Ketchak—Dance of Bone

Originally the ketchak was a choir of men who by their litanies cooperated with the Sanghyang giri that was to be put into a trance. The intention of any Sanghyang (trance) performance was that the girl while in a state of trance (semi-consciousness) would be capable of hearing and telling the wishes of the gods or of the ancestors.

At present this ketchak is also performed with a special story (libretto). This story has been chosen from the Ramayana saga. Very condensed, the contents of the Ramayana saga are as follows:

By intrigue Rama, the legal heir to the throne of Ayodhya, is exiled from the realm of his father Dasaratha. Accompanied by his wife Sita and his younger brother Laksamana he moves from his father's palace and goes into the forest. Here he goes through many adventures and finally he is chasing the deer with the golden horns. At a certain moment his wife Sita remains alone without protection. Then she is kidnapped by the followers of Rawana, the king of the demons. After that, Rama with the assistance of the army of monkeys, under the command of Hanuman, attacks the residence of Rawana, called Lengkapura (Ceylon).

The monkeys are building a weir of bridge between Hindustan and Lengkapura and the battle ends with the victory of Rama. Some episodes from this saga are represented in the dance of the principal figures:

1. After the departure of Rama, Sita is speaking to his younger brother Laksamana. Sita orders him to go and help Rama who has persued the deer with the golden horns, because Sita hears a call for help, thinking it is Rama, who calls for help.

2. Sita, already kidnapped by Rawana, is staying at a bower in his palace. There she is visited by Rawana, who asks her hand for marriage. She then burst all into tears.

3. Rama marches out to Lengkapura to rescue Sita, his wife. He meets Meganada, Rawana's son and becomes involved in a combat with the demon. Meganada shoots his arrow, which turns into a serpent and ties Rama up like a rope.

4. Rama tied up, beseeches the gods to help him. Then Vishnu's bird, Garuda, is sent to free Rama.

5. Hanuman, the king of the monkey talks with his generals and mobilizes his army for a battle against Lengkapura. The performance ends with the battle-scene between the army of Hanuman (monkeys) and the army of Rawana (Rakshashas or demons).

N.V. Travel Bureau „BALITOUR”
Denpasar (Bali)
<table>
<thead>
<tr>
<th>Location</th>
<th>Pages</th>
<th>Specimens Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland</td>
<td>1-3</td>
<td>39651 - 39609</td>
</tr>
<tr>
<td>(from train Washington to NY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(from plane, Washington to San Fran.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>4-5</td>
<td></td>
</tr>
<tr>
<td>West Virginia</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>7-11</td>
<td></td>
</tr>
<tr>
<td>(from train Santa Fe from Richmond to San Joaquin Valley)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td>12-15</td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td>16-21</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>21-24</td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>24-25</td>
<td></td>
</tr>
<tr>
<td>(from plane Washington to NY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>(from plane SF to Chicago)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>25-26</td>
<td>(from plane New York to Scotland)</td>
</tr>
<tr>
<td>Denmark</td>
<td>28</td>
<td>(from plane Copenhagen-Dusseldorf)</td>
</tr>
<tr>
<td>Germany</td>
<td>28-29</td>
<td>(from plane Dusseldorf to Geneva)</td>
</tr>
<tr>
<td>Switzerland</td>
<td>29-31</td>
<td>(from plane Geneva to Rome)</td>
</tr>
<tr>
<td>Oman</td>
<td>31-32</td>
<td>(from plane Beirut to Karachi)</td>
</tr>
<tr>
<td>Iran</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>33-36</td>
<td>Specimen collected 52-53 = 39651</td>
</tr>
<tr>
<td>India</td>
<td>37-42</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>31-45</td>
<td>(from plane Bangkok to Djakarta)</td>
</tr>
<tr>
<td>Malaya</td>
<td>42-46</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>48-50</td>
<td></td>
</tr>
<tr>
<td>Java</td>
<td>54-111</td>
<td>Specimens collected 52-53 = 39651</td>
</tr>
<tr>
<td>Specimens collected 52-53 = 39651</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimens collected 58-61 = 39702-39748</td>
<td>126-138</td>
<td></td>
</tr>
<tr>
<td>Specimens collected 39667-39718</td>
<td>76-85</td>
<td></td>
</tr>
<tr>
<td>Specimens collected 39719-39740</td>
<td>90-93</td>
<td></td>
</tr>
<tr>
<td>Bali</td>
<td>112-124</td>
<td>Specimens collected 114-115 = 39770-39777</td>
</tr>
<tr>
<td>Specimens collected 114-115 = 39770-39777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimens collected 118-119 = 39778-39784</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimens collected 122-123 = 39787-39794</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>139-179</td>
<td>Specimens collected 142-143 = 39799-39805</td>
</tr>
<tr>
<td>Specimens collected 142-143 = 39799-39805</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimens collected 168-169 = 39806-39807</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaiian Islands</td>
<td>180-181</td>
<td>Specimens collected 180-181 = 39808-39809</td>
</tr>
<tr>
<td>California</td>
<td>182-183</td>
<td>(from plane SF to Chicago)</td>
</tr>
</tbody>
</table>
EXCURSION III

to

Baluran (East Java) and Bali

by Bus.

Dec. 22. Leaving Tjiawi at 6.00 a.m. for Solo in Central Java via Bandung, Tjirebon, Tegal, Semarang and Salatiga. It will be a heavy journey this day.

Midway Tjiawi-Bandung we will see some plantations of teak, which are truly out of bounds from an ecological angle; the annual rainfall is too high; age about 10 years.

Afterwards the bus climbs along the slopes of bare hills: G. Missigiti tertiary formations of limestone. Bandung will be reached at 8.30; the capital of West Java, well-known since the Asia-Africa Conference in 1956; Centre of Institutes devoted to the study of the Natural Sciences, Physics, etc.

Leaving Bandung on our left hand the volcano Tangkuban-prahu, which is still active, on the slopes of which are cultivated Cinchona and Pinus merkusii. For some kilometres we will drive along ravines with picturesque landscapes, with Bamboo, Eupatorium palescens and Alsophila spp.

Entering the plains of Tjirebon on our right hand we see the Nunuk hills, which are severely eroded. These plains are the most western part of Java where sugar cane can be grown. From here the region with a distinct monsoon climate starts.

From Tjirebon to Semarang the road follows the north coast of Central Java. This is a region where onions are grown on a large scale and further more sugar cane and rice.

Lunch will be at Tegal at 13.00.

At 5.00 p.m. we will be passing through Semarang the Capital of Central Java.

Along the road to Salatiga we see Myristica fragrans (nutmeg) and Hevea plantations.

At sunset we will have left Salatiga and we hope to arrive at the Dana-Hotel in Solo at 7.00 p.m.

Solo is the Centre of Javanese art and culture. The Sunan has his palace here.

Dec. 23.

Solo - Madiun - Gempol - Pasirputih.

Departure from the Dana-Hotel at 7.00 a.m.

For an hour the journey is not very interesting: wide plains just ploughed for growing rice in the next wet season.
After crossing the border between Central and East Java (after about one hour and a half) we will be driving through teak plantations, most of which are devastated by cattle.

Typical species of the Malaysian Monsoon Forests will be seen here, some of which are: Acacia leucophloea, Schleicheria oleosa, Schoutenia ovata, Butea monosperma, Lagerstroemia cinerea, Homalium tomentosum.

Before Ngawi near Trinil, Dubois discovered the famous Pithecanthropos erectus dating from the middle-pleistocene.

The volcano on our right hand is the Lawu.

After Maduran we will see again some teak forests of various age.

Just after Kertosono the river Brantas will be crossed; this river causes trouble every year by its floods.

Between Djombang and Modjokerto was the centre of the 13th century kingdom of Modjopahit. In a museum in Trowulan, near Modjokerto, some antiquities from those times are conserved.

At 1.00 p.m. lunch will be served at Gempol.

The afternoon-trip after Gempol along the north coast of East Java will be for about 3 hours via Pasuruan, Probolinggo. End of this day's journey will be Pasirputih (White sands); staying the night over here in rest-houses on the beach.

The Baluran region

This region centering around the extinct Baluran volcano is characterized by its dry climate (less than 1000 mm annually) with a severe dry monsoon of 10 months. In the dry season dry winds come down from the Idjen Pass (600 ft.).

There are practically no rivers. The soil, originally lava, has changed into heavy, black earth, strewn with basalt and andesite blocks.

The vegetation is savana-like, along the small mountain streams we find gallery forest. During the dry season the vegetation burns regularly, which prevents the re-establishment of the forest. The latter is well developed towards the summit of the Baluran.

Many plants have subterranean parts enabling them to survive drought and fire, such as Dioscorea hispida, Asparagus racemosus, Crinum asiaticum and some orchids (Plantanthera susannae, Pogonia nervillia).

The trees are deciduous and flower often on the bare branches, e.g. Dillenia pentagyna.
Of the grasses the most common is Andropogon amboinicus, f. genuinus, which becomes more than 2 m tall. Other species are A. parviflora, A. zollingeri, A. triticus, A. contortus and A. subtilis. Other tall grasses are Rottboelia exaltata and Ophiurus exaltata, which remind one of a horse's tail.

Themeda argentea is also common. Among the trees the most conspicuous are Acacia leucophloea with yellow-white bark.

The Palmae are represented by Borassus flabellifer and Corypha gebanga.
Scattered here and there we find Ficus superba (krasak), and in the driest places a thorny scrub consisting of Feronia elephantum, Aglae marmarica, Acacia tomentosa Homalium tomentosum.

We also encounter Schleichera trijuga (Kosambi), Protium javanicum, Grewia, Phyllanthus emblica, Melia azedarach, Albizia lebbeckoides and A. procera, Cordia obliqua, Morinda tinctoria and Schoutenia ovata, Tamarindus indica.
On level ground where the heavy impermeable black soil is deeply cracked during the dry season, the grass cover is thinner and Zizyphus mauritiana is common, often with an abundance of Ipomoea heterophylla.

At the margins of the open places occur the yellow-flowering Abutilon indicus and Thespesia lampas, in moister places Ophioglossum reticulatum.

Rauvolfia serpentina grows in the better parts of the forest, Butea monosperma, the flame of the forest, is common in teak plantations. The teak does not do very well here.
Field notebook no. 53

Beginning with 3965

End with 39809

Standard

Miniature Blank Book

No. 665 9 1/2 x 6 120 Pages Units
No. 667 9 1/2 x 6 200 Pages Units
No. 668 9 1/2 x 6 300 Pages Units

Made in the Following Rulings

Journals, Day or Cash Books, Double S and Cts.
S. E. Ledgers, S and Cts.
Double Entry Ledgers
Records with Margin Line

When ordering give Number and Ruling desired

Made in U. S. A.

A BOOKIN & PAUL PRODUCT
Nov. 5 - Trip by Pennsylvania R.R. from Washington to New York - left side of train.
Fall coloring about at its height on a little part.
Leaves almost all fallen from Rhus typhina, Robinia, Betula nana, and some Platanus.
Fagus bare, branches plumose.
Liquidambar about at its best, with a range
from yellow through range
to reds and purples. Acer
rubrum very striking, from
bright yellow to bright red.
Nyssa scarlet but some
trees bare. Quercus alba
dull purple but mostly
already gray from quercus
velutina mostly ahead, bare.
Quercus coccinea deep red
to maroon. Quercus palustris
orange-brown to reddish.
Quercus phellos greenish brown.
Quercus rubra. Quercus Villa orange-pink brown. There
seems to be considerable
variation in stage of change
according to habitat
variability.
Extensive pine land along
n. shore of Edenton.
North of there the season
become rapidly more advanced
with willows still
with leaves.
What appears to be a Magnolia bog across from the big Westinghouse plant south of big dual highway several miles south of Calvert Distillery, north of Baltimore.

North of Baltimore there seems little difference from the situation described for north of Washington. The season seems much less advanced than it is immediately south of Baltimore. Perhaps the differences may be more physiological than climatic.

Small Magnolia swamp along left side just south of forest large arm of bay crossed by train. In this arm are large areas of marsh now completely brown colored, wet of track some distance.

1. Same variation in apparent stage of advancement of season noted north of Aberdeen. It seems really only a matter of the forest type concerned, those where...
Nov. 12. Air trip, Washington, D.C. To San Francisco, direct, 6:08 a.m. right side of plane. Along Potomac above Washington to somewhat below Great Falls and then over Montgomery Co. Md. Some autumn coloring still apparent, but most trees bare or brown. Rapidly clear color westward. Very little left at Sugarloaf Mt. and westward. Considerable amount of pine forest in Montgomery Co., just west of Washington, mostly sharply outlined patches, in general not differing much from the outlines of presently cultivated fields. Some color still in elms, and Bull Run Mts. at Point of Rocks, scarcely any in lowlands west of here, but again scattered yellow takes west, and some red on east slope of Blue Ridge at Harpers Ferry, west slopes red-brown. Two main range of Blue Ridge here in Maryland side, completely separated, the western one only going a short way north, several subordinate ridges. just to the west of it, also going only a short way, north, Potomac meanders from northwestward after before reaching the Harper Ferry Gap. Then churn tunnel somewhat more southward, over a small city (with airport) and a large quarrying operation that may be a cement plant. Then a series of straight even wooded ridges separated by flatlands, cultivated valleys sown foothill land, also wooded, dissected by terrace ravines, but north-south parallel ridges very noticeable even in midst of this. Forest on ridges mostly deciduous, with a scattering of conifers, but the rolling of flatland land of the foothills and valleys where wooded, has a substantial proportion of pure coniferous forest, this mostly in angular patches which are certainly old fields. West of about the 3rd main ridge is a valley with striking entrenched meanders. West of this & ridges with flatlands, now cultivated, but some with angular pue that gaps are set, headlands but.
From here on flying cars vast sea of dull gray clouds with a continuity of planes layer overhead, all the way down, blue and yellow, and below at first fairly smooth. Upper layer yell above and featureless. They between very clean, visibility excellent between layers. A very clearly northwest quadrant, white below against dark gray, but black gray against skin transparent gray above, and above this a thin layer of clouds, above this dark gray featureless stratus cloud. Thinned out between Dayton, and Indianapolis, are almost solidly cultivated.
HANDLING OF BAGGAGE for passengers traveling to San Francisco. The attendant in each chair car and porters of each Pullman will contact passengers traveling to San Francisco and place a check on hand luggage, giving you a stub. This checked luggage will be unloaded at Richmond and moved by truck direct to the Santa Fe passenger terminal in downtown San Francisco. It will be ready for you when you arrive at the terminal. This service has been arranged to avoid any delay or inconvenience in handling your luggage to San Francisco.

A WORD ABOUT SMOKING for chair car passengers. You'll note in the arm of your seat an ash tray for the convenience of smokers. We do not encourage smoking in chair cars and rely on the consideration of passengers to do what is best in their judgment of when to smoke and how often they should smoke. Each car is ventilated every three hours but this does not always overcome the objections that many passengers have to excessive smoking.

If you notice your neighboring passengers objecting, we suggest you do a limited amount of smoking in your seat and make an occasional visit to the lounge car where smoking is more acceptable to all passengers.

SCHEDULE OF THE SAN FRANCISCO CHIEF is printed for your convenience on the following pages of this folder.

At Clovis there is a short stop for leg stretching while train is being serviced. At other stops the schedule does not permit passengers to leave the train.

Thank you—happy traveling.
HANDLING OF BAGGAGE for passengers traveling to San Francisco. The attendant in each chair car and porters of each Pullman will contact passengers traveling to San Francisco and place a check on hand luggage, giving you a stub. This checked luggage will be unloaded at Richmond and moved by truck direct to the Santa Fe passenger terminal in downtown San Francisco. It will be ready for you when you arrive at the terminal. This service has been arranged to avoid any delay or inconvenience in handling your luggage to San Francisco.

A WORD ABOUT SMOKING for chair car passengers. You'll note in the arm of your seat an ash tray for the convenience of smokers. We do not encourage smoking in chair cars and rely on the consideration of passengers to do what is best in their judgment of when to smoke and how often they should smoke. Each car is ventilated every three hours but this does not always overcome the objections that many passengers have to excessive smoking.

If you notice your neighboring passengers objecting, we suggest you do a limited amount of smoking in your seat and make an occasional visit to the lounge car where smoking is more acceptable to all passengers.

SCHEDULE OF THE SAN FRANCISCO CHIEF is printed for your convenience on the following pages of this folder.

At Clovis there is a short stop for leg stretching while train is being serviced. At other stops the schedule does not permit passengers to leave the train.

Thank you—happy traveling
Most of the oaks are evergreen, doubtless both Q. agrifolia and Q. chrysolepis represented as dwarf
is rare. Some Juglans
californica
North of Livermore beyond tunnel at pleasant face, covered by other oak forest, south slopes with grass
and oak savanna.
Some orchards and vineyard
on hills but not in good shape.

Out of the hills, directly north of Mt. Diablo, are extensive marshes of
quite named alkali. They lie on flats between round
grassy hills and Eucalyptus
Bay. Some flat land not
low enough to be marsh.
Many large refineries
and chemical works and other
factories. These around Pittsburg.
Beyond Antioch mostly
vineyards and orchard.
Rows of Eucalyptus, ground
somewhat rolling, sandy.
Some marsh locally. A few
oaks very locally.

Old River
Near San Joaquin River,
raft areas of low
intensively cultivated
land in thick crops,
crossed by long
canals and channels
of the rivers lined by
shades of eucalyptus
and vineyard, hedges of sago,
great masses of floating
gibassias, california and
Eichhornia crassipes.

Most of the crops in January
Eastward in this area
is considerable blowing
dust, west of Holt.
South of Stockton
flat cultivated land
with scattered large
Quercus Obata, back
in partially so at this
season.
Much snow visible in
highSierras to the east.
Between Hughson and Denair
to east of roads, what appears
to be a normal prof. (about 1½
min. before Denair).

Dominant agricultural
staples from Merced to beyond
Pandale orchards and
some vineyards. Around
Pandale large acreage of
figs, mostly trimmed down.
1959 California

To a dwarfed, spreading stature. South of Placer, the route goes for a short distance through rolling grassland. The more humid, large areas of irrigated land. After the grand large area of slightly rolling grassland and dry farming, the light brown, varying to light nut and light and dark gray. Wooded bluffs along dry sandy channels of Chowchilla River. Just areas of rolling essentially treeless dry farmed land between Chowchilla and Fresno. Rivers more luxuriant around Madera.

South of Fresno the country is intensively cultivated, largely in cotton. Near Kings River and just south of it is rather dense savanna or often bent of large oaks, with rare sycamore, in Cholame. About 5 minutes south of Tenford is an area of short grass, probably disturbed.
EL CAPITAN

Tr. 18, Eastbound, 391/2 hrs. Los Angeles-Chicago
Dailv, All-Chair-Car Hi-Level Streamliner.
Extra fare train.

Nov. 17 - west of Williams.

pines - junipers open and
forest with thin grass, some
overgrow with pines, pines, some
forest. A few inches of snow
between Williams and flag-
staff - open but more of
less continuous stand
of small pines. 3-5 m tall,
with thin grass and with
scattered tall Junipers, 20-25
m tall. So much snow
that it is hard to be sure
of pines, half they probably
are. The large groups of
pine trees could raise from
fire a fire from planned burning
and management, a relief
from the heavy grazing.
East of Flagstaff the
pine forest is once again
same open ground, pine
areas of scattered pines
in a few years it is only
lost much like that
described above. Some
uniformity of different areas
of pine, tall pine
open shafted near large
areas. A few inches of snow
everywhere.

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Mix</th>
<th>Read Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>Leave San Diego Trk 79, 5:00 pm, arrive Los Angeles Union Station 7:50 pm.</td>
</tr>
<tr>
<td>318</td>
<td>5</td>
<td>2 ( \text{ts} ) Los Angeles River...</td>
</tr>
<tr>
<td>35</td>
<td>9</td>
<td>Long Beach passengers for El Capitan leave 7:40... via motor coach for Penticton.</td>
</tr>
<tr>
<td>1310</td>
<td>35</td>
<td>( 8 \text{:20 pm} )</td>
</tr>
<tr>
<td>803</td>
<td>5</td>
<td>( 8 \text{:20 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>607</td>
<td>73</td>
<td>( 7 \text{:50 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>432</td>
<td>5</td>
<td>( 8 \text{:15 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>519</td>
<td>5</td>
<td>( 8 \text{:00 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>474</td>
<td>5</td>
<td>( 10 \text{:00 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>476</td>
<td>5</td>
<td>( 10 \text{:10 pm} ) ( \text{Cal.} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Mix</th>
<th>Read Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>Leave LA UNION... 7:50 pm.</td>
</tr>
<tr>
<td>318</td>
<td>5</td>
<td>2 ( \text{ts} ) Los Angeles River...</td>
</tr>
<tr>
<td>35</td>
<td>9</td>
<td>Long Beach passengers for El Capitan leave 7:40... via motor coach for Penticton.</td>
</tr>
<tr>
<td>1310</td>
<td>35</td>
<td>( 8 \text{:20 pm} )</td>
</tr>
<tr>
<td>803</td>
<td>5</td>
<td>( 8 \text{:20 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>607</td>
<td>73</td>
<td>( 7 \text{:50 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>432</td>
<td>5</td>
<td>( 8 \text{:15 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>519</td>
<td>5</td>
<td>( 8 \text{:00 pm} ) ( \text{Cal.} )</td>
</tr>
<tr>
<td>474</td>
<td>5</td>
<td>( 10 \text{:00 pm} ) ( \text{Cal.} )</td>
</tr>
</tbody>
</table>

\( \text{Albuquerque...} \) 9:00 pm. 4635 1235 \( \text{LA JUNTA...} \) 9:30 pm. 4645 1235 \( \text{LA JUNTA...} \) 9:30 pm. 4645 1235 \( \text{LA JUNTA...} \) 9:30 pm. 4645 1235 \( \text{LA JUNTA...} \) 9:30 pm. 4645 1235

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond. 

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond.

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond.

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond.

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond.

\( \text{passengers...} \) to and from South of Newton and to discharge passengers from Albuquerque and beyond.
HERE'S HOW TO OPERATE YOUR CHAIR . . .

A. This trigger on arm controls back of seat. Pull up on trigger and push seat back to position desired. When seat is reclined pull up on trigger to bring back of seat forward.

B. Legrest pulls up and can be set to position desired. Notice that when you pull legrest to a position higher than level of seat it will drop down. By turning legrest completely upside down you can make a crib of seat for small child.

C. Button at inside top of each seat permits you to adjust top part of seat to position you find most comfortable. There is a center arm that folds into back of seat when not in use.

Reading lamp focused above each seat can be used as you desire.

We caution passengers not to stand or sit on leg rest of their seats as they will not support your weight and may cause injury.

PILLOWS are available from the news agent. He will be through the train to offer you a pillow, which can be purchased for 50c for your trip.

DRESSING ROOMS AND LAVATORIES are located on the lower level of each chair car. Also, there are lavatories on the upper level of the lounge car.
Still east of this the steppe changes to a bushy type of steppe with locally, tufts of Chrysothamnus, and another type of erosion, forming low mesa-like, sharply and unevenly distributed on the plateau. They are dwarf scrub savannas.

Just east of Winslow are considerable areas of Tamarisk scrub, mostly along a broad wash which now has water in it. The Tamarisk has turned a burn range-brown in color. Amidst it on the rolling plateau is a mosaic of open scrub and steppe. Locally, small patches of scattered cottonwood mixed with the Tamarisk.

This mosaic continues eastward along the river to Holbrook, and beyond. Locally Tamarisk replaced along river by small cottonwoods. East of Holbrook scattered small sandstone mesas and buttes.

Further east an area of small dunes, with various mesquite taken to stabilize them, along with trees, including shrub plantings, mesas more conspicuous. Thin snow generally, all morning. Eastward large areas of shrub savanna and dwarf scrub savanna on rolling and slightly dissected plateau country. At about Arizona-New Mexico boundary the prevailing vegetation changes to open forest savanna of Pinon-Juniper.

Shortly before Gallup a line of west-facing red cliffs, locally cut into beautiful narrow domes and pillars. Almost bare of vegetation. Trunkard Gulch's route follows a wide canyon cut in a sandstone plateau. Scrub savanna in bottom, scattered lines ponderosa in open Pinon-Juniper on top.
East of Gallup, to north of route very interesting erosion features in red sandstone. Prevailing vegetation open scrub in valley bottoms, open sand flat or savanna of pinon-juniper on mesas and ridges. Still thin snow everywhere.

Pinon-juniper continues for a long distance eastward, but after certain feature, it alternates with large flat or gently rolling steppe. Snow disappears from all except high slopes near Grants. Rasa beds with open scrub, mostly stetiflex, east of Grants in broad valley cut in flat-lying sandstone beds. These have pinon junipers.

Now again eastward. West of Rio Pecos are vast plains to south of track, almost shrub steppe. To north of track low rolling bare steppe with scattered juniper shrubs. Very little snow.
Bottom lands above ALBUQUERQUE are largely cultivated, checked with high levees and irrigated. Populous forest near river. Scattered trees near roads and by-passes elsewhere. Thin snow, melted off in places.

Soil finer, grey brown, quilted somewhat away from river. Slopes at foot of terraces very gentle, upper parts, with open stripes, sand.

Nov. 19 - Flight from Lunt to Clovis, N.M. 12000', st. side of plains. Mainly plateau country. The first part covered largely by open forest, probably Pinyon, junipers. No closed forest at all. Areas of very flat ground are bare of grass, and

Eastward this forest becomes sparser, areas of grass become larger and more prevalent. Erosional features are

interesting. Small remnants of mesa, amoeboid in shape, some skeletons by headward erosion. This headward erosion is really a rather obvious process as the cutting power of the water is proportional to the slope down which it flowed. This can be applied to explain many erosional features. Perhaps there is a limit of steepness beyond which the cutting power decreases. Toward Clovis the grassland becomes the prevalent feature and trees, become more and more restricted to escarpments and to quite slopes just above them. Near Clovis trees disappear altogether. Small ponds, probably dry during most of the year, are scattered rather abundantly over these plains. The topography also becomes rapidly less rugged and near Clovis there is almost no relief.
Nov. 19. Flight from Elvira N. M. D. Int. With Texas at side of plane. East of Elvira are large areas of low, partially or entirely stabilized dunes. This country where not under cultivation seem covered by a low very thin brush. In some of the more dried of these areas the dunes are well stabilized except for localized spots of activity, which, show up very strikingly. Low spots where water collects have trails radiating out from them. Here also there is a bit of wind erosion getting started.

Through this country both in the dunes and elsewhere, low spots are common without outlets. Most of them do not have any water in them. Seems quite likely that either gypsum deposition, sitting or compostion by alternate cracking and swelling could make
wilderness of thin brush and intricate dendritic gully systems. In the center of this is a ragged rocky knob. It would be of interest to examine this area geologically and compare it with the grassland that may have existed here before the gullying took place. It would be important to figure out the sources of the present flood and to compare its explosive expansion with the contraction of the prairie flood that it replaced. Also it should be of interest to find if any components were equally at home under both of these contrasting sets of conditions. The brush seems to be mesquite, rather closely spaced but not touching in most places, mostly almost bare at this season.

East of Abilene the country becomes more heavily wooded, but notably still with mesquite, though it is hard to tell from a high altitude. Licks become abundant but are mostly artificial. The country for a long way eastward from Abilene is a much dissected plain with much of the flat portion under cultivation, most of the irregular area loosely wooded in grass with scattered trees and bushes. The total relief is not much and the erosion remnants are flat-topped. Eastward the trees change from deciduous to very dark green evergreens. Cultivation becomes less and less common. Cattle trails are common. Areas of active erosion are common and of fair size. Eastward a fairly large meandering river crossed diagonally. The bluffs and mesas lining it meander as channel by open evergreen forest. This and deciduous are east of it probably the old Cross Timbers.
Pennsylvania - New Jersey

Pattern as nearly clear fields, then very little
more streams noticeably entrenched, at least larger
ones between Harford and Philadelphia.
Practically no pine
to Philadelphia and in
New Jersey between Philadelphia and
New York.

Flight - Shrewsbury Ontario
10:45 a.m.
Left side of plane.
An enormous area east
of Shrewsbury, covered by subdivision
development with small houses.
Extensive area of salt marsh
inside a long, slow bar
isolated with a steep rise,
continuous dunes sloping to
narrow beach. The salt
marshes are apparently
developed on white sand and
have mostly been closely
ditched with parallel
ditches, exposing the sand.
The course takes us out to sea
rather soon, so no more
most of Long Island.
Then we're back toward
over Long Island, then east
along its south side.
There are still considerable
areas of wood and
swamp eastward, but
very numerous subdivision
some salt marsh along
estuaries. Forest seems
to be a mixture of
of deciduous tree and pine.
In the eastern part is
a typical drowned coast
line with many
V-shaped estuaries, off the
sand island, or islands.
The forest is in
evergreen much cut by
woods, usually in a
rectangular pattern.
The long shore bar
island on the east
has an astonishingly
straight and sharply
cut outer coast and a
rather wide beach.
The inner coast is very
irregular and the sound
is filled with patches
of marsh and shifting
sand islands and bays.
The island gradually
forms the mainland
in the sound further out.
Less development out
on the long peninsula to
Mountauk, but they is one.
East of these broken

Cumulus clouds below
with particularly ragged
appearance on top, like
shredded cotton batting.
Another dirty gray appearance
in high clouds close by, but
top with a vague alto-stratus
layer. Irregular coastline
in distance, detail not clear
because of cloud patches.
Martha's Vineyard mostly
observed a curious large lagoon
on northeast corner, surrounded
by a semicircular bay. (Is it this
Martha's Vineyard?)
Nantucket (?), fairly large
much open at a few
woods, an astonishing curved
bays on \\
the \\
side with a very
wooded land.

East side and a large bay.
Wide cut cliff on southeast side.
Cape Cod in math, not very
close.

Cape to sea the cloud layer
becomes continuous, and a
less level in top, but with
a cotton batting like appearance
and at more less regular
intervals, rounded hummocks
rising above this surface
which have a slight indefinite
involved contour. Swirl appearance.
This not at all regular.
Dec. 2. Flight Copenhagen-Dusseldorf
Soils around Copenhagen
airport very black, mostly
plowed, some with green grass.
Low cloud layer off visibility.
Just before Hamburg, a small
cloud-free area—extensively
cultivated, bright green, few
small forest patches.

After Hamburg, continuous
low bed of clouds, flat-topped
cumulus clouds, closed form,
"altocumulus" between them. About
half a third of the way are
crossed some curious rather
sharp boundary curving
somewhat S-shaped, between white
foot-lofted clouds on one
side and less substantial
gray ones on the other (roundly).

Around Dusseldorf borders grey
gray, mostly cultivated. Little
patches to be seen except some
white patches of conifer woods.
little thin grass, some
fair sized areas of woods
and either pine coniferous
or pure conifer.
Switzerland

Voices and to summit of Jura a thin cloud, followed by
small cloud of white, then Mount Blanc, sticking up through it. South of
summit ridge of Jura and in its higher valley, a bed of dense clouds.

Tops of Jura dusted with snow, town of Granville.

Lawn, meadows, plentiful on north side of mountain.

Portion of Jura showing above clouds between Granville and Geneva, largely wooded.

Some clearing in meadow, some bare gray cliffs of magnificent size.

In the valley about half way from Granville to Geneva, a small area of woods, mostly spruce, but some deciduous is evident.

Other similar areas not. This east of Rhone.

High Alps to south, mostly snow covered.

No snow on western Jura at least not visible from town. Toward Geneva, rice in fields on wooded hill.

In valley bottom, even on those on flat ground, just a little
snow dusted over ground thinly covered.

Geneva & Genev

The high Jura near Geneva have extensive meadowland on their summits and upper slopes.

A view of Mount Blanc, partially broken by the village of the Alp of Valley.

All except the steepest land between Geneva and the higher Alps is cultivated in pasture. Few slopes wooded.

Passed Mont Blanc, partially above the clouds, completely white. Another peak almost as high just south of it.

Southern part of the exposed, great snow fields, only cliffs free of snow.

Italian slopes with rather little snow thinly wooded in most parts. Visibility poor.

Dec 11 speared at Karachi mostly at night, 19,000 feet plus plane.

Crossed peninsula of Trinacria.

Oman at a just north of

The west side is a vast
Oman

Plain of oriented dunes, with patches of Phoenicea arabica between them here and there, especially inland. No other vegetation seen on the otherwise pale tawny plain. Well inland are extremely rugged, nude mountains, a dull pale chocolate brown in color. In a deep valley on the Gulf drainage is a few sized oasis with Phoenicea dactylioides. In the deep canyons on the east side, water can be seen occasionally with a few small oases. In some of the steep canyons a bit of gray-green vegetation can be seen. Nothing on ridges or slopes. The coastal plain on this side is narrow, but there is a small oasis with a small town, very bleak-looking. This might be theDry Dunes.Oasis has other plants as well as Phoenicea, but can't make out what they are. Few or no Phoenicea arabica on this side of mountains.

A little out from the east coast are lines of a tawny bloom festooning the coast.

Iran, Pakistan

The coast of Iran near Chabahar, seen from a short distance out at sea is indescribably barren. It is a dull cream color, like coal sand, rather flat with almost no vegetation. Two small oases on the peninsula east of the bay where Chabahar is located. Chabahar seen jutting one of them. The low mountains back of the coast look just as barren as the coast.

Eastward are low abrupt bare hills or cliffs very near the coast.

The mouth of the Dashti River is one of a cluster of stream mouths on the bay west of Ras Jiriani. The country is bitterly desolate, but must have had rain just recently, as the stream have water and each has a plume of salt in the sea outside its mouth.

The peninsula west of and culminating in Ras Jiriani has low rugged hills and conspicuous cliffs back of a narrow, tawny, completely barren flat coastal plain.
This seems to be a cuspatate coast, the cusps very prominent looking seaward, but somewhat elevated and the tips may be truncate.

Karachi - tidal flats west of river mouth or cusp have apparently a low semi-open mangrove swab or meatal patches, some mud on other parts, some east of river but above the mouth, bushes here mostly low gray ones, some taller green ones, tidal flats on coast to east mostly bare.

Flat desert east of Karachi with irregularly scattered dark gray green small trees, large bushes and some abundant smaller gray bushes.

Enormous expanse of mostly vegetated tidal flats extending south in the Indus delta.

Celtropis common locally n.e. of airport. Carp and fish common.

Areas of thin low dry grass around airport, irrigated fields bright green.

At Karachi airport - a

Somethings with wide wide leaves dark purplish green above, deep purple beneath, flowers white, dotted with purple around throat, two upper lobes contiguous and somewhat overlapping, lateral spreading, from narrow and somewhat bent forward (subgibbosa). Another

wheat gray-green, gray and white, navigator leaves only the ordinary form of

Physcia quillifolia, with whitish banded leaves.

Also a non-navigated form which looks as i remember P. navata & cespit. Perhaps P. quillifolia is only a form of P. navata. All alike.

Between Karachi and the airport is a profoundly disturbed landscape. Little trails innumerable.

Karachi - Calcutta.

Phoenix and other trees around irrigated areas. Indus delta extends south as far as vision permits as such a busy day. Is this dwarf mangrove vegetation??
Upper part of delta seems to be vegetation almost completely fallow.
Northwest of Indus is a desert landscape, locally completely bare, locally dominated by shrubs and (?) small trees.
Large square reservoir of greenish black water, irrigates lands to east of it, but some areas appear alkaline.
Channels and bottom land of Indus - bottom land mostly wooded, some grassland and savanna. Great sand flats along channel itself. East of channel alternating cultivation and arid land, low-lying vegetation. Some areas appear to be sand and support a sparse vegetation. This mosaic continues for some distance. The cultivated land, cut up into small irregularly rectangular plots by levees, becoming more and more dominant eastward to another meandering channel.
Some plots in eastern part will have pattern east of the channel for a short distance, then open desert, with varying concentration of brush, locally cow, locally small irrigated areas.

India
Gulf of Cutch lined with irrigated land. Some low saltish spots away from it also irrigated. Some areas apparently in saltpan and marsh for agriculture. All have evidently been at one time a another under cultivation, judging from benches and ditches. Some areas are very black, have irregular patches of vegetation. Old coasts side, tidal marshes. Very old dikes rivers meander with intricate patterns. The actual channels mostly vegetated, crescent shaped areas between them with varied density of natural vegetation. All of this marsh of the Gulf of Cutch. Eroded somewhat elevated area of broken parallel ridges running N.E. S.W. Obviously dissected plain but the pattern difficult to understand.

Yes and these play lakes, now dry and bare, surrounded by scattered trees. General vegetation of area scattered bushes, scattered bottom areas
appears to have been cultivated. This extends a long way, perfectly painted, little variation Southwest of it is an extension of the Gulf of Cutch, mostly vast fields and flats, water in center.

Northeast of this are vast brownish gray fields, almost a quite bare of vegetation. In places they have tracks across them, not quite extending to edge of fields. Small fans of alluvial material extend out into these flats from rainy months. North of eastern extension of this is flat land divided into plots by mud and stone walls. Notably cultivated during rainy season. This surrounding is marred deeply jointed low mountain of reddish granite. The joint pattern east-west forms bumpy desert vegetation. Another much lower mass of this easternmost "East of this more cultivated" land and a small village. Then more of the extension of absolutely bare playa flats surrounding "muddy lakes with saltymarshy hard even to be sure that this lake has water in it.

East of this vast stretch of desolate mostly gray linen cultivated land, but into plots by walls with some trees or bushes. The dwellings, concentrated in dense villages and some scattered through this area, each surrounded by a tract of overgrown pasture land. Going to walk in the fields must take a very considerable amount of time. To the south there are some wet spots in the pattern, visible when the low sun hits them. This landscape becomes slightly greener eastward and seems to develop a slight rolling relief. The arid of the undulations north of this are more abundant here in the pasture areas, now in the cultivated areas except in walls between plots and very few there. It is probably that running through undisabled. The scenery is savage, badly quilted. Eastward some patches of cultivated fields with walls.
scattered villages each
with a pasture area this
more wooded than farther
west, landscape greener
but still only with a tinge
of green. All of this plain
with very little relief.
For undulating area, rolling
ridges, rolling southeast
parallel, become noticeable
eastward, probably stabilized
dune ridges.
Then patches of rocky
hills, outcropping from the
plains, with flat valley
between them. Hills, semi woods,
more & less green. Valleys
cultivated, with sandy
streamer channels, streams dry?
Hills, more numerous, valley
narrower, everything, greener,
estward.
Probably the mouth of
the Sandhyd range.
From here the country is generally
increasingly, with uneven open
woods. Trend of ridges
south-southwest somewhat on average
and becoming more densely
wooded, ridges, stronger,
reddish, sedimentary, habitation
and cultivation, only in main
valley, woods almost absent,
Practically no flat land.

Many lakes, reservoirs,
seen, especially in distance
to south; a few along course.
Trend of ridges change
to N-E. Becomes a bit
less rugged, much less
wooded. An important
stream now winds
south eastward and
much flat cultivated
land along it. Hills almost
disappear. Perhaps the Nambale
when it turns northward.
Hills still along course but
plains along river to south.
Must be Nambale, or it
parallels course for some
distance to south. Lakes
common in its plain.
Hazy, getting bad, toward
sunset. Visibility poor.
Vegetation poorer eastward,
probably because of premium
natural winter climate.
Hills disappear along course
and to south. Away from
rivers country seems
sparingly settled, but still
very poorly vegetated.
Then come scatters
low hills, with thin woods.
Country gradually hilly
again, but only in patches
a low, gently trending hill, with
rather dense.
Cultivation increases eastward to south Grand Bahama. After this too dark for visibility.

Dec 10 - Bangkok to Djakarta

Northeast coast of Malaya. Mouth of a large meandering river with meander patterns throughout coastal plain.

Largely a mosaic of rubber plantations, coastal plantations, and areas of paddy fields. Some forest patches. About half of general area back from coast is in rice, in various stages from green to brown.

Further inland are large areas of rice that are mostly green. Also some mandarin orchards and swamps.

Then mountains which are densely forested. Many clouds, visibility poor.

Crossed another broad valley with a rice running northwest with considerable rice, some rubber, some swamp forest.

Then hills with dense forest. Farming on mostly cloudy but occasional holes showing hill and mountains all thinly wooded.

Numerous streams after a considerable distance another river running east to northeast, with a reddish sandy bed, some rice in the narrow valley bottom. Then forested hills, very cloudy. Then less clouds. A relief of small hills, very intricate, solid uniform rain forest.

This is a large area. After a considerable distance a large meandering river and valley system running southeast, much rubber and rice in the broad flat bottom. This enters the sea with another coming from the west and there are large swampy areas near the mouth.

Along the coast a spectacular series of beach ridges and an old shore line of white sand and beach of a cultivated area.

Another meandering river of black water and several black water lagoons and inlets in this cultivated strip.

Coastal plain with white sand and remnant old sand ridge, a large muddy
estuary a lagoon, then
much swampy, long-shore
channels, some of it grassland
and beach. Coast trends
slightly westward. The sea
here is very muddy and of
a greenish-tea-soup color.
A vast complicated coastal
plain along here but
visibility poor. The green
color of the sea is more and
more conspicuous, almost
a grass green. Have never
seen anything like this.
Extends for a long distance
from shore, water obviously
very shallow. Bottom muds
as great parallel ridges
and undulations. Could this
be turtle grass? Fills
the whole right of the
southern east coast.
Another large river estuary
with very complicated
channels paralleling coast.
Approaching shore again,
much muddy. Another long
river mouth, extremely
muddy. Much rice in its valley.
South of it a large lake with
many islands of swamp forest.
Linn. high island off shore
appears grassy covered by
low scrub except for trees around

Next, much cultivated land
and a settlement on coastal
plain. Vast forest on flat
to rolling a low hilly ground
inland. A road cutting
through the forest, running
about north-southwest.
Southward many clearing
in the forest, mostly grassy.
Some clearing in progress.
They much rubber land
with swamps along stream.
Rubber very green at this season.
One area of hedge style
planting of rubber. Many
clearings. Soil where
exposed seems to be a
white sand, at least
in many places.
Then large hilly forested
area, extending another
for a great distance. Relief
rather slight.
Then many clearings,
with large, large valley
almost all now less
cleared and in cultivation.
Many young rubber plantations.
The coast again, with
a large river running
into it, some clearing
in this valley. More of
beach ridges around a
crescent shaped bay. Water
Fern green. Along south part of Sarg. forest comes almost to beach. Black water & streams coming out of it into month bay. Mixing conspicuous

Plane made right angle turn westward through flat forest land with some old clearings. Forest becomes very fine textured as we approach a great lagoon or estuary. Plantation immediately around estuary, with roads.

Considerable mangrove swamp. Approaching John Strait and Singapore Island.

Complicated pattern of rubber plantation, belukas, grass, forest, swamp between estuary and strait. Much new rubber plantation.

Singapore Island - mostly mixture of houses and trees, great red beans. Water scarce forest, some small palm rubber plantations.

Turned south again

Large islands to west cut by straits, mostly low and wooded.

Southward a maze of islands - tiny ones through

Be grassy with trees along blue. Larger ones wooded but with degraded forest - belukas and much savannah.

Mangrove swamps along with some plantations and river cleanings. Channels and estuaries very complicated. Relief low. Obiously a drowned low hilly relief.

Southward the islets become smaller and sparser. surrounded by dark colored reefs.

Blimpia in distance is west a peninsula extending east and southeast. About opposite this another group of small islands.

Green forest, partly cleared. At some time, once a less region, partly rather open, some plantation.

John Strait and satellite islands had very green in vicinity. Islands largely wooded but with many clearings. Talang, savanna, belukas, inan irregular mosaic. Mountainous central and southern part still has some undisturbed forest. Apparently somewhat
in undertaking south side.
Large burned areas on south coast.
A large roughly circular area of sea is a dull dirty green color. in contrast to the blue-green around it. Bounded by a scalloped line of white-foam breakers?
not at all clear what this is from 15:000'. Some patches of brown south of the Sumatra in distance.
The above dull green water evidently merely a different water mass.
Here are three of different colors intersecting, not mixing readily. But there not outlined in white.
More grass-green sea, becoming lighter and more pea-green southward. These greens are probably merely due to different depths of water, but have a dille.
More opaque appearance than I am accustomed to. Possibly because of greater salt content or plankton content.
Largest island mostly wooded by clouds, partly cleared, some loads, plantations.
Approaching south Sumatra

Sea very muddy. Coast low.
Almost entire island under cloud.
Glimpse of interior slow.
Dense forest, some cleared land along a small stream, several houses, clearing, bright green, perhaps tabak, possibly rice, but no lovefattan. Some paths visible. Then more forest, vast areas, little or no relief. Mostly cloudy.
First very mixed, some trees lightly colored. Then a large area of smooth canopy with only few scattered emergents, then emergent become abundant, then close to from canopy. A few trees bare, a few in young leaf.
Some large rounded clear spots, bright green, near a black meandering stream.
Still black areas in green suggest that clearing may be spent. Lower along this stream, southward, an obviously man-made clearing in an area stage of regrowth. Also the forest becomes more open. Some patches of savanna. But grass very green towards the back low. Mostly the local rain eight colored trees.
1958  Indonesia

Rice fields around
Sjahans and have
villages with coconuts,
Musa Artocarpe, etc.
Teluk petih, huts, village
like wooded islands,
very green, nice.
Dec. 9 - Karachi airport

Pseudanthemum
planted around airport building

Shrub 1 m tall. Leaves dark green above, deep purple beneath; flowers white with purple dots around throat. Two upper lobes erect, partly overlapping, lateral lobes spreading, lower lobe bent forward somewhat gill-less.
Dec. 16 - Between Tjiwab and Tugur

Terraced rice, with bamboo, bananas, mango, other tree crops, much Manihot, Carica, etc. Rice in all stages from planting to harvest. Replanted immediately. Many ornamentals. Some Cyathus and other wild plants in rice well. Above Tugur same pattern along roads. Tea plantations on slopes. Little shade.

Dark brown soil, 1-2 m. deep.

Tea height 1-1.5 m. Forest on top of some hills.

Rice + village complex drops out very soon after Tugur. Plantjak Pass - 600 m. - tea plantations with very little shade. Some with gray appearance because they are trimmed back very drastically.

On other side of pass the tea drops out again and is replaced by rice, Manihot + garden complex.

Tjiwab

Tree line 4500' up a lower montane rain forest - trees widely spaced, canopy irregular, and rather open, emergents to 40 m. Of Angio: Lactoridum, Flora.

No noticeable stratification at that level. Asclepius indrae and other epiphytes common, thin but continuous moss cover. Under growth layer to 4.5 m. Pinanga, Dracaena, Calamus, Plecotomia, - very irregular dense ground layer of ferns and various herbs + relics monos. Photos 5 b/w., 3 b/d., at 495' At 5000' large Podocarpus imbricaria cone in as emergents. Persia cornosa. Throughout this forest lianas are present but not in great abundance. At 5500' 5 photos b/w. New tallest tree perhaps 30-35 m.
Just below waterfall, is an area where the forest has been destroyed by a mud flow during an eruption years ago. A few scraggly trees survive, but most are dead. In one place where a section of this mud flow is exposed it is about a meter thick and looks like glacial till. Shrubbery vegetation has come in sparsely, including Vaccinium, Baptisiaea, etc. Winter is coming. Neighboring sun, land cave, apparently decaying, though the branches don't disarticulate properly.
Dec. 14 - Above Tjibodas, in rather high, lower montane rain forest.

Nephrolepis abundant on tree trunks
Podocarpus imbricata frequent
Drymaria occasional along trail
Ophiopanax common in tree trunks
Unna um
Ophiopanax common on twigs of emergent tree
Ophiopanax very local between rocks of trail
Baccharis occasional in undergrowth along trail
Ophiopanax (elastis)
Ophiopanax rare along trail
Neotoma graudens (ft.) Dupe rare on mossy rocks
Ophiopanax common at stones along trail
Ophiopanax rare along trail

Dec. 16 - Below Tjibodas waterfall is often abundant completely destroyed lower montane forest almost completely destroyed by mud flow 2 years ago, very open.
Polygamous

1. 64. Pratia montana
    common, terrestrial, in open
2. 65. 
    occasional in low shrub
3. 66. 
    common open story
    ground below falls
4. 67. Neviera granadensis (L.) Druce
    common on rocks and
    fallen tree trunks, in open
5. 68. Saracella
    occasional on fallen
top in open

1692m

scrambling. Flower
purplish blue
crenates, irregularly
ascending, upper
blade on flowering
culms reduced.

prostrate, firm,
flower greenish yellow,
fruit translucent
vermilion.

bright green, above,
white beneath.

very coriaceous.
Dec. 13 - Trip Bogor E.
Uphill, Kedon, by bus and boat.
Bogor has a pattern of small garden cultivators.
Lower down toward Jakarta on flat land, some small rubber plantations
and even some pasture, but still mainly gardens and
rice.
In the gardens are:
Cocos, Musa, Citrus,
fall fruit, bamboo, mango,
plantain, sweet potato,
Ceiba, Piptocceph, guava, Areca,
Carica, Phoenix dactylifera.
Tamain, Muntingia, Anacardium
ornamentals:
Acetabulum amaranthaceae.
Alpinia macronychia
Jatropha curcas
Canna hyacinth. Coleus sp.
Diplenia negra
Cassialpina pulcherrima
Diosmea saccata maculata
Cithamanthus
Thevetia peruviana
Ipomoea ceylonica
Lambour, sp.
Hibiscus tillincus
Chlorophyta sepulcra
Allamanda hendekani
Codiaea minor

Lovenia glauca
Jephyrunthe, roza
Jephyrunthe candida
Thunbergia erecta
Tabernanthea camani
Hibiscus hybri
Nerium oleander
filicum?
Samaria zanana
Calabacina
Bougainvillea sp.
Pedilanthus tithymaloides
Erythrosclera
Clavon dendrum thamsonii
Aroonho kalimbi
Gerbera gannemii
Hygocera
Folidae sp.
Malvaceae
Cupressaceae
Plumeria obtusa
Plumeria rubra
Caladium bicolor
Polycia scutellaria
Heliconia auranti
Euphorbia sp.
Chlorophyta latex
Pyracantha, littoralis
Hibiscus sabios paludal
Ixia alba
Enanta repens
Antigone nepitae
Polycia quinquefolia
Cassifera quadrangularis
street trees in Djakarta.
Mangifera indica
Borak regia
Artocarpus heterophyllus
Populnea regia
Ficus benjamina
Muntingia calabura
Chromia pheranira
Tamaramda indicus
Unja Sf.
Agathis sp.
Cassania sp.

Along canal west of Djakarta
Jambiya secta very common
Fatisuga grahamia also occurs
(widespread in Java, see Kostermans)
Kainan grass-flower etc.
(sil. eaten, see Kostermans)

Yangon - enormous market.
Fruit - along road
Sweitenia macrophylla
Cassia siamea
Comm. Norman
Hevea brasiliensis (small
plantations)

Fernana cinnamomum and
Ananas comosus comm.
in hedgerows,
Metrosideron swamps.
Hibiscus macrophyllus
Rice is cult. like but
adobe.

Lyons means as abundantly
as in most places we
have seen. Cassava
and pasture and village
share ground with rice.
Then some large open
areas of rice.

Streams very muddy,
some rather rolling open
area. Apparently from
rivers. Some uncuttunated
areas, with slow swamps
in some parts, in rice and
more.

Leaves of Melastoma,
Nepiera, Santana etc.
Then almost solid rice,
some Metrosideron swamps.
Leaves used for thatch.
Trunks very little used for
starch (see Kostermans).

Trunks reach 4 m.
Soils here (Plamode?)
Light gray when dry,
darker brownish gray when
wet.

Throughout this part
of Java the rice is headed
and the bouquets of
panicles are dried on the
wheat.
Serang - much more open, less crowded than the past. Range of main trees run soutward. Convents abundant. Mangroves, vines. Some areas of Parajata thickets with Flachnia.

Pandeglang Volcano to right - still has some patches of forest on higher and northern parts. Party of slopes grassy, with only scattered trees. Turn westward. Garden complex. Anuenan grove very crown, small trees with narrow crowns.

The typical complex of trees, gardens, houses, etc. from Bogor to Djakarta and to Pandeglang is dominated by mango, jabu fruit, and coconut. At Pandeglang it changes and is a complex of coconut, betel and guatem. This is the pattern to Labuan where grass becomes dominant and along the coast forms a pure stand (photo).

Mrs. north of Labuan are cleared up to half of the way to the secondary forest for the rest of the way. A small island s.w. of Labuan seems to have relatively undisturbed forest.

Krakatau can be seen to the w.w. rather too far to distinguish surface features. Ang Krakatau is a perfect cone, almost like Alamogar. These pits of old Krakatau to right. Low explosive activity from the sea to right of face of

Another double cone may to the right is not part of Krakatau group. Coast of Java, to left, fastnessed by low islands, these appearing practically undisturbed.
Dec. 19 - Salvia plumifolia, island.

The soil is so compact that water has evidently stood in it. The ground layer of seedlings is very sparse, almost no herbs.

Then an elevated terrace about 15 m. wide, generally with a much thicker, smaller tree, many large lianas. The floor here is far richer and there is a more noticeable ground layer, still largely of seedlings. Some ferns, but there mostly in fallen tree trunks, where there are characteristic communities of seedlings and ferns. In one place a very large tree had fallen, knocked down several others, which in turn knocked down others, making a small well over 100 m. long.

This limestone terrace is rather compacted and settled up, so there is some gully erosion and water trickling over impervious layers in the bottoms of ravines.
At beginning of cliffs west on inner side is an eroded terrace possibly 60 yd. high, with curious rimmed basins, and a series of exposed breccias, edges by exposure of terrace 13
beaches dipping landward (Photos 241, 242)
Small inlet has pennis in one end (photo)
Beach beyond the terrace above is of gravel, is obviously being cut back, but there is a gravel ridge in places very evident. The vegetation here and just back is a tall forest of large Barringtonia and
Hernandia along the coast thick is dominent but in sandy places there may be Callophyllum
Pandanus thickets here and there, I. tetraspis
Fragments seen once here, as估值 material
Back of the top of the Beach ridge the forest is largely Barringtonia but with considerable Hernandia and Schinus. Locally but abundantly a thick shrub to sapling sized lower story
of Andira and Aglaia, with occasional young Rapinghamia. Few thickets of Pandanus mixed with this. However, in most places one can walk freely. Fallen trees from the west obstruction.
The ground is mostly pebbles and cobbles, in places masses of boulder.
The beach ridge has cut off areas of low lying ground that support a stand of Sutherlandia racemosa growing to a height of 10-12 m., with abundant pneumatophores.
Along the gravel ridge are scattered Pandanus and Turraeanthus trees, much less abundant than the Pandanus.
Hibiscus tiliaceus is fairly common. Thespias much less so. Allophyllum occasional to common. Most of these species grow out over the water, making walking along the beach difficult.
The flat land back of the sandy beach has a significant number of boulders. Some exposure of what may be an old platform near the beach. But on the other side of the island, the narrow flat zone there has great masses of boulders and rubble, presumably thrown up by the 1873 tidal wave from Krakatoa. Likewise, on the flat around the southwest side, where the bridge is of gravel, there is much gravelly and bouldery rubble back on the flat. The tidal wave must have swung around the end of the island and picked up considerable material and carried it inland. From the channel the vegetation of the island looks of remarkably uniform height until the southwest corner is reached. Then it becomes very irregular.

The sandy beach generally supports a good forest of Calophyllum, Fontesia, Scaiers, Sophora tetraptera, and Ficus, with occasional patches of Pandanus, Biaenna, Gymnopodium, etc. The gravely beach ridge supports, principally, Hernandia, Barringtonia, with some Ochna. Along the front are occasional bushes or small trees of Combretus, Calophyllum, Guttifera, Trumpeania, etc. No herbaceous growth except in sandy beaches where there has been disturbance, where we see Ipomoea acuminata, Stachyurus pinnatus, Zizyphus, etc.
Dec. 18 - Volcano Ruben River across fresh Rutan landings.

Rutan ridge, back of which is a swamp.

If Nyasa and Sonneratia, alba? Nyasa abundenantly

tree. Nyasa abundant...flowering. Birds are

distinctly warm when

pressed to cheeks. The
tip of the leaflets are

long filament, connate

along the margins at

first, then stiff, spreading.

The pneumatophores

of this Sonneratia are

more narrowly conical

than those of S. casuarina.

Back of the Nyasa swamp

is a strip of Dates, swamp; with various

trees, but an abundant

understory of bamboo.

Back of this a palm

forest, Leuca, Oncopera,

east along a small stream.

Back of this two large

clearings, with grass,

various secondary

weeds and shrub species,

and scattered trees.

In one pasture was a herd

of 9-10 bantang. In the other

a sambar deer, one bir of 7
Dec. 18 - Pulau Bentjyang island
off West Bintan
Dense wet forest on coral limestone substratum.

39669. **Tomentis orientalis** L.f.

12. 70 Vitex
common flowering shrub at top of sandy beach

12. 71 *Monosiga perpusilla*
common locally on sand in disturbed places at top of beach

12. 72 Lecanora zellicae
rare at top of beach

12. 73 *Sophora tamentosa* L.
dominant in fringe at top of sandy beach

12. 74 *Hibiscus tiliaceus* L.
common in edges of forest at top of beach

3. 75 Cassytha filiformis
common locally at top of beach, parasitic on *Sophora tamentosa*.

same, sandy shore, top of beach

12. 76 *Barringtonia asiatica*
dominant in forest on sandy ground, back of beach

12. 77 *Hernandia sonneratii*
cocdominant with *Barringtonia* on sandy ground, top of beach

shrub 2-3 m. tall, leaves fleshy, horse carp, flower white, fruit not mature.

shrub 3-4 m. tall;
flowers lavender, prostrate, branches erect.

shrub 2 m. tall (other seen to 3-4 m.); flowers white,

shrub 3-4 m. tall;
flowers bright yellow, scandent, fragrant, flowers semi-scandent tree;
flowers bright yellow (unfaded at 6 A.M.), stems soft, green, flower white, large tree.

large tree, fruit inflated, mouth of envelope without teeth.
78 1953 Jan
Ochnosia oppositifolia Lam.
(common in forest at top of beach)

Allophyllum coccbe BE.
(common at top of beach)

Premna obtusifolia R.Br.
(occasional at top of beach)

Pemphis acidula Fass.
(occasional at top of beach)

Euphrobia chamissonis
(very local at top of beach)

Croton
(occasional at top of beach)

Quettardia spicata
(occasional at top of beach)

Andisia (humili?)
(abundant in forest just back of beach
and at top of low cliff)

IXOA?
(rare in edge of woods
at top of beach)

Aglaia cleophrider Bent.
(abundant on exposed
top of low cliff)

Farnhiachtis cyanchous R.Br.
(abundant at top of cliff)

same inland on elevated dunes

Tabernaemontana
(rare in undergrowth)

Croton
(rare in undergrowth)

Drymoglossum?
(cummin on fallen tree trunks)

small tree, lactiforous;
buds, flowers, and immature
fruits in same inflorescence.
large shrub; flowers white; fruit danger-ud.

broken top; twirled 20 cm.
diam. sterile
branched at base; stems
ascending; glands green;
large shrub, 3-4 m. tall.
large shrub 4 m. tall;
flowers white
shrub 3 m. tall; fruit
immature, pinkish green.

slender shrub 2 m. tall;
buds white

shrub 2 m. tall;
buds yellow
loosely tufted.

shrub 2.5 m. tall;
flowers white
large shrub; 3
leaves fleshy
1953 Java

2969* (Indh.) Trigonema.
3.
312 93 36
pecans, in undergrowth.
Rare in undergrowth.

5 94 Vavaea palumbanica
very rare in under-
story of forest

in high forest or
lowlying flat.

3 95 Placodes
on fallen tree-trunk.

1 96 Asplenium
on fallen tree-trunk.

3 97 Euryalyceus javanicus
rare in undergrowth.

1 98 Cladina
rare in forest floor.

12 99 Jancinia Huber (Roxb.) Kung.
occasional in lower story

same, 5% of sandy beach.

12 9700 Hernandia Inversa L.
rare in fringe of forest.
(more common in rocky areas)

shrub to 3 m tall.

yellow.

stems erect, to 3-5 m tall.
armed with vertical rows of prickles with
broad base; stalks.

slender tree about 10-15 m.

tall 15 cm; ddh. sterile.

(only tree known)

rhizome very short, erect.

large shrub, small tree.

fruit immature.

flowers green.

small tree, later yellow.

very slow growing.

fruit immature.

shrub 3 m tall.
Dec. 19 - Cape Lejan

edge of forest back of beach

3.9701 Leucaena leucocephala
common in undergrowth

3.02 Cordyline myxa
common in cleared roadway.

3.03 Pyrothrix lanceolata
common tree trunks

3.04 Hedychium albido-punctatum (new)
common in grassy cleared area, grazed by wild oxen.

open areas on rocks above sea shore

3.05 Ipomoea littoralis, Bl.
occasional

3.06 Cyperus
local in rock crevices

3.07 Phyllanthus
local in rock crevices and weedy places

3.08 Poa annua "muticum"?
very common in grassy areas grazed by wild oxen.

3.09 Justicia
local just back of sea-olive in open place

3.10 Cyperus hystrix
local in weedy places.

shrub 2.5 m. tall
fruit immature, brownish small tree about 8-10 m. tall; fruit, dull pinkish, juice very glutinous, said to be used for glue leaves, rather fleshy prostrate; coral white, salmon pink but with globose tube; scarcely any odor when broken

prostrate, trailing; flowers bright magenta, purple tufted, spikelike pale green erect

prostrate, panicles erect

erect shrub to 1 m. tall; flowers very rare, dull white; heads white
1. rare in weedy place at foot of cliff.

12. Pachydemum sp. (intermedia?) abundant on cliff of volcanic tuff.

12. Jambostomos sp. common on cliff of volcanic tuff.


16. Fuchsia (same sp. as softica, but does not have ribbed fruit) common in edges of thickets just back of shine.

17. Andisia (rumita?) common in thickets just back of shine.

18. Randia rare in thicket just back of shine.

written at base.

loosely tufted.

forming loose mat, culms erect from prostrate base, leaves very fleshy, small white lobes, patent tube globe.

large shrub; figs green, depressed globe, definitely not ribbed.

shrub 2 m. tall, fruiting branched, articulate 5 main stems, but not detaching readily; flowers dull magenta purple; fruit immature.

shrub 2 m. tall with drooping erect branches; flowers dull yellow.
Dec. 19 - Paulus Handeuleum

Pemphis acidula
good stand on small and
gavel. feeding on gravel
beneath.

Guettarda species
Hibiscus schizopetalus
Chrysopsis fruticosa
Peaches fimbriatam
Byronia jaquin
Crinum
Andinea (humilis)
Lantana camara
Cynometra
Palmia obtusifolia
Wedelia biflora
Navalina solidula
Acrostichum aureum
Cycas cincinnalis
Candanus tectanus
Dorus trifoliate
Gom (n. botata)
Fag xamiricifilia
Mangifera indica
Ficus gloriosa
Nephrolepis bisinuata
Hydrilla triflora
Macaranga tanarius
Buddleia thunbergia?
Buchanania platyphylla
Glochidion

Ceiba pentandra
Lecceina globosa
Annona muricata
Psidium guajava
Musa sapientum
Caraica pyxata
Peperomia pelucida
Acalypha indica
Pteridium cretica
Ananas comosus
Ageratum suspensum
Hortobagyi diandra?
Elaegnus amabilis
Lophophorus adenium
Nerioda
Eucalyptus mertensii
Wrightia citrifolia
Scabiosa coerulea
Cimbristylis cyanea
Eupatorium

DR. Zemina

Pachyphytum sp.
Euphorbia hirta
Chrysopogon aciculatus
Stachyurus japonicus
Ficus nitida
Rudemachia gigantea
Hernandia
Pachypodium balsamiferum?
Dendrocalamus
O. beccaria
Cuscuta amabilis
Jatropha gymnosperma
Capparismum fontanesii
Sonneatia
Pteris
Garcinia
Embutus

Other small islands
largely mangrove
Rhizophora around
edge. Sonneratia in
interior. Pemphigus on
gravel banks.

On the mainland is a
broad flat, with an
extensive pasture, mostly
in Chrysopogon acicularis,
with clumps of Lantana,
Eupatorium, Origanum, Quam.

Scattered Lagerstroemia
trees and Cynips

Herds of over a dozen Banteng
and about a dozen deer
Banteng = color, dull
brown and red-brown
Perhaps sex differences?

Forested, tree banded mostly
straw species. Cultivated
area around houses. Then
a large open area covered
by a scrub about 1.8
m high. Lantana camara,
white green in color, but
flowering and occasionally
fruiting. Some Blumea bald,
scattered Ardisia.

In the interior, somewhat
surrounded by the scrub
are several exposures of
"ferns", with thick, mossy-
ly, Buchanania, Pachnandra,
Hopechinia, Fimpietia
4. Gibbona, Manda citrifolia,
etc.

1. *Hytheia?*
   - Local in Pandemic forest
   - Small gravel flat just inside beach.

2. *Pandemic aculea*
   - Dominant in forest
   - Small gravel flat just inside beach.

12. *Thuery*
   - Small patches in Pandemic forest not far from beach.

12. *Blumea*
   - Occasional in Santan scrub on very thin soil.

14. *Bridelia*
   - Occasional in forest.

2. *Glochidion*
   - Common in forest and forest edges.
1. Ximenia americana
   - mature, beach in fruit

2. 24. Digitaria
   - common around dwelling

3. 30. Digitaria
   - common around dwelling

4. 31. Digitaria
   - common around dwelling

5. 36. Taccas palmata
   - common in shady trail

6. 33. Emilia arcuifolia
   - occasional in grassy phase around dwelling

7. 34. Palma
   - common in undergrowth

8. 35. Desmodium umbellatum
   - very common in undergrowth

9. 36. (Lep
   - parasitic on Taccas palmata leaves.

Dec. 11: Pasirputih

10. 27. Aegiresis caricata
    - gym stand on basaltic rocks, covered by salt water, at high and medium tides.

11. 37. (lame?
    - m basaltic rocks well above tide level

12. 39. (lame?
    - m basaltic rocks well above high tide

13. 40. Hibiscus tiliaceus

14. 39. (lame?
    - m basaltic rocks well

shrub; fruit immature.
flower purple.
flower purple.
flower purple.
fruiting ( Vernonia grandiflora )
shrub 2 m. tall
flowers white; fruit black.
shrub to 3-4 m tall;
flowers white; foliage;
carving notchi shots.
shrub 1.5 m. tall; leaf
thick, little; flowers white;
fruit immature.
scandent; flowers white.
lariginous vine; flowers
dull yellowish white.

Native erect tree; small flower
light yellow fading reddish.
Dec. 12 - Krakatau Volcano

Krakatau, Veleata, Lang, and Analu Krakatau (labeled, in background) (photo).

Three older Krakatau islands are arranged like Naug, and indeed would be very much like it except that Krakatau itself is so much higher.

Analu Krakatau is in a state of continuous quiescent activity, with an explosion every few minutes, throwing ash to considerable heights. There is a large crater and smooth ash slope, dark brown in color down to low wave cut cliffs, except at one end where the slope ends at beach level. Apparently some coral debris has been cast up here as the top of the beach is light colored. Near a small patch of casuarina, hard reached tree size. A few are scattered on the slopes, fair sized but only 3 or 4 in number.

The three outer islands are well wooded except on the steepest cliffs, which are mostly grassy but locally completely bare. The material of these, when exposed, is very light colored and banded. The bedding is in places irregular, probably because of slumping.

The forest on Krakatau is luxuriant to the top. Casuarina is an important component, mostly in patches. Prominent is perhaps the most important in terms of area, covering much of the lower slope. However, there are a good many species and the forest is generally a dense mixed forest. No grass now except on the steep inner wall.
Dec. 21 - Laving Bago - Bandung.

Mission of Bandung rice on set. Irrigation and straw is to be filled more and more into soil. Elsewhere burned and ash incorporated.

There are conspicuous areas of coconuts with underlaying of bananas.

Then large very flat area estimaily devoted to rice. Limestone outcrops. Old coral reefs. Either an old lake bed or inland sea.

Limestone mts. almost completely depleted. Veg of fenugreek and bamboos, ferns, etc.

Infestation of Caraceus a coconut at Padiakang, w. of Bandung.

Bandung - Lavaedang.

Large plain, old lake bed surrounded by mountains, all in rice, except around villages. Where road goes through mountain is a deep winding gorge with traces of forest in its walls.

On way beyond Tjimalaka - photos of rice landscape + children. Farther on one range of limonite hills and peaks. The lower slopes of these are covered by planted tea.

Forest, Teals said to have been introduced 1200 years ago. Bandung laterals mostly shade planted with trees for fire.

Acacia as minor begun planted on very degraded soils. These soils in limestone region are called "maize" soils.

Namao Hill - very steep and rugged, limestone entirely exposed, covered by Imperata which is not very luxuriant.

Tjirebon Plain - secondary vegetation on genmus and waste of this is largely bamboo.

East of Tjirebon along the coast Baroseus appears. Within plain mostly rice is cultivated but some sugar cane. Near coast waste spot dominated by fenugreek, glazed, but there are few waste spots. Roads lined with Tamaia, mostly now a less paddocked. A few km. east of coast there appears along roadside. Large areas of pasture land fallow and grazed by water buffalos. Endo being followed and planted.

About Gebangilin - Caraceus damage to coconuts conspicuous.
Vast low lying poorly drained flat back of coast, dominated by sedges in the hollow. Many vegetables cultivated here.

East of Legut are plantings of *Acacia griffithia*, *L.s.* fed legust, flowers & people. About 50 km NE of Kendat starts a region of low hills with well grown tea plantations, some being 100 years earlier to kill trees.

Small Melton in swamp here, in ravines. Much bamboo in waste spots.

Agriculture damage at Kendat. Half of Sembang the country is hilly, cleared with scattered coconut, a few secondary thickets, grass, scarcely any rice, eastward rice gradually appears. Apparently water is controlling factor. Manihot planted when not enough water for rice.

To eastward and southwest a number of volcanoes are scattered about the landscape, some are active.
List of plants collected on July 10

1. *Cyllanthus* sp.
2. *Androche rostrata*
3. *Vexans* sp.
4. *Prideauxia* sp.
5. *Dalesia sandersii*
6. *Herberia*
7. *Alloglypha* sp.
8. *Dendroxy* sp.
9. *Plectonema* sp.
10. *Barnesia* sp.
11. *Geoffriella* sp.
12. *Drosera* sp.
13. *Lonicera* sp.
14. *Schoenoplectus* sp.
15. *Buddleja* sp.
17. *Calothyrsus* Linn. et

18. *Ipomoea* sp.
19. *Cleome* sp.
20. *Tridens* sp.
21. *Cuscuta* sp.
22. *Ricinocarpus* sp.
23. *Shamane* sp.
24. *Gmelina* sp.
25. *Pisonia* sp.
26. *Glabrous* sp.
27. *Oerlinkia* sp.
28. *Tettsia* sp. (ult.)
29. *Ulmus* sp.
30. *Weinmannia* sp.
31. *Lindera* sp.
32. *Tilia* sp.
33. *Parasites* sp.
34. *Hymenace* sp.
35. *Piranga* sp.
36. *Salvia* sp.
37. *Menyanthes* sp.
38. *Picea* sp.
39. *Cedrela* sp.
40. *Cotoneaster* sp.
41. *Neorhiphotis* sp.
42. *Bosica* sp.
6. "Allora" sp.
7. Podocarpus macrophyllus
8. Podocarpus torquatus
9. Podocarpus taxifolius
10. Podocarpus taxifolius

AMONG LILIES, TULIPS, ETC.

1. Lilium regale
2. Lilium tigrinum
3. Lilium regale
4. Lilium regale
5. Lilium regale
6. Lilium regale
7. Lilium regale
8. Lilium regale
9. Lilium regale
10. Lilium regale

1. Tulipa
2. Tulipa
3. Tulipa
4. Tulipa

Habitat.

Collected Sep.
October

1. Tulipa
2. Tulipa
3. Tulipa
4. Tulipa

2. Tulipa

1. Tulipa
2. Tulipa
Vast low lying poorly drained flats back by coast dominated by sedges where follow. Many vegetables cultivated here.

East of Tegea are plantings of Ecklonia maxima, i.e. feather grass, flowers to people. About 50 km N of Kendal starts a region of low hills with well green tea plantations, some being cut. Ranged 2 years earlier, to bulb trees.

Small Metrosigma swarms here in numbers. Much bamboo in waste spots.

Crypts damage at Kendal.

East of Katerina the country is hilly, cleared with scattered coconut, a few secondary thickets, grass, scarcely any air.

Eastward rice gradually appears. Apparently water is controlling factor. Manihot planted where but enough water for rice.

Eastward and southward a number of volcanoes are scattered about the landscape, none are active.

Dec. 23

In the palace grounds at Kendal a bright yellow flowered form of Tuba menifolia is planted as an ornamental (looks like the one in Male.) Ficus kuriesii (F. benzjama but with aerial roots) planted as sacred tree - beautiful examples, surrounded by walls - Vayun habit.

Muntingia perhaps the commonest street tree (also seen very commonly yesterday in most towns and villages) fruit said to be much eaten by children.

20 year-old tea plantations, East of Solo (photo) tall straight trees. Shrub layer of coffee. Freen trees cut out. Whitening left to cut down fire hazard. Undergrowth of Lantana in some spots, planted with teak, to cut down fire hazard and to protect soil from erosion during dry season.

Clean - fallen, hill coffee
pulled out by goats used for firewood! Planting by need, 50% planted, heat-treatment.
Teak forest a complete government monopoly. To cut a teak tree in demand, permission required from forest officials.
All teak land (200,000 acres) government-owned. 10 x 10% of teak timber exported.
Soils east of island for some distance seem to be mostly regur (black cotton soils).
Rivers and streams through this area very muddy.
East of town the villages are surrounded by rows of
thorny bamboo. East of Medium bamboo practically dominates the landscape.
& Flat-topped Acacia tremendously becomes prominent, said to be inappropriate. Toward still-fish roads, cocoa must be common here. Rice is dominant through this entire area.

Near the sea, in the vicinity of Pasirpanu (Puntia and Cammus) appear, soil is black.

Usurung, at Pasekangs, Gending Lime. The bluff overlooking sea, degraded scrub of Puntia, Cactana, Patrophi, goosypholus, Ficus, Melia, and other grass, possibly helianthus. Northeastward along coast toward Uasi-punuk the bamboo around the villages become very scarce.

At Pasir Punuk the sand of the beach is almost black with an admixture of flat cap coral sand. The loach coming down and forming the point are thin gray yellow-basalt apparent with a thick flow. The surface weather darker than the normal color of the rock. Teak forest with dense undergrowth here.

Dec 13: Pasir Punuk

Five clumps on basalt slope - Schleicheria, Albizzia lebbeck, Homalium Tomentosa, Schottienia, Flacourtia viridea, Puntia, Juphys, etc. Trees rather scattered, glima & clay continue. Cactana dominant in shrub layer.
Part of it less degraded, with more or less continuous eye. trees, incl. Pterium, Eucalyptus, and others seen near a river.

Drier region in Java - rain less than 10 in., in wet season of 2½ mo.

Here the undergrowth is thick. Many of the trees lose their leaves during dry season. Only Schleichera, Schoutenia, and Gouania retain leaves. Undergrowth completely deciduous; hevea, pant disappears.

Soil thin and black. Andesitic-basalt, outcrop generally. Old flow.

The more wooded part is in a valley.

Dec 12: Pasir Panihitik to Baluran.

At Asembragus, photo of ancient hill top, very old. West of here a large flat area has been cleared and plowed for large scale cotton planting. Scattered & Ayeduvraea trees left, forming a sort of savanna landscape.
The vegetation varies from a tangled thicket, choked with Lantana and vines, trees mostly with crowns not touching through open forest with a dense scrub layer of Lantana canescens, to savanna with grass and scattered trees and clumps of thicket.

The grass is dry, barely starting to send up tiny shoots, more advanced where it has been burned. On flat ground are areas of grass on conspicuously choked, dry gray ground, black soil.

The forest is partly thorny deciduous, partly semi-deciduous.

Talpat, Galopean - Dissected lower slopes of the volcanos, drastically burned over, with sparse tufts of several kinds of grasses, a few scattered small trees of various kinds - Phyllanthus emblica, Mhinda, Acacia leucophloea, growing.

etc... A few small herbs - Bushwrea, Lemnisca, Euphorbia, etc.

Gallery forest in ravines - Holoptelea, Pemina, Ficus, Murraya, Grewia, Pisonia, etc.

Schleicheria, etc. -inite trickle of water in camp.

Schleicheria, still scatted but dry by hillside, well above the 1000 feet. Bits said to be present.

(Photos of mountain dog cayon)

The flat grassy area with cracked still have scarcely any trees. They are surrounded by areas of sandy and of other deciduous forest. (Photos, end of Day 3)

This around lookout near waterfall, lookout on small scoria core.

On flatter ground below Talpat, scattered trees of Acacia, flat tips and spreading. Ground in low spots, deeply cracked. Pomegranate planted along road from distance on both sides.
Dec. 24 - Pass input
Degraded forest on steep
slope of basaltic rock
with thin soil.

Ulfori

Schleicheria

very common tree in open forest
in open

Vaccinium ulfori

comm in undergrowth

Calanus

rare in undergrowth

Tabern andana

rare in undergrowth

Weedlia

occasional in open

Randia

occasional in undergrowth

Thuernbergia alata

rare in open

Dec. 24 - Bekal

Croutenise eque

common in open forest

Dec. 24 - Talpath, north
Base of Belomor Volcanic
G baseball forest in rain

Pilgrim

occasional

Small tree,

Scandent shrub;

Flowers greenish;

Small shrub; flower

White; fruit immature.

Scandent shrub;

Flowers white;

Depressed shrub; flowers

Pinkish purple;

Small shrub; flower

White;

Depressed shrub; rays yellow;

Shrub; 1-2m tall;

Flowers white;

Flowers white.

Shrub
108 1958 Java

3. Shandies, mombii
   n tree in gallery forest
   in savanna
   5
   53. Morinda
   very common
   54. Vites occasional
   5.5. Jicyplus
   common
   56. Dioscorea
   common, twining in shrubs
   57. Vernonia
   common in open burn grassland
   58. Euphorbia
   rare in open burn grassland
   59. Buchnera
   rare in open burn grassland
   60. Morinda
   common
   51. Grewia
   occasional

Dec. 25. Wurrojo, mouth of base of Balorian Volcano
Dry thicket in savanna

5 62. Morinda common

5 63. Abutilon indicum (L.) sweet det.
   common under trees in Fayzad

5 64. Grewia
   common on small hill

5 65. Cissus
   with awanda

Tree about 10 m. tall;
fruit
small tree; fruit
green
small tree;
leafless
sprouts from base of old sticks; flower purple.
glands white.
flower white.
small tree; flower
white
small tree or shrub;
5.5 m. tall; flowers
yellow, fruit immature.

Spreading tree 3 m. tall; fruit
immature; seed is to eat; chewing
suberossent herb or shrub; 1.5 m. tall; flower
orange;
small tree.
sterile.
Wongsoyo - Banjirwangi
Great trees along road
D.7m, melaba (Baba
m.), lemon, etc.
Tamarind has disappeared.
Wongsoyo - Caiba very
abundant. Bananas
produced for export.
Dry hills approach shore
at northeastern point of
Kali Strait. Care ed by
low tangled scrub forest.
Beyond these Tamarindus
reallean. Coconut plantations
with or without undercrop
of bananas very extensive
on coastal flat here.
Maize also planted
under coconut. Coconuts
here healthy looking,
stalks near Wongsoyo
very yellow - said
to be attached by a pest.
Trees start bearing at
6 years, considered too old
at 9, years.
Manihot also planted
under trees. Labourers
who
cause for trees and make coffee
plant tea bushes between the
trees as their compensation.
acant, with aromatic scopolodil
living, flowers pale lavender.

Cracks in rock, up to
several cm. wide and at
East (m. small).
In ravines and low
spots, tangled gallery
forest (Photos b. & b. very
m. wet, etc.; Cania gastrula)
On slopes a mixed savanna
with Cania fermenta, 
Phyllanthus emblica, Cania
gastrula, Bauhinia sp.,
Achrasatis undulata, etc.
(Chalky dog photos b. & b. w.)
(Photos of cracked ground
and grassland mix)

Around trees and
clumps of trees in ravines
there is a concentration
of shrubs, mostly scented
and semi-accident (photo)

Photos from lookout. Biskat.
The shrubs run together
to form a tangled edge
about 2 m. high, when
the trees are close enough
to form an open forest. This
in most places is largely
Lantana camara, which
is deciduous here.

Dec. 25 Wongsoyo
3976 A strong calamine
small, clump of tree. stream
77 Cumbozgo galata,
common around buildings

with rain.

1953 January
110 111
Dec. 25. Kilimanjaro. (Roof of the World) drive looking for p, landed on beach, down a path from ferry, Aphanachia, Vitellaria parvifolia, Danae grandidier (rose by star)

Along road for 2-3 km. is a striking open forest of Brachus, then dense thicket of tangled scrub forest, especially in the night. On left some mangrove, raining very hard.

The Brachus has grass beneath, no shrubs, said to be burned twice a year. Spacing between savanna and open forest.

Photo (from 28-29) of typical tangled and growth landscape of N. Bali. Saw several white storks. This is a game reserve.

Gunting Langyan (godim) is a spectacular dissected volcano.

The country after the game reserve is densely cultivated, mostly in maize on hillside.

Pula Pulabhi - temple - temples - tall cliffs. Many gray

mountains. (photos) (photos, brachus very abundant in this vicinity near sea. Acacia ferox - very large flat topped tree. Lower soil has degraded to savanna, very much resembling the lower ridges on S. E. Bali. The higher ridges also resemble the 100 km. from a distance. A large area of Coconuts with an understory of bananas, very luxuriant. Large flat area of rice, very luxuriant also. There are coconuts and bananas, with some areas of maize. Rice and vegetable mosaic appear. Tinandja.


Across lake a long ridge with plantations on one side, the steep side above lake, still in fairly good health - Alexandra's nearest. Main genus Eucalyptus. Macaranga, Schellenbergia, Eugenia, Schellenbergia, Macaranga,
1953 Bali

Dec. 25 Bedugul, on Lake

Oxatan

Drymania

on cut bank of volcanic soil
near building

Emilia ravenalia (L.) DC.
on marble wall just above lake

Ficus aureoispina; parviflora

common in montane rain forest or nylon

Ficus microcarpa

common in montane rain forest or bamboo

Ficus microcarpa

common in montane rain forest or bamboo

March 25, Dewa Ruh

73. Adinandra

common in montane forest

74. Lambicus

very common in open places
along trail

75. Michelia ( )
glance

occasional in wet forest or ridge

76. Miscanthus Arundin

occasional in wet forest or ridge

77. Rubus

common along trails in wet forest or ridge

4700'

4700'

woody climber reaching
high in trees; fruit;

depressed globose; deep orange spotted with white;

turning soft and deep maroon;

becoming fully ripe;

cover puds, even when

fruiting, appears to tie;

parts high in tree with;

larger leaves and spreading

branches, also fruiting (not collect)

tree; flowers whiteish

shrub 2 m. tall (reaching 3 m)

flowers white (no yellow

glance in inflorescence); is

flat to rounded, tugged
cymes. Old inflorescence

purple setting very few fruit,

then immature.

tree; leaves glaucous

beneath.

tree; inflorescence and

flowers pink,

scendent shrub;

flowers white.
1953 Bali. Podomaru—Batuwana Medanilla, many littoreceus, Epistachys, many ferns, orchid, mosses, branchipecten, Rubus Qoldreperi, in undergrowth, with very conspicuous basjiasia leaves in young inflorescence. One "Lipotes" with long perfect blue inflorescence, and very fleshy translucent fruit.

Features not seen but possibly present.

Most of these slopes, except those almost vertical are covered by coffee plantation with occurring of Crotona of some native plants in ravines. Anthera robusta, said to be some El. arabica.

Climbed through complex of Coconuts, fruit trees, rice terraces, to over 7,500' replaced by coffee plantation with Rhynia. At about 5,000' there start to be small farms. At perhaps 4,000' there are remnants of native forest, plus plantations of Casuarina, Eucalyptus macrorhiza, Widdingtonia. This area seems moderately wet.

Hotel Kintamandai

Photos of volcanoes Agung and Batun and calder lake-Batun.

Photos of Kedon temple. Bangu\n
Photos of Agung Volcano and rice terraces from top of Bukit Nangli.

Photos of Elephant Cave (now) bathing place, archaeological material.

Bali pigs are a strange breed, elongated, with a deep, rya in the back and a fat belly, black and pink in color. Bali cattle forked mud, like the wild-banteng, females red, males dark, blackish, all with the conspicuous white patch on the backs of the legs, only the variability in the humps suggesting any hybrid ancestry. Some have banteng horns, others nearly sagittal.
brought in by native collectors.

low branching thick stemmed rosette tree; flowers white. f. the same as p. leaf plane; fruit immature, pulpy, tightly filling cavity around seed. medical, very viscid.

tree to m. tall, fruit very sticky.

shrub 1 m. tall. material picked up from ground under trees 4 m. tall; flower, fruit.

shrub 1 m. tall, aromatic when broken; flowers white, fruit gray-green, small shrub; fruit red, fleshy; flowers greenish-white;
Dec 27 - Libang
Photos of market and village
temple 1st 12-11 am 001-4:00

Angel sacred forest of
Pterocarpus heterophyllus
Pinus silvestris (fig 201)
Trees are a less uniformly about
40 m, d.b.h varies from 25 cm
to 10 cm. Trunks smooth; fr
50 m scattered second layer
10-20 cm. Pisonia a sapling:
Dense groves layers 1-2 m
more varied camp.
Epiphytes in canopy.
Gray monkeys around temple.
(See. Womenly feet around
squirrel ground - N. Q.)

Village complex - Cocon, Aranga,
Oread, Agapanthus, jatropha,
mango, citrus, Musa, bamboo.
Hibiscus tiliaceus, Golden
Centa, Carica, Manihot Eugenia
Cumini, plumaria.

Gulingan temple - Good shooting, rice
tended, shrine.

End 1st 20th. in Camp turned off.
Village - mud walls, vle. yle.
Village temple (bld). 8-10 banquet
of cocon.
Psychotria
common in undergrowth in

Vareta
common in undergrowth in

Melastoma
occasional around edges of

Hedyotis biflora (L.)
on steps of temple

Cephalanthera bicolor
common in undergrowth, as seedlings.

Dec. 27 - Temple

Court yard of temple

Mollugo
occasional

Dentella serpyllifolia
abundant

Dec. 27 - Janua

Ximenia americana
infedral vegetation

Dec 29 - Denpasar & Gilimanuk
Generally the area near
Gilimanuk is scarcely
like Bali; scattered farms,
villages, no rice, almost
no temples, some second
growth, fence rows of
coconuts in manuf. yard

shrubs, flowers white;
fruit range when ripe.
shrub ca. 1 m. tall; flowers
white, fruit immature.
shrub ca. 1 m. tall, flowers
deciduous purple.
ends white.

These seedlings, with
hairy stipules, mixed
with and intergrading
with those with glabrate
stipules.

Stems spreading

forming very flat mat;
flowers dull white.

fruit yellow, sour, not
pungent flavor, but flesh
unusually thick.

The most important crop.
Small development of
Mangosteen (seen on whole of island), conspicuous
groves of Euscama (photo).
Beach sand beach of Gilimanuk
fruit magnetically attracted (photo).
The flat land of Bali, the coastal plain, except for the front coast, is very intensively cultivated, mostly in rice where water is available for irrigation. In places even the ditches in the rice fields have a row of beans planted in them, or tobacco.

Bali varies from one local region to another in the pattern of cultivation, etc.

Imperata cylindrica occurs generally, but it is also planted, especially on steep slopes, for rice or thatch. Laid to last 8-10 years, while coconut leaves last one year. Arenga sheath fiber, used mostly on temple roofs, said to last 50-60 years.
Dec. 28 - Banjvunagi-Djember from Banjvunagi south largely coconuts, then rice. This continues - flat rice fields with "island" of village complexes, more or less the same to Gentang. West of Gentang coffee begins to appear, shaded by bananas etc. at about 700 - 810. Rubber starts somewhat west of this, still large coconut plantations.

Coffee soon dominant, and continues so till we climb a mountain mass. Here degraded forest with climbing farnbos (a very wide-leaved sp.) appears at about 1800', and coffee disappears at about 2200 - 2300', replaced by the degraded very dense forest - under layer a terrific tangle, of 5-10 m. tall scattered large trees remain from original forest. On the hill coffee does not regrow, but there is a little tea, suggesting that the hill is limestone.

They still rolling to some what dissected country with rice, Imperata, bananas, etc. Villages.

West of Djember - Prokobra etc. Tobacco, rice. Sugar-cane, rubber, coffee etc. Ox, tract on the hills. Tremendous dissected volcanos. Round to right.

North of Djember a great irrigated canal between dilated level of water, and of rice fields, giving the appearance of golden. Very green. Xanthosoma sagittate much the common terrestrial cases in Java. Evidence of a serious flood just south of Djember. Follow canal towards Semeru Volcano, highest in Java. Lamongan east of, in night. Sands to the mouth in small boats on side of Lamongan. Much sugar, and rice in farm house as old. Laid bed, now pools in side of great canal. A few m. of buildings, rather high ground.
mostly maize, little a
no rice. Dark reddish brown
soil. Great volcanic
boulders in stream beds.
Scattered clumps and
rows of bamboo.
Rice again at date
streams in this entire
region very muddy.
Then has just been a
very hard rain.
Vast rice fields.

Pobolinggo - Madura
West of Pobolinggo a few
hrs. a low coast with clumps
of a few low sandbars
in shallow, hence mud flat.
Intricate network of
fish traps in shallow
muddy water.

Dec. 24 Madura to Benerasato
Madura rice very high,
very muddy.
N. of Ita A large area of
rolling hills with tea and
plantations in various stages
some fallow land.
Tea leaves harvested and
taken to market for use as
wrappers.

Green cabbages, very
common along roads and in
villages.

About here the large
Tea planters disappear
from roadsides.

Photos of rice harvest
24 hrs. after help.

Tobacco and sugar in
this region are as well as rice.
Very large tobacco barns. Many
pediments seen around Kleten.

Photo of edge of village of
Kandahar.

Temple at Brambangan -
photos - being restored, with
new roofs in place since 1931.
Huge Terminalia catappa tree
in courtyard. Other temple
ruins in Tenggul District.

Another smaller temple
not restored, at Kaliantan.

Komodo Dragon (photo) in
Legi Kedara. Very sluggish,
Tagua yellow, forked.

Breadfruit. Minor crop,
along edges of rice fields.
These trees range 8-10m
almost completely defoliated.
Grassy and in places badly eroded. Lower slope with some secondary woods.

Probable type: olie.

date from 779 AD. Burial, but original stones and images used 504 images
off Buddha, a mining town. taken to live
by Chulalongkorn. (Many photos).

Region, region - most densely populated area in Java, 1,400 ft. sq. km. Village complex appears to occupy more land than rice fields. Some rice fields have gardens raised a few inches above water level.

just west of has a low range of grassy hills - Hambalat.

A few miles to right is a low mountain, almost completely deforested, except for a few trees of trees on several hillocks. Some near a plantation. Lower slopes in coconut, mostly.

Dec. 31: Proceed to Bogor: south of smaller hills and scrub plantation. Gano forest permitted in teak plantations, and erosion

is not prevented. River exceedingly muddy.

Locatals north and east are nice plan village complex.

In village complex (off Wagen)

Cemete

Bambus

Hibiscus tiliaceus
TOURS

S S A From Bali-Hotel to Lukuk (temple), Baturiti and Bedugul (p.m. 12.00 above sea level) on Lake Bratan, opportunity for swimming. Back to Bali-Hotel. Duration 4 hours.

S S B From Bali-Hotel to Sangeh (Holy Forest temple and monkeys) then to Mengwi (temple) and back to Bali-Hotel. Duration 3 hours.

S S C From Bali-Hotel to Bona to see Ketchak (Monkey dance). Tickets obtainable at Bali Tour. Duration 3 hours.

S S D From Bali-Hotel by way of Kedewatan and Ubud (centre of painting) to Bedulu (Elephant's Cave). Then to Tampak Siring. Excursion to Gunung Kawi on foot to see the old monastery and King Tomb, then to the Holy Spring near Tirta Empul and from there back to Bali-Hotel by way of Mas (wood carving) and Tjeluk (silverwork). Duration 5 hours.

S S E From Bali-Hotel to Tjeluk (silverworks) Gianjar, Bangli (Pura Kehen) Penelokan (beautiful view on lake Batur and the volcano of Batur) and Kintamani (1500 m above sea level). After lunch at Kintamani Hotel back to Bali-Hotel. Duration 7 hours.

S S F From Bali-Hotel to Tjeluk (silverworks), Mas (wood carving), Bedulu (Elephant's Cave), Tampak Siring: Excursion to Gunung Kawi (old monastery, King Tomb) on foot. By way of Sambu, Seseh, Bangli (Pura Kehen) Penelokan (beautiful view of Lake Batur and volcano of Batur) to Kintamani (1500 m above sea level). After picnic lunch at Kintamani Hotel back to Bali-Hotel. Duration 7 hours.

S S G From Bali-Hotel by way of Tjeluk (silverworks), and Gianjar to Klungkung (Kertagosa, old courtroom). Then by way of Bukit Danum with beautiful view on the valley of Klungkung and the island of Nusa Penida, to Besakih (Great temple, mother temple of Bali). Then by way of Rendang and Selat to Tirta Gangga (opportunity for swimming) picnic lunch (taken from Bali-Hotel). After lunch to Udpung (water palace of Radja Karangasem and via Kusambe (Goa Lawah, Bat Cave). Klungkung back to Bali-Hotel. Duration 9 hours.

S S H From Bali-Hotel to Sanur (sea bath at Sanur, Swimming and opportunity to visit Mr. Le Mayeur, painter). Duration 3 hours.

S S J From Bali-Hotel by way of Sempidi and Kapal, Mengwi, the by way Kediri to Tanahlot (temple on a rock in sea). Back to Bali-Hotel. Duration 4 hours.

S S N From Bali-Hotel to Kuta Beach Djaja, Kuta to visit the painter Agus Djaya. There is a nice beach in opportunity for swimming. Duration 3 hours.
Grassy and unplanted land, badly eroded. Toward the southwest with some secondary woods.

Problems: The site dates from 773 AD - erected.
But original stones and images used 904 images of Buddha, a minor ruler from Java.

By Chimalongo (many photos)

Region near - most densely populated area in Java 1,460 sq. km. Village complex appears to occupy more ground than rice fields. Some rice fields have gardens raised a few inches above water levels.

Just west of here a low range of rocky hills.

On a few miles to right is a low mound, almost completely deforested, except for a few thickets of trees on several hilltops. Some banana plantation covers slopes in coconut honor.


South of Ismatitlina limestone hills with tea plantation.
Grassy配上in tea plantations, and erosion.

is not prevented. River exceedingly muddy.
Lowlands south, and west are rice fields village complex.

In village complex of Wangen:

Coco

Canebos

Heliconia tiliacea

Mango

M. Maize

Cepo

Ananas carassula

Muntingia

Macarthem amboinensis

Orea

Ananas Syl.

Galeopsis heterophylla

Citrus

Breadfruit

Manihot

Ananas

Jea

Pandanus

N. biga

Eucalyptus

Pine

Citrus

Icaor

Tamarindu

Many ornamentals

Cacao, cacao

A few km. of Wangen and the low range of
Limestone hills, mostly in teak, not heavily grazed. A few villages and banana-planting culture. Then next of these the hills continue in mastic, small cultivated patches, thicket, rice in some, rice village complex. Some degraded forest on higher steep slopes, some very steep areas. Some teak planting again, westward, limited areas. This hilly country extend westward more than road gradually gets out of it. To south, running parallel to it, through low rolling hills in teak, much grazed. Then about Marching a large area of village complex and rice. Continue plantation on lower slope. Then extensive flooded area. Then a long range of hills crowned by manihot, fields, red soil, then another large flooded area, on wandering this much smaller. On both sides of teak along are a mosaic of rice fields.

And small rounded hill with tea, mostly omn, banana, etc., dwellings and undergrowth, some palm, rubber area. A treeless landscape. Gradually the proportion of rice becomes less, but of hills more; the hill fence and trees there is predominately upland landscape with some rice, tea and the, toward forest the country is mountainous, undulating, with spectacular rice terraces below, shifting agriculture on higher steep slopes, little forest left but thicket in middle. Arable common. Many flowering, Dalea not attend to the ground flora at least has a number of flowering plants common at base grade below. How ending this section is not clear but portions may indefinitely. Many trees in bad shape, very dead, but no conclusion some flowering plants away down-trunks. The
Black sheet fiber is said to be used to line septic tanks, to wrap fish which are in earth, etc. as it resists rot and termites. Also used to make the that of lying roofs very strong. Fruit eaten, should not be used in making very little used for toddy fermentation. Prevents the swarms of bamboo as they grow cement every year. They grow trees seen at 3400 ft. Several other varieties badly attacked by insects.

Volcanoes in. Gwaii and Bandoing cleared and made cultivation up summit.

Chilikerus indicus commonly used as hedge.

Glossochile carceris. A small bamboo more rarely.
Jan. 7 - Bogor
planted ivy for gardens

39795
5

Pseudanthemum

5 97. Hura crepitans

5 99. Hura

large spreading tree, flowers white, somewhat fragrant; leaves slightly aromatic when crushed, small shrub, leaves green with dark purple veins; sepals white with purple dots near center.

spreading tree, male and female flowers dark red; the male spikes cylindrical, with two whorls of flowers each.

spreading tree; male and female flowers white; male spikes compressed in the direction of the length, parallel with axis, flowers arranged spirally, many; edge of stigmas of female flowers deeply lobed.
1959 Java
Jan. 5. Bogo. The proposed addition to the Botanic Garden, Bogo. Rolling hills with rather deep dark brown soil, volcanic ash, and soil rich in organic matter. Water and mud in thickets of bamboo, miscellaneous trees. The high ground is terraced, some in Marigot grass in grass, bushes, etc. Said to be former rubber estate. Perhaps 2,000 m. alt. n.m. 780 acres. Magnificent hotel above Bogo.
- Some coconut trees.
- B. setosus, a pinetree
- Pieces of tile in soil, some young rubber, some rice, and bananas.

1959 Australia
Jan. 9. Darwin - Driving rain. Rain, said to have been raining from Monday to today. Thursday.
The area around Darwin is green, open forest of rather small trees, mostly Acacia. In town a typical tropical assortment of ornamentals:
- Allamanda cathartica Rubroflora
- Calophyllum inophyllum
- P. tricolchotum
- F. guilfoylei
- Delonix regia
- Pseudosideroxylon caeruleum
- P. fruticosum var. filifolia
- P. frutescens?
- Mussaenda pendens vel aff.
- Theretria peruviana
- P. emerus rubra
- Ficus sp.
- Antigona leptopus
- Lawsonia inermis
- Bougainvillea spectabilis
- Cattaranthus roseus
- Acalypha amaranta var.

A. helios
- Jatropha podagrica
- Nephrolepis sp.
- Syzygium sp.
- L. lucidus aequus
- Euphorbia pulcherrima
- L. spicata aequus
- Manihot esculenta variegata
Prevailing vegetation around Darwin is a seasonal open forest, varying toward savanna of the species of "Eucalyptus", "Buchanania", "Terminalia", "Grevillea st. Pardew", etc., with Cyperus media rather common and difficult to recognize. The ground cover is tall grass. This is burned every year.

Locally, with no strict topographic difference, is a type of miombo forest densely tangled with vines; difficult to walk through. Native about 15 m. In dry season the majority of trees and most of undergrowth species lose leaves, but some for only a short time burned every year. Patches in vicinity of Darwin being destroyed for subdivision, golf courses, etc.

Mangroves common along coast, but growing on rock terraces reached only by lapping tide. Terraces cut in a peculiar rock called chalke locally. A bedded gneiss. Centipede domin.
1959 Australia

Cassia, glychnon, yellow
Cocos nucifera
Acacia, mearnsii
Chilean teak
Pine, cypress

Northern Territory

Jan. 2 - Darwin, N.T.

2. Among mangroves in rock
substratum covered by high tide

39800 Exocarpus latifolia

2. In thicket, just track of bees

39799

Jan. 2 - Darwin, N.T.

2. Stockman?

Common in open forest.

Common in open forest.

Jan. 2 - Alice Springs, N.T.
around airport, on flat, sandy ground

4. Eucalyptus

5. Eucalyptus

Shrubs 2 m. Tall, aromatic, flowers white.
Yellowish-green shrub, small, whip fruit, turning dull brown, receptacle swollen, heads lavender blue.

Fowers with, limb white, tube yellow.

Flowers yellow, almost a quite actinomorphic.

Flower leaves pale beneath.

Small tufts, culms almost erect.
Jan. 1. - Trip by air from Darwin to Adelaide - Dr. - left side. at 7.30. Raining hard. Sea very rough, about 25 lines of breakers, water muddy. Considerable mangrove trees of Darwin in a small bay. Also a small estuary system of the air field at 8. Large one north of Darwin filled with mangroves.

Clouds cleared away, from a small area along a muddy stream. Low hills trending parallel to stream - wooded locally densely so. Bare ground along bottom land, becoming grassy further south. Traces of old channels, represented by strings of pools. Some bare spots. Then complex semi open country - flat arears in grass, slightly elevated parts, savanna 8 open forest locally. Ponds, probably ephemeral, very muddy, abundant. Then country flatters out more and grass and savanna are more general, with gallery forest along streams. Ponds ten common. The grassy areas not green but the savanna is the steppe savanna, with the reddish substratum coming it somewhat.

Country generally rolling, green, mostly savanna, only the highest areas red. Some large sandy hills. Flanking with dead or leafless trees growing in them. These trees really not leafless but somewhat so.

Hills more prominent, with open forest, ravine grassy. Some higher hills to left in middle distance then closer, irregularly well wooded, some savanna, quite green, on slopes away from concave. Then flatter savanna locally sandy, locally green, with many meandering streams. Then slightly rougher country with thin savanna, locally green. Then clouds.

Same, but more hilly, sparsely wooded mostly thinning, some still broken. Gently. Clouds.

Rolling, green savanna in thin open forest.

Aband of low strike, ridge trending back and left from curve, quite wide, shallowly, this, wood and almost as grass.
8:00 Then hills with sand, rock, showing locally. Bushy and shrub-bush. No clouds.

8:02 Approaching Katherine, mostly cloudy. Thin open forest, some bright red cultivated fields. Thin savanna around Katherine air strip. Some areas quite green. Areas of very rocky plateau, apparently over-eroded with thin savannas. Shrubvegetation dense in ravines and in the networks of joint cracks. Some areas with open forest and grassy patches, varying to savanna. Gallows forest along rivers. Soil washed down when disturbed. Numerous ephemeral (13) pools. Rocky ground. Conical termite mounds prominent and abundant locally. Euphobia.

A few blackheads along air strip at Katherine - open forest of Acacia sp.


9:46 Grass under trees thinner, solid red, clouds.

7:57 Thin savanna. Clouds.

8:37 Thin forest & savanna, almost no ground cover. Country almost flat. Clouds.

9:04 Some but even sparse and dry; shallow rain, meandering through slightly rolling land. Clouds.

9:11 Thinner forest, mostly savanna, a desert savanna. Soil red.


9:24 Patchwork of sandy desert, savanna and forest.

9:31 Forest becoming more prominent but visibility poor.

9:35 What appears to be several large dry lakes, surrounded by an uneven stretch of open steppe forest. Patches of thin grass a shrub savanna.

9:38 Another large dry lake. Very sparse shrubby vegetation. Curious, very pale reddish drainage pattern leading to another dry lake further to right. Lake gray and area immediately adjacent is bright red. Shrub desert. Road across lake is white. Red part is
apparently debris fan slope, very low, several round pits with water around edges of lakes. Far sides of lake have sandy dunes. Evidently the red sand from this side scarcely blows out onto the lake bed, but there are very small dunes a mile of white sand on the lake bed. Then a considerable strip of small ripple-like dunes. Lakes become more vegetative, mostly predominantly dunes; still very sandy, almost crossed from the red area, both of these with somewhat of a patchwork of vegetation, a very curious pattern, possibly due to wind, but very difficult to explain. Then some rolling light red land with abundant pools of muddy water. Often an irregular patch of red and pale gray areas, some with sparse vegetation, others with almost nothing. Clouds.

10:07 a red desert with irregula small patches of denser vegetation. Apparently approaching Tenent Creek.

10:09 Vegetation becoming somewhat densely savanna-like but still desert scattered small yellow-green trees. Some very thin desert grass, substratum a light red, slightly more grassy as Alice Springs is approached. Low rounded hills ridge, coat about 70° left of course.

10:15 more vegetation in depression between them. Shallow dendritic gully system with more vegetation.

10:16 some small flat topped erosion remnants, then somewhat closer vegetation, but irregular, a dark scurf locally. Then locally shrub-savanna, bluish patches of dwarf sub erosion remnants, lakes, brownish red. Gallery scrub along dendritic gully system. Mosai of steep-savanna and desert flat desert grassland. Fighting track.

10:22 Atsmall settlement of few dozen houses. Voids scrub and many red erosion remnants north of airstrip. Many cylindrical termite abounds in Glenopen shrub and shrub savanna around field
150

1959 Australia

Melis aedonae, c. specimen

Ceratocaulon aculeatum, plants

Tannin in soil.

On the flat-topped red

criss-cross remnants are a

few very little small

trees, grass by Eucalyptus,

and in slopes a grey low

open scrub, partly stunted.

10:57

Left Tennant Lk.

Savanna with Ziziphus?

clump = circular, dead in centre

Row gray-green heacia?

Then mosaic of patches of

savanna with desert, very red.

Then rather even desert

with vegetation in a

somewhat oriented "rippled"

pattern, possibly small

fused dunes with more red soil

between them. Patches even

then desert grassland, interspersed

with ripples pattern, entire

area red.

11:09

Slightly more relief.

Ravines

with vegetation.

Mosaic of red and slightly

green areas, gallery scrubs

in ravine, area of "ripples"

scrub desert. Patches of green

along bottom land of "ripples"

stream paralleling course.

Also some lighter reddish areas

pink areas with small

patches of paler sand, some

dull greening red areas.

Some of the boundaries

are regular enough

to have been fences - possibly,

this pattern may be

in part due to decades of

evergreening.

Very low broad strike ridge

transverse of inner, with

ravines more or less perpen-
dicularly dissecting them, or

very shallow, with scrub

in bottoms, little vegetation

on higher parts.

Low-rolling terrain, reddish,

desert savanna patches

of dark gray scrub, then

mosaic of patches of dark

scrub and "rippled" grass. Scrub

apparently collects sand. All is

patches of scrub scarcer;

mostly thin desert scrubland.

Along with somewhat mandarin

depression more vegetation

then surrounding grassland;

more scrub patches.

11:45

Patch of almost bare sand,

W.4 hard soil.

11:46

Following a stream bed

with gallery scrub and

a flood plain of almost bare
light red soil. Rather dense desert grassland on flat terraces on both sides; to right of this a range of low hills, probably a strike ridge with very sparse vegetation except in ravines.

Irregular mosaics of areas of desert savanna, desert grassland, and almost bare areas, with meandering stream bottom land with dense grass, still thin.

Shrub savanna - still thin. Large areas of desert grassland with eroded higher spots, dense vegetation in ravines, trees scattered along larger creeks and along stream beds.

This has all the appearance of a formerly badly cropped range, abandoned long enough for cattle tracks to disappear.

Small low sedimentary plateau or rift, thin grass, ravines radiating from sides with shrubs.

Cost erosive contacts with rimrock. Then shallow complicated coves etched in floor.

Shrub-savanna grassland and eroded base area.

Shallow vegetation ravines. Somewhat greater relief.

Thorn desert with patches of desert grass. White spots on the red that may be prospect holes. These are either continuous red shrub desert, locally rather dense.

Large area of flat desert grass with shrubby patches, gradually changing to steppe.

Areas with slight relief of shrub desert, flat area, apparently lake bed, steppe. Shrubby areas may be small sand dunes, perhaps sand collected by bushes. The lake bed is extensive.

At the side of a long dune ridge, with concentric bands of shrubs, (Desertcactus) between ridges bands of steppe. Ridge, bare and red except for shrubs.

Steppe mostly grass, dune pattern complex (no assurance that there are dunes).

Scattered dark low mountains covered by open scrub in some desert. Far red fans and flats between them with only scattering shrubs, perhaps small trees. Flying at low alt., very rough.
154
1959 Australia

12:05 Continuous low sand hills middle distance to left. Red flats close with scattered shrub or small trees. Then scattered low hills.

12:08 Badly eroded area. Trees lining possibly quilites. Pattern very strange, possibly concentrically banded. Dune ridges and valleys—probably 1.7, pattern very extensive (photograph).

12:11 Stream system with trees along streams. Then more of same pattern (photograph).

12:13 Apparently approaching Alice Lps. More low hills.

12:14 Open gallery forest along stream, and brook desert on low hills. High hills in distance. No other纪ulus.

12:15 Alice springs, a fair size town noted cattle. With a sharp steplike straight ridge and beyond it.

Then another, standing muddy wash between small flat-topped trees abundant. Very muddy vegetation.

Then very flat salty plain with scattered trees becoming smaller and denser.

155
Around airport, remains of (with spirally twisted ditto) spikes, Melia angustifolia, Pemias.

12:20 No stream system, meandering streams with grass and trees. Low open forest, in the plain south of Alice Lps. Airport. Also trees with narrows strings of open desert and desert grassland.

12:22 A few patches of stiffe savanna.

12:24 A low range of sand boxes, hills transverse to course.

12:25 Then a mosaic of patches of dense white savanna, with from hills with scattered shrubs, trees, red and sand dunes.

12:27 Low hills with bluish grass on atelope and scattered trees, patches of red desert hills.

12:28 Bluish hills, dunesless little dunes, patches of red sand dunes and flats between hills.

12:29 A series of stipe ridges traverse to course with gaps in them. Much red...
bar. desert, very small blue hills, with arrypts, some small clumps of taller large hills. Much geology showing, if there was only time to interpret it.

On dry area of almost true red desert, with only a few minor shriny small trees along ravines.

A zone of bright red mallee almost straight parallel dune, parallel with course, to left, interrupted by hill but still continue on flat area. Then stretch into the far distance, where they lean arrypts into flat closer at hand in forest savanna.

Become arrypt mallee natural and shrubs, red against blue of arrypts savanna.

Not so arrypt mallee (red) almost as dunes, mostly stabilities and hard to see. Then rather red arrypt desert.

Scattered small mallee, remnant hills with suffix yellow tops at very slight arrypts. Then more parallel dunes, this time at a slight angle towards coast eyeing on a vast arrypt desert.

2:01 Plain. (White)

Thumb vegetation getting sparser and more sparse, arranged in lines parallel with the dunes. Perhaps stabilized dunes on more likely the bottom of the depression between them (phot)

No more dunes - a flat desert plain with very little visible vegetation, practically none except along faint watercourse. Landscape not very red any more.

More parallel dune on otherwise sandy landscape. Little vegetation except scattered shrubs along the dune ridge, few between each area.

2:04 Dunes change from red to pale yellow, slight but vast.

2:17 Pal plain with almost no vegetation except thorny of trees, a shrubs along dry watercourses.

2:29 This is almost a flat area, bare, pale buff in color. Regularly patched with dull pumpkin.

2:29 Larger parallel dune at about a 15° angle, bare backbone from coast on a flat plain. Scratched shrubs between dune.
159 Australia

237 Dunes have become red and dry, and much
broad, flat ground between them almost covered.
Very little vegetation.

238 Dunes analogous and
not their parallel alignment become a vague irregular
sea of dunes, some vegetation

239 Crossed a broad brackish
strip of water, covered by vegetation

241 A broad plain colored like the
planted desert, no vegetation
except in a few dry
watercourses, (hot)

242 Crossed a broad white dry
watercourse with a few
lines of vegetation,
then more patches desert very bright hematite color

243 A tributary watercourse, bright
with prominent lines of vegetation,
then another. Then another. Then another
This does not go in the main
but branches off into coves.

248 Similarly vegetation
in the lower courses of
these before they come out into
the white salt flat, of what

336 End of main body of lake.
Many small salt flats detectable
flats, all white and dry, some
connected by channels, some
not. The lake proper, a few
dunes and small salt flats.
Vegetation. Mostly thin, rather wooded, occasional
small, scattered patches of forest in some small
valleys.

Note: ridge forms a very interesting pattern. Not altogether
understandable as ridges seem to alternate.

Then hillier land with
scattered cultivated fields
in thin grassland, a few
patches of forest and savanna.

Some dry farming of flat
areas, partly wooded and partly
savana or low hill.

But a couple of patches of
ceres, obviously planted forest
open near bottoms.

Green wattle bushes
for firewood.

4935 Mostly under cultivation
now, except a strip of pasture
varying from wattle
and open forest, to
a strip of savanna and
then light bush.

4936 The grassland here has
some pasture and
scattered patches of
savana. Flat country.

4934 Another town on middle distance
to left. Steep woodlots seem
to be the rule here. Various size.

514 In distance to left, a hilly
partly wooded region
a town below, visible.
162

1959

5:17

Localizing altitude.

Vegetation: Savannas, and
watercourses.

Climbing, pea, wv. nov. M.\nleft. What appears to be
basaltic silt and
basaltic islands in distance.

Hilly land mostly savanna,
some good forest on higher
height, and patches of some
in slope.

Join Adelaide
National Park.

Open forest of Eucalyptus
calophyllus, E. sideroxylon,
understory of Acacia spp.,
Casuarina spp., etc. (photos,
also show many Girrawum
in endemic).

On slopes E. leucoxylon
(photos) with Hysopradium
(foto), result of fire.

From summit of Mt. Lofty
(400m) sports of stringy-bark
E. sideroxylon, selagophyll
scrub changing toward
Adelaide township.

In forest also some E. tetrodaxis
and a few Banksia spp.

March of Leptospermum
glabrum, Pimelea, thryptomene,
etc. in bottom of vine. (photos)

163

surronded by Eucalyptus
of Eucalyptus
open, 12-15 m. with
tall, almost continuous,

leaves, Eucalyptus, several
species of leguminous shrubs,

Leptospermum, etc.

Leptospermum rotundum
Leptospermum dominant in

shrub layer; Hakea, etc.

Selagophyllus scrub with
scattered Eucalyptus
above E. leucoxylon in 1959.

Lower slopes, savanna, forest

of E. leucoxylon (photos)

Arura, etc. mostly exotic
on ground.

The color of these forests is
uniformly a dull dark green.

Only the Eucalyptus in the under-
story is bright green. The
shrub layer, otherwise, is
also dull dark green. The
green layer is the savanna
and open forest, and on many
places is straw yellow. This
is a Mediterranean type of
landscape and reflects a
Mediterranean climate – about
5 sunny months in winter. The
rest of the year is. Wine producing.
Jan. 10. - Tripped by air Adelaide to Melbourne. 9:00 a.m. at site. Very low coastline, mostly sand banks, a few very low cliffs to S.E. of city.

Low hills on peninsula east of city covered with savanna replaced northward by open forest as higher slopes are reached. A small reservoir S.E. of city. Some slopes scrub-covered. Pattern of distribution of forests and open land suggests cleaning by man, at least in many cases.

3:05 - Rolling country, mostly cleared, with scattered trees. Much of it apparently in pastures, some cultivated.

3:06 - Trees essentially absent from here on, except a few along water courses and ranges, and in a few areas of apparently rocky soil where there are scattered small trees and some open scrub. Hills mostly dry, formal, now brown; on where scrub covered, black.

3:13 - Approaching bay - some shots of white soil have open scrub, or some seem to be desiccating pools. Along...
166

That may be true, but
not necessarily; it is mostly
very well stabilized by
vegetation. Large unplowed
areas
In several places the area
has been disturbed and the
dunes have become active again
area of fused sandans
with thin scrub, rather
than thick sand - a fact
and
partially cleared land
with numerous standing
elongate spots, remaining
in parallel alignment along
curve for some distance.
To left of plowed vast
undulated area,
unmiddle distance, dry
farming almost - extensive

Most curious brown
untamed with lines,
several way, parallel
but numerous and close
9 together, as though
combining. Then more
black, densely wooded hills
solid cultivated land and
pastures. In places scattered
trees, haphazard and naming

3.45

Then a broad strand of
irregular forest at sand, part.
These bands and run at
about 60° to curve, forward to

167

4.34

Large patches of forest, some
(pastures), and cultivated
ground, forest or wooded
hills, very dense, dull dark
green.

Jan. 11, Melbourne - street and park, ornamental
Eucalyptus, Vehicula, "jimba,"
Macaea pinnata
Gentiana st.
Ailanthus altissimus
Nerium oth
Ceratium (ord)
Abelia grandiflora
Jacaranda or calophy?
Phalma thyr.
Cytinus scoparius
Betula alba
crass submilla
Helianthus annuus.
Jan. 10 - Adelaide, S. A.
Slope of Mt. Lofty
Flindersia?
marshy place
common in shallow layer in Eucalyptus obliqua forest.

Jan. 11 - Melbourne (E.A.)
Crataegus sp.
Amelanchier sp.
Rhamnus alnus
Ligustrum vulgare
Quercus robur
both unhealthy though

Sabinia molle
Maclehondieae
Caperma laniger
Abutilon pictum
Washingtonia filifera
Veronica (Hebe) sp.
Charissa tenuata
Bells fennici
Phelmedis canariensis
Fuchsia magellanica
Hydrangea
Phlox drummondsii
Pennisetum (Japanese reed grass)
Calamagrostis
Phlox paniculata
Cistus laurifolium
Salvia splendens
Pelargonium
Impatiens sultana

AUSTRALIA

small shrub
shrubs; not tall, flowers
dark orange in color.

Viburnum opulus
Cotoneaster pannosus
Canna hybrida
Calliostoma
Tagetes
Helianthus

Poa annua
Triticum repens
Vicia tricolor
Althaea rosea
Worms sp. (glabra)
Alternanthera sericea

Cedrus libani
Liquidambar styraciflua
Taxus sp.
Populus nigra ( Lombardy)
Hibiscus - Chinese, sterile flowers, new

Cycadaceae
Eucalyptus sp.
Populus deltoides?
Chamaerops humilis (arbutus)

Morus alba
Pennisetum
Grevillea
Lantana
babylonica
Dracaenacea?
Asculus parisi?
Ginkgo biloba
Wedelia?
Fatsia japonica?
Guercus sp.
Euphorbia robusta
Mangium?
Antirrhinum?
Gaura?? fl. whit., fr. varieg.
Lythrum salicaria?
Brachyglottis regularis
Leptospermum?
Dianthus sp.
Plumbago auriculata
Chamaecyparis?
Ficus?

Cardium? (articulate?) common in open fields and vacant lots.

Jan. 11 - Melbourne - Corin banke
Leete Melbourne
North, dry, faintly green. Numerous harvested grain fields and pasture land with abundant scattered trees. Trees, most in pastures. Typical savanna vaying locally almost to open forest.

Residence and town surrounded by.strips of dense forest, then a slope with green grass and open forest, then densely wooded round hills. The forest on ridges very fine textured, that in ravines coarse textured. A few cultivated clearings on tops of wide ridges and in small plateaus. This forest quite extensive.

End of forest, now complex, hilly country with wooded savannas and steep slopes, otherwise grassy with scattered trees. The grass mostly dry, some small valley bottoms green.

Narrow green flat valley bottom with hilly meandering stream with narrow gallery forest, many traces of old beds and meanders.

A considerable densely wooded range a bit to right.

Another small valley with meandering stream and incredible series of old meanders for such a hilly country. Then extensive dry hills with sparsely scattered trees.
Eildon Reservoir, a very complex drowned valley in a mostly rounded range of low mountains. North arm of reservoir in savanna covered hilly country. Remnants, remnants of rainfall. North lip of reservoir.

Then rather level & slightly rolling land, savanna, a few harvested grain fields, grass mostly dry.

Mosaics of dense forest, open forest, pastures, and cultivated land: lots of grass in green.

Vast densely wooded area, a few small cleared patches, quite mountainous. Dry plains to left of course. Rather rugged mountains to right. Little cleared and pruned pasture land in a few of the valleys.

The woods in the mountains slope are slightly open, showing some ground, varying to completely closed in places.

Same vast wooded area on right, dry plains but with a few wooded valleys stretching into distance on left, these valleys seem to be the extensions of main.

cleared valleys in mountains to right.

3:14 A high, very rocky mass, with peaks and ridges of bare granite, scree, and joint cracks wooded also lower slopes, silted & be much snow in winter, and large sliding mass seen on top of one of peaks.

3:15 Large valley system with much cleared land, mountains between well wooded. Then another lower mountain mass, solidly wooded.

3:17 Very large reservoir, for lift (Hume Res.?) cleared valley on it. Then vast wooded, mountain area, with rock outcrop to be one peak and a high plateau above timber line in distance to right (Hunter Line?) typically mountain mass as far as can be made out from distance. Several other smaller peaks also slightly hazy in this.

Some high ridges apparently have snow on west side, dense forest of dark brownish color in east northeast.
3:25 A forest fire in distance on right. The dark, bronzy, forest seen on highest peaks. On highest ridge there seems to be a rather open scrub at least on south sides. Also seem to be many bare white trees. Patches of these very conspicuous, probably from old fire.

3:30 Semi-open mountain and ridge tops, meadows in some valleys very noticeable. The roads in all this mountainous area.

3:32 An apparently new road below high, semi-open rounded mountain tops in distance to both right and left.

3:34 Passed directly me, very high, very nearly completely open mountain top with snow patches. Road in valley to right of it.

Then more very semi-open.

3:36 Mt. 5,578. Very high but with snow patches from to left. (MWK) Erosions.

3:37 Some small green valley or dry savanna country. Hills after Corne.


3:40 Very old oaks, plants abundant in open brush on steep slopes. Rocky-like country with open grass, patches of open forest. Some open patches of young grass. Mostly very close-cut, open pasture. Locally patches of savanna and open forest.

3:43 Passed again along (Corne) lone small pond. Circled back. This is apparently typical sheep country, mostly hill-wagon type areas of coarse bunch grass, much overgrazing, sand. Photos of degraded open forest. Trees are low, rounded, spreading.

3:45 Come from here along upper Murumbidgee R. to Canbena.

4:15 Left Corne. Rock outcrop abundant, especially where there are trees. Quite a few gull-sized birds, some full, some dry. Dryness hard holds on old bit.
Ranges of low hills with open forest, grassy valley between.

Wandering stream with clear water winding through hills, then crossing into valley and joining river. On other side of valley, tonight an extensive wooded area of low hills.

Green fields on river flats.

Some serious galling on sides of valley; but stream is not muddy, at least now.

Hills covered by savanna, look badly overgrown.

Hilly country, mosaic of open forest, savanna, and regrowth grass, same nearly closed forest at rougher areas.

Fairly high wooded mountains form left, a rocky soughed, sparsely wooded range on right, become less rugged and more densely wooded as we follow it.

Valley below picturesque and savanna badly galled.

Hills with very degraded forest and savanna.

Grassy valley with many small artificial ponds. Extensive savanna on way.

Hilly area.

A pair sized town surrounded by low wooded hills. Canberra.

Jan 12 - Canberra - Sydney.

Left Canberra.

Stretches of rather tall open forest, rather similar, mostly with enormous amount of dead timber - possibly from fire, some stretches with all trees dead, some rather bad erosion. Patches of open forest are angular, suggesting that the dead trees may be from clearing operations rather than fire. Large lakes in recession with rather muddy water, very thin grass on flat, along shore, no trees except where hills or cliffs come down in shore.

Thin flats of grass, with patches of savanna and fresh galls.

Hill to left, partially wooded. Grass very thin, brush mix open.

A couple of large ponds.

Then gables with patches of forest and savanna, some...
of the forest rather dense, perhaps more so planted.

In middle distance is left considerable forest on low
hills.

Some closer by course. Then a large canyon cut
through a rough forested
area, rather a system of
deep canyons almost
isolating a wooded 
plateau.

Another part of this wooded
area has a very old patern
on plateau, like a trace from
an ancient road.

Follow the main canyon
for a distance, then it
wanes away at point where
it is joined by an intricate
tributary system. This
whole complex area is well
wooded and presumably
difficult of access. Would
make an excellent reserve.

Surrounded by green
pastures and fields.

Wooded complex area end.

Another long similar area
in middle distance to left.

In center of this area is what seems to be a very
large lake, possibly
ruins of a large city.

The
area is evidently past track

of Sydney. Flats and
hill around Sydney very

green. At this point are
other coastal towns not
Sydney. Beautiful 
shaped beaches with narrow
strip of dunes behind them.

Cursed coast, but every
not all pointing same
way.

High escarpment
just back of coast.

Behind this is plateau,
mostly forested, a little
open grassland, some

of it.

Directed densely
wooded, several small
in canyon.

Lack roads very thinly
wooded, a much bare orchard
in this.

Several subdivisions in
the area around this plateau.

Lack a very complicated
coast and apparently Sydney
itself. Directly back of
Sydney is much less
open country with winding
river or estuary.

Much forest close to city and
among suburbs.

Some very fine in this

area.
Dear Ray:

Thanks very much for the Poinsettia seed. They are both the angular, coarsely tuberculate seed of P. heterophylla. As you note, the pedicels do elongate and straighten as the fruit mature. This gives the capsule a relatively clear shot for its explosive dehiscence. I am very glad to get the seeds, though I'm not sure that I'll try to grow a Poinsettia garden this summer. I want to spend at least a month in Mexico, collecting over in the west, and by the time I return from Montreal, the summer will be nearly gone.

I have been somewhat side-tracked lately, but I do intend to write up my poinsettia data one of these days.

With best regards.

Sincerely,

[Handwritten signature]
Jan. 16 - Between Koko Crater and Malama Pl. 
roadside in low Protium forest.

Gossypium tementorum
common locally

Euphorbia heterophylla L. Mt. L. Dried occasional

Gossypium tementorum still persists for a few hundred yards along the road and somewhat into the forest. It attains a height of two meters, and is definitely woody. The flowers are open wide in the morning (about 8 a.m.) and part the coherant stigmas, somewhat bent to one side.

The plants are mostly badly infected by small, mealy bugs tended by tiny ants, and the most heavily infected plants are dying back from the tips. Also some of the plants seem to have a mosaic disease which makes the leaves become small, some yellowed and dead. The flowers are small, light yellow, and about 1 cm. long. There are no red spots at base of involucral leaves, scarcely paler. (Red for Reddy).

Leaves of Codiaeum, cut with almost complete petiole, and kept in water in a "pin jar" for some weeks had developed roots and were in a completely healthy condition. Roots radiated from cut end of petiole.
Jan 26 - Flight San Francisco to Chicago, left side offshore. East of hills back of Oakland is a very considerable area that is not cut up for real estate. There are grassy pastured hills, sparse areas of Artemisia, some wooded by trees, and some good patches of low open brush. Roads make much of this quite accessible.

East of this, Mt. Diablo is quite rugged and rocky. Apparently has some true chaparral, some forest, and much rocky, steep grassland, as well as some gentler grassy slopes.

Valleys filled with fog. San Joaquin mostly covered in fog, a few spots open. Foothills of Sierra covered in fog. Most of the tops of highest chaparral areas. From these on is very largely a mosaic of large areas of open forest with smaller areas of chaparral, the boundaries of these often not sharp. Flat valley bottoms cleared. Some areas logged. Only well up in the mountains are areas of closed conifer forest, these varying locally to open forest and chaparral. Open slopes with scattered trees and more common upward. A little scattered snow in the lower open forest, more in the closed forest, thick mosaic of closed forest, open forest and open slopes; deeply snow-covered. More and more open snow and rocky ridges and slopes upward, till country is essentially bare with patches of open forest in valley. Much bare rock. Snow not especially heavy. Some high, granite dome, and ridges with almost none.

Eastern slopes have almost no snow. In midst lake to north, some forest south and a little east of it, with considerable snow. Otherwise, along coast south and southeast of lake very little snow, large gentle slopes of sagebrush.
scattered junipers on sides of ramn and canyons.
Then considerable areas of rather dissected slopes and low mountains, the upper parts of which are covered by open coniferous forest, a savanna, of low trees, lower slopes, sage brush. Some alluvial fans covered by sage brush. Many hills with then forest and savanna. Then what seems to be desert with only very sparse vegetation, quite dissected, varicolored, not even the low mountains showing any visible vegetation for this altitude.
Several dry lakes with broad alluvial fans leading down to them. On the fan south of dry lake nearest cause what appears to be old partially stabilized dunes, then going west to north westward. A highway crosses this fan. These dunes would be worth investigating on the ground.
Another small dry lake located immediately to left of course, with what appears to be clumps of vegetation holding small clumps of trees around it. Very rocky hills, low mountains, east of this, with scattered junipers.
Then broad valley, dark areas outcropping from fan delta covered by scattered white, but that must be prospector holes - slightly hilly land, then another enormous valley with great fan, an U shaped airfield, but no town at all on this side of course. Large strips of transversally arranged dunes, very little vegetation evident in all this country except in areas the fans change sage brush. Crossing remnants, protecting through alluvium. Then bare low mountains, and alluvium filled valleys, dissection not very sharp. Rugged high mountains fan to north. Wide valley some patches of dunes. Low mountain with scattered trees, much higher and wooded to north.
Then another broad flat valley. A highway (railroad) crossed the low basin in the mid. and this valley.

Then much bare irregularly low mountains and dissected country with mesas, alluvium-filled valleys. What appeared to be a duny field immediately along came, with a large wash running down to a large dry lake somewhat to north. South of it rather rugged mountains with some coniferous forests on slopes, a little snow. Then a much higher mountain range. Note in the May 10, 1909.

High range with some woods south, wide alluvial fans along some low far slopes widely spotted with pale areas—prominent below. A wide valley with a stream, with water and some small dams, rather extensive areas of marsh, extending far to north, running southward.

Rather low mountain, wooded to north, to east of this valley, then a sandy basin. Then a low mountainous area with scattered trees, denser with a little snow on higher north slope. Another wide valley. Then a near the mesods. High range, isolated small ranges in generally alluvium-filled areas, some of these rather high and well forested, a little snow on north, high slopes. Crossed a fairly high range with another, considerably higher, to north, ahead, alternating ranges and alluvium-filled valleys with dry lakes. In some distance, valleys bare, scattered junipers and dissection, mountains shapely to moderately wooded. Very little snow.

A couple of small lakes with water in valley to north. Otherwise alternating low flats and shapely wooded mountains. Low higher peaks with pretty dense forest, a little snow. It rained here.
evergreen. Immediately eastward some deciduous, great patches.

1045

f) north a large valley. Along course and ahead very mountainous country with patches of gray chiseled forest, some snow. Low clouding more so ahead. Deep desert valley, with a small meandering river and to north, a small town a two, surrounded by high mountains, some very colorful, mostly bright red eroded mud, well to north.

Solid clouds.

1042

1039

1037

1036

1035

1034

1032

1031

1029

1028

1027

1026

1025

1024

1023

1022

1021

1020

1019

1018

1017

1016

1015

1014

1013

1012

1011

1010

1009

1008

1007

1006

1005

1004

1003

1002

1001

1000

1009

1008

1007

1006

1005

1004

1003

1002

1001

1000

1009

1008

1007

1006

1005

1004

1003

1002

1001

1000

1009

1008

1007

1006

1005

1004

1003

1002

1001

1000

very dissected land, pattern complex but less spectacular. Then some pretty spectacular erosion again. Vegetation very sparse—in rugged shrubs some junipers a flowering, wide bare desert plain. Then clouds. Sama a similar plain, no visible vegetation, ground mostly reddish.

cross a large rise, with a little water and much dry bed, this continued white. Tributaries are with white bed. Perhaps? Eastward this bare plain rather irregular. Then clouds.

Clouds thinned out, land is entirely under cultivation except for numerous dendritic gully systems which are sharply to densely wooded.

A few small woodlots.

A fairly large city or a southeastward meandering meandering river. No snow at all in this whole patchwork area.

Large meandering river, becoming almost parallel with ours. Then crossing it, say.
A little snow in ravines, ma
snow visible in parts north;
 gullying very intricate
 and covering more ground but
not very fresh. Rather little
level, unplowed land, fallow;
through, not much wooded
and generally cultivated.
Gallons feast along river
and streams.
Ground covered with thin snow.
Conspicuous gully formed
along river to north, flowing
eastward.
Some very complicated meander
patterns in a wide river run,
crossing course toward s.e.
Then gently rolling topography
showing ancient dendritic
gullying. Even small streams,
mostly slightly incised, tightly
meandering.
Wide river runs running
generally southward.

Interlaced of tributary systems
showing very gentle relief.
Tributary systems dendritic,
Main streams wooded. Other
were sand mostly treeless except
around farm houses.
Small incised streams
have been mostly channelized.

leaving very complicated
dry meander patterns in
agricultural lands.
Bottom lands of larger
streams or rivers wooded.
Meandering conspicuous.
Crossed Mississippi it.
Very complicated system
of channels and islands,
Adam to north, probably
are below source also.
Series of parallel bone ridges
running east from river.
What seems to be an old
extremely flat bottomland
bluffs, but north
of river course, running
southwest. May have
been an ancient lake bed.
Completely cultivated.
Very flat land east of
Completely but rather
thirty snow covered.
Tomato Bake

Cook 4 ounces elbow macaroni in boiling salted water for about 10 minutes; drain and rinse. Combine 1 1/2 cups milk, 1/2 cup soft bread crumbs, 1/2 teaspoon salt, 1 teaspoon Worcestershire sauce, 1/4 tablespoons prepared mustard and 1 cup cubed American cheese in a saucepan. Heat slowly until ingredients are well blended. Mixture is creamy. Fold in cooked macaroni and 1/3 cups cubed cooked ham. Pour 1/3 of mixture into a greased casserole. Next, arrange a layer of 4 fresh tomato halves over the macaroni. Add remaining macaroni mixture. Top with the other 4 tomato halves. Cover entire top with bread crumbs. Bake in a moderate oven (375 degrees F) for 35 minutes. Makes 4 servings.
with
Isle Hobbyists

Hikers Discover
Varied Plants

By HARRY A. WHITTEN

The Hawaiian forest is unusually rich in variety of plant life, not only of native plants but also in the large number of plants introduced here.

Those who took the Wai'anau hike last Sunday had opportunity to observe the variety.

There is a shrub in Wai'anau that is endemic to this region, that is, it was found nowhere else in the world when first identified by the botanist, Dr. Joseph Rock.

It is named Solanum easterianum, after Hawaii's second Governor, George R. Carter.

SHRUB SPREADS

In the years since it has been reported spreading in Waiahole and Waikane, the two valleys adjoining Wai'anau.

Also in Wai'anau is the white strawberry guava, seldom seen elsewhere, according to Thomas H. L. McGuire, veteran forester.

These are a few of the examples of plants to be found along one Oahu trail.

The Hawaiian Trail and Mountain Club has no hike this coming Sunday, as members are having their annual luau at their Waimanalo clubhouse.

R. J. Baker, kanaka'a photographer and president of the club in years past, has returned from a trip to Europe that included 27 days in the Soviet Union, as well as shorter stays in Poland and Czechoslovakia, topped off by three weeks in Paris.

Mary Jane Bagley has also returned to Honolulu, after working in Washington, D.C.