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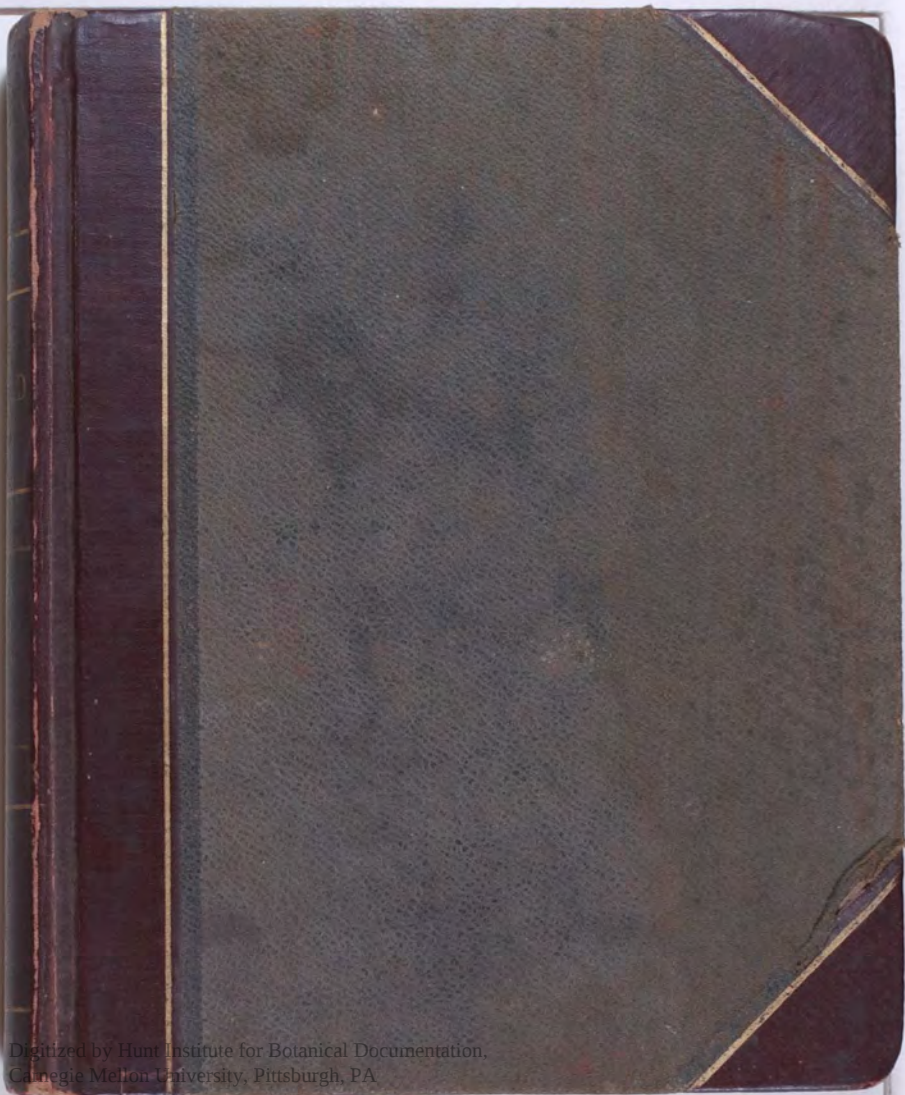
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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.





Standard Blank Book

No. 38

Journals Double S and Cts. no Units

S. E. Ledgers " " "

D. E. Ledgers (Whole Page Form " "

Records with Margin Line

In 150, 200 and 300 Pages

Made in U. S. A.

List of Pineapples in Experimental Plantings at Chapman Field, Fla.

TP1 SPZ 49714. Collected by Shantz in Belgian Congo. No description. ^{small yellow fruit, fine flavor} but ^{not post-harvest} ^{large neck}

50727. Collected by Shantz, Zanzibar. Said to be a large fruit. ^{identical with 49714}

52492 Abacaxi, sent from Bahia, Brazil by V. A. Argollo Ferraz.

52298. Cambrai, sent by H. Papenoe from Palmira Depto. del Valle, Colombia.

51378. "A very fine variety of Samoan pineapple," from the Governor, Pago Pago. ^(Good - Malama)

* 54663. Chocoana, from G. B. Chittenden, Port Limon, Costa Rica.

56852. Wild pineapple from P. H. Rolfs, Vigosa, Minas Geraes, Brazil.

56907. Wild pineapple from Belle Horizonte, Minas Geraes, Brazil.

F.H.B. 36037. Natal pineapple. sent by Dr. Gunn.
Port Elizabeth, South Africa

Shipped to Tela July 6 1925
Plants from Miami, Florida. F.H.B. Card 57760.

12	S.P.I.	54663	Costa Rica	10
3	"	46769		6
9	F.H.B.	36037	Natal	6
6	S.P.I.	44338		6
10	"	49835	Belgian Congo	10
1	"	50727	Zanzibar Africa	5
7	"	49714	Africa	6
9	"	38908	Moacaxi	6

57

Aracados are now being allowed entry
into the United States from

Antigua B.W.I.
St Lucia "
St Croix Virgin Is.
Colombia
Cuba
Dominica, B.W.I.
Dominican Republic
Haiti
Jamaica
Montserrat
Peru.
Argentina.

Wednesday Winter Haven Fla. Aug 4 1925

12. Dr. Menzies Winter Haven
3 3/4 acres of Casahuate
Planted May 1924. Fruit was
maturing in Dec 1924. Harvested Feb
12, 1925 Temp 28°. Planted 6x8
ft. On working land summer. No
other cultivation

34. A. F. Higgins of Litchfield. About 1 1/4
acres of Casahuate on Lake Chap. 4 to
5 ft apart in rows 10 ft apart. Planted
early in June 1925. Clean cultivation

M. B. Cox, Winter Haven
15 acres Casahuate at 4 1/2 x 10 ft
8 acres planted Apr-May 1925
7 " " early July 1925
In light pine and palmetto soil
Practise clean cultivation

Delawater

1 1/2 acres planted July 1924

Dr J. E. Crump
1 1/2 acres on lake shore at
6x15 ft
5 acres back of house

A. R. Ladden, Lake Hamilton
2 - acres Casahuate 7x7 ft
2 " Hart

Friday Chapman Field, Fla. Aug 7, 1925

Acid Soil - dug 1 foot from base
along with 300 parts of soil.

Dip for plants - 1 cask (small) for
dip up only 100 gallons of water

Plants - clear up one

2 casks 12 x 13 x 7 1/2 inches

2 casks 24 x 13 x 7 1/2 "

4 bottles 24 x 13 x 7 1/2 "

size over all 34 x 13 x 3 1/2 inches

To make 100 plants required:

300 pieces 13 x 13 x 7 1/8

600 " 24 x 13 x 7 1/2

Root Knot - *Sadum cyanide* remedy
1000 *Sadum cyanide* to 5 gal
of water. Saturate the soil and
allow to dry, then plant.

Sand from mangroves
2 parts cotton wool
1 " cotton wool

Saturday Miami, Fla. August 8, 1925

Notes from Buckle Avenue garden.

44682 2 plants of *Persea schubertiana*
in field, should be moved to Chapman Field

Remnants seedling *Litiscus* plants

Two plants of *Ammonia sedici-
folia* from Ammonia plot at Buena
Vista should be saved.

Sunday Chaparral Field Sta Aug. 9, 1935

Avocado selected for Dr. Carlos Ros
from La Brea

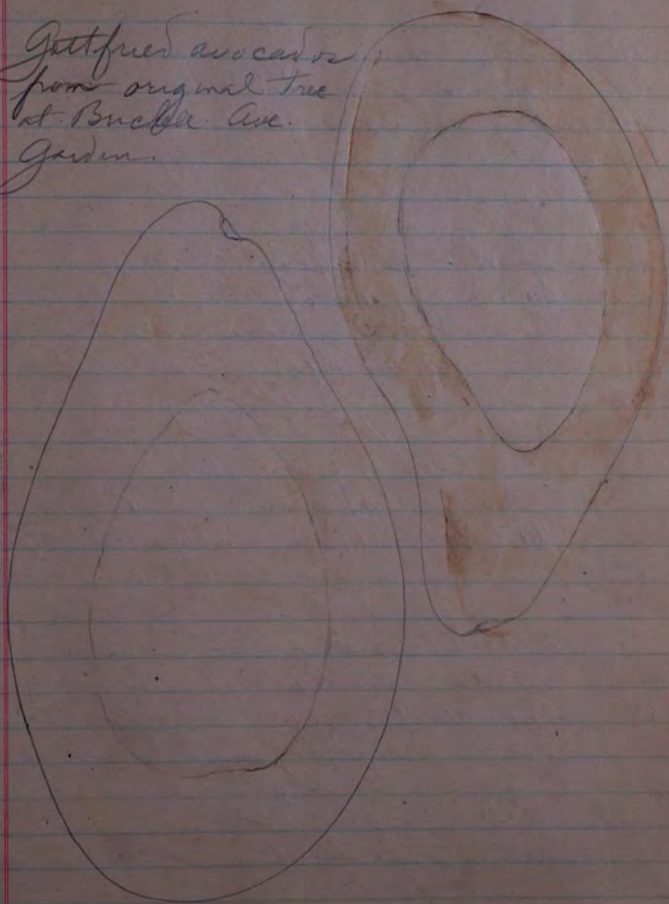
62376	Collinson	2
61740	Gottfried	2
44625	Parachoy	2
55509	Dodge	1
46337	Quebla	1
62370	Windsor	2

Avocados to be sent to Tela

62376	Collinson	2 plants
61740	Collinson x Trapp	2
	Walden	2
	Penelli	2
44625	Parachoy	2
55509	Collinson	2
46337	Gottfried	3
	Quebla	3
	Windsor	3

All tung oil trees (Aleurites montana)

Gottfried avocado
from original tree
at Buena Ave.
Garden.



Thursday Washington D.C. Aug. 13, 1935

Rubber Distribution of raw latex was entire year
is essential to profitable handling of latex.
Tropical East Indian plantation system can
be applied to any other bases.

O.F. East Rubber in Tropical America only
except to very limited areas in the
tropical zone. Dry season too hot.
Even when ground water is near
the surface tapping can not be con-
tinued through entire year.

300 trees large enough to tap, in Haiti.

60-75% of the rubber in East
India comes from 35% of the trees.

Selection not yet worked out to complete
retrofection. Budding does not seem to
give results expected. Selection as
good as budding so far.

Cost \$500 to 600 per acre to bring
rubber into bearing in the East

May be possible to establish plan-
tations in tropical America elim-
inating certain expensive operations
of East. Not necessary to remove
stumps. Partial shade desirable for
young trees.

More scattered planting among
natives. Put a few trees about residences
for future seed supply.

Cost of bringing into bearing ought
to be about the same as cacao.

Plant Rows 20 ft apart. trees 10 ft
apart in rows

Said to be 70,000 trees in Tabasco
between Salto de Agua + Pichucalco.

Do not get seed from Trinidad or
South America, because of
disease of leaf disease which
ruined young plantation in Dutch
Guiana

Wednesday Washington Aug 26 1923
 Talked with L. H. Dewey in Kapok.

Kapok found on N. coast of Hon-
 duras is probably *Cela pentandra*
 crinita. The cult. in J. is called
C. pentandra and is introduced from the
 S. of America. Dewey in *Cela acumin-*
ata. Mr. Dewey thinks this is the best
 one for J. I say for seed of *pachote*
 in J. in J. in J.

Request I will be used to start.

Exportations into U.S.

1920	9881 tons	269 per ton
1921	8645	302 import
1922	7370	375 per
1923	7769	474
1924	8395	514

Mostly all from Java.
 No duty on imports.

Yield: 7150 lbs of pods per acre
 400 pods per tree annually.

Plant 500 trees for Botanical Doc.

Begins to yield at 2-3 yrs. At
 5 yrs an acre of 135 trees should
 produce 420 lbs of clean kapok
 annually.

Plant 16 x 16 ft. in 20 x 20 ft.

Monday Washington Sept 21

J. P. Gifford, from Porto Rico, called.

Panchoy, appears in February with
Rubens B. de la Cruz, Gamachales PR.

Cabral Soc. getting well.

Callao Soc. not successful
at Rio Piedras.

Tuesday Washington Sept. 25 1925

Earl S. Haskell, 3622 T
St. N.W. Washington D.C., gives
following notes re Hevea in
Yabasco.

Dr. Federico Martens
Salto de Agua, Chiapas
Agent for Dornberg - general store

Dr. Alvin Martini
Salto de Agua, Chiapas

Otto Lenke Timber

In charge of "El Encanto", on
river Tuleja, 4 days above Salto
de Agua. Address Salto de Agua.
Technically not informed with one
rubber in the whole region.

Dr. Ponciano Rojas, Pichacaleo,
Chiapas. Information re rubber - ref.
Haskell Healthy Escandado, +
grows Castilla

Saturday Bell Me Sept. 25 1935

Dischidia pectinata

61373 *Bambusa polymorpha* 100 plants

55936 *Alseodaphne* sp. 1 plant

58283 *Isopogon gracilipes* 6 plants

62786 *Passiflora* sp. 6 plants

56158 *Psychotrias* spp. 12 plants
(56020)

Sunday S.S. Metapan Oct 4 1935

Talked with Mr. Crank of British Honduras.

There were 11,000,000 lbs of chicle imported into the U.S. in 1924; the price was about 43¢ per lb. Best quality is from Peten and grows on limestone soils.

Plantation of 50,000 acres is now being started in British Honduras. Trees to be set 80 ft apart, or perhaps twice that close to allow later selection of highest yielders and elimination of others. It will probably be possible to tap annually for 3 yrs. Then the trees must be allowed to rest for 2 years before tapping is resumed. Trees in the wild can not be tapped as heavily. It is thought that first tapping can probably be made at 6 yrs.

Broadfruit tree is said also to yield a high grade of chicle, but held to be a slow grower. I think it will outgrow *Achras sapota*, and it should be investigated. It might not yield as heavily.

Character of soil + climate may be of importance in affecting quality of chicle produced. Tests in Honduras should be conducted.

Saturday SS Metapan Oct 10 1925

I propose that we establish the following projects at Tela:

1. Experimental Rubber Culture
2. Tung Oil Production
3. Chicle Production
4. Avocado Production
5. Commercial mangosteen production.
6. Travels and Vegetables for Local Use.

In addition to these major projects there will be a number of crops which we will want to try, but which will not merit treatment as separate projects, at least at this early date. I think it would be well therefore, to

establish a general project under which they can be handled. This might be termed as below, and might include the plants mentioned as well as numerous others. When any one of these plants shows sufficient promise it can be raised to the standing of a separate project.

Miscellaneous Crops

Bambo
mango
Rubi
Pineapples (Experimental Varieties)
Abaca
Spices
Maragogipe coffee
Mellin
Spanish cedar
Ebony

Barana V C Dunlop germinated banana pollen
in 2% and 5% sugar solutions, securing
a maximum 100% germination. No germina-
tion obtained in solution stronger than 5%.

He made studies of reactions within grass
world mainly for July 1923 in
which barana and dunlop are cited.

He Gerardo undertook solution for Luciana
recovered Tala. Figure regarding results

Seed

Treatment Griffith of Porto Rico reports that
Pulao seeds germinated well after 45
minutes in the 50% of a specific quantity
of 1.8%. One hour would have been
been a better time of immersion.

Saturday Tala Honduras Dec 5/1924

Cannas seed from Miss Byrnes
planted as follows



1. E. M. Byrnes
2. The President
3. King Humbert
4. Favorite
5. American Beauty
6. Dazzler

Wednesday Pt. Arturo Dec 9 1935

Rec'd shipment of plants from Johansen,
Quinn T. Co., as follows

Caryota mitis
Ipomoea spinescens
Stemodia grandis 2 plants
Hydrocorymbus angustifolius
Stemodia barbellata
Stemodia angustifolia
Stemodia alba
Stemodia elegans 2 plants
Stemodia bogotensis
Stemodia lindl.?

Rhoeo madrona? 2 plants

Musa textilis, seedling "Pala" 12 pbs
B60, 1 plant

Isopogon laevis 1 bunch cuttings
Isopogon cane 1 "
Isopogon grass 1 "
Andropogon rupestris 4 clumps
Polytaenium spumosa? " "

Pinus

Red Spanish
Smooth Cayenne, Havana
Milagro, Ecuador
Gamboua
Monte Lirio
Cocozal
Palogga

1 bunch suckers of each variety

Photos to be used in Book

Mexico Plate Drawing

Palmaria 1619 1

Avocado from Querétaro 1634 1

Toluca 1617 1

Wheat from 1715 1

Sicco 1619 6

Sicco 1619 1

Sicco 1619 1

Guatemala

Pit from 1729 1

Pit from 1712 1

Pit from 1706 1

Pit from 1708 1

Pit from 1722 1

Pit from 1729 1

Pit from 1695 1

Pit from 1705 1

Pit from 1705 1

Pit from 1684 1

Pit from 1685 1

Pit from 1685 1

Pit from 1685 1

Pit from 1685 1

Pit from 1685 1

Pit from 1685 1

Plate Drawing

Avocado seeds 16927 1

Rubus sp 16972 1

Dahlia masonii 17014-17176 1

Tactia 17011 1

Ruiz, Antigua 17053 1

Nimble 17085 1

Young to market 17106 1/2

Carp. Pucula 17161 1

Cigarras 17171 1

Cajuela 17197 1

Pecaya 17204 1

Pit from avocado 17264 1

Pit from 17304 1

Avocado tree 17312 1

Cheremoya 17407 1

Mangrove 17422 1

Tuna grading 17457 1

Pacayito 17470-72 1

near Bejucal, about 20 miles south of Habana. He has already made a large planting - perhaps 100 acres of rubber and oranges among the best Cuban orchards of the former and Hager and Philippine of the latter. He is going to augment another large planting.

Dr. Tardieu also at Vulcaral is establishing an orchard in the region South of Habana but I did not see it on this trip. He does not import as so many as serious a type as he has planted but he has lots of money and seems willing to spend some of it on experimentation.

Tentative outline of Book

Preface

Chap I. Guatemala - Central and Los Altos

Chap II. Guatemala - The Verapaz

Chap III. Mexico, Queretaro to Topochula

Chap IV. Costa Rica, and on to Bogota

Chap V. The Colombian Highlands

Chap VI. The Cauca

Chap VII. The Ecuadorian Highlands

Chap VIII. Southern Ecuador and the Coast

Chap. 18 Peru

Chap. 18 C. 18

Jan. 11 - 4000 white seeds from
Costa Rica planted in nursery
at Lancaster

Jan. 23 - Seeds germinating

Jan. 20-22 75 Alouatta
plants planted at Lancaster

Jan. 25. Shipment of plants
from Florida planted at Lancaster

T. P. I. Number

1. *Hevea brasiliensis* 4000 seeds
from Costa Rica Division
2. *Alseodaphne* 79 trees transplanted
from Pto. Abasco.
3. *Alseodaphne* 1095 seeds from
Pto. Abasco
4. *Uncaria tomentosa*

List of *Pensacella* in Variety
Collection. Herbaria at Lancaster Feb 18 1926

	SPI 56852	W. B. Bragdon	9 plants
		Hawaiian Smoother (Johansen)	3
		Costa Rican Red (Johansen)	6
	✓ SPI 54663	Chocoma Costa Rica	10
10 cent	H9835	Belgian Congo	10
		Madagascar (Johansen)	6
	SPI 56407	W. B. Bragdon	10
		Taboga (Johansen)	6
	FHB 50725		5
10 cent	SPI 50727	Gambier	5
		Monte Lirio (Johansen)	6
		Gambier (Johansen)	6
6 cent	H4338	White Antigua	6
3 cent	46769	Queen Natal	3
2 cent	FHB 36037	Natal	9
7 cent	SPI 49714	Belgian Congo	6
		Corozal (Johansen)	6
6 cent	SPI 38908	Abacay	6
		Smooth Cayman (Reasoner)	10
		Abachi (Reasoner)	10

Japanese Persimmons - *Lanceolata*

From Mich. to South

1. *Bugai*

1. "

1. "

1. *Hachige*

1. "

1. *Tam. Naki*

1. "

1. "

8 plants

Thursday Port Jervis CR. Nov 18 1922

Called yesterday at Bananats and
way from from Almirante of
plants sent down on Nov 19 1922
the following are of interest

1. *Mangosteen* now about 4 ft high
and in fine condition

Chauliogra Tree - There are several
Tarakogenes *Burji* about 15 ft
high. Also *Hydnocarpus* *castanea*
and *H. wrightiana* all doing well.
One *Hydnocarpus* is fruiting.

2 seedling *Hydnocarpus* about 15 ft
high, branched at 8 ft, very slender
trees. They may not be of good
stock. They have no SPT numbers
making good growth.

Guatemalan *avocado*s not doing
well obviously not at home
in this climate

Shore Zent Mar 18 1926

1 mangrove about 8 ft high, planted
May 1922. 1 only 3 ft high and
very weak

1 Syden 15 ft high on fine slope

Chauliogra tree 1 probably Terek-
legans 10 ft high on fine bank

Experimental planting of bamboo
planted in 1920 from cuttings.
Probably not good by 500 Growth
good but plants badly infected
with scale.

1 - Photos sent to Illustrated London News
April 7th 1926.

SP 18058, from p. 139 (Belin) "Round about Boga"
18055 139 (Cuscuta)
18046 140
18082 142
18151 143
18132 144
18171 145
18051 149
18101 154

Florida Agenda

See L. W. K. Stirling's place, Davis.

Get Young Deuberry, C. A. Howell Nursery
Co., Channahoe, Alabama.

Get San Flet raspberry.

Townsend's chard is a lime chard
hybrid. Ralph Robinson thinks.

Wednesday Habana Cuba Mar 30 1929

Visited Estacion Experimental Agronomica. Trees and plants almost destroyed by the hurricane of last fall. Buildings badly damaged and few repairs made yet.

Within a few laws prohibit importation of all plants into Cuba except those for use of Estacion Agronomica. No way of bringing in trees for Preston & Banco.

Only minor Cuban fruit allowed entry into U.S. at present is the avocado.

Visited Federico Morales V. at Vereda Nueva, 45 km SW(?) of Habana. He has about 40 acres in avocados, from 1 to 5 years old. The trees from 3 to 5 yrs old were badly damaged by the hurricane but only a small proportion (perhaps 10%) were lost. Only West Indian planted. He has the following varieties: Trapp Picoch, Rave Orange, Wilson Picoch, Picoch, and one of his own which he calls Estrella.

The orchard plantings are obviously receiving little care and are not making good growth.

The sap Black Fly occasionally attacks avocados but does not breed on it.

Has Hasen mangoes which are not some of the avocados. Badly damaged by hurricane.

Thursday Habana Cuba Mar 31 1927

Walter Biquel in company with Senator Faust Medical.

Thousands of about 150 acres now planted to avocados and mangoes - 3000 avocados trees and 1500 mangoes at 100 ft. intervals. The mangoes are principally all Hadam and California (mostly Hadam). The avocados are Blue Orange, Nelson-Pepper, and Pollard. The Hadam tree is a which I sent him wood about 2 in. dia. and 12 ft. high showed flowers and green. Relatively little damage was done to the trees by the hurricane.

A good many Hadam mangoes are carrying a few fruits. They have been planted about 30 months. Quite a few Blue Orange avocados, same age, have also set fruit this spring.

Soil here is a heavy, dark gray clay loam, with limestone beneath and much loose limestone in surface soil. Passes to heavy clay in parts. I think ground is sloping and well drained in general.

Senator Menocal is getting very satisfactory results from shield-budding with avocados. Poor results with mangoes and has used manching in consequence. He has tried crown grafting the mango but with very little success so far.

He would like to try more Guatemalan varieties. At Santiago de las Vegas, Van Hermann's new mango tree is one of the same time as the West End tree and has white flesh. The tree is not healthy and will probably die this year.

The Senator is, I believe, the most energetic and serious minded man in Cuba, so far as avocados are concerned. All efforts to establish new varieties on this island should take him into account. He is quite successful at budding, & has much better land for growing avocados than Van Hermann, Fortan, and Morales. We should help him to assemble as soon as possible a collection of all the best Guatemalan & hybrid varieties.

Saturday Preston, Cuba

Apr 2 1929

Nancuener to be planted at:

Alamo	4 acres	} 17 acres
Jalisco	4	
Aracosa	4	
Alamo Verde	4	
Sactia	1	

Total cost, including purchase of plants (\$1500), cost of preparing ground and planting, and cultivation for three years, \$2500.

Grassmowing, new canal are:

P.O.J. 213

P.O.J. 979

P.O.J. 1228

P.O.J. 2379

Kassoor

This afternoon I looked over some of the lands in the Division with Mr. Trenler and Mr. Walker. We stopped at:

Juan Vicente 8 - 18 kms from Preston.
Good rolling land - close to water. No housing for white men. Deep soil.

Juliana - 29 kms from Preston. Plenty of rolling land but hills seem to give no protection from wind. Avocadoes growing here show the back which looks like most trouble soil typical above. Creaks 2' wide on surface at this season. Brownish yellow clay subsoil in places. Drainage on flat lands poor.

Santa Isabel - 34 kms from Preston. Soils fully as heavy as at Juliana, and not more desirable from other points of view.

Stopped also at Guano. It does not seem to me, on this casual examination, that any of the lands seen today are suitable for commercial avocado culture because of their very compact nature. The strong prevailing winds are an additional handicap - "brown-eyed leaves" from excessive evaporation.

Sunday Preston Cuba Apr 3, 1927

Wrote to Sactia Island with Mr and Mrs Schoffen. 45 minutes by boat from Preston, then 10 miles on a Ford to the Caba island. Here are 144 acres of orange and grapefruit, said to be 35 years old, some in flower. The trees are in bad condition from gummosis, and are now in being given. Orchard was to be written off by 1935. Last year sold a million oranges at \$9 per 1000. Oranges look like Valencia and are of large size and excellent quality. But with disease there. Its scale insects are there. Black fly said not to have appeared in this grove as yet. Worrying how well the trees bear considering severity of gummosis and amount of dead wood.

Soil here at the grove is light red (red brown) of the type seen around Stgo de la Vega. I did not make borings to see subsoil. Land is sheltered from winds by

a belt of uncut native growth (low timber) and by position on the whole, the conditions seem favorable and the grove would probably have been a success with due cultural attention, but it will never be for the gum disease.

It seems to me this offers a good situation for trying all experiments. There are 5 or 10 acres adjoining the island which could be cleared up at a cost of not more than \$5 per acre. Mr Bennett can charge at Sactia his plenty of time to handle the matter.

Monday Banes, Cuba Apr 4 1907

Went to Los Angeles district
with Mr. Hillary and Mr. Bane.

Two S. Gonzales, property of
100 acres, formerly bought by the
company for water supply, has
orange, fruit trees and more are
being planted. The Bane is
experimenting with budding and
grafting. Properly offer best oppor-
tunities for this sort of work -
as on a well sheltered from the
wind, has water available, and
soil is not bad - rather a sticky
dark gray clay which does not
crack so badly as many others.
Aids are very troublesome. Small black
stinging ants which eat the bark of
citrus, avocados and other trees. Bane
of tar lawn placed on the trunks
1 ft wide to keep them off, but
appears to be ineffective. This part
should have further study and control.

From here we drove through
Malaga farm to Los Angeles District
headquarters.

There are soils of varying char-
acter in this district. Quite distinct
from the heavy blackish gray clays
of Paction. Much lime rock
is found in certain places, and
there are red and brown clays
some of the reds of very similar
appearance to those at Paction
Island.

Throughout most of this district
however the wind blows strong
and constantly, and what few fruit
trees are growing about houses
look very poor. I do not believe
it will be worth while to
consider the feasibility of putting
experimental work in this district.

This afternoon Mr. Mitchell, Mr. Hillary, Mr. Baird, Mr. Van Dusen and myself went out to Narango Del Rio, about 30 kilometers from Buenos Aires.

There there are an orchard of coconuts, some banana trees, also 700 acres of coconuts and many citrus trees. Much in fruit. There is a banana plantation.

The land is quite hilly so that the drainage is mostly good. The soil is not quite so heavy as on the low flat cane fields, but is heavy enough to crack slightly, and is dark grey when dry. It is a heavy clay I should say.

Citrus trees have mostly died out. Apples look very badly. Bananas (Mrs. Michel) said to be 30 yrs old are very small, not 3 to 5 ft. broad, and are anything but good.

fruit. A few balsa trees planted 5 yrs ago have made fair growth. Agaveates look fairly well and blooming freely. Mangos look well.

Slight protection from wind here better than in the open cane areas. The situation of the place is a handicap for experimental work, and the soil not too good. I believe the red soils grow better trees here than the black ones, and Narango Del Rio lies in the black belt.

Since Jorgensen studies me as the best place in Buenos Division for small scale experimental work. It is reasonable, has fair soil, good drainage, is somewhat sheltered from winds, and has a small amount of water available.

Wednesday Baragua, Cuba Apr 6 1927

The day was spent here at the Cuba Sugar Mill Experiment Station, where J. L. L. and Prof. Van Dine. Mr. Stahl, Mr. Lane and several assistants.

Many of the plants sent here from the U.S. have been set in permanent locations. Prof. Van Dine has not had time to come for them. There is a plant of *Alseodaphne montana* (P. 11 62-14) which was planted in the nursery Nov. 14, 1925, and is now 10 ft high, well branched and looks promising. It is growing on red soil, deep and well drained.

We went from Baragua in the afternoon to visit a colony some 7-8 km from the mill. Here are growing many avocados, mangoes, and other fruits, all well kept. We badly suffering from drought except the mangoes, which are carrying plenty of fruit. The cotton seems to be a good

one for fruit cultivation. The steady winds which blow at this season are somewhat objectionable.

Pineapples of 2 kinds growing here. Red Spanish Pine which looks like Chocoma.

Van Dine's men are working on four projects.

1. Cane Mosaic control
2. Varieties
3. Stalk borer
4. Cultural Practices

Thursday Salinas, Alta April 7 1929

Talked with Prof. Earle re sugar cane.
BH 1012 is best cane for general plant-

ing.

Combination 381 for drought resistance.

381 is better sugar cane but not as drought resistant as 313.

Jugosa insularis - Mr. Gray will get for us.

Mr. Gray says Mandarin stool is best here for fine gummosis. Soils orange on black con. soil. Grapefruit good on gravel hills - makes better growth & greater fruit.

2 Pineapples secured - Cuban Queen (green leaves) and Black Jamaica (red leaves)

Merritt's mulberry only variety which succeeds here.

Eggplants to grow in Honduras.
Maine Laurel oak & Florida Highbush

We should get Guadua bamboo

Mr. Gray wants
nutmegs
cloaks
oil
teak

Get Carboneros from Porto Rico

12029 Cane (Haw. 19029) is one of the Gray best seedlings. Gives 17 lbs sugar for 100 lbs cane and better tonnage of Crystalline for Caballero. Should be tried in Honduras.

Triumph like only variety who fruits well here.

Saturday Habana Cuba Apr 9/27

Visited the old Runyon avocado orchard at Guanajay now owned by American Dairy Products Co.

This grove is rapidly being destroyed, as present owners are not interested in avocados and mangoes.

Soil is typical red cane land, deep, apparently well drained. No heavy Runyon in upper subsoil visible.

Grove perhaps 15-20 acres all together. Parts of it must be nearly 30 years old as I remember the Trapps and some of the mangoes were $5\frac{1}{2}$ yrs old when I came here in 1915.

Damage done by hurricane was severe on older parts of grove, not at all severe on younger parts which appear to be 6 or 7 yrs old at most.

Numerous old trees of Trapp and Calcock. Young specimens of grove contain Eagle Rock and smaller Guatemalan name of which is not known to present owners. Should write Mr. Elmer Runyon at

Elizabeth, NJ to find out. He will know.

Eagle Rock is said to open here in Nov. and Dec. The other Guatemalan (a pear shaped fruit) opens in Dec. and Java Trapp opens here in Sept. but sometimes later or much later. Solanum opens August.

Prof. Burke tells me that A. Bonazzi, who is carrying on the work started at Chaparral (San Manuel, Omeque) by Maria Calvo, has some important work on malvaceous fiber plants including methods of extracting.

Hadon mango grown commercially at Manacas, St. Clara province, by Nick Huff and Theo. Gerhardt.

Mr. San Hermann says there is a sizeable orchard of Trapp and other good avocados at Catalina de Guines, not far from Habana. He will visit shortly and get report on condition and varieties grown.

Send Mr. Schugart "Manual of Tropical and Subtropical Fruits".

Cortan canes rec'd from F. J. Earle

Ashura

Jama Museum

Mt. de Nisol

Argentina (Havengue)

C. 653

C. 685

CH 864 (CH 64?)

POS 3735 (2725?)

Dr Shuman

N.Y. Times Lockawana 1000

For discussion at Boston

Departmental Reports-

Form, Frequency, Editorship

Pathological Work

Cacao Experimental Work

Miscellaneous Asps in So. Division

Administration of So. Division

Plant Breeding Projects

Use of Resistant Varieties

Uniform Positions & Salary Scale

Project numbers & Classification

Radio Frank

Signature rubber stamp

Books to buy:

Coffee

J. J. Elliott collection

Barbados

Trinidad

Guatemala

Yucatan

Cuba

Mexico

Guatemala

Yucatan

Guatemala

Yucatan

Guatemala

Yucatan

Guatemala

Yucatan

Guatemala

Yucatan

Guatemala

Experiment on banana root growth
(pH value determines presence and abundance of root hairs - Girtman, Riverside - got copy at Experiment station)

Set plant on open ground. Dig trench 12-15 in. from plant. Set $\frac{1}{4}$ " wire mesh glass in frame, tilting bottom toward plant, 15-20 degrees. cover trench with trap door - frames covered with tarp papers.

Send Mrs Elliott list of Guatemalan names & meanings

Send address to Mrs Peterson and Perry Clegg Aovca.

Doole, Chas.

Took course in Univ. of Hawaii.
Then plantation foreman on sugar
estate. After 2 yrs went to Hawaii
for selection and hybridization
work. Likes toward mathematical
type of work. Fine wife. Two
years was at Berkeley, with Babcock.
Shame that he could not get
a more likely man for our banana
project. Personality a little queer,
and requires some direction to
maintain continuity.

Sources of men

Oregon Agricultural College
Utah Agricultural College

A. B. Corby, Dean, Corvallis
W. S. Bissell, Prof. of Horticulture

T. H. Abell, Prof. of Horticulture, Logan
Wm. Peterson, Director Exp. Station

R. E. Doty
 c/o H. S. P. A. Exp. Station
 P.O. Box 411 Honolulu

Shaver thinks might be good man
 for our experimental work.
 Formerly field man for Calif. Vegetable
 Union Station in Hawaii on pine-
 apple work. Station in Cuba on
 pines.

X-ray treatment of plants

At U. S. Cotton Field Station, Shafter,
 following method of treatment, with
 slight variations, has been carried out
 on rose, nasturium, strawberries, oranges.
 started in Jan 1925. no results as yet.

Time Distance from target
 3-5 min. 10 ins. in all cases

Melamps
 10 (all cases)

Spark gap
 5 ins in all cases

Friday Barro Colorado July 20 1928

Reforestation

Ingala (*Alouatta palliata*) not successful. Report 1 plant 3 ft high, in fine condition. Root of the same large, about 1 1/2 in. only 1 ft high, not in full leaf, not set happy. Should get seed from McClure of *A. mustela* and try here.

Mahogany, cedar and Teak all doing well in nursery. *Swietenia macrophylla* not given here yet. On report of Mr. Nathan on results to date.

Desired Research Projects

Mr. Mitchell suggest following

3. Artificial Fertilizers. Should they be used and if so, where and how? This would involve long-term trials on various types of soils.

1. Soil Survey of entire property. Soil classification and such analyses (chemical) as required, for each representative soil type. Should this be done by Dr. Orin's group, or someone brought into our own organization with view to continuing soil work here? Suggest men like Meyer who would just make his soil survey, then bring together best specimens and experience in fieldwork in Cuba, then lay out experiments and carry them through.

2. Green Manures & cover crops. That (1) such plants as *Crotalaria stricta* or replant lands, planting about April, turning under about July; and (2) that plants be European or middle size for trail (alternately middle size) planting about April, immediately cut, and plowing under when they come into bloom.

4. Cane Variety Tests.

Should work of Preston & Dancy be continued? Probably need two stations, (1) high, dry, red, rocky volcanic Barro, and (2) low flat black soil lands Preston (or Barro for convenience of handling). Attempt to get early ripening variety, also one which will carry over from one year to next.

5. Barro

Plan definite survey to determine extent of spread, and damage done. Keep close with Barro for means of control.

6. Sampling of cochs and for sucrose content, also correlation with agricultural aspects. Already on boards.

7. Minor crops to maintain labor saving in seasons. Primarily should be crops which require no harvest and are, secondarily things for his own consumption.

Cane varieties likely to be of local adaptation. Therefore varieties which show promise at Barro or elsewhere will have to be tested fully here before they are commercially planted. We should get all promising varieties the moment they appear on the horizon, so as to be ready to plant commercially, with safety, ahead of our competitors, if possible; and not to lose money through getting them in late.

Saturday Green Cuts July 21 1928

Talked with R. M. Smith Spt of Agr.
and A. Bonagry Research Spt.
Visited Research Lab and Variety garden
at Malaga Town.

Mr. Bonagry talks understanding of rice
problems the management of the variety
at other research lab. Pathological and
physiological problems already known
in the area.

Also considers variety plots should be
established in the area representative
of general type.

At Malaga about 160 varieties now in
trial. No records being kept. Some
crops tried last year and from Tala.
No records.

Bonagry emphasizes need of accurate and
gratifying with region, as basis for intelligent
rice survey.

Monday Central Baragua July 23 1928

Send Bonagry Division and Prof.
Some Dini seeds of *Casuarina*
cunninghamiana from Flores and
other *Casuarina*.

Following cane varieties should be
obtained here.

POJ 2878

POJ 2883

Co 213

Co 281

Striped Tip

Yellow Tip

Red Tip

Rajada

Rajada Red Spout

Howard 1192

15079

15157

15165

15166

15175

15212

Barlaam alba Sport
 51 B (Jawa)
 1 yellow *Calceolaria*
 1 yellow *Banksia*
Cassia Cuilla (yellow Egyptian)
 " *legitima*
 " *albus* (Alaska)
Saccharum biflorum (= *glabrum*?)
Calceolaria
Rubra

These seeds sent to J. P. D. J. for POT
 28/8/28 G. O. J. 3883 (and "also")
 number of seeds to J. P. D. J.

List of Cane sent to J. P. D. J. last year 18

Alba de *Natal*
Cayana 10
Rosaceae
 CH 64/21 (seedling of *Alba*)
 POT 36
 " 213
 " 234
 " 979
 " 2714
 " 2725
 " 2727

EK 28

Mutua (not *Alba*; = SPI 33243)

Oshina

Tekela

Badilla

H 109

SC 12-4

Hw 9072

Hw 12029

B 74

D 117

D 1135

D 208

BH 10/12

~~CH 64-91~~

Bull. 258 - Agr Exp Station
Columbus Missouri
"Artificial Insemination
on the Farm"

See Harvard Annual Rpt 1927

2. Should cleaned flat
ground Project #4 carefully.

April should cleaned bananas
Why compare new planting with yield
of old note on clean flat.

Thursday Farm 6, Almacate Aug 9 1928
Banana Breeding Project

First thing to be done is to bring up
to date examination of hybrid material
which has become available since 2 letter
study. Arrange definitely with White
or Boone after. Now 100 hybrids available.

Make check counts of chromosomes on
newer varieties studied by White. Ask
Boone think open to question.

He thinks we have enough synthetic
crosses along lines recommended by White
to give us an idea as to possibility
of this line of attack. There were ma-
ture within next 18 months & should
be examined promptly.

He believes, from practical standpoint,
we should try crosses using Gro
Michel as old parent before going
further with synthetic work. This
can be done at Tela.

Is Dole available? get it to
cross with Gro Michel. 16 drawings

In Almirante a good place for breeding work? Perhaps perhaps. Consider could be ideal in Perma's opinion. Tala or Castilla should also be seen, I should think.

Program found in Whaler's museum
materialities & discuss Perma & myself

1. Deal with some Trinidad & Jamaica
to get off information in work done.
In fact, Graham & Perma, or myself &
Perma.

2. Transfer maps accord to Gwa
Michel & other 32 chromosome types.
Add 16 chromosome types (Dole).
Conduct extensive crossing at Tala
for 2 yrs, then review results
before proceeding further.

3. Examine all synthetic crosses now
growing Almirante.

Withhold further synthetic crossing until
progenies now growing have finished &
been examined. Further program to
depend on indications of these
results. Arrange for complete & prompt
domestic chromosome counts as material
becomes available.

4. Definit revision of variety collection
along white lines (extensive travel
& assembling of material) for 2 or
3 yrs. when action will depend on
needs developed in material & promise
shown by project.

5. Test possibilities of Almirante in
connection with Gwa Michel breeding.
Small plot at Navaro? Under
Perma's charge to be visited 2 or
3 times a yr & crosses made.
Plant Gwa Michel & purified seed-bearing
varieties (determined by chromosome
examination) in adjacent rows & let
them cross naturally.

Pernau thinks it will take one
scientific man with 4 trained native
helpers 24 months to make 500,000
cresses as called for in Whites
outline.

4 helpers at \$50 each	\$4800
Records Abstract at \$150	3600
	<u>\$8400</u>

Allowing \$1600 for additional costs, we
have a \$10,000 budget for the project at
Tela.

Friday
Cacao

Almirante

Aug 10 1928

23,100 hectares in bearing

Pruning Experiment Dec 21 Farm 2
planted 15 X 15 approx.

Another Dec 11 Farm 3. Mr. Lugo
of Costa Rica is to prune 2 hectares
by Tunnies method, and records to
be taken also from unpruned 2 ha.
alongside.

Mr. Martell, overseer of these
farms, thinks shade relation OK
at present, & casting out much more
light will let in so much light as
greatly to increase damage from thrips.

He has 1 hectare planted & in bearing
from seed of a selected Forastero type
tree. Results are highly encouraging
& point to probable value of selection.

Suggested cacao cultural experiments

Take on cacao farm for Research
on cultural problems.

Put on good census and 1 research man
to take records.

Make soil map of entire area. Post studies.

Put sound water table tubes as required,
to watch ground water.

Line out sections properly, if not done already.

Prepare to have yield recorded by sections,
accurately, with dates of picking.

Set up experimental sections on all re-
gions here, e.g.

1 section to be left with no shade, +
pruned to let it light.

1 pruned but shade retained

1 pruned, shade reduced, + trunks cleaned
of lichens + algae.

1 given special drainage, etc.

Close observations of entire farms
month by month, and accurate records
covering all features, would throw much
light on our problems. All cost data
to be recorded fully, but no paper
charges.

Keep close account of all costs, but
give free hand to overseer, to hire all
labor necessary to carry out program.

Observe rainfall, max. + min. temp,
relative humidity + sunshine hours.

This exp. should throw light on crop
periodicity (supposed to be tied up with
weather); relation of wet soils to
production; relation of wet soils to
weather to production + pod rot; etc.

Varieties

Plant 5 acres Reubens 67
for experimental commercial shipments.

Maintain collection in state quo.

Cacao

Abandon performance record
plot Ford 6. Short $\frac{1}{2}$ yrs data now
available.

Nothing promising in way of superior
types. Good talk on actual flac-
tuations in production, & seasonal
fluctuations. Cacao not representative
of large tracts.

The Adams & The Clowes in favor
of continuing

Miscellaneous plants

Oil palms suffering from bud rot
and brown (Cortado). Plants
have made splendid growth. About
80 now alive, up to 8 ft high.

Cover crop work abandoned already.

Rubber maintain in state quo.

Mahogany suffering badly from
burr. Still as at present. Camar
has found burs also in Costa
Rica, & thinks mahogany will not
succeed there either.

Abaca

Now 43 acres in field plantings
Magnificas, Bangulanan, Libutan,
Peteenan, Targayon, Magandinas
seedlings.

Propagate as fast as possible
until we get enough for satisfactory
comparative trial.

Send to Tela or Costa Rica

- 2 Bonags
- 3 Java mangas
- 1 Rambutan Dimaljan
- 1 Rambutan (Flat rock)
- 5 Pili nuts

Send to Mr. Permar

Musa manescopos
Translations of Man articles

Cacao Trees at G. J. Portin's office,
Farm 6, indicate possibility of successful
cacao cultivation in this region. They
generally have good soil. Drainage is
good; they have no shade and surface
of ground is in carpet grass. They
bear heavily and show minimum foot
rot.

Harland of Trinidad reports that
increase of 60% in yield above that of
ordinary seedlings can be obtained when
planting either budded or seedlings of
selected parentage.

Keep wide get at Digunnes.

House (Standard overseer's)

light

pinewood

keel

wash room

furniture

linen (bath & bath)

cracking table

kitchen

Suggestions made by Mr. Whynper.

1. Farms should be surveyed, and good areas consolidated. Acreage not considered accurate in some instances.
2. Let supplies all be of Calabacillo, where soil poor to medium. Foresters, from selected trees, on good soils.
3. Work up pedigree stock to supply material for new plantings. Pedigree 100 self-fertilized progeny each from 500 high yielding parents.
4. Dry cacao at lower temperatures, for longer period of time. Small cheese-cloth bags filled with finely ground cacao put in Gordon Snyders.
5. Flooded & otherwise unprofitable areas should be abandoned.
6. Give additional drainage where required; clear out old drains.

7. Rubber shade to cut down food rot.
8. Thought our farms not clean enough, but Henselton says our cleaning not profitable.
9. Form a cacao committee to coordinate all matters affecting cacao.

Programme of Cacao Research at Imperial College of Tropical Agriculture, submitted by Professor Anderson.

While some individual trees in Trinidad bear over 200 pods per yr (in rare cases 400) the average is about 10 pods. Differences in quality are also good, but not so easily measured.

College of Agriculture asks financial support for a long-term investigation of problems affecting the cacao growers of the entire British Empire.

Records of annual food yield of individual trees; plots with shade, no shade, and heavy shade, and progeny plots have been maintained at Rovers Estate since 1910. Planting distances range from 6×6 to 18×18 feet.

Aim of research is to increase both yield and quality.

Yield may be increased in at least 3 ways, namely:

1. By replacing poor bearing with individuals of more productive strains.
2. By improving cultural conditions until trees bear maximum crops their nature allows.
3. By reducing present heavy losses due to disease.

Quality can be improved by sorting out desirable types and purifying the strains until they "breed true" for seed.

Relationship of stock and seed must be studied; and value of budded trees determined as compared with seedlings.

Purvey investigations should also be made.

Statistical studies would determine (1) number of pods per tree (2) size of pod (3) shape of pod (4) number of seeds per pod (5) seed-weight, (6) thickness of pod shell, and (7) any other genetic factors influencing yield.

Selected individual trees would be self-fertilized and 200 seedlings raised. Worthy stock selection would be made to produce 4000 trees as material for:

- (a) Study of laws of inheritance in cases.
- (b) Selection of best trees for propagation.

One man's time would be put on this. A second man would devote his time to:

Problem of root sticks. Take pods from trees of various types, raise seedlings and compare their growth-rates, root-development, water requirements, and anatomy.

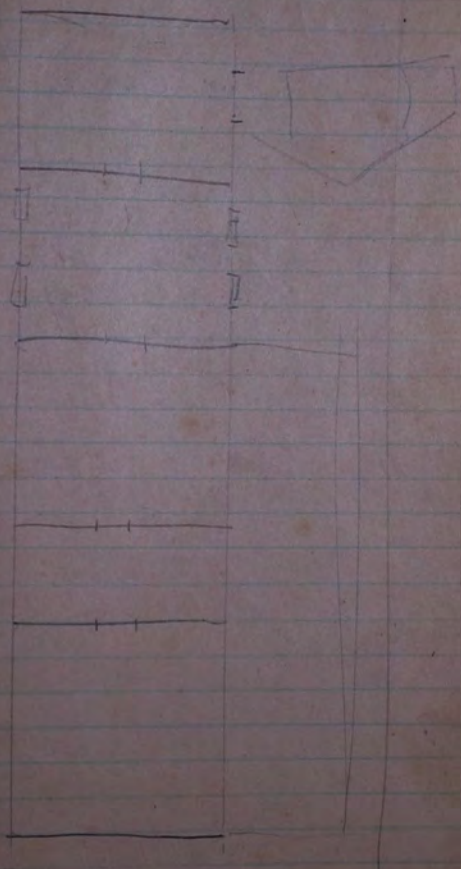
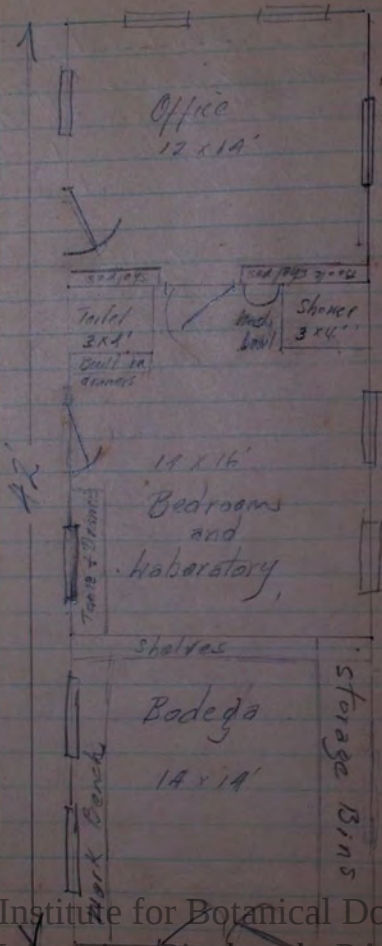
Would also study effect of seasonal fluctuations and other environmental conditions on shedding of young fruit; and observe if date of maximum bearing is entirely due to climatic conditions or at least partly varietal.

April 1928.

Tentative Sketch of Office Bldg
Siquirres

#3500

Excess suits
2 bedrooms



Send to Bernand's Iguanas

Cross Cup seed

Garcinia mangostana

Avocado & Mango. Caribbea

Lycopers, etc.

Look up the words in Washington
 Ark Dr Galloway in notebook
 Bamboo

Franklin Adams in copybook

Erasmus Kewenig, 10 High St.
 Boston

Books to order

C. J. J. van Hall
 Cocoa Macmillan & Co (1914)

Wm. H. Ukers
 All about Coffee
 Tea & Coffee trade Journal Co. N.Y. 1922

Plants wanted for Tela
Bouea oppositifolia
 Bamboos
 Tung oil

Edgellway

1 pair smoked glasses
 380 Automatic
 Poncho for Dr. Galland

Small doll for Nancy

Soap - 1 box fancy

Dress for Nancy size 1 yr

x " " Supply 16 yr or about 26 Fr.

2 vests with flack 1 n. down white 34 ins

✓ 1 - Bruce bag

2 Bandages size 32

Spoon + fork silver plate

U. S. Desiderata

Preserved ginger

Sony brand since

Electric fan

~~Spent~~ - Smoked glasses - goggles

~~Shutter release~~

380 automatic for Dean

38 s+n for Carmen

~~Rain poncho~~

Overcoat for Hattie - size 42 equal to brown

Perfume atomizer

3 pairs thick socks - stockings - underwear

6 1/2" blackwood ruler, one millimeter + inches (15 cent)

38 s+n for Butler

Kahler white canvas shoe 5 B 6766 on 3100
 with arch supports.

2 packets White at Drugstore

Bottled hair cream

Chato on Feature Writing - H. H. Harrington

"Viva Mexico"

Tennis balls

Work socks, gray

Game gotten stock

Art nails

OK Philippine Agricultural Review
 Editor, Adriano Hernandez, S. Youngberg
 Asstg Director of Agriculture,
 Manila, Philippine Islands.

Revue du Botanique Appliquée
 Editor, Aug. Chevalier,
 57, rue Cuvier, Paris, France.

OK Bulletin of the Imperial Institute
 The Director, Imperial Institute,
 South Kensington, London, S.W. 7.

OK Tropical Agriculture
 Editor, C. Y. Shephard, St. Augustine,
 Trinidad, B. W. I.

OK Tropenpflanzen
 Bottdamer Str. 1 & 3, Berlin, W 35, Germany.

OK Florida Grower
 1306 Grand Central Ave, Tampa, Fla.

X Revista de Agricultura Comercio, y Trabajo.
 Secretaría de Agricultura, Comercio y Trabajo,
 Editor: Habana, Cuba.

Elis. Callagras

OK Tropical Life
 Tropical Life Publishing Co.,
 89-91 Great Titchfield St.,
 London, W. 1, England.

OK Tropical Agriculturist
 The manager, Publication Depot,
 Peradeniya, Ceylon.

Dept of Commerce, Trade Promotion Bureau
 Railways of Central America
 + The West Indies

Earthenware flower pots
A H Hewitt & Co. Cambridge, Mass
Paper flower pots
Meharset Paper pots
R & J Farquhar Co. Boston

Thos R Towns, Holguin Cuba for
shaddock seeds.

Musa textilis from Johansen

Dahlia variabilis is found by
F. J. Chittenden R H S. Green
de B & Gilbert, Age Exp Station
Kingston R. I.

Harold K. Plank.
Box 5171, Station B,
New Orleans, La.
3022 Magazine Street (nearance)

Philip S. Smith
McGran - Hill Co.
110th Ave at 36th St
New York City

Chikao Mataka
Mataka Sugar Co.
Toranomon, Tokyo, Japan

W. E. Broadway
31 Cornhill St
Port of Spain, Trinidad

J. N. Clephart
Conservator of Forests
Box 181
Bellize, B.H.

63586. *Bouea oppositifolia*

J. L. McHenry
722 Sheridan St. N.W.

- ✓ Philippine Agr. Review.
- ✓ Hollywood Magazine
- ✓ Florida Grower
- ✓ Atlantic Monthly
- ✓ Literary Digest
- ✓ Revista de Agricultura, Habana
- ✓ L'Illustration
- ✓ Tropical Agriculture, Trinidad
- ✓ Secura
- ✓ Tropenpflanzer
- ✓ Tropical Life
- ✓ Revue de Botanique Appliquée
- ✓ Bul. Imperial Institute, London
- ✓ Tropical Agr. Botanical Documentation,

