a serious annoyance.

- 31161 *Digitaria pruriens* var. *microbachne*
locally common in waste spots
- 5 62 *Euphorbia heterophylla*
occasional as weed or
garden plant
- 2 63 *Eclipta alba* (L.) Hassk.
edge of marshy weedy place
- 1 64 *Lonchus oleaceus* L.
^{rare or} weedy coral flat near air strip
- 5 65 *Tridax procumbens*
common on weedy coral flat
near air strip
- 5 66 *Euphorbia hypericifolia* L.
occasional on weedy
coral flat near air strip
- 1 67
one vigorous clump on
weedy coral flat near airstrip
- 3 68 *Conyza bonariensis*
common on weedy coral flat
near airstrip
- 5 69 *Conyza canadensis*
occasional on weedy coral flat
near airstrip
- 5 70 *Pluchea odorata*
common, in places abundant,
in vicinity of air strip
- 3 71 *Conyza bonariensis* (L.)
occasional around buildings
- 5 72 *Cyperus ~~per~~ odoratus* L.
abundant in wet places
- 2 73 *Phyllanthus ~~per~~ amarus* Schum. & Th. det. G.
abundant almost everywhere

- erect, bushy herb 1 m.
tall, lower 2/3 of floral
bracts scarlet, distal
third green.
prostrate; rays white.
- erect
- prostrate and branched
at base, scapes ascending,
- erect, tips nodding;
sap milky.
- over 1 m. tall, sterile.
- erect, pappus dull whitish;
flowers white.
- erect, flowers white.
- shrub 2 m. tall,
aromatic; flowers
pinkish white.
- flowers white; pappus
whitish.
- caespitose, stems
bluntly triangular.
- erect, this tall in
protected spots.

- 31174 *Amaranthus spinosus* L.
occasional in sheltered moist place
- 76 *Leucaena glauca*
one small shrub seen, in nursery, probably planted.
- 77 *Solanum nigrum* L.
weedy edge of nursery plot
- 78 *Amaranthus dubius* Mart.
weedy edge of nursery plot
- 79 *Pluchea indica*
common generally
- 80 *Solanum nigrum* L.
weedy disturbed ground
- 81
planted in nursery
- 82 *Stachytarpheta ~~jamaicensis~~ ^{indica}*
planted in nursery
(but seen elsewhere as weed)
- 83
planted in nursery
- 84 *Leoparia dulcis*
abundant in weedy wet place
- 85 *Amaranthus dubius* Mart.
common locally in coconut grove.
- 86 *Emilia javanica* (Burm. f.) Rob.
common locally in weedy places
- 87 *Chloris inflata*
common or abundant generally
ctd. on p. 14

- erect branched herb,
stems bronzed by
red mottling.
shrub 1 m. tall, branched.
- tangled bushy herb, ^{stems green;}
berries black, flower white.
- erect ~~shrub~~ bushy herbs
up to ~~1~~ 1 m. tall, stems
reddish. (one branch from
each of two plants on each sheet).
- shrub 1 m. tall;
heads pinkish.
- erect, stems ^{dark} purple, fls. white.
- twining, flowers pinkish
white, unripe pods
deep purple.
- spreading much branched
herb; flower violet.
- erect, branched herb
6 dm. tall.
- erect; flowers pale
bronze green.
- flowers brick red.

Jan. 20 Darrit, Uliga & Dalap Islets, e. end of atoll. Vegetation quite luxuriant, arborescent. *Pluchea odorata* is well established on Darrit, in places forming greater part of shrub layer. *Pluchea indica* also locally common. This and a woody plant resembling *Euphorbia hypericifolia*, and *Chloris inflata* said by native informant Mike, to have come with Americans, not to have been brought intentionally.

Dalap Islet

- 31191 *Hedyotis bipinna*
common on weedy airstrip
- 92 *Euphorbia ~~hypericifolia~~* prostrata Ait.
common on weedy airstrip
- 93 *Chloris inflata*
common on weedy airstrip
- ~~94 *Euphorbia*~~ *Darrit Islet*
- 94 *Euphorbia*
local along road in sparse woods, around ~~house~~ installations.
- 95 *Pluchea odorata*
abundant, forming thickets locally
- 96 *Pluchea indica*
common locally
- Uliga Islet, weedy roadside*
- 97 *Cyperus*
- 98 *Physalis*
- 99 *Physalis*

same informant gave name "kejbar" for *Achrosia paniculata* and ~~says~~ said the fruits were used as fish-poison in old days, also that children eat kernels.

Kod. roll 1 27-28 *Pluchea*
Pan roll A 17 *odorata*

Kod. roll 1 17-20 *Majuro*
Pan roll A 9-11 from air.

prostrate; flowers white, plant chlorotic.
prostrate, purplish green, stems red-purple. small tufts, racemes purplish.

erect, tips arching.
aromatic shrub 2 m. tall, rounded; flowers pinkish white. shrubs 1 m. tall; heads pinkish.

tangled herb, fls. yellow.

rare in wet place

14

1950 Kwajalein atoll
Marshall Is.

(ctd. from p. 12)

31188 *Dactyloctenium aegyptium*
rare roadside3 89 *Paspalum vaginatum*
abundant in many
places near inner
beach90 *Cyperus*
common very locally in
wet places around airport
buildings

(back to 12)

31200

Kwaj.

Cyperus rotundus L.
weed in nursery plot, rare

Kwajalein Islet

15

dense spreading
clump.
forming dense
ground-covers.

spreading tufts.

Jan. 21

soil in coconut grove pH 7-7.5.

Site #1 - north end of island /
Scaevola brush, somewhat
broken. Ipomoea (per. c.)
ground cover in openings.
Scaevola & Messerschmidia
considered rosette shrubs.
Ipomoea per caprae a lian.

Site #2 Coconut plantation
seriously destroyed by wa-
broken second layer of
Scaevola, Mess. etc.
Solid undergrowth of
Wedelia.

Site 3 n. of center of I.
open ground. solid
layer 1-2 m. deep of
Wedelia bipinn.

Site 4 center of I. toward lagoon
open ground solid
layer 2-4 dm. deep of
Ipomoea (per. caprae)

Site 5 center of I just inside
windward beach - almost
solid layer of Vagana ma.
1-2 dm. lvs leathery.

Kodachrome ^{roll 1} 23-24 Ipomoea per. caprae
Pan. roll 4 13
Kod. roll 1 25-26 + pan. 14

buildings covered by
Wedelia, Ipomoea, etc.
Ipomoea per. c. in f.g.

Kod ^{roll 1} 27-28 Pan ^{roll 1} 15

Site #2 Wed. f.g.

Site 6 - wide bare
strip from windward
to lagoon beach,
mostly occupied by
a ~~small~~ stand of
Fimbristylis cymosa
Patches here and there
of Chloris inflata,
between tufts of
Fimbristylis are
plants of Portulaca
samoensis. Wedelia
and esp. Ipomoea per-
caprae are encroaching
from the edges. Part of
the strip is still completely
bare.

Site 7 Forest of Messerschmidia
4-6 m. tall, with some
Pisonia. Undergrowth
largely ~~gone~~ shaded out.

- 31201 *Allophylus timorensis* (DC.) Bl.
 rare, in Messerschmidia forest
- 5 02 *Chloris inflata*
 common along trails, nowhere
 else except patches in
 open area.
- 3 03
 on moist soil in sheltered
 area.
- 6 04 *Fimbristylis cymosa*
 abundant in large open
 area.

Revegetation on Bigej
 shows some interesting
 tendencies. Most of the
 bare ground has been
 covered either by a dense
 mat of *Ipomoea pes-caprae*
 or by a 1-2 m. deep pure
 stand of *Wedelia biflora*.
 The usual annual weeds
 exist only along trails and
 immediately around houses.
Pluchea odorata, though
 here in 1946, exists only
 as a few half dead bushes
 obviously losing out in
 competition with the
Wedelia. A plant or two
 of *P. indica* still persists
 around buildings.
 A few patches of *Vigna*

shrub 2.5 m. tall,
 almost sterile "kubuk"

in dense clumps,
 leaves somewhat
 stiff.

marina ~~still~~ in
 almost pure stand
 exist.

What was low
 brush of *Messerschmidia*
 almost impenetrable
 in 1946, is now a
 dense forest 5-6 m. tall,
 fairly open beneath.
 Some *Wedelia* has
 been there but is now
 dead or almost so.

Coconut trees scattered
 over north $\frac{1}{3}$ show the
 effects of wind and
 spray.

Chloris inflata has
 become common along trails.

✓ Jan. 22 - This islet has been more completely destroyed than any other I have seen. No coconuts left standing, no trees of any size. At the south and north ends are numbers of *Messerschmidia* 3-5 m. tall. Young *Scaevola* is also common here.

At the south end is some soil, and large patches of *Vigna marina*.

Wedelia biflora in pure stand or *Iporhoa per-caprae* in pure stand cover large areas and are the dominant plants over most of the islet.

- 31206 *Pseuderanthemum* ^{*canthensis* Don.} ^{*canthensis*}
 3 planted around buildings
 3 07 *Paspalum vaginatum*
 common in open places on lagoon side, some on outer side.
 3 08 *Pluchea odorata*
 one small colony in open coral flat.
 2 09 *Vernonia cinerea*
 occasional in open places
 5 10 *Pluchea indica*
 abundant in open bare part, unable to compete with *Wedelia*.

except the central section. Apparently continual traffic has compacted the limestone debris into a partially consolidated mass that will scarcely support anything. This ~~se~~ extends over most of the central portion. The center is absolutely bare, except for sparse *Fimbristylis*.

No *Chloris inflata* seen.

Pluchea indica abundant in center section but does not stand up against *Wedelia*. *P. odorata* only one small colony.

shrub 2.5 m. tall, flowers white with purple dots in throat, sterile, forming dense mat.

sterile shrub 2 m. tall.

flowers purple

shrub 1 m. tall; heads pinkish.

- 31211 Polyscias ^{aria} ~~scutellata~~
 3 planted by building
- 12 Coccoloba uvifera L.
 2 planted by building
- 13 Clerodendrum inerme
 in thicket near buildings

The vegetation on the windward side around the buildings at the south end is a low mixture of *Paspalum vaginatum*, *Triumfetta procumbens*, *Vigna marina*, *Sporobolus per-carpus*, *L. tuba*, *Wedelia*, etc. with patches of *Scaevola*, bushes and small trees of *Messerschmidia*, occasional planted coconuts and *Pandanus*.

There are a scattering of young coconut trees, some already flowering, all over the island except in the center.

- sterile shrub 1.5 m. tall, leaves very concave above.
- sterile shrub 1.5 m. tall.
- scrambling shrub, flowers white with maroon stamens and pistil.

1950 Guam

✓ Jan. 24 Anigua, 1/4 mi. e. of
County Jct., w. of Agaña

4 m.

Secondary thicket on base
of limestone cliff. Mixture
of *Leucaena*, *Triphasia*,
Piper, *Carica* & *Heterospatha*
on talus at base of cliff.
Triphasia forms a rather

31214
7

Piper guahamense
in secondary thicket
on limestone talus

✓ Jan. 24 Ravine of Lower Fonte R.
1/2 mi. s.e. of County Jct. w. of
Agaña

8 m.

thickets on limestone
bluffs - upper story of
scattered *Artocarpus* allis
10 m. tall. second dense one
of *Leucaena* and *Heterospatha*
5-6 m. tall. Undergrowth
of *Triphasia*, *Pandanus dubius*
and seedling *Heterospatha*.

15 *Heterospatha elata*
common on limestone bluffs

Pan. roll #16 - *Heterospatha*
elata.

impenetrable tangle.
Piper grows with it.
Heterospatha sterile at
this season. occasional
also on cliff above.

shrub 1.5 m. tall,
leaves glossy above,
spikes erect. root has
slightly anaesthetic
quality, somewhat aromatic.

The whole tangled
with lianas of *Ipomoea*
and *Abrus*.

Substratum of rough
limestone outcrop
and boulders.

Pan roll #17 -
Kodach. roll last 5 shots
Heterospatha.

tree 6 m. tall, leaves 2 1/2 m. long,
infl. with green fruit in lower
leaf axils, 3 times branched, light
gray.

1950 Guam

~~Tadian~~ ^{Tadian} Point,

✓ Jan. 24 - cliffs near coral pit - vegetation here of brush + low trees, tips of most plants killed, sprouts coming from below. whole has rather brown appearance, almost burned-looking. probably result of salt spray blown from sea below. waves obviously dashed over coastal strip. 115m.

- 31216 *Allophyllus*
just below top of limestone cliff
- 5 17 *Chloris radiata* ^{limestone}
common at top of cliff
- 1 18 *Hedyotis coccinea*
rare on freshly broken up limestone
- 1 19 *Ipomoea tuba*
common at top of limestone cliff.

Kodachrome roll 2¹⁻⁶ - Typhoon damage to coastal plain vegetation also to trees on top of cliff. *Laportea*, *Cynometra*.

shrub 0.8 m. tall;
- flowers white.
culms ascending to erect.

flowers white,
anthers deep purple.

twiner, leaves dull,
not fleshy, flowers
white, not open in
afternoon.

Jan. 24 Limestone flats
near Coral Rits, just
back of ~~Faguan~~ Point
Fadian Fadian #5 m.

Dense low forest 8-10 m.
tall, much torn by the
typhoon, some trees knocked
down.

Substratum very rough
coral.

Veg. roughly 2 layers,
1 quite mixed tree layer
with Pandanus, Rapanea,
Guettarda, Macaranga,
Intsia, Cynometra, Ficus,
Cerbera(?), Guarnia, etc.

Aglaia none (ex. in places Pandanus
tectarius) abundant enough
to be called dominant.

Macrophyllous.

Shrub layer of
Cycas, Pandanus, Pipturus
Eccararia, etc. + young
of tree layer. 2-3 m. tall

Cycas most conspicuous
A few vines, as Flagellaria,
etc. Epiphytic ferns
(Pyrosia) on a few trees,
abundant where found.

Aedes (a small sp.) common
and troublesome.

80 m.

71220 Polyzias *gandifolia* Volk.
occasional in forest

5 21 *Laportea*
common in forest

2 22 *Eragrostis ~~fulva~~*
pioneer on fresh broken
coral limestone in open.

5 23 *Chloris inflata*
pioneer on fresh broken
coral limestone, in open.

5 24 *Corchorus aestuans*
pioneer on fresh broken
coral limestone, in open.

erect ^{scarcely} ~~un~~ branched shrubs
— 1-3 m. tall, fruit immature.
Small tree 7 m. tall,
(others seen up to 1 m. diam.)
fruiting inflorescences
with smaller branches
enormously swollen
and fleshy, calyx and
fruit not fleshy.
spreading

erect from decumbent
base.

prostrate herb,
extensively branched,
stems reddish; flowers
yellow, fruit
strongly ⁽⁶⁻¹⁰⁾ winged

✓ January - Agaña Swamp
east of Agaña

A low expanse of
reeds, with occasional
low spots, excavations
and channels with
water in them.

Dominant plant is
Phragmites karika.
Acrostichum aureum common.
Pandanus occasional.
Hibiscus tiliaceus occasional

Conclusively shows that
Phragmites and *Acrostichum*
will grow in fresh
water, and on wet
ground with no standing
water.

31225 *Dryopteris*
edges of swamp along road,
coral soil.

5 26 *Dryopteris*
around excavation in
swamp.

3 27 *Myriophyllum* ^{aquatic}
submerged in water of
channel.

5 28 *Bacopa monnieri*
thick mat in open
trampled place.

Pan roll A 27-28 view from
Kod roll 2 7-8-9 hill near Tinajans

fronds erect, rhizome
just beneath surface.

fronds erect, tips of fertile
pinnules revolute.

some portions of ~~leaves~~
leaves swollen, aerenchymatous.

prostrate; leaves
subfleshy; corollas
lavender.

- 31229 *Sida acuta* L.
5 on abandoned weedy road
in swamp.
- 6 30 *Sida rhombifolia* L. ?
common on abandoned weedy
road in swamp.
- 6 31 *Merremia gemella* (Burm. f.) Hall. f.
occasional on old road
in swamp

✓ Jan. 25 Agaña Spring,
water works.

Large pool of clear
water, bottom covered
with *Potamogeton*,
some *Myriophyllum*,
floating algae being
skimmed off.

- 5 32 *Potamogeton*
dominant on bottom of pool

- 5 33 algae
floating on surface of pool

- 3 34 *Myriophyllum*
rooted in center of
pool, rising to surface

- 35 *Dentella repens*
forming lawn around
pool, 3-5 dm. above water

- 36 *Zelbingia pendula*
planted on dry stone wall

suffrutescent herb
1 m. tall, flowers
orange-yellow.
weak shrub up to 2 m. long,
stems pale gray-green;
flower orange yellow.
prostrate; flowers clear
yellow, anthers white,
curved.

a very few floating
leaves, these plane,
submerged ones small,
crisp, sterile.

lower parts of leaves
swollen, aerenchymatous.

prostrate; flowers white,
lobes slightly dentate;
fruit green.
plant prostrate to
ascending, stems fleshy,
leaves sub-fleshy, maroon below, flowers
magenta.

- 31237 *Lippia nodiflora*
 3 growing around nursery,
 apparently spontaneous.

3

- ✓ Jan. 25 Lower Fonte River
 w. of Agaña, s.e. of
 County Jet.
 secondary thickets and
 disturbed places.

- 5 38 *Melochia*
 rare in thicket

- 6 39 *Heliotropium indicum* L.
 occasional on freshly
 disturbed broken coral

- 5 40 *Merremia hederacea* (Hall. f.) ^{Burm.} Hall. f.
 occasional along
 weedy roadside

- 41 *Aeschynomene ^{cannabina} ~~sesban~~*
~~*Aeschynomene indica*?~~
 common on freshly
 disturbed broken coral
 along road

prostrate, peduncles
 erect, maroon, corolla
 white.

small tree 5 m. tall,
 leaves gray above;
 flowers deep crimson
 in center, fading
 distally to dull magenta.

erect, ~~leaves~~ herb
 up to 0.8 dm. tall; leaves
 strongly rugose,
 flowers lavender.

prostrate, twining,
 flowers clear yellow,
 calyx lobes with
 projecting folded
 apex; anthers white,
 curved.

erect, branched herbs,
 1-1.5 m. tall, flowers
 yellow, closed,
 articulation between
 seeds in pods swollen.

✓

Jan. 24 Agaña Swamp
e. side

Site 1 meadow with
Panicum purpurascens,
Ipomoea sp. *Cleocharis* sp.
Polygonum + *pusillae*
 0.4-1 m tall counting
Cleocharis as one. There
 are 2 layers, but the
 upper one is only partly
 present. could best
 be regarded as one,
 being grazed by a
 few cattle. part also
 cult. as taro patches.
 Is a belt bet. base of
 bluffs and edge of
 cane brake. soil black
 and peaty. water
 table near surface.

Site 2 solid brake of
Phragmites karba
 4-5 m. tall, only other
 species is a sterile legum-
 inous vine that is occasional
 ground a black mud,
 water table just below
 surface. Obviously
 inundated part of
 year because lower few
 nodes of canes have
 abundant roots.

Site 3 same but with
 uneven layer of
Hibiscus tiliaceus
 6-7 m. tall. Various
 other plants mixed in
 on higher spots,
 water table lower
 4± dm. see p. 32.
 On roadsides, etc.
Muntingia calabura
 is common. also *Sida* spp.

Kod. roll 2 ¹⁰⁻¹¹⁻¹² zonation in swamp
 Pan roll A 29-30

31242 Eleocharis

1 abundant in low spots in open part of swamp

3 43 Polygonum

common in open part of swamp

7 44 Ipomoea

abundant in open part of swamp rooted in mud.

45 Aeschynomene

one individual seen in open part of swamp

✓ Jan. 26 Agaña

Fresh coral full along road.

3 46 Eragrostis pilosa

1 47

1 48 Hedysotis

rare

6 49 Mitracarpum hirtum

0 m sterile

↓
 stems 1 m. or more long, prostrate, ascending at tip, flowers white in erect racemes.

stems ascending at tip, flowers purple in throat, fading to white at edge of limb.

shrub 1 m. tall, fls. yellow, banner red, outside except at edges.

5 m

culms spreading prostrate, flowers purple, standard white. flowers white.

erect; flowers white.

1950 Guam

13° 27' 08" N

144° 43' 06" E

- ✓ Jan. 27 - Headw. of Fonte R.
 brake of *Phragmites*
 in bottom of shallow ravine
 pure stand of *P. karika*,
 dense, almost impenetrable,
 water flowing into it
 from headward, but
 none seen as far as I
 entered.

flat area surrounding
 this badly wind eroded.
Pennisetum dominant.

- 31250 *Polygala*
 3 common in eroded places
 4 51 *Dryopteris*
 one small colony in eroded
 volcanic soil
 5 52 *Dryopteris*
 common around edges of
 red brake in wet volcanic soil
 2 53
 desiccating stream bed
 in eroded volcanic soil
 4 54 *Pennisetum*
 dominant plant on
 eroded soil
 4 55 *Cyperus*
 in desiccating depression on
 1 56 *Ammania coccinea* Roth.
 one plant only in desiccating
 depression on volcanic soil.

145 m.

soil brick red. pH 7.0
 wet. deep, 7.1
 clay.

along edges of brake
Dryopteris and *Lygodium*
scandens common,
 along with weeds
 such as *Elephantopus*,
Mimosa, *Leucaena*,
Hyptis capitata etc.

rhizome prostrate, fronds
 erect.

rhizome prostrate,
 fronds erect, only one
 fertile one seen.

erect from very
 shortly decumbent base.

small tufts.
 volcanic soil.
 petals crimson.

Jan. 28 - Just east of Talofofo Bay
 Looked for Ruppia in
 mouth of small stream.
 found none.

Vegetation beaten down in
 an upstream direction by
 typhoon. Very little foliage
 left.

Kod. roll 2 13-14 7 typhoon
 Pan. roll A 31 damage.

✓ Jan. 28 Talofofo River Valley
estuary running several
miles inland.

In lower part bordered
by broad belt of *Phragmites*,
then a belt of *Barringtonia*
racemosa, above by
secondary thickets
and cultivated patches.

Site 1 pure stand of
Phragmites *karka*
3-4 m. tall, rather matted,
on wet ground, probably
flooded by really high
tides.

31257 *Opuntia*
lying in grass by roadside,
taking root, ~~branch~~ erect.

5 58 *Acalypha* *indica*
roadside weed

5 59 *Pseudelephantopus* *spicatus*
common weed in clearings

No sign whatever of
Ceratopteris *gandichaudii*

1-2 m. Kod. Roll. 2 13-14 patch of *Alocasia*
Pan. roll A 32

Site 2 Pure stand of
Barringtonia *racemosa*
about 8-10 m. tall,
rather open beneath,
but with a shrub
layer of young
Barringtonia averaging
about 1 m. tall.
Soil a black mud, channelled
between bases of trees
to depth of about 2 dm.

one branch erect, others
rather ~~to~~ small and
somewhat shrivelled, but
all rooting. Possibly
discarded from someone's
potted collection, but
a strange place to throw
it.
erect.

erect herb, leaves dark green,
flowers white,

✓ Jan. 29 just s. of Talofofo Bay
30 m.

31240 *Ipomoea bona. nux* 1.
common along roadside

Kod. Roll. 2 ^{15-17.} Breadfruit tree
Jan Roll A. 33 damaged by typhoon
vine, flowers white,
already collapsed when collected
shortly before noon.
leaves rounded to lobed.

Jan. 29 - 1½ mi. n. Inarajan

Jan. 29 - Inarajan

~~Jan. 29~~

Jan. 29 near s. end of I.

Jan. 29 Merizo

Jan. 29 Umatag

Jan. 29 near s. end of I.

Pan. roll A. 34-36 - Erosion
Kod roll 2 18-23 - scars &
patches of
woods in ravines
in volcanic area.

Pan roll B - Typhoon damage
Kod. roll 2 - to Nipso

Pan roll B. Makateq with
Kod roll 2 plants damaged
by typhoon

Pan roll B coconut
Kod roll 2 plantation
damaged by
typhoon.

Pan roll B Kod roll 2
Old bell tower
& boy in auxiliary gas
tank outrigger canoe.

Pan roll B. Kod. roll ²⁴ 3.
views across bay
and up toward mts.
with patches of
forest. Old Casuarina
on erosion scar. open
air library, volley ball
game.

Pan Roll B. Kod roll 3
Typhoon damage.

✓

Jan. 29 Umatag

Hills of volcanic soil
with Miscanthus
and patches of Gleichenia,
serious erosion scars,
scattered casuarina
and Pandanus trees

3 1261 } Timonius

5 62 } Timonius

scattered shrubs in
open Miscanthus area.

5 63 Sphenomeris

on large erosion scar

Hills bet. Merizo + Umatag
have been burned over
some.

Condition of Rhizophora
at south end is rather
surprising. The more
exposed young trees are
apparently completely
dead. How they were killed
is not at all clear.

7:30 am

shrub 1 m. tall; fruit green.
shrub 1 m. tall ~~fruit~~ flower
greenish white, 4-merous.

leaves stiffish.

Typhoon damage is of
several sorts

1. Actual breaking and
uprooting of trees.
2. Killing of ^{leaves and} smaller
branches by desiccation
3. Killing of leaves and
smaller branches by salt spray.
4. Killing or severely injuring
of trees + shrubs by
waves of salt water.
5. Cutting away of soil
by waves of salt water
or runoff of fresh water
(very severe in places)

Feb. 1 - View ^{Guam} from air -
 greater part of northern
 section has been disturbed.
 Primary forest still exists
 in small patches, mostly
 around cliffs and at
 their tops, and a fairly
 large patch in the
 triangle between the
 roads to North Field and
 Northwest Field.

Feb. 1 View of Rota from
 air - Forest still exists
 on and near cliffs
 between terraces, and
 on part of the top two
 terraces. Small
 patches beyond air strip.
 All level areas of any
 size seem to have been
 cleared, and most
 of them seem to stay
 cleared. That near
 the airstrip seems to
 be reverting to woody
 vegetation.

Feb. 1 - ~~top~~ View ^{Aguijan} from air
 Top terrace almost
 completely cleared, with
 wind breakers. Second
 largely cleared. Patches
 on others.

Feb. 1 View of Tinian from
 air. Woody vegetation
 coming back in many
 parts.

Low dense belt of
 vegetation at tops of
 cliffs could be
 mistaken for mangrove.

- ✓ Feb. 1 - Kannat Laulan,
above Magicienne Bay.
Thick red soil mixed
with coral debris,
disturbed area
- 31264 *Miscanthus floridulus*
3 local on steep slope
below road cut
- 5 65 *Indigofera spicata* Forsk.
occasional around
abandoned installations
- 4 66 *Sorghum halepense*
abundant in waste
areas everywhere
at low altitudes
- 3 67 *Psidium guajava* L.
only one plant seen
(said to be kept under
control by an insect)
- 5 68 *Grewia mariannensis*
rare, in undergrowth
in rocky place.
- 5 69 *Psychotria mariana*
common in remnant
of woody vegetation
- 4 70 *Pennisetum purpureum*
var. *merkeri*
common in old fields
and thickets.
- 3 71 *Laportea saipanensis*
remnants of old forest
out in open.

~~100m.~~
75m.

dense thicket, canes
several m. tall.

low spreading,
rather compact bush,
flowers reddish-orange.

shrub 1 m. tall,
sterile.

shrub 1-1.5 m. tall.
flowers white, ripe
fruit red.
forming small
brakes, culms
up to 3 m. tall, 1.5 cm.
thick, flowering
spikes rare.
large old trees, almost
defoliated, sterile. Trunk
6 dm. in diam.

31272 *Phaseolus lunatus*
 established in abandoned
 field, forming a dense
 blanket over a limited
 area.

5 73 *Operculina ventricosa*
 common, covering large patches.
 Feb. 1 - O'Leary

secondary vegetation

774 *Lesbania ~~canadensis~~ cannabina*
 common as a pioneer on
 bare ground, and where
 moisture is sufficient
 as here at edge of marsh,
 forming a shrub 3-4 m.
 tall, with woody
 stem 6 cm. thick, flowers
 yellow, brownish without,
 in short pendent racemes.

75 *Acacia farnesiana*
 one large plant seen,
 in weedy place.

✓ Feb. 1 - Chalan Kanoa
 waste places back
 of beach, mostly
 around buildings

vine, flowers white.

2 m.
 huge liana, thickly
 blanketing ~~the~~ large
 patches; flowers white,
 bracts pale purplish
 green. Top of outer layer
 of fruit dehiscing off.

shrub 4 m. tall,
 branched at base;
 flowers orange yellow,
 very fragrant, fruit green.

2 m.

- 31276 *Chloris radiata*
 5 common along roads
 and ~~in~~ around buildings
- 5 77 *Cyperus*
 common locally
 in wettest places
 in coral debris
- 5 78 *Ficus*
 local, just behind
 beach

- ✓ Feb. 2 Tanapag
 flat moist ground and
 dry roadsides
- 2 79 *Pluchea indica*
 dry roadsides
- 1 80 *Emilia sonchifolia*
 moist ground, rare
- 5 81 *Ammannia coccinea* Rottb.
 moist ground, rare
- 1 82 *Jatropha gossypifolia* L.
 planted along roadsides
 as ornamental

- ✓ Feb. 2 O'leai
 sparse second growth
 on flat ground
- 6 83 *Melochia*
 occasional

erect tufts

small tree 5 m.
 tall, ripe fruit
 purple-black,
 soft.

shrub 0.5 m. tall

flowers lilac, heads
 pubescent.
 petals lavender-purple.

shrub, m. tall,
 young growth and
 petioles deep maroon,
 glands or hairs green,
 sticky; flowers red.

rounded bush 2.5 m.
 tall, flowers red in center,
 fading to white at ends
 of notched petals.

✓ Feb. 3 - South of Garapan
flats of coral sand
just above beach.

31284 *Saccharum spontaneum* L.
several clumps in
opening in bush

✓ Feb. 3 - Lake Susupe, west
side
slightly brackish lake,
surrounded by casuarina,
with openings with
Paspalum vaginatum,
thickets 3-4 m. tall of
Hibiscus tiliaceus, on edges
75 *Sciurus*
in water at edge of lake

Feb. 3 just east of
Aptena, ^{end} of Saipan
dry flats of coral
sand and gravel.
Extensive uneven
mats of *Saccharum*
spontaneum.

2 m.
erect, rather loose
clumps up to 4 m. tall.

Kod. roll 3, Pan roll B.

0 m.
of these clumps of
Acrostichum aureum,
Clerodendrum inerme, etc.
Scirpus at water's edge,
forming floating mat
at outside edge.

culms terete.

1950

As Teo, near Cadzanan i Daog

✓ Feb. 3 - base of Kagman
Peninsula, near Chacha
thickets on broken ground

31286 *Mucuna*

4 at side of road in slope

3 87 *Clorix inflata*
roadside

5 88 *Clorix virgata*
roadside, common

5 89 *Mimosa invisa* Mart.
roadside, local

✓ Feb. 3 - near As Teo
e. of Mt. Tapotchuan
roadside in hilly
area

5 90 *Buddleia asiatica*
local along road

60 m.

large vine, flowers pale
green, fleshy.
spikes purplish.

spikes erect,
contiguous.
semi-scandent,
tangled, flowers
light purple.

150 m.

erect shrub 2 m. tall,
flowers white.

✓ Feb. 1 South side of
Kagman Peninsula, w. of
Kagman Point 30 m.
terrace of limestone
becoming exceedingly
dissected toward edge
of cliff

- 31291 *Bikbia mariannensis*
abundant, dominant
in places in scrub on
very rough rock.
- 92 *Callicarpa candicans*
in sheltered places in rough
rock
- 93 *Jasminum simplicifolia*
common in scrub
- 5 94 *Capparis cordifolia* Lam.
common in scrub near
cliff edge
- 6 95 *Myoporum laetifolium* Koidz.
common in scrub near cliff edge
- 5 96 *Hyptis*
common in openings
back from cliff
- 1 97 *Emilia sonchifolia* (L.)
rare, one plant seen in
opening away from cliff

Kod. roll 3 end
Pan roll B

low dense brush of
Bikbia, *Scaevola*, *Myoporum*,
Capparis, *Canthium*, *Jasminum*,
Wedelia, with *Cynometra*, *Trema*,
and *Pisonia* away from
edge.

shrub 1.5 m. tall;
flowers white.

low shrub, seriously
cut back by salt spray.
buds purple.

low, semi-scandent
shrub, mostly sterile;
bright green.

tangled suffrutescent
herb, leaves ^{subfleshy} gray-green,
fls. white, old ones
faded, new ones about
to open at 5 p.m.

prostrate; leaves fleshy,
bright green; flowers
white, odorless or almost so.

erect herb, to 2 m. tall,
highly aromatic; leaves
rugose, flowers pale.

flowers purple

- 31298 *Tricholaena* ^{rosea} ~~repens~~
 4 locally common in
 openings away from cliff
- 1 99 *Vernonia cinerea*
 rare in openings away
 from cliff
- 31300 *Scaevola frutescens* (Mill.) Kr.
 6 common, especially
 near edge of cliff
- 4 01 *Phyllanthus marianensis*
 occasional in scrub
 away from edge of cliff
- 5 02 *Hedyotis albidopunctata* (Mer.) Forst.
 common on bare coral
 roadbed.
- 5 03 ~~Cleistanthus~~ *Callicarpa candicans*
 occasional in scrub
 this one away from edge of cliff.
- 5 04 *Scaevola frutescens* (Mill.) Kr.
 common in scrub ^{near} ~~away~~
~~from~~ cliff edge.

erect

erect; flowers purple.

low shrub, 1 m. tall,
 leaves somewhat
 fleshy; flowers dull
 purplish-white; fruit
 white, fleshy.
 erect, 1 m. tall.

prostrate; flowers
white.

shrub, 1 m. tall;
 flowers purple.

shrub 0.5 m. tall,
 spreading, flowers
 dull purplish, fruit
 white.

1950 Saipan

✓ Feb. 4^{2. end} Sabanan Laulan, about
1 mi. s. of As Teo

Area of eroded volcanic soil, erosion apparently started by the existence of a military camp. The ~~bedrock~~ bedrock is a porphyry or tuff, white inclusions in a gray matrix, that is ~~eroded~~ weathered to a clay, even though preserving its structure. The gullies have cut well down into this. The general vegetation where erosion is not apparent is *Miscanthus*. In the eroded areas and the

31305 *Cantharosperrum*
5 common on weedy spots
and roadsides.

5 06 *Lycopodium cernuum* L.
occasional in gullies,
with *Gleichenia*

1 07 *Wikstroemia elliptica*
rare

5 08 *Gleichenia linearis*
common, colonizing
extensive areas on
eroded soil.

200 m. soil pH red surface soil
recently burned over
5.6
same material 15 cm.
deeper 5.0
weathered parent
rock 5.0

surrounding *Miscanthus*
are many of the normal
~~sabana~~ ~~plants~~ - *Miscanthus*,
Cheilanthes, *Euphorbia*,
Sphenomeris, *Gleichenia*,
Lycopodium cernuum,
Geniostoma, *Heteropogon*,
etc. also a number
of strand plants
such as *Scaevola*, *Ipomoea*,
per-capuae, *Desmodium*
~~triflorum~~ *umbellatum*,
etc.

gray pubescent vine;
flowers yellow.

slender, sterile shrub
1 m. tall.

rhizomes prostrate,
fronds erect.

- 31309 *Myrtella benningseana*
rare, only one small plant
seen in eroded place.
- 10 *Sphenomeris*
common on bare eroded
subsoil and rock
- 11 ~~*Caecvola frutescens* (Mill.) Kr.~~
~~occasional~~
- 11 *Nephrolepis hirsutula*
in bottoms of erosion
gullies with strand plants
- 12 *Caecvola frutescens* (Mill.) Kr.
occasional on eroded area
- 13 *Desmodium umbellatum*
occasional on eroded
ground
- 14 *Cerbera*
occasional on eroded ground
- 15 *Dodonaea viscosa*
occasional on eroded
slopes and in gullies
- 16 *Cantharospermum*
on eroded slope
- 17 *Euphorbia*
on eroded ridge and ~~among~~
Miscanthus
- 18 *Glossogyne tenuifolia*
on eroded ridge
- 19 *Emilia sonchifolia*
on eroded slope
- 20 *Heteropogon contortus*
common in areas that
are not seriously eroded

flowers white.

tufts and small hummocks

erect.

rounded spreading
shrub 1.5 m. tall; flowers
white. fruit white, fleshy.

shrub 1 m. tall, only a
few old dried fruits
still persisting.

shrub with milky
juice.

shrub 2 m. tall, fruit
pale greenish; flowers
green.

prostrate; unusually
hairy.

erect, flowers white.

flowers purple.

- 31221 *Geniostoma micranthum* var. *glabra*
rare on eroded areas
- 5 22 *Cheilanthes tenuifolia*
occasional, especially
among *Miscanthus*, but
also (small plants) on bare red clay

- ✓ Feb. 4 - Unai Lamlan Katan
low coral bluffs along
shore above beach,
mostly covered by *Pemphis*
and *Bikkia*.
- 3 23 *Hedyotis albida-punctata* (Merr.)
in crevices and cavities
on bare cliff.

From here it is obvious
that along this coast a
great deal of salt spray
blows far inland.

Vegetation on cliffs shows
extreme "wind-shear" effect.
In late afternoon sun
the actual spray is

shrub 1 m. tall; flowers
white.

erect

on north east side of Kagman Peninsula

3 m.

Feb. leaves varying in fleshy-ness
to very thick; flowers
white, limb patent; fruit
tending to be fleshy

very visible, blowing
up over cliffs and inland
from north east.

- ✓ Feb. 5 Chalan Kanoa
 31324 *Taeniophyllum*
 epiphytic on *Artocarpus*
 31324a *Emilia* ^{on the back of beach}
 on sand around east
 Feb. 5 north of Tanapag. -
 5 25 *Panicum purpurascens*
 dominant in low-places
 Feb. 5 S. of Puntan Maghi.
 n.w. coast
 secondary vegetation
 mostly weeds and opening
 5 26 *Trema*
 occasional
 5 27 *Indigofera tinctoria* L.
 ✓ Feb. 5 - Marpa Point (Puntan
 low vegetation on limestone
 flat at top of cliffs 30 m.
 large patches of low
Scaevola frutescens,
 and *Paspalum vaginatum*
 and *Phyllanthus*.
 3 28 *Tridax procumbens*
 bare coral roadside
 5 29 *Clitoria ternatea*
 common in weed patches
 5 30 *Myoporum bonariense* Koeh.
 on rough coral
 asiaticum var. albescent
 5 31 *Abutilon indicum*
 common on rough coral
 32 *Hedyotis albedo-punctata* (Merr.) Forst.

roots dull green,
 fleshy; buds green.

near Tanapag Village.
 tangled mass
 2 m. deep.

Pan
 B. & W. roll B
 granules flattened
 by blast of ammunition
 explosion

low wide-spreading
 rounded tree, stem 2 cm.
 thick, flowers reddish.

Labaneta) Views of Marpa Cliffs
 from several places
 B & W Roll B & C
 Kod. Roll 4
 also unexploded shell
 with *Passiflora foetida* in by.

rays yellowish white

tangled vine, ^{staggered}
 intense blue, with
 lemon yellow claw
 prostrate, leaves
 fleshy; flowers white
 with honey like odor, fruit magenta
 low shrub, flowers orange.

leaves fleshy, fls. white.

1950

31333

Cochlos toresianus Gaud.

1

rare on edge of cliff

34

Phyllanthus

locally abundant

on rough limestone

357 Trema

common tree

Feb. 5 - e. of Marpi Cliffs

open weed patches and

cane fields, roadside

with *Passiflora foetida*

eroded place in red

earth with great

quantities of dead *Achatina*

shells. Deep red granular-

sotryoid soil, testing

about 6.5. Few live snails seen.

sterile.

leaves sub-fleshy,
flowers white.tree 4 m. tall, leaves
silvery beneath, fruits green

Pan roll C

Kod. roll 4

pictures of dead snail
shells in gullies of red
eroded soil.also of vegetation above
showing patches of
Acacia confusa in
forest.

- ✓ Feb. 5 - Fannuchuluyan Bay
Terrace at top with
thickets of *Albizia* and
Leucaena, patches of
sorghum, fields of sugar cane
Thickets open beneath.
Cliffs with forests of
Cordia, *Barringtonia*, *Phemna*,
Cynometra, *Hernandia*,
Erythrina, etc. tangled
with *Alyxia*, *Abrus*, etc.
Open places with *Pemphis*
and *Bikbia*.

- 5/31336 *Amaranthus*
common at foot of
cliffs at top of beach
- 7 77 *Alyxia toresiana*
common in woods on cliff
- 7 38 *Commelina benghalensis*
local in thickets at
top of cliff around ruined
building
- 5 39 *Blechnum brownii*
common in thicket
- 2 40 *Malvastrum*
one plant seen in thicket

- ✓ Feb. 5 Puntan Fannuchuluyan
s. of Fannuchuluyan Bay
Cliffs of gray tuff,
- 3 41 *Jussiaea ~~maritima~~ tenuifolia*
common on bare cliffs
- 5 42 *Cassia*
common at edge of thicket

strand forest at base
on talus and top of gravel
beach of old trees of
Hernandia, *Thespesia*,
Pisonia,
open beneath, with
Thuarea and *Ipomoea*
pes-caprae, these running
out onto beach. *Ipomoea*
seedlings coming up
abundantly on sand
just at top of wave mark.

17m. erect.

20m. vine, fruit black.

40m. stem fleshy.

40m. stems erect at tips.

40m. erect, fls. orange.

60m. Kod roll 4 - views across bay
Pan roll C / with *Isletan* *magico* *Fahang*
also view inland
forming a turf

low shrub or subshrub, fls.
yellow, pods green.

1950 Saipan

Feb. 5 Center of island west
of Puntan Fannuchutan

At pass Miscanthus
is definitely growing
on almost bare limestone.
Ferns and other things
under acacia.

Feb. 6 Anatahan

from about 15° W. of S.

Looks like a cone that
once was much higher but
has had the top blown off,
slightly dissected on
s.w. slopes, less so further
east. Rim + ridges
look grassy, sparse forest
in ravines and on high
peaks.

Some wave cutting around
shoreline, resulting in truncated
ridges and in places a very
recent looking sea cliff.

Kod. roll 4 Pan Roll C photos of
Passiflora foetida covering
red soil on ammunition
storage depot. also of limestone
peaks, acacia confusa
forests.

2 Xerox copies

ph. 82-105

142-179

2 Xerox copies

ph. 32-105

142-179

1950 Saipan

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of Puntan Fannuchutan

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has had the top blown off,
slightly dissected on
s.w. slopes, less so further
east. Rim & ridges
look grassy, sparse forest
in ravines and on high
peaks.

Some wave cutting around
shoreline, resulting in truncated
ridges and in places a very
recent looking sea cliff.

Kod. roll 4 Pan roll C photos of
Passiflora foetida covering
red soil on ammunition
storage depot. also of limestone
peaks, acacia confusa
forests.

from ~~15°~~ 20° W. of S.

from a little S. of W.

Feb. 7 - near Salt Lake
w. side of island

ash beds, granular
ash #7-7.5

- 31343 *Hibiscus tiliaceus* L.
common around edges
of salt lake, not seen
to any extent elsewhere
- 44 *Sphenomeris biflora* (Kaulf.) Tagawa
on cut bank in ash
- 45 *Zoysia tenuifolia*
abundant locally
forming a solid cover
- 46 *Polyscias scutellaria* (Burm.) Fock.
planted around old house site
- 47 *Thevetia peruviana*
planted around old house site.
- 48 *Euphorbia hirta* L.
common weed in road
- 49 *Phyllanthus niruri* L. *amarus* Schum.
occasional along road
- 50 *Pennisetum purpureum*
common locally along road
- 51 *Dactyloctenium aegyptium*
common weed along road

Feb 7 ash beds of
isthmus, near harbor;
flats, somewhat cut
by ravines, covered by *Miscanthus*

52 *Cassia occidentalis* L.
occasional along road

Pan roll C - views of Pagan
in early morning
from ship.

Kod roll 4 - various views of
volcanoes, also vegetation
near fresh water lake
and of lake from Mt. C. F.

spreading low tree

caespitose, leaves tending
to be leathery.
forming dense mat.

erect shrub, 2 m. tall,
leaves very conchoidal.
small tree, flowers
yellow.

Th. det.
G. L. Webster
1955

forming dense tangles
spreading tufts

flowers yellow

31353 *Eleusine indica* (L.) Gaertn.
rare weed in ravine

54 *Desmodium triflorum*
common on bare places

55 *Heteropogon contortus*
common on bare ash

56 *Crotalaria ~~retusa~~ pallida* Desv.
abundant everywhere

57 *Ipomoea batatas*
one small colony

Feb. 7 - near salt lake (see p. 89)

58 *Lathyrus roseus*
common along road,
spreading from planting
at camp

59 *Elephantopus mollis*
common generally on ash

60 *Jatropha gossypifolia* L.
dominant over large areas

61 *Sida rhombifolia* L.
common weed

62 *Sida acuta* L.
common weed

63 *Amaranthus spinosus* L.
occasional weed

spreading tuft.

prostrate

erect shrub 1-1.5 m. tall,
flowers yellow with
brown lines.
formerly a principal crop here.

flowers white

shrub with fleshy
stems, 1 m. tall, young
growth purplish, hairs
purplish with green
viscid glands; fls. red.
said to have been brought
by Japanese who used the
oil from the seeds as hair
oil for women.

erect herb, 0.8 m. tall.

ascending herb, 0.8 m. long,
fls. orange.

erect herb 1 m. tall.

- 31364 *Euphorbia prostrata*
 very common weed on roadbed
 2 65 *Portulaca oleracea*
 common weed
 3 66 *Digitaria ciliaris*
 occasional weed in road.
 2 67 *Eragrostis ~~amabilis~~ tenella*
 common weed generally
 on bare soil.

Feb. 7 - flats near landing
 ash soil

- 1 68 *Stachytarpheta ~~jamaicensis~~ ^{indica}*
 only one plant seen
 1 69 *Emilia sonchifolia*
 occasional here,
 not seen elsewhere on island.

Near the landing and
 around the bay to where
 the hills come near to the
 beach, and across the
 broad isthmus a depression
 between the two high
 parts are extensive flats
 covered by ash beds. This
 part constitutes the only
 extensive agricultural
 land on the island outside
 the coconut plantations.
 The ash is workable and
 probably fertile, and
 is about neutral in

prostrate

prostrate, bronze green,
 fleshy.
 culms ascending.

spreading tufts.

flowers blue-lavender,
 leaves gray-green.
 flowers purple.

reaction. It is granular
 in texture and gray,
 where fine, almost black.
 Agriculturally the principal
 difficulty might be water.
 Any extensive dry period
 might mean crop failure.
 A part of the isthmus covered
 by lava flows.

Feb. 7 - Fresh Water Lake
lake of brackish water
inside old crater.

surrounded by *Acrostichum*
aurum and *Casuarina*.

on one side is a flat place
with forest of *Trema*,
Casuarina, *Psychotria*,
Ficus spp., *Melanolepis*, *Peruvia*, *Aglaia*,
etc. The *Casuarina* trees

are tallest but old ones
Psychotria mariana
common tree in second
story of forest

31370
3

71 *Trema orientalis* var. *argentea*
commonest tree on island
except *Casuarina*.

72 *Passiflora foetida* var. *hispida*
abundant, climbing
over other vegetation

73 *Grewia crenata*
common in second story of forest

74 *Ananas comosus*
persisting in open ^{wet ground} around
lake.

75 *Alocasia macrostigma*
occasional in wet ground near lake

76 *Colocasia esculenta*
common locally in wet
ground east end of lake

are in poor condition.

tree 5 m. tall, ~~fls~~ stipules
as in *Mapourea* when
well developed; flowers
white, salverform, ripe
fruit red.

small rounded tree
5 m. tall, ripe fruit dull
dark reddish.

extensive herbaceous
vine, flowers white
with basal half of
corolla segments deep purple.
fruit orange.

small tree, spreading,
4 m. tall, fruit green.
plants sterile reddish
pale green in color.

leaves erect, bright green;
plants 1 m. tall, ~~inflorescence~~ purple,
petioles erect, ~~blades~~ glaucous,
pendent,
dull. plants sterile.

- 31377 *Psychotria mariana*
common in understory
- 2 78 *Chara zeylanica*
covering lake bottom in 5-8 dm.
of water
- 1 79 *Acrostichum aureum* L.
continuous belt around lake
at water level and up 4-8 dm.
- 3 80 *Euphorbia thymifolia* *Euphorbia prostrata*
common in path in old village
- 2 81 *Melanolepis multiglandulosa*
occasional in understory
- 1 82 *Premna* ~~*obtusifolia* R.Br. (obtusifolia leaves)~~
occasional in understory
- 2 83 *Operculina umbellata* *ventricosa*
occasional in woods
- 3 84 *Ficus tinctoria* Forst. var. *neo-cordata*
common in woods
- 2 85 *Polypodium scolopendria*
local near edge of lake
~~terrestrial~~
- 1 86 *Aglaia mariannensis*
one of commonest trees in forest
- 4 87 *Cyperus polystachyos*
abundant locally in wet spot
- 4 88 *Pteris quadricincta* Retz.
common on walls and
bluffs of partially consolidated
- 4 89 *Abrus precatorius*
occasional in forest near lake

shrub 3 m. tall. flowers
white.

ill-smelling when
freshly taken from water.

clumps, ponds 1-2 m.
long.

prostrate, purplish.

~~occasional in~~ under
shrub or small tree,

racemes pendent dark brown
shrub 2 m. tall,

flowers green with larger lobe white
great vine, climbing
over vegetation; flowers
white, open at 10:30 a.m.
center yellow.

tree 6 m. tall; fruit
orange when mature.
fronds erect, sterile.

small tree 3 m. tall.

ash in shade.

vine climbing in bushes,
flowers purplish.

- 31390 *Carica papaya*
occasional in forest
- 2 91 *Nephrolepis hirsutula*
common in forest on ground
- 3 92 *Ficus prolixa* var. *subcordata*
common in forest

✓ Low ^{mucky} ~~peaty~~ soil e. of lake pH 7
same ~~place~~ at east
end of lake.

- 3 93 *Ipomoea aquatica*
in low moist ~~peaty~~ ^{mucky} area at east end of lake
- 3 94 *Paspalum conjugatum*
in low moist ~~peaty~~ ^{mucky} area at east end of lake.

Birds:

Saw about half a dozen ducks that may have been Marianas mallards on the fresh water lake. Another reported from the salt water lake. They looked much as I remember mallards, but rather small and with a bright red face. One pair behaved as though they were nesting. Fairy terns common. Starlings (?) seen in the trees near lake.

tall single stem, flowers cream white - (fruit of ♀ plant very small).
fronds and rhizome erect.

large banyan, one half leafless and with green fruit, other half leafy. (one leafy twig from another individual)

prostrate, flowers pale lavender with purple throat.

stems running, with erect branches.

A dark bird with lighter head that flew like a dove, but did not get a good view.

About 15 reef herons over the salt water lake, most of them white.

One kingfisher.

The snails here have unusually thin shells. Possibly due to lack of limestone.

✓ Feb. 7 - same - on ^{rather} recent
lava ~~at~~ east ~~end~~ of lake
mostly covered by *Miscanthus*

31

31395

Hyptis pectinata

common locally

1 96

Ipomoea pes-caprae

rare, on lava just above lake

1 97

Cyperus javanicus

edge of lava, in wet soil pocket

3 98

Paspalum obiculare

common on lava in soil pockets

1 99

Cheilanthes tenuifolia (Pursh) f. des.

occasional in crevices on lava

31400

Vernonia cinerea

common

3 01

Digitaria ciliaris

occasional

3 02

Phyllanthus ~~javanicus~~ mariannensis

common locally

✓ Feb. 8 - Mt. Charlen ~~the~~,
spatter cone just east of
lake

rough lava and

Scoriotrichia

1 03

Pilea on wall of deep
crevasse, shaded

5 04

Glossogyne tenuifolia

local on lava slope

1 05

Cheilanthes tenuifolia (Pursh) f. des.

around hot-air vent

5 06

*Nephrolepis hirsutula*common on outer slopes
of cone, in crevices

soil pockets on this lava
with fine black soil pH 6.5

erect herb 1.5 m. tall,
aromatic.
prostrate, flowers
purple.

erect

fls. purple.

one plant shrubby,
others almost acaulescent.

Kod. roll is views of crater, of
Pan. roll D cone, of lake, of
black lava flow, etc.
of slopes and cliffs around
caldera, with *Miscanthus*, *Casuarina*
fronds erect etc.

rays yellow

- 31407 *Sphenomeris biflora* (Kaulf.) Tagawa
rare on crater rim
- 2 08 *Glechhia linearis*
one or two tiny colonies inside
rim of crater, plants all young.
- 2 09 *Davallia solida*
on fresh lava flow
just east, one of first colonists
- 2 10 *Nephrolepis himantula*
on fresh lava flow just east.
one of first colonists
- 5 11 *Casuarina equisetifolia* L.
on fresh lava flow, just
east, one of first colonists.
- 1 12 *Chrysopogon aciculata*
on ash beds to east
- 3 13 *Ageratum conyzoides*
common locally on lower slopes
- 3 14 *Melastoma malabathrum*
rare, one plant seen just
below rim.
- 2 15 *Fimbristylis ^{boninensis Nakagata} ~~usakiana Kuhn~~*
common on crater rim

Mt. Charlen ~~is~~ is a small
dormant cone of scoria east
of the fresh water lake, in the
large caldera occupied ^{at its base}
by this lake. it is of ^{material}
of various sizes, covered by
a smooth red hardened crust.
Has a small crater filled
with vegetation. A lava flow
of semi-basaltic issued from

fronds erect

forming inat;
scapes erect.
erect, fls

small shrub, flowers
white.

tufts.

its base and flowed to
the lake. This is now covered
by sparse vegetation, mainly
Miscanthus. *Casuarina*
covers the slopes of the cone. Various
vents on the sides, base,
and rim give forth hot gases
but no odor. Between the
flow and cone base is a deep
crevasse.

100

1950 Pagan

- ✓ Feb. 7 Pass bet. the two lakes
on walls of compact ash
p. H. 7-7.5, partly shaded.
- 31416 ~~Dryopteris~~ *Thelypteris unita*
common
- 3 17 ~~Dryopteris~~ *Thelypteris toresiana*
occasional

- ✓ Feb. 8 Lava flow at landing
- 3 18 *Wedelia biflora* v. *argentea*
local

old. from p. 79. — From the
base of Mt. Pagan, directly
opposite this, has come
recently, a flow of intensely
black aa lava. It has
only a few plants — *Casuarina*
Nephrolepis & *Davallia nit.*

Pagan is a double complex of
volcanic outlets with a
main high volcano on each
end. On the west end, around
Mt. Pagan, are a series of
secondary vents of various
ages, including an old caldera
occupied, in its lowest part,
by the fresh water lake.

The sides of the main
cones are steep and of loose
material. The top parts
are almost bare, with a
few *Casuarina* (?) trees struggling

Pan roll 0 - view of
east peak of Pagan late
afternoon.

101

rhizome creeping.

sprawling tangled herb,
flowers yellow.

on the slopes.

On the lava and ash the main
colonist is *Miscanthus floridulus*,
but *Ficus* (?) & *Morinda*
citrifolia are frequent. *Heteropogon*
forms occasional patches. *Trema*
is also here and there, as in
the small crater of Mt. ~~Charles~~ Charles.

✓ Feb. 8 - Village - many
plants in cultivation
around village, also
many weeds.

- 31419 *Triumfetta*
common in coconut plantation
- 4 20 *Elephantopus mollis*
common in coconut plantation
- 1 21 *Pilea rhombifolia*
common weed in coconut plantation
- 3 22 *Ocimum sanctum* L.
commonly cultivated
- 4 23 *Blechnum brownii*
common weed in coconut plantation
- 3 24 *Passiflora foetida* v. *hispida*
occasional weed in plantation
- 1 25 *Thevetia peruviana*
cultivated around houses
- 3 26 *Premna corymbosa*
cultivated around houses
- 1 27 *Acacia farnesiana*
cultivated
- 1 28 *Scaevola ~~portensis~~ torrada*
cultivated
- 1 29 *Sporoclea pes-caprae*
dominant beach plant
- 3 30 *Vernonia cinerea*
common weed everywhere
- 1 31 *Eleusine indica* (L.) Gaertn.
common weed in village
- 1 32 *Amaranthus spinosus*
common weed

coconuts, papaya, banana, tobacco
lime, mango, terminalia c.
acacia farnesiana, *Trema o. v. a.*

erect herb, 1 m. tall;
flowers yellow.
erect, flowers white.

erect herb 0.8 m. tall.

aromatic
erect bushy herb 0.6 m.
tall bracts purple,
corolla white.
sprawling herb.

herbaceous vine

shrub 2 m. tall; flowers
yellow.

shrub 3 m. tall, flowers
greenish, ripe fruit black.
single large bush,
largely defoliated.

shrub 2 m. tall,
flowers white

luxuriant vine, spreading
over beach and climbing low cliffs,
flower purple.

erect, flowers purple

~~erect~~ spreading tufts.

erect herb 0.8 m. tall

- 31433 *Phyllanthus* ^{amans Schum. & Th.} ~~sp.~~ det. G. L.
 3 common weed in village
 34 *Synedrella nodiflora*
 common weed in village
 and plantation
 35 *Sambucus canadensis*
 cultivated in village
 36 *Malvastrum coccineum*
 occasional ^{weed} in village

Feb. 9

Farallon de Pajaros from m. w.
 7 mi. dist.

Webster
 1955

erect

erect, flowers yellow.

shrub 2 m. tall

flowers orange-yellow.

no detail could be made
 out but summit appeared
 to be capped with steam.

1950 Minami Iwo Jima

24° 15' N

141° 28' E

Feb. 10

profile from
n. or s. sideisosceles & with
alt. half base.

Minami Iwo Jima from a little
south of east.

abrupt cone of ~~very~~ light
colored ^{and gray} material. Intermittently
covered by an umbrella-shaped
cloud (or smoke?) (prob. not smoke)

Several large break-off
cliffs around basal part.
above these large areas of
woody vegetation. Apparently
~~this~~ grass on all parts
not covered by woody veg.
e.g. some of the more abrupt
cliffs and talus filled vertical
ravines. Break-off exposures
show dark ^{gray} rock, bedded in
places. Loose material is a
light pinkish tan color or gray.

Thin woody veg. clear to summit.
Grass may well be *Miscanthus*.
Break-off cliffs abundantly
cut by thin vertical dikes.

Woody veg. looks fairly diverse.
A number of trees orange yellow,
as though dead with full
foliage. Scattered here and
there.

Woody vegetation seems to cover all parts that are
reasonably stable and not too steep. Grass on loose
slopes, also on some sharp ridges. Light green vegetation,
possibly *Leucaena* or *Sporobolus*, prominent on lower talus slopes.
No small vegetation.

Chart says active volcano in 1919, but this is doubtful. Capt. says
sulfur fumes came from sea to north some
time ago. Vegetation
does not indicate any evidence of recent
activity. Trees on
summit; no evidence of crater.

Kod. roll 5 end. roll 6.
Pan. roll D

^{south}
On ~~east~~ side is a black
sand beach and at
least one place where
the cliff could be climbed.
(on s.e. corner.) <sup>landing feasible in good
weather, soft mud, rubber boat.</sup>
~~west~~ side is more
precipitous, with
~~steep~~ hanging valley,
and steep boulder beaches,
^{some black sand} cliffs around base.
Hanging valleys (or
almost vertical ravines)
wooded. Cliffs around
base on this side could
scarcely be climbed.
^{northwest} ~~west~~ side basal cliffs
unclimbable, 45° slopes
above well wooded.
Rock beaches.
long shoal with rocks to
northwest.

2 places on s.w. corner can be
climbed, giving access to
2 different 'cirques' each of
which might give access to
summit and rest of upper
slopes.

several small caves on
s.w. side, high up.
S. e. corner has a comb-like ridge
E. side cirque-like, with
great talus slope running
1/3 way up, eroded into gullies.

middle section huge bare cliffs. little woody vegetation on this side except a strip on extreme left, and a few patches elsewhere.

possible access to upper slopes on n.e. corner

From n.e. trees can be seen on summit, fair sized ones. No evidence of a crater

Apparently it would be possible to walk around the island on the beach except for the south-east corner, where an old ship is on the rocks. Perhaps in really rough weather it would be difficult anywhere on beach.

No good camp sites evident.

Several Black & sooty albatross seen near island. Many red tailed tropic birds.

Curious umbrella shaped cloud quite persistent, shifting, sometimes almost disappearing, then returning but always maintaining its shape

No evidence of fresh water seen, but doubtless may be seeps and sea-level springs.

110

1950 Iwasima

Feb. 10

from south

Iwabachi is a rugged mass of bedded material with cliffs and talus. Little vegetation except on talus and a few patches above the cliffs on south side. No trees but some low bush.

Flat part seems grassy from a distance. Some woody veg. at base of Iwabachi toward flat side.

West side of Iwabachi has almost no vegetation, is cliffs + talus, stained with sulfur.

Large crater on w. side, rim much lower to west.

On w. side of flat part are a few scattered trees, mostly grass.

Volcanic material here mainly light colored, one or two outcrops of dark.

111

Kod. roll 6.
several views
from s. & w.
Pan roll D + E
several views
from s.
pan series from
west.

w. side Iwabachi

North end seems to have several terraces, esp. when viewed from west.

n. end from w.

Also some rather high cliffs.
There seem to be traces of at least 7 or 8 terraces.

Feb. 10

Kod. roll
Pan roll E

View from south

Made up of bedded dark red-brown and red-gray material probably mostly tuff.

Break-off cliffs and talus slopes common. Age of talus and cliffs may be estimated by amount of vegetation developed on them.

Several conspicuous very steep hanging valleys on west side. Woody vegetation very well developed in these and on all ^{upper} slopes visible steeper places and some talus slopes grass covered but these not prominent. Grass and some green woody (?) veg. on ledges on cliffs. Broad-leaved veg. apparently develops almost as soon as grass on basal talus, later these slopes become wooded.

North slope precipitous, scarcely wooded. ~~North~~ East slopes moderate half way up. considerable grass, as well as woods. East slope steep with high cliffs at base. Slope wooded, cliff bare. Grass on talus at base.

from northwest

View from west

In general the island is well wooded.

North slope has a long serrated ridge extending in a cliff.

Basal cliffs around north and west and south sides, talus at base, rocky beaches all around, ^{thick} on n.w. side ~~these~~ deep valleys cut almost to base-level. Various places seem climbable.

Same sort of umbrella-shaped cloud as on Manami but denser and larger, upper fourth ^{of island} not visible.

O n. n. e. side is a gently sloping shelf with steeper slopes above it. Pre-war village could have been here.

Feb. 11 - north side of Mt.

Back of Omura 70 m. est.
thickets, and windbreaks
and openings on slopes.

31437 *Elaeagnus*

several plants on bushy slope

38 *Rubus*

local on bushy slope by trail

39 *Athyrium?*

local in small ravines

40 *Casuarina equisetifolia*

common on slopes, forming thickets

41 *Acacia confusa* var.

occasional in thickets

42 *Pinus*

common in patches and rows

43 *Pteris*

occasional in shade of
great boulders

44 *Dryopteris*

occasional in shade of great boulders

45 *Boehmeria*

common in bushy patches

46 *Lambucus*

rare on ~~flat~~ hill covered
by great boulders

47 *Trema orientalis* var. *argentea*

common everywhere, this plant

clay soil from decomposed
volcanic tuff (and a green
rock).

tangled
shrub 2 m. tall, fruit
turning orange.

low semi-scandent shrub;
flowers large, white.

rhizome erect, short,
fronds up to 1.5 m. long;

two extra pieces with
each specimen from different
plants.

small tree 6 m. tall;

said to ~~be~~ have been imported
by Japanese and called "american pine".
small tree 5 m. tall, sterile.

tree 15 m. tall, 3 dm. thick,
cones on ground beneath, said
to have been brought by Japanese
and called "Shinawa pine".

fronds arching.

shrub 1.5 m. tall, fruit
old and shattered.

shrub 1.5 m. tall,
mostly dead.

young tree 4 m. tall, sterile.
(all seen sterile)

- 31448 *Oplismenus compositus*
5 between great boulders on hilltop
- 5 49 *Pouteria*
common on hilltop of great boulders.
- 1 50 *Gnaphalium purpureum*
in tiny soil pockets on top
of great boulder
- 3 51 *Ardisia*
common tree on hilltop
of great boulders.
- 5 52 *Psilotum nudum*
one small colony on top
of great boulder
- 3 53 *Asclep. v. apoc.*
Very common, especially
on rocky places.
- 2 54 *Cinnamomum ^{japonicum Sieb. det.} ~~cassipourea~~*
common in thickets, this
one on rocky hilltop
- 6 55 *Ochrosia*
occasional on rocky hilltop
- 5 56 *Ardisia sieboldii?* det. Walther
common on rocky hilltop
- 5 57 *Piper*
common on rocky hilltop
- 5 58 *Celtis*
common tree on rocky hilltop
- 3 59 *Mucuna gigantea*
common on rocky hilltop
- 1 60 *Calophyllum inophyllum*
common, planted for windbreaks

- stems elongate, prostrate,
ascending at tips.
- tree 8 m. tall, sap milky,
leaves dull green, coppery beneath.
- tree 4 m. tall, fruiting
heavily. fruit green.
- plants erect.
- woody vine, extensively
twining; sap milky; fruit rare.
- tree 5 m. tall, aromatic,
in bud only, rarely so.
- tree 6 m. tall, spreading,
sap milky, fruit yellow
and fleshy when ripe, in pairs.
- tree 8 m. tall, fruit green.
- vine, rooting at nodes,
flower spikes extremely young.
- tree 6 m. tall, leaves
paler beneath, fruit green.
- woody vine climbing in
trees; flower clusters on old
wood on lower leafless part of vine;
flowers pale green.
- tree 7 m. tall, densely leafy.
"tamano".

- 31461 *Rhododendron?*
 occasional on bushy slopes
- 62 *Ficus*
 occasional in old wind break
- ✓ Feb. 11 - slope back of Omura,
 around bombed out Japanese
 installations. 10 m.
- 4 63 *Solanum nigrum* L.
 in crevices in broken concrete
- 5 64 *Youngia japonica*
 common in crevices in
 broken concrete
- 7 65 *Cyperus alternifolius*
 common generally
- 5 66 *Chloris radiata*
 common in roadway
- 5 67 *Raphiolepis?*
 on small bushy hill, common
- 5 68 *Hibiscus tiliaceus* var.
 common on small bushy
 hill
- 5 69 *Ficus*
 common generally in thickets

Acc. Wilson favored the
 Japanese cleared the
 seaward slopes thoroughly
 and put them under cultivation.
 Then they found the wind was too
 strong, so they had to plant windbreaks,
 for which they used the native *Calophyllum*

shrub 1.5 m. tall, leaves
 glaucous beneath; sterile.
 shrub 1.5 m. tall; fruit
 purple on one side.

flowers white.

flowers yellow.

densely caespitose

shrub 2.5 m. tall, leaves
 leathery somewhat
 pellucid-reticulate veined.
 shrub 3 m. tall, leaves
 green beneath.

banyan tree 5 m. tall,
 spreading, aerial roots
 numerous, figs turning purplish.

This does not thrive inland
 where there is no salt spray.
Rhoediscolor used in making
 medicine by Japanese. Used for
 "gripes" (stomach cramps?) and for
 fever in children. Evidently used on
 a large scale, as they tried to get the Bonin
 people to plant it.

✓ Feb. 12 - slopes of mountain
back of Omura
Dense mixed forest,
in places rather tall
and with little undergrowth,
in other places stunted
and bushy, or even open
and dominated by sedges.
Palms very common.

31470

Palms

3

common, scattered over
whole slope

"cabbage palm", bud
eaten, leaves used for
thatch in old days. A
roof of them would
last 25-30 years.

3

71

Wikstroemia

occasional in open
spots in forest

5

72

Rub.

rare in sparse places in forest

2

73

rare in sparse places in forest

6

74

Ficus

rare in undergrowth
in bushy places

5

75

Hibiscus

common in more scrubby
forest.

Roll 6

Roll E a few

shots of
vegetation

75-150m.

This area said by Wilson
Laroy to have been main-
tained as a preserve by
the Japanese governor, with
cutting only rarely allowed
and then strictly limited.

slender clean trunk
6 m. tall, many leaves,
fruit green (endosperm
hard when ripe); ~~petioles~~
~~without prickles on~~
~~mature trees, but quite~~
prickly when young. (two
leaves with prickly petioles
taken from trees with
trunks 1 and 2 m. tall).
shrub 3.5 m. tall, sterile.
(others seen 5 m. tall).

31470a

31470b

shrub 2 m. tall, flowers
white.
shrub 1.5 m. tall, fruit immature.
(broken shrub, only one seen
with fruit, to go with #31472)
shrub 1.5 m. tall; figs
immature.

tree 7 m. tall, one flower
picked up on ground beneath,
yellow turning red, deep
~~maroon~~ center and stigmas, yellow stamens.

- 31474 *Gahnia*
occasional in open places
- 3 77 *Eugenia*
common in and around openings
- 4 78 *Smilax*
common around openings
- 5 79 *Hibiscus*
edge of opening, common
- 3 80 *Eugenia*
common in and around opening
- 2 81 *Hibiscus*
in opening
- 5 82 *Raphiolepis*?
common in forest, this plant in bushy second growth
- 3 83 *Pandanus* *P. boninensis* Wats. det G. S. Jones 1968
common, this plant in opening
- 6 84 *Carex*
common on bare or eroded spots and disturbed places in forest
- 5 85 *Raphiolepis*?
common in forest
- 5 86 *Laurae*
common in forest
- 1 887 *Schinus terebinthifolius*
around old fox-hole, probably planted

dense erect clumps,
inflorescence black.

tree 7 m. tall, fruit
rare, reddish black, glossy.
tangled vine, spineless;
leaves glaucous, sterile.
small rounded tree
4 m. tall.

shrub 3 m. tall, fruit
reddish black, glossy.
young plant, sterile; shrub
2 m. tall.

shrub 3 m. tall (others
much larger); fruit black.

(1 in bush)

tree 5 m. tall, fruit
green.

dense tufts, scapes arching.

shrub 2.5 m. tall, others
seen larger; flowers
~~pale~~ pinkish white.

small tree 4 m. tall,
(others seen much larger)
fruits erect.

sterile shrub 2 m. tall,
strong odor when broken.

- 7 same - bare rock ~~ridge~~ ^{surrounded by} forest, on mountainside.
- 31488 *Cyrtosium*
6 common on cliffs and talus in shade
- 3 89 *Andropogon*
common on top of ~~ridge~~ ^{ridge}
- 4 90 *Cyperus*
common on top of ridge
- 6 91 *Fimbristylis*
common on top of ridge
- 5 92 *Jasminum*
common, forming tangles on sides of ridge
- 5 93 *Osteomeles anthyllidifolia* Lindl.
on top of ridge

The flora of the Bonin Is. is one of the most difficult I have seen from the point of view of knowing whether the plants are native or not. Many of relationships are with eastern Asia. And it is from there that most of the introduced species were brought by the Japanese. For example, *Casuarina* may be found almost anywhere except in dense primary forest. Bamboos of several kinds are very widely

- loose clumps.
- small clumps, culms spreading.
- spreading tufts.
- vine; flowers white, star ~~like~~ shape, very fragrant.
- prostrate shrub, flowers white, fragrant.

dispersed and aggressive. Camphor may be found here and there. Citrus also is much at home, and papaya. All of these are a part of the vegetation, yet all were introduced. *Ficus nitida*(?) ~~and~~ is very common around Omura. It was brought by the Japanese. (It is called "small leafed gum" while *F. macrophylla* is called "large leafed gum".) *Leucaena glauca* was brought by the Japanese after they started their fortification. (130)

✓ Feb. 13 - ~~to Bay~~ Bay shore
north of Omura

Thickets around old building sites

31494

Hibiscus tiliaceus

common, forming thickets,
~~occasional~~, only seen near
bay shore.

✓ Feb. 13 - Mts. around old
radio station east of
Yankee town ^{200 m + 15 m.}

peaks grassy and eroded,
seaward slopes brushy
or grassy, the shrubs more
dwarfed the more the exposure,
forest in ravines and

95

Hypolytrum

very common in disturbed
or open places, mostly
past fruiting at this season.
this specimen from old roadside ditch.

96

Bidens pilosa L. var.

common in roadway

97

Ficus

occasional in dwarf
forest on ridge.

98

Psidium cattleianum

one plant seen beside road

99

Cyathea

few plants scattered in
Terna forest on steep slope

small thicket forming tree.
flower clear yellow with part
of petal exposed in bud red,
center maroon stigmas maroon.
"hau" inner bark used for
cordage in old days.

protected slopes. The
composition much
the same in the
brush and forest.
Roll 6 end Roll 7 first 1/2. scenery
Roll E end Roll 7 beginning on n.e.
side, some vegetation.

forming dense ground
cover, spreading by ~~low~~
slender stolons up to
several m. long; leaves, cutting
if not handled carefully.
erect, ray-flowers white,
rather conspicuous.
bushy shrub 2.5 m. tall.

shrub 1 m. tall; fruit
immature.

dried
pinnas
included as
no fresh fruiting
was seen.

trunk 1.5 m. tall, fronds ^{2.5 m.} long,
scaly at extreme base, stipe 1 m. l.,
thick at base. sp. incl. stipe, 2 basal
pinnas, one central pinna and tip.

- 31500 *Hedyotis*
 grassy exposed ridge over
 ocean, occasional
- 3 01 *Hedyotis*
 same
- 3 02 *Hedyotis*
 same
- 1 03 *Ligustrum*
 common in scrub forest
- 5 04 *Sphenomeris chinensis* var. *biflora* (Kaufl.)
 common in bare earth of road cut
- 2 05 *Hibiscus*
 common in scrub forest

Feb. 17 - Canyon E of Yankeetown
 Walls covered by thick brushy
 woods.

- 6 06 *Laportea*
 occasional along roadside
- 1 07 *Korthalsella*
 in scrub forest, parasitic on (#31486)
 prob. juvenile *P. boninensis* Warb. det. St John 1968
- 3 08 *Pandanus*
 common in forest at all altitudes
- 1 09 *Smilax*
 occasional in scrub

over

small erect, branching shrub
 1 m. tall, foetid when freshly
 broken, leaves light green;
 calyx in fruit enlarged.

same

same

shrub 2 m. tall; berries
 purple-black.

Totani +
 Ohba

tufts, leaves somewhat
 leathery.

small tree 4 m. tall,
 flowers clear light yellow,
~~with~~ turning red with
 age (perhaps second day), with
 maroon center and stigmas.
 "mountain haw"

stems reddish below,
 flowers white, star-shaped.

joints flattened, plane of
 each branch perpendicular to
 that of parent branch.

(1 in Bist)

tangled vine, fruit yellowish,
 almost globose.

- 31510 *Polystichum*
3 common on sides of ravine
- 3 11 *Nephrolepis cordifolia*
common on forest floor on
sides of shallow gully
- 4 12 *Salacia?*
occasional in bushy forest
- 3 13 *Wikstroemia*
rare in edge of forest in ravine
- 1 14 *Selaginella*
one tiny colony on wall of ravine
- 8 15 *Korthalsella*
abundant on fig tree
in woods on steep slope; branches
of host drying where heavily infested.
- 8 16 *Smilax*
occasional in bush along
road

from p. 125 Now it forms dense pure
stands in many places, even
in remote areas. Quava
is found here and there
but does not seem very
aggressive. *Eulalia japonica* (?)
is very widespread in
open places, is really the
dominant grass on ridges,
peaks, etc., but is very
difficult to know if native.
It forms a thick but rather
loose mat. Conspicuous

fronds ascending to arching,
glossy; plants tuberiferous.

shrub 2 m. tall; ♀ buds
only.

shrub 3 m. tall.

prostrate.

joints flattened, ^{plane of} branches
perpendicular to that of parent
branch.

springy vine forming
tangle, young leaves
glaucous, flowers yellowish
green.

is the abundance of *Bryophyllum*
calycinum on eroded rocky
peaks and ridges. It is
deep orange red, abundantly
flowering. Old sugar
fields still persist with
cane growing and flowering.
Mostly on slopes up to
45°. Now show some
drought symptoms.

Only running water seen
on e. side of bay, two small streams
with a very small flow from
pool to pool. (Gobies in one above dam. (see p. 133))

✓ Feb. 14. Mts. east of bay,
above reservoir
thick forest on steep slopes
and ridges, grassy slopes
mostly on side toward bay
ridges and knobs eroded
and bare, dominated by
Bryophyllum calycinum.
One eroded spot with *Selaginella*.

31517 *Dodonaea viscosa* L.

5 one bush on open eroded ridge

2 18 *Cladium*

rare on open ridges and slope

1 19 *Blechnum orientale*

one small colony seen in
eroded place

5 20 *Selaginella*

abundant on eroded spot
on high ridge

1 21 *Pteridium aquilinum* (L.) Kuhn

one ~~small~~ colony seen
in opening in forest on high ridge

5 22 *Psilotum nudum* (L.) Presl.

small colony on rotten rock
in forest

3 23 *Scaevola frutescens* (Mill.) Krauss

high open ridge, seen almost
everywhere on island, up to
mountain tops, except in forests.

3 24 *Raphiolepis*

common in forests everywhere

Freyinetia seen but not
collected as it was sterile.
Tree ferns in occasional
patches, one trunk seen 6 m. tall

Roll (8) a few shots

175 m.

small rounded bush 1 m. tall.

red achenes hanging by
threads, small spreading tufts.
rhizome thick, erect.

rosettes, curling when dry.

most plants dead,
only two ^{green} fronds seen.

shrub 2 m. tall, spreading,
fruiting inflorescence dry;
(only one plant on island
seen in flower, most sterile
or with dry fruit).

shrub 2 m. tall, fls.
pinkish white, fruit
pyriform.

315 25

5

one bush seen in brush on ridge

Feb. 14. - slopes and ridges
above large bay on east side
of main bay

steep brushy broken wooded ridges

7

26 *Juniperus*

occasional in brushy places on ridge

3

27 *Juniperus*~~*Juniperus*~~ same

5

28 *Juniperus*

same

3

29 *Pittosporum*

common generally in woods

5

30 *Elaeagnus*common generally, especially
in brushy places.

5

31 *Cinnamomum camphora*local.
~~occasional~~ in ravine

5

32 *Cinnamomum doederleinii*

common everywhere in woods

det. Kesteven

2

33 *Pouteria*common everywhere, especially
on ridges

rounded densely branched
bush. fruits reddish green.

Roll 7 to end Roll 8 beginning
Roll E to end scenery and
vegetation, mts. & eroded places.

♂ small tree 4 m. tall with
dead top, pendent tips. "spruce"

♂ small tree, 3 m. tall, small
branchlets, pendent "spruce"

small tree 4 m. tall, branchlets
pendent "spruce", wood of ^{said} ~~tree~~
highly inflammable.

tree 5 m. tall, leaves
with undulate margins.

All plants seen sterile except
this one which had 3 dry fruits.

scandent shrub, branches
tending to be elongate with
reflexed branchlets; fruits

fleshy orange red, very astringent.

Tree 8 m. tall, leaves glaucous
beneath, camphor odor when
broken; said to have been introduced by
Japanese. sterile.

small tree 4 m. tall, odor of
sassafras when broken.

"sassafras" used for medicinal tea
in old days.

tree 6 m. tall, fruit green,
very rare.

31534

1 common vine everywhere in woods
and on open ridges

3 35 *Ardisia*
common in woods

5 36 *Ligustrum*
common generally, this sp.
in open brushy place on ridge

3 37 *Fimbristylis*
common on open eroded ridges

3 38 *Carex*
common on open eroded ridges

5 39 *Wikstroemia*
common on brushy ridges
(with #31540)

5 40 *Wikstroemia*
common on brushy ridges
(with #31539)

4 41 *Madia thunbergii* S. & Z.
common on ridges and in
woods.

1 42 *Mangifera indica*
common in ravines and lower slopes

5 43 *Geniostoma*
rare on brushy ridge

8 44 *Photinia*
very local on brushy wooded ridge

1 { 45
1 { 46
1 { 47 common in woods on ridge
seeds only, picked up under a
tree with quite thorny petioles.
(see #31548)

tough vine, sap milky;
very rarely fruiting.

small tree, fruits turning red.

shrub 1 m. tall (others
seen as small trees); fruits
dark purple.

caespitose, leaves stiffish.

caespitose.

shrub 1 m. tall, berries
red. (perhaps young
form of #31540)

tree 4 m. tall (perhaps
is old form of #31539)

shrub 2 m. tall (others
seen as small trees); leaves
glaucous beneath, flowers
pale green (most plants sterile).
dense tree 8 m. tall; flowers
pale greenish.

shrub 2 m. tall, flowers

shrub 3 m. tall; fruit
scarlet

palms with trunks closely
scarred (1-3 cm. apart) becoming
smooth and longitudinally fissured.
Thorniness of petioles extremely
variable from tree to tree, even
slightly on same tree. "cabbage palm"

31543

1 damp woods (for data see p. 132)

5 49 *Stachytarpheta urticifolia*
lower slopes along road,
in shade but open ground1 50 *Phyllanthus ~~sinensis~~ debilis* Klein
or Wild.
loose dirt along road5 51 *Eulalia japonica*
abundant in open places
everywhere, this on roadside1 52 *Psidium guajava*
fairly common1 53 *Paspalum ~~distans~~ conjugatum*
common locally1 54 *Digitaria*
common locally on talus and
some rock slopes3 55 *Paspalum scrobiculatum*
common locally on talus
and roadsides5 56 *Cassytha filiformis* L.
rare, parasitic on *Osteomeles*1 57 *Polypcias*
around old house site

Above waterfall in other stream
in pools were numerous
snails (*Melania*? see preserved material).

Whole island ~~was~~ as far as
I saw, made up of tuff and
volcanic breccia. Weathered
material is rather sharply

(stone) picked up under cabbage
palm with smooth petiole.

shrub 1.5 m. tall, erect,
leaves rugose; flowers
deep rich purple.

det. G. L.
Webster, 1955

plant purplish green.

loose clumps.

shrub 1.5 m. tall; sterile.

culms stiffly erect.

green, leafless, fruits green,
fleshy.

erect shrub 3 m. tall,
sterile, leaves variegated

set off from underlying
rocks. Erosion to bedrock is
consequently very common, especially
on peaks, shoulders, knobs, etc.

The general vegetation pattern is rather simple, in the parts visited.

In the lowlands a much altered forest, now composed of *Ficus nitida*, *Hibiscus tiliaceus*, *Hernandia sonora*, *Calophyllum inophyllum*, ^{mangrove}, etc. - now much invaded by *Leucaena glauca* ^{and Casuarina} seems to dominate. Much of this is being cleared for gardens.

The upland forest is a mixed type, with *Raphiophis* (?), *Hibiscus*, *Pouteria*, 2 sp. *Laurac.*?, *Ligustrum*, *Cinnamomum*, cabbage palm, *Pandanus*, *Ardisia*, *Ochrosia*, *Terminalia catappa*, ~~Casuarina~~ etc. Where this has been opened up it has been invaded by *Pinus*, *Casuarina*, several bamboos, etc. Where it has been cleared for cultivation, sugar cane is dominant, with often windbreaks of *Calophyllum*. Conspicuous stands of *Pinus* occupy many ridges, patches on slopes, etc. Open areas not planted to sugar, as well as exposed, eroded crests, etc. are largely dominated by *Eulalia* (?), and where too bare on this, *Brizopyllum*

Flowering of *Leucaena* seems to be seasonal, only one bush being noticed in flower now. *Citrus* is common and widespread in forest, esp. around clearings. Bamboo brakes are common. On a two sugar cane dumps seem to approach 5. *Spontaneous*. Probably seedlings.

calycinum.

On some high but rather protected slopes are patches of *Cyathea*, usually in the general matrix of the forest. On exposed slopes and crests the forest is dwarfed to a dense scrub, but maintains more or less its own composition.

In eroded openings several sedges - *Gahnia*?, *Fimbristylis*, *Cyperus*, ^{carex}, and esp. *Hypolytrum* have taken over. A few trees, such as *Wickstroemia*, *Eugenia*, *Juniperus* etc. seem to favor these places or their edges more than the forest. *Hibiscus* is able to establish itself. In places that are rather bare *Agave americana* has become well established. Near the large radio station east of Yankee town *Acacia confusa* has become established. It is present in other spots but not thriving especially well. *Leucaena* seems to be the most aggressive species now, forming dense pure stands, producing a carpet of its own seedlings beneath. *Leucaena furcata* and *Boehmeria* form patches in openings even up to the tops of the mountains.

✓ Feb. 17 - gardens ~~and~~ and
dooryards around village
black cinder soil

31558 *Ocimum basilicum*?
cultivated

~~59 *Cosmos sulphureus*~~
~~cultivated~~

59 *Cosmos sulphureus*
cultivated

60 *Zinnia elegans*
cultivated

61 *Gomphrena globosa*
cultivated

62 *Celosia argentea*
cultivated

63 *Cassia alata*
cultivated

64 *Pithecellobium dulce*
occasional, planted

65 *Catharanthus roseus*
common, cultivated and escaped

66 *Datura*
one plant in garden

✓ Feb. 17 - trail around south
side of island, coastal
strip a shelf, mostly
10-20 m. above sea, backed
by cliffs or steep slopes,

67 *Melochia compacta* Hoch.
common locally where strip
is almost at beach level

68 *Paspalum conjugatum*
common along trail

Slopes above plantations all ^{nicotiana}
ex. forest in ravines + on cliffs ^{casuarina}.
Sparse forest near top of peak on w. side.

pleasantly aromatic
herb; stems, bracts, calyxes
maroon; corolla greenish
white.

flowers brilliant orange.

coarse herb 0.8 m. tall;
rays ~~are~~ crimson.

heads ~~bracts~~ magenta; bushy
branching herb.

herb over 1 m. tall,
tops of spikes magenta.

shrub 2 m. tall; flowers
deep yellow.

sterile shrub 2.5 m. tall.

suffrutescent herb 0.6 m.
tall, flowers magenta.

shrub 1 m. tall, flowers
deep purple, fruit green.

planted to coconuts, with
thick undergrowth of
Pipturus, ~~ya~~ Trema,
young coconuts, ferns, etc.

shrub or small tree 3-4 m.
tall. flowers red in center,
petals pink distally.
forming dense patches

- 31569 *Hibiscus tiliaceus*
occasional, especially down
near sea level
- 3 70 *Erythrina variegata*
occasional
- 4 71 *Cyperus cyperinus* (Retz.) Des.
one plant seen on cinder
bank near trail
- 4 72 *Eragrostis amabilis* ^{*tenella* (L.) Beauv.}
occasional on bare cinders
along trail
- 1 73 *Desmodium triplorum*
common along trail
- 1 74 *Colubrina asiatica*
occasional around base of cliff
- 4 75 *Cyperus javanicus* Houtt.
occasional along trail
- 2 76 *Xanthosoma sagittifolium* (L.) Schott
planted occasionally
- 3 77 ~~*Casuarina*~~ ^{*newsporum*} *oppositifolia* (Lam.) ~~Richardson~~ ^{F & S. Lam.}
common tree, especially
near bases of cliffs
- 5 78 *Casuarina equisetifolia* L.
common tree, especially
on cliffs and bluffs
overlooking ocean
- 2 79 *Pteris quadraurita* Retz.
common everywhere
- 3 80 *Hedyotis biflora*
occasional in trail
- 3 81 *Zoysia tenuifolia*
common abundant locally
- 1 82 *Portulaca oleracea* L.
occasional along trail

sterile shrub 3 m. tall.

shrub 2 m. tall
flowering when almost
leafless, flowers scarlet.
tuft

spreading tufts

prostrate; sterile.

semi-scandent shrub;
sterile.

small tufts, leaves
glaucous.

herb 2 m. tall; leaves
glaucous beneath, dull above.
tree 5 m. tall; flowers
white, very fragrant;
fruit mostly immature.
tree 10 m. tall.

prostrate; flowers white.

forming dense turf
in open places.

spreading; fleshy.

- 31583 *Dactyloctenium aegyptium*
common along trail
- 2 84 *Lepturus repens* var. *repens* Forb.
one small patch on top of
bluff over ocean
- 1 85 *Ricinus communis* L.
very local in plantation
- 1 86 *Pipturus argenteus*
dominant plant in understory
- 5 87 *Cenchrus brownii* R. & S.
common along trail
- 1 88 *Capsicum frutescens* L.
common generally
- 3 89 *Crotalaria* ~~*maculata* Desr.~~ *gallipada* Ait.
abundant in openings and
along trail
- 1 90 *Carica papaya* L.
common generally
- 1 91 *Morinda citrifolia* L.
common generally in undergrowth
- 2 92 *Polypodium scolopendria* Burm. f.
abundant in undergrowth
- 3 93 *Nephrolepis hirsutula*
abundant locally in undergrowth
- 3 94 *Hyptis pectinata*
common along trail
- 1 95 *Pseudelephantopus spicatus*
rare along trail
- 1 96 *Achyranthes aspera*
local along trail
- 5 97 *Hedyotis foetida* var. *marianensis*
local on ~~bluff~~ ^{bluff} of great broken lava rocks

spreading tufts

spreading, matted.

shrub 2.5 m. tall.

shrub 3 m. tall.

fruits scarlet, flowers
pale green.

erect suffrutescent herb
2 m. tall; flowers yellow
with brown lines.

erect herb or tree, 3 m. tall (up to
10 m.), ♂, flowers cream yellow.
all seen were of weedy variety
with very small fruit.

shrub 2.5 m. tall; leaves
glossy.

rhizome prostrate, prostrate
erect.

rhizomes and prostrate erect.

aromatic herb 1.5 m. tall.

erect, flowers purple.

shrub 0.6 m. tall, foetid when
broken; flowers white.

- 31593 *Deeringia amaranthoides*
on bluff of great broken lava rocks
- 5 99 *Callicarpa candicans*
common on bluff of great lava rocks
- 31600 *Achyranthes velutina*
rare, on ledge of lava cliff
- 3 01 *Eugenia reinwardtiana*?
rare, on bluff of great broken lava rocks
- 5 02 *Terna orientalis* var. *argentea*
common generally
- 3 03 *Melanolepis multiglandulosa*
common generally
- 3 04 *Vigna marina*
common generally,
especially seaward.
- 5 05 *Oplismenus compositus*
common generally
- 5 06 *Digitaria ciliaris*
local in open places along trail
- 3 07 *Terminalia catappa* L.
one tree seen with buds
(other, sterile, common, perhaps different)
on sea cliff.
- 5 08 *Phyllanthus marianus*
very local near seaward edge
- 1 09 *Portulaca sarraensis* ~~Bedd.~~
rare, one tiny colony seen
on ledge of tuff cliff.
- 2 10 *Davallia solida* (Forst. f.) Sw.
occasional, on tuff cliff
- 1 5 11 *Asplenium nidus* L.
common generally, terrestrial,
this on tuff cliff

scandent shrub climbing
over other vegetation, flowers
green, fruits turning pink.
weak shrub, flowers purple.

shrub 1 m. tall, flowers
white.

tree 5 m. tall, ripe fruits
maroon

tree 6 m. tall, fruit sooty brown,
racemes pendent.

vine climbing in trees

prostrate, forming
loose mat, leaves crisped.
spreading & ascending.

small tree 3 m. tall,
buds only.

erect shrub, scarcely
branched, 1 m. tall.
fleshy, spreading, sterile.

rosette, fronds ascending

- 31612 *Ficus tinctoria*
5 common, especially
around bases of cliffs
- 5 13 *Wedelia biflora*
abundant in open places
and under trees near seaward
edge of strip
- 2 14 *Emilia sonchifolia*
common locally along trail
- 5 15 *Psychotria mariana*
common generally in undergrowth
- 1 16 *Alnus precatissima* L.
common, tangled in trees
- 1 17 *Operculina ~~umbellata~~ ventricosa*
common, climbing in
other vegetation

- ✓ Feb. 17 - canyon on east side
of island
deep gorge cut in scoria
- 2 18 *Alocasia macrorhiza* (L.) Schott
common in gorge bottom
- 5 19 *Boehmeria*
common on walls of
gorge
- 5 20 *Piper guahanense*
common on bottom of upper
part of gorge
- 5 21 *Peperomia*
common on vertical scoria walls
- 5 22 *Asplenium unilaterale* Lam.
common locally on banks of gorge
- 23 *Angiopteris evecta* (Forst.) Hoffm.
occasional in upper gorge bottom

scrubby tree; figs immature

scrambling herb,
forming low tangles,
a resinous odor when broken,
flowers yellow.

small tree 4 m. tall;
flowers white; fruit red when ripe.
vine

extensive vine; flower
pale yellow, anthers just
starting to twist.

High slopes all *Miscanthus*, forest
in ravines and canyons.

petioles, bracts purple,
leaves glossy green, erect.
shrub 1-2 m. tall, leaves
rugose.

shrub 2 m. tall, somewhat
aromatic, spikes erect, white,
fleshy; spikes erect.

bottom

fronds arching, 4-5 m. long, 2 lvs,
brown, from erect barrel-shaped rhizome, *stellate*.

- 31624 ^{Bolbitis} ~~Campylopus~~ *quoyanum*
5 common on banks in upper gorge bottom
- 3 25 ~~Lycopodium~~ *Ctenitis subglandulosa*
occasional on banks in upper gorge bottom
- 3 26 *Athyrium*
rare on scoria cliffs
- 1 27 *Freycinetia*
common in upper part of gorge
- 1 28 *Miscanthus floridulus*
dominant on upper slopes
- 1 29 *Geniostoma micranthum* var. *micranthum*
rare in gorge bottom
- 2 30 *Sphenocnisis biflora*
rare on scoria walls
- 1 31 *Aglaia marianensis*
common on canyon bottom and sides
- 3 32 *Psychotria mariana*
common generally
- 4 33 *Lycopodium thelypteris opulenta*
occasional at base of cliffs
- 1 34 *Anticarsus allis* (Park.) Forb.
common on upper sides of canyon
- 1 35 *Flagellaria indica*
common in canyon
- 1 36 *Barringtonia asiatica* L.
common in lower part of canyon
- 1 37 *Hernandia*
common in lower part of canyon
- 3 38 *Pandanus tectorius* Park.
upper canyon wall

~~so~~ tips of ^{sterile} fronds tending to proliferate, fertile ones erect. rhizome short, erect.

rhizome pendent ascending, at tip, about 25 cm. long. vine, forming tangles, bracts orange, inner ones eaten away (by rats?) large clumps.

shrub 2 m. tall

small tree 4 m. tall, sterile (other, seen up to 10 m. also sterile) shrub 2 m. tall, flowers white; ripe fruit red. rhizome embedded in scoria, fronds ascending. tree

extensive vine, climbing with curling leaf tips; sterile. trees of all sizes, (fruit on ground).

tree 10 m. tall (fruit on ground).

tree 6 m. tall, fruit immature

South end has no forest of any consequence, nor any limestone. High ridges and slopes Miscanthus. Cliffs bare Miscanthus. Everything else planted to coconuts. S. end. banded tuff and lava.

Feb. 13 roadside near landing

31639 *Panicum ambiguum* Trin.
3 rare

3 40 *Heliotropium*
occasional

White cliff on east side about
midway. Not seen closely
enough to say if limestone.
Has dark talus at base.

Cmde. Gray says a similar
white layer (of hard rock) 8-10
ft. thick inside crater of
Mt. Pagan.

Also says there are about 50
acres of cotton, with windbreaks.
Breadfruit also found, as
well as oranges + bananas.

spreading tufts, prostrate

flowers white.

from north

upper slopes mainly *Miscanthus*
lower slopes mainly wooded.
wooded ravines running far
up on upper slopes. Middle
slopes of main volcano have
sparse low woody vegetation

✓ Feb. 18 - Around Pardo Village
in open coconut plantation
and gardens

21641 *Cyperus javanicus* Houtt.
occasional on open slopes
above ocean cliffs.

2 42 *Portulaca oleracea* L.
~~occasional~~ common on cliffs above sea

1 43 *Callicarpa candicans*
rare on sea cliffs

2 44 *Eragrostis amabilis* Tenella
occasional on open ground
at top of bluff

2 45 *Sporobolus caprae*
common on sea bluffs

1 46 *Casuarina equisetifolia* L.
only seen on sea bluffs

Gently sloping peninsula
to north is a rough
lava flow apparently
originating at the base
of the main volcano.

It is covered by a vegetation
of *Pipturus*, *Ficus tinctoria*,
Melanolepis, *Hibiscus*
tiliaceus, *Claoxarpus* (more
common toward head of
flow), *Morinda citrifolia*,
Psychotria mariana, etc.
with sparse undergrowth.
Asplenium nidus & *Polypodium*
scolopendria abundant
under trees.

small tufts, leaves dull,
gray-green.

fleshy, prostrate to ascending.
sterile shrub.

spreading tufts.

prostrate, flowers purple.

tree 4 m. tall, sterile.

- 31647 *Thespesia populnea*
a few small trees on top of sea bluffs
- 1 48 *Euphorbia hirta*
common weed in gardens
- 1 49 *Vernonia cinerea*
common weed in gardens
- 2 50 *Phyllanthus ~~viridis~~ amarus* Schum. x Th. det. G.L. Webster, 1955
common weed in gardens
- 1 51 *Eleusine indica* (L.) Gaertn.
common weed in gardens
- 2 52 *Catharanthus roseus*
abundantly cultivated
- 2 53 *Amaranthus viridis* L.
abundant weed
- 1 54 *Solanum melongena* L.
sparingly cultivated
- 5 55 *Canavalia microcarpa*
Feb. 18 - Forest on lava flow
- 5 55 *Canavalia microcarpa*
megalantha Merr. var.
- 2 56 *Ficus tinctoria* Forst. var. *resoudana*
common in forest
- 1 57 *~~Mexosiphia~~ oppositifolia* (Lam.) Fock. fock. K. Schum.
occasional in forest
- 2 58 *Hibiscus tiliaceus*
common in forest
- 1 59 *Polypodium scolopendria* Burm.
abundant on lava in shade of forest
- 1 60 *Asplenium nidus* L.
abundant on lava in shade of forest
- 1 61 *Mninda citrifolia*
common in woods and in plantation

shrubby tree 3-4 m. tall.

stems ascending.

flowers purple.

erect.

suffrutescent herb 0.7 m.

tall, flowers magenta

(white form also seen)

prostrate or weakly ascending

large, much branched herb;

flowers lavender, fruit

narrow.

vine climbing in brush;

fruit green; bud purple.

small scraggly tree;

sterile.

tree 6 m. tall; fruit green.

small tree 6 m. tall, very

crooked stem.

rhizome prostrate; fronds erect;

fertile ones almost all battered & old.

rosettes, fronds ascending to erect,

fertile ones with fertile part frayed.

small tree 3-4 m. tall, leaves

glossy, flowers and fruit, white.

- 31662 *Guamia marianae*
one small sterile tree seen in forest
- 5 63 *Melanolepis multiglandulosa*
one of commonest trees in forest
- 5 64 *Psychotria mariana*
common in forest
- 5 65 *Pteris quadriaurita*
common locally in forest, terrestrial
- 5 66 *Pipturus argenteus*
abundant in forest, dominant
- 3 67 *Piper betle*
one small patch seen on edge of forest
- 3 68 *Capsicum frutescens* L.
common along trail in forest
- 5 69 *Trema orientalis* var. *argentea*
common in forest on higher part of flow
- 5 70 *Scleria lithosperma* (L.) Sw.
occasional in forest on rocks,
especially near upper part of flow
- 5 71 *Erythrina variegata* var. *orientalis*
occasional in forest
- 3 72 *Blechnum brownii* f. *puberulum* Leonard
abundant along trails and
in plantations, forming almost
pure stands as ground cover.
- 5 73 *Randia cochinchinensis* Lam.
common in forest
- 5 74 *Peperomia*
occasional, epiphytic on tree trunks
in forest near head of flow.
- 1 75 *Clusia asiatica*
common locally in forest

tree 3 m. tall

small tree 6 m. tall, young
fruit sooty greenish brown.
shrub 2 m. tall, flowers
white, fruit red when ripe.
rhizome short, erect.

small tree 5 m. tall, fruit
white, fleshy.
vine climbing over trees; sterile;
leaves ^{acrid} ~~peppery~~ when chewed.
suffrutescent herb, flowers
pale green; ripe fruit red.
small tree 6 m. tall; ripe
fruits almost black.
small tufts, culms arching,
fruit white.

tree with very ascending
branches, flowering when
leafless, flowers scarlet.

shrub 3 m. tall, flowers
white, fragrant.
fleshy, pendent from tree.

semi-scandent shrub,
fruiting portion leafless.

- 31676 *Davallia solida*
5 climbing on tree trunk in forest
- 1 77 *Taeniophyllum mariannensis*
on branches of *Elaeocarpus* tree
- 3 78 ~~*Scaevola frutescens*~~
- 3 78 *Peperomia*
on rocks
- 5 79 ^{*Ageratum*} ~~*agcaia*~~ common in forest
- ✓ Feb. 18 - boundary between forest and open grassy slopes
- 5 80 *Premna* ^{*obtusifolia* (Bl.) (Othura lvs.)}
isolated tree on grassy slope
- 5 81 *Pouteria obovata*
common in edge of forest
- 1 82 *Hedyotis foetida*
rare on lava ridge in open
- 5 83 *Geniostoma micranthum* var. *micranthum*
rare on lava ridge
- 3 84 *Ficus prolixa* var. *subcordata*
rare on lava ridge
- 3 85 *Cassytha filiformis*
rare on shrubs on open lava ridge
- 3 86 *Scaevola* ^{*taeada*} ~~*frutescens*~~ (Mill.) Kr.
common on open lava ridge
- 5 87 *Phyllanthus marandus*
common on open lava ridge
- 3 88 *Ageratum conyzoides*
edge of forest
- 3 89 ^{*Cantharidium*} ~~*Cantharidium*~~ *scarabaeoides*
edge of forest, on grassy slope

roots flat, green, fruit and buds green.

fleshy

small tree 6 m. tall, flower, yellow.

small tree 4 m. tall, flowers pale green.

small tree 5 m. tall, leaves gray.

shrub 0.6 m. tall, pale green, foetid when broken.

shrub 1.5 m. tall.

figs shrub 1 m. tall, almost leafless; figs green.

green, leafless, tangled; flowers white, fruit green.

spreading shrub 1 m. tall; flowers white.

erect shrub, unbranched, 1 m. tall.

twining vine,

- ✓ Feb. 18 - coconut plantation,
cleaned fairly free of brush
- 31690 *Amaranthus dubius*
common weed
- 91 *Malvastrum corrandelianum*
occasional weed
- 2 92 *Citrus aurantifolia*
thicket in plantation
- 1 93 *Nicotiana tabacum*
planted in clear places
under coconut trees
- 2 94 *Xanthosoma sagittifolium* (L.) Schott
commonly planted under
coconut trees
- 1 95 *Abrus precatorius*
common weed generally
- 1 96 *Ipomoea stictocardia* ~~complanata~~
common under trees
- 1 97 *Barringtonia asiatica*
occasional
- 2 98 *Carica papaya*
abundant weed generally
- 3 99 *Nephrolepis hirsutula*
common locally
- 31700 *Triumfetta semitriloba*
one much trampled plant seen
- 2 01 *Capricum frutescens*
one plant seen, planted.
- 2 02 *Sida acuta* L.
uncommon

- erect herb up to 1 m. tall
(note difference in spininess)
herb 1 m. tall, flowers
orange-yellow.
- ~~flower~~ small tree, strong
lemon scent when broken;
flowers white, very fragrant.
- erect herb 1 m. tall, corolla
limb pink.
- up to 1.5 m. tall, leaves
dull, glaucous, especially
beneath. "Onolulu" (Honolulu?)
cultivated for edible rhizome.
- wine, very tough stem,
climbing in trees and
shrubs, flowers purple.
- wine, extensively creeping,
flower purple.
- small tree, 5 m. tall, sterile.
- unbranched tree up to
6 m. tall, all seen were of
small-fruited wild var.
- rhizome and fronds erect.
- herb 1 m. tall. flowers yellow.
- shrub 0.6 m. tall, flowers
white, ripe fruit red.
- herb, much branched, 1 m. tall,
attached by rhizome.

Feb. 19

cliffs and ravines with woody vegetation. Long shelf to right completely planted to coconuts. Other slopes grassy but higher ones on volcano with very sparse scattered woody veg.

The ravines are wooded with *Ficus tinctoria* and *F. prolixa*, *Pipturus*, *Hibiscus tiliaceus*, *Morinda melanolepis*, with occasional *Bremna*, *Elaeocarpus* & *Pouteria* toward head. *Merremia* and *Abrus* are common vines, with *Freyinetia* toward head.

Polypodium scolopendria and *Asplenium nidus* very common on rocks under tree forest.

not much other undergrowth. Walls of ravines, cut in coarse granular ash or cinders, tend to be vertical.

Pteris less common.

Shore very rocky. Just above rocks on talus, where there is talus, is a thicket of *Hibiscus tiliaceus* that almost defies penetration.

Cliffs and top of beach covered by *Sporobolus percapra* and *Wedelia*. *Hedyotis* common on cliffs. *Terminalia catappa* common on cliffs & talus, also *Pandanus* (these ascend mountains too.) *Cassytha* here and there on cliffs.

Soil in ravines and plantation tests about pH 7.

No *Passiflora foetida* seen on Almaguán.

Coconuts planted just about everywhere where they could grow. Don't seem to bear as well high up.

Triumfetta is the dominant weed here in plantations. Ground

South end is a high bluff with tremendous recent landslides and great talus slopes at base - ~~quite~~ almost without vegetation, of a tan colored material.

✓ Feb. 19 Vicinity of Asangsong Village

bluffs just above ocean

9-15 m.

- 31703 *Fimbristylis cymosa*
crevices in tuff cliff
- 3 04 *Pandanus tectius*
occasional on talus and cliffs
- 6 05 *Pouteria pectorata*
on talus just out of reach of waves
- 4 06 *Callicarpa candicans*
on rocks just above waves
- 3 07 *Hedyotis pretidiana* *marianensis*
on cliffs, common
- 3 08 *Wedelia biflora* v. *argentea*
common on cliffs
- 3 09 *Zoysia tenuifolia*
common carpeting tops of cliffs and ledges.

✓ same - village and plantation

- 7 10 *Dactyloctenium aegyptium*
in path, common

- 3 11 *Digitaria ~~bisorensis~~ radicata*
occasional in plantation

small tufts - ~~unplanned~~
dead.

tree 10 m. tall; fruit green.

tree 3 m. tall, bushy, fruit green.

erect shrub, flowers purple

shrub 2.7 m. tall, flowers white.

scandent herb, flowers yellow.

forming dense soft turf.

spreading tufts

prostrate

- 31712 *Digitaria* ^{setigera} ~~pruriens~~ var. *pruriens* approaching var. ~~microbachne~~
opening above cliff
- 13 *Digitaria* ^{setigera} ~~pruriens~~ var. *pruriens*
opening above cliff
- 14 *Euphorbia* ~~prostrata~~ *thymifolia*
in trail
- 15 *Cenchrus* ~~setosus~~ ^{brownii B+S.}
in plantation, occasional
- 16 *Cassia* ~~sophora~~
rare in plantation
- 17 *Pachyrhizus* ~~erosus~~
common around edges
of village
- 18 *Hypis* *pectinata*
common around village
- 19 *Lida* *acuta* L.
common in plantation
- 20 *Lida* *spinosa*
common in plantation
- 21 *Jasminum* ^{marianum DC.} ~~acutifolium?~~
rare in plantation, only one or
two young plants seen
- 22 *Operculina* ~~umbellata~~ *ventricosa*
common generally in thickets
- 23 *Commelina* *bengalensis*
common in open places in
plantation and village
- 24 *Lida* *hornbifolia* L.
common about village
- 25 *Benincasa* *hispida*
occasional about village

- prostrate to ascending
- prostrate to ascending
- prostrate
- culms ascending
- erect, flowers yellow,
fruit terete (only one seen).
vine climbing over
other vegetation
- erect herb 1 m. tall, aromatic
flowers whitish.
- erect suffrutescent herb,
1 m. tall, leaves with mildew.
(with # 31720, no intergrades seen)
- erect suffrutescent herb
1 m. tall, flowers yellow.
(with # 31719, no intergrades seen)
- sterile.
- extensive vine.
- prostrate, open flowers
lavender, cleistogamous ones pale green.
- erect suffrutescent herb, m. tall.
- vine, flowers bright yellow,
fruits very glaucous when
not quite ripe.

- 31726 *Triumfetta semitriloba*
common in village and
dominant weed in plantation
- 27 *Clitoria*
common about village
and in waste spots nearby
- same - wooded ravine
above village
- 28 *Dolichos lablab*
common in outskirts of village
- 29 *Ricinus communis* L.
common in village
- 30 *Crotalaria* ^{*pallida* Ait.} ~~*rupestris* Desv.~~
occasional around village
- 31 *Ipomoea indica* (Burm.) Merr.
rare in village
- 32 *Mangifera indica* L.
rare in village, in ravine
- 33 *Ficus tinctoria* var. *neobadanum*
common generally
- 34 *Annona reticulata* L.
rare in plantation
- 35 *Oplismenus compositus*
occasional in plantation,
(also in forest)

erect herb, up to 2.5 m. tall,
flowers yellow.

vine, flowers bright
blue.

vine twining over weeds,
flowers lavender

erect herb 1.5 m. tall,
flowers green. stigma
reddish.

erect herb 1.5 m. tall,
flowers yellow with brown lines.
vine, flowers pale blue.

tree 6 m. tall, flowers
greenish yellow.

small tree; fruit
yellow, turning maroon
when dead-ripe.

tree 7 m. tall, fruit
dark red when immature.
prostrate, leaves
crisped.

- ✓ same - wooded ravine
above village, woods
of *Pipturus*, *Ficus*, *Melanolepis*, etc.
- 31736 *Artocarpus altilis* (Park.) Fosb.
several trees in ravine bottom
- 5 37 *Ficus prolixa* var. *carolinensis*
shrub on wall of ravine
- 5 38 *Ficus prolixa* var. *carolinensis*
rare in ravine bottom
- 2 39 *Polyscias grandifolia*
occasional in ravine bottom
and on walls, in undergrowth
- 5 40 *Elaeocarpus zipp*
rare in upper branches of ravine
- 1 41 ~~*Achras*~~ ^{*Neiosperma*} *oppositifolia* (Lam.) ^{Fosb. & Fach.} ~~H. Schum.~~
occasional
- 6 42 *Pouteria obovata*
common in upper branches
of ravine
- 1 43 *Terminalia catappa*
occasional
- 1 44 *Miscanthus floridulus*
forming dense matted brake
above forest on sides, dominant
plant on open slopes
- 1 45 *Heteropogon contortus*
to top of vertical walls,
common
- 1 46 *Freycinetia reneckei* Mark.
common in upper branches of ravine

tree 10 m. tall

shrub 3 m. tall, figs green.

large banyan, leaves
very young, figs green, rare.
sparsely branched
shrub 2.3 m. tall.

large rounded tree, 15 m.
tall, ~~old~~ old leaves turning
bright red; flowers white;
fruit bright blue, glossy.

tree 6 m. tall; fruits on
ground beneath.
large rounded tree, 15 m. tall;
fruit rare, green.

tree 7 m. tall, leaves almost
all shed, scarlet - picked off ground.
2 m. tall, all seen sterile.

tufts.

vine, all seen sterile.

same, - village + plantation

31747 *Pithecellobium dulce*

planted in village

48 *Desmodium triflorum*

bare spots in plantation

49 *Lynedrella nodiflora*

along trail, occasional.

shrub 2.5 m tall,

flowers greenish.

prostrate.

~~occasional~~ erect, flowers
yellow.

1950 Hydrometer readings
for sp. gr.

page	Locality	date	source of H ₂ O	reading
32	Agaña Swamp, Guam	Jan 25	stagnant channel	1.002
62	Lake Lucero, Saipan	Feb. 3	Lake	0.999
	"	"	"	1.000
	"	"	"	0.9995
	Rain water, Saipan			1.003
	Saipan tap water, Chalan Kanoa			

✓

Feb. 21 - ^{any} Ditzgenyama Ridge north and south ridge of volcanic breccia or conglomerate with coral limestone low on its flanks, and with a thin strip of coral capping along the west side near the top. The material weathers into a mottled red and blue clay. On a large flat denuded area of this the surface layers (in dry weather) are puffy and air-filled, showing, apparently, that the water-content was high.

This clay, in bare spots, ^{at several depths} tested pH 5 or lower. Around edges where grasses (mostly *Chrysopogon* and *Paspalum scrobiculatum*?) are invading the same sort of material, tests made on soil taken from among the grass roots yielded a new range varying from pH 5.5 to pH 6.5.

Apparently the humus produced by this vegetation tends to be less acid than the material resulting from decomposition of this (dyalite, etc.) rock. Quartz granules up to the size of peas are abundant here in the soil, limonite concretions also.

200 m.

The vegetation here, before last April, was *Miscanthus*, invaded and in places dominated by *Casuarina equisetifolia* and *Acacia confusa*. The parts of this still remaining show that these woody species are able to come up and make a healthy growth, shading the grass, which becomes loose and lanky. Possibly it would eventually be ~~be~~ shaded out. Last April a large fire burned over most of this area. The trees were completely killed. The grass ^(*Miscanthus*) now occupies the ground completely. It was evidently only burned off without injuring the roots.

On the west break of the hill there are eroded areas, in part exposing the thin limestone caps, in part in pure volcanic material. *Chrysopogon*, ~~*Phyllanthus*~~ ^{*Phyllanthus*} ~~and~~ *Miscanthus* and *Scaevola frutescens* are on both. *Dodonaea* rare but seen on limestone.

Heteropogon, *Glossogyne*, *Fimbristylis*, *Gleichenia*, *Euphorbia*, *Cantharophanes*, *Lygodium scandens*, etc. confined to volcanic soil.

Boundaries sharply defined. *Phyllanthus* only seen on limestone.

- 31750 *Scaevola frutescens* (Mill.) Kr.
 4 common in open somewhat
 eroded country on both
 limestone and volcanic soil.
- 4 51 *Euphorbia*
 common on bare spots on
 volcanic soil
- 3 52 *Gleichenia linearis*
 common on volcanic soil
- 3 53 *Phyllanthus*
 common on limestone
- 1 54 *Glossogyne tenuifolia*
 occasional on bare spots
 on volcanic soil.
- 3 55 *Heteropogon contortus*
 common on volcanic soil
- 1 56 *Fimbristylis*
 occasional on volcanic soil
- 4 57 *Lygodium scandens*
 occasional on volcanic soil
- 3 58 *Cantharospermum*
 common on volcanic soil

Bunke (geologist on Saipan and
 Tinian survey) says many
 of limestones on Saipan are
 much mixed with
 volcanic material,
 apparently detritus deposited
 when the barred reefs were
 formed. This type of limestone

rounded shrub 1 m.
 tall; leaves leathery; flowers
 white with purple lines;
 fruit white, fleshy.
 erect; flowers white.

dwarfed here, in some
 spots seen much more
 luxuriant.
 erect dwarf shrub;
 leaves stiff-coriaceous,
 sensitive.

tufts

small tufts.

rhizome underground,
 fronds tangled.
 small plants to ~~erect~~ tangled
 vines, leaves gray-green,
 especially beneath.

may be the origin of the
 deep red clay soils on the
 limestone beds on the e. side
 of the island. Of course there
 is always the possibility
 of detrital deposits of volcanic
 material on the limestone, then
 subsequent weathering.

✓ Feb. 22 - Chalan Kanoa
coral sandy bottom of lagoon
in about 1 m. of water

31759 *Thalassia hemprichii*
common

10 60 *Halophila*
common, forming turf

✓ Feb. 23 - Kohler Field

3 61 *Indigofera endecaphylla*
on large patch on coral debris

✓ Feb. 23 - San Antonio
roadside

5 62 *Indigofera suffruticosa* Mill.
common

3 63 *Mitrasacme coromandelianum*
common

✓ Feb. 23 - ~~Atafu~~ hills above Tanapag
old coral quarry

5 64 *Dryopteris*
common in open full sun
in crevices and on top of rocks

✓ Feb. 23 - ^{Laderan} ~~Atafu~~ Tagpochan
a coral limestone ridge
~~is~~ bounded on both
sides by cliffs, culminating
in Agso Tagpochan, 1555 ft.
This ridge is partly wooded
with *Pandanus* (2 sp.), *Aglaia*,
Pisonia umbellifera, *Guarnia*,

rhizome buried; sterile

rhizome buried, fruit
globose. leaves translucent,
venulose.

100 m

prostrate herb, forming
a deep mat; flowers red.

30 m

shrub, 1 m. tall, flowers
reddish.
branched herb.

rhizome creeping,
slightly buried in
debris.

Ochrosia, *Claoxylon*, *Polyscias*, etc.
The limestone beneath is extremely
rough. *Ipomoea* and *Mucuna*
cover this forest in an immense
tangle. The forest has
been badly battered during
the war, and presents an
extremely bedraggled appearance.

The top is plateau like, but in the form of terraces, with grassy areas, probably former farms, on them, and much war construction, especially on the topmost peak.

The top is open on the windward (east) side and covered with *Miscanthus*, growing on bare limestone. The soil around its roots tested bet. pH 7 and 7.5. None of its common associates were present. *Phyllanthus marianensis*, *Dryopteris guthriei* (?), and several weeds grow with it. The stand is quite

ridge ~~south~~ north of peak

- 31765 *Antigonon leptopus*
3 planted around dwelling
6 66 *Hippobroma longiflora*
roadside weed
2 67 *Alocasia*
colonies in edges of forest

thick. Little black wasps and large black ants were present.

It will take the forest here some time to regain its normal condition. It also shows evidence of considerable battering from wind. It is fairly penetrable, except for the rough substratum, the sharpness of which is concealed by vines and, in openings, grass.

Snails (*Achatina*) are common, but live ones few in comparison with dead ones, and with number observed in 1946.

Kod. roll 9

350 m.

vine with rose-pink flowers.

herb, stem prostrate, ascending near tips, up to 2.8 m. long, fls. white stems up to 1 m. tall, leaves up to 4 dm. long, petioles deep purple, leaves clear green, spathy pale green, darker in closed lower part, spadix buff, white in flowering part, turning pinkish. odor somewhat bad.

page.	Locality	date	time	wet b.	dry b.
	Kwajalein Islet	Jan 21	8:20 a.m.	77.5	82
	"	"	"	76	82
	"	"	"	76	81.5
16	Bigej	"	1:10 pm	80	88
16	"	"	"	78.5	84
	"	"	"	78	83
	"	"	1:15	78	85
	"	"	1:20	79.5	85.5
24	Guam	J. 24	11:45	79.5	96
	"	"	"	80	87.5
	"	"	11:50	76	85
	"	"	"	78.5	85
	"	"	12:15	78	88
26	" coral pit	"	3:40	76	86
	"	"	"	77	86
	" Radio. Font R.	26	3:45	76	85
				75	81.5

inside BOG.

patch of BOG exposed to sea breeze.
outside, broken sunlight, sea breeze
sparse coconut pl. 0.5 m. from
ground

ground under coconut trash
" " Wedelia

Open sun + wind. Breast high
sparse coconut pl. 0.5 m. from g.

full sun

in shade in undergrowth of thicket
same, deeper in thicket.

" broken sun in thicket

full sun and breeze

full sun, open.

in sparse jungle on limestone

Waist high in reed brake

ground level in reed brake

- 31768 *Discocalyx*
1 in edge of forest in undergrowth
- 5 69 *Discocalyx*
in edge of forest in undergrowth
- 4 70 *Claoxylon*
in forest, rather common
- 1 71 *Ochromia oppositifolia* (Lam.) K. Schum.
common in forest
- 5 72 *Youngia japonica*
common on coral along road
- upper peak and vicinity
large area of *Miscanthus*
with patch of forest
on limestone
- 3 73 *Centella asiatica*
common on bare coral of peak
- 1 74 *Dryopteris*
in rock crevices on peak
- 3 75 *Bidens pilosa* L.
on rock trail on peak, common
- 3 76 *Dryopteris*
on bare ~~coral~~ coral rubble
- 3 77 *Miscanthus floridulus*
dominant on large limestone
area on east ~~side~~ (windward) side
of peak.
- 3 78 *Pisonia umbellifera*
common in forest on rough limestone

- shrub 1 m. tall, flowers
coral red, lobes firm,
somewhat fleshy.
- shrub 1 m. tall,
fruits mostly immature,
ripe ones bright red.
- shrub, - 2 m. tall,
leaves smooth
- small tree, flowers
white, fragrant.
- flowers yellow.

475 m.

rhizome prostrate
clumps, 3 m. tall

small tree 6 m. tall, wood
very soft; leaves thick,
fruit immature, ~~or~~ subterete,
very sticky on ridges.

- 31779 *Polyscias grandifolia* Vahl.
common in forest
80 *Mucuna*
common in forest

- ✓ Feb. 23 - Garapan
around old warehouse
on flat coral sand and rubble
81 *Pluchea odorata*
occasional
82 *Catalpa longissima*
occasional, planted?

small tree 3 m. tall,
fruits turning purplish.
woody liana
climbing over trees,
flowers pale green.

2 m

shrub 2 m. tall, aromatic;
flowers dull pale lavender
tree 5 m. tall, flowers
white; ^{throat purplish with yellow ridge,} fruit pendent.

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1950

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$$\begin{array}{r} 390 \\ 42 \overline{) 1638} \\ \underline{84} \\ 798 \\ \underline{840} \\ 580 \end{array}$$

$$\begin{array}{r} 1550 \\ 47 \overline{) 72850} \\ \underline{938} \\ 7900 \\ \underline{705} \\ 8500 \\ \underline{8120} \\ 3800 \\ \underline{3780} \\ 200 \end{array}$$

殺菌整腸剤 「ナンポール」

「ナンポール」はツルクサ科に属する熱帯植物の有効成分を抽出したるものにして微かに芳香性酸味を有する帯紫紅色のアントシアニン色素配糖体を濃厚に含有する薬剤なり。
「ナンポール」の全成分は未だ審かならずとも既に数年の臨床実験と幾多の薬理試験とに依り薬効の正確なる即効は臨床家をして常に驚嘆せしむるところにして而も何らの副作用なきは明白に立証せられて居る。
強烈なる殺菌性を有するを以て細菌性下痢即ち夜痢・赤痢・チフス等の如き熱性下痢に對し本剤の投與は眞に適切にして普通一時間乃至二時間にして自覺症狀及び客觀症狀を消失し、明確に治癒の轉機を認めるに至る。又結核性下痢にも連続服用により著しく効力を現はす。

適 應 症

1. 夜痢、赤痢、腸チフス、パラチフス、その他腸熱性下痢。
1. 肉類、魚貝類、其他食物中毒性腹瀉下痢及蕁麻疹。
1. 乳兒の慢性急性及慢性腸加答兒及結核性下痢、忌阻。

用 法 及 用 量

1. 「液剤ナンポール」は一日三回一調宛（20cc アンプル入）、乳幼兒は半量宛空腹時に服用し場合に依りては同一量服用するも差支へなし。
1. 「錠剤ナンポール」は一日三四錠宛、乳幼兒は半量宛空腹時に微温湯にて服用す。
1. 「液剤ナンポール」「錠剤ナンポール」共に（若干の砂糖、シロップを和して服用するも可）症狀に依り食間に數回連用し又同時に多量を服用するも副作用皆無なり。
但普通液剤は一アンプル、錠剤は四錠にて充分其の効果を舉るを常とす。

使用上の注意

1. 胃酸過多症に起因する下痢には効力薄し。
1. アルカリ性薬物即ち重曹、マグネシヤ、珪酸アルミ、吸着劑カーボン活性白土等は化學的變化或は物理的變化を起して効力を減退せしむるを以て「ナンポール」服用の前後二時間……三時間間は之等の製劑の服用を禁ず。
1. 本剤服用の場合は下痢として「ヒヤシ油」その他の種下痢を用ゆる必要を認めず。且つ之等の下痢を使用せざる方が恢復を早め結果に於て極めて良好なり。

内 容

〔液剤ナンポール〕

ロニオ・デイスカラ・ハンス抽出液		
		99.87(%)
酒 石 酸	0.05	
安 息 香 酸	0.05	
尿 素	0.03	

包

液剤ナンポール 20cc アンプル 3 管入

〔錠剤ナンポール〕

ロニオ・デイスカラ・ハンス調厚エキス		
		8.70(%)
酒 石 酸	0.50	
安 息 香 酸	0.50	
尿 素	0.30	
乳 澱 粉	60.00	
	30.00	

錠剤ナンポール

12 錠入

製 造 發 賣 元

東京都中央区日本橋室町一ノ四番地(商民社ビル四階)

南方藥品工業株式會社

殺 菌 整 腸 剤

「ナ ン ポ ー ル」

「ナンポール」はツクサ科に属する熱帯植物の有効成分を抽出したるものにして微かに芳香性弱酸味を有する帯紫紅色のアントシアン族色素配糖體を濃厚に含有する薬剤なり。

「ナンポール」の全成分は未だ審かならずと雖も既に數年の臨床實驗と幾多の藥理試験とに依り藥效の正確鋭敏なる即効は臨床家をして常に驚嘆せしむるところにして而も何らの副作用なきは明白に立證せられて居る。

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適 應 症

1. 疫痢、赤痢、腸チフス、パラチフス、その他腸熱性下痢。
1. 肉類、魚貝類、其他食物中毒性腹痛下痢及蕁麻疹。
1. 乳兒の綠便急性及慢性腸加答兒及結核性下痢、惡阻。

用 法 及 用 量

1. 「液劑ナンポール」は一日三回一圓宛（20cc アンプル入）、乳幼兒は半量宛空腹時に服用し場合に依りては同一量服用するも差支へなし。
1. 「錠劑ナンポール」は一日三回四錠宛、乳幼兒は半量宛空腹時に微温湯にて服用す。
1. 「液劑ナンポール」「錠劑ナンポール」共に（若干の砂糖、シロップを和して服用するも可）症狀に依り食間に數回連用し又同時に多量を服用するも副作用皆無なり。
但普通液劑は一アンプル、錠劑は四錠にて充分其の効果を舉るを常とす。

使用上の注意

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1. アルカリ性藥物即ち重質、マグネシヤ、硫酸アルミ、吸着劑カーボン活性白土等は化學的變化或は物理的變化を起して効力を減退せしむるを以て「ナンポール」服用の前後二時間……三時間とは之等の製劑の服用を禁す。
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内 容

〔液劑ナンポール〕

ロエオ・デイスカラ・ハンス抽出液			
99.87(%)			
酒	石	酸	0.05
安	息	香	0.05
尿	素		0.03

〔錠劑ナンポール〕

ロエオ・デイスカラ・ハンス調厚エキス			
8.70(%)			
酒	石	酸	0.50
安	息	香	0.50
尿		素	0.30
乳		糖	60.00
澱		粉	30.00

包 裝

液劑ナンポール 20cc アンプル 3 管 入 錠劑ナンポール 12 錠 入

製 造 發 賣 元

東京都中央区日本橋兜町一ノ四番地(商況社ビル四階)

南 方 薬 品 工 業 株 式 會 社

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