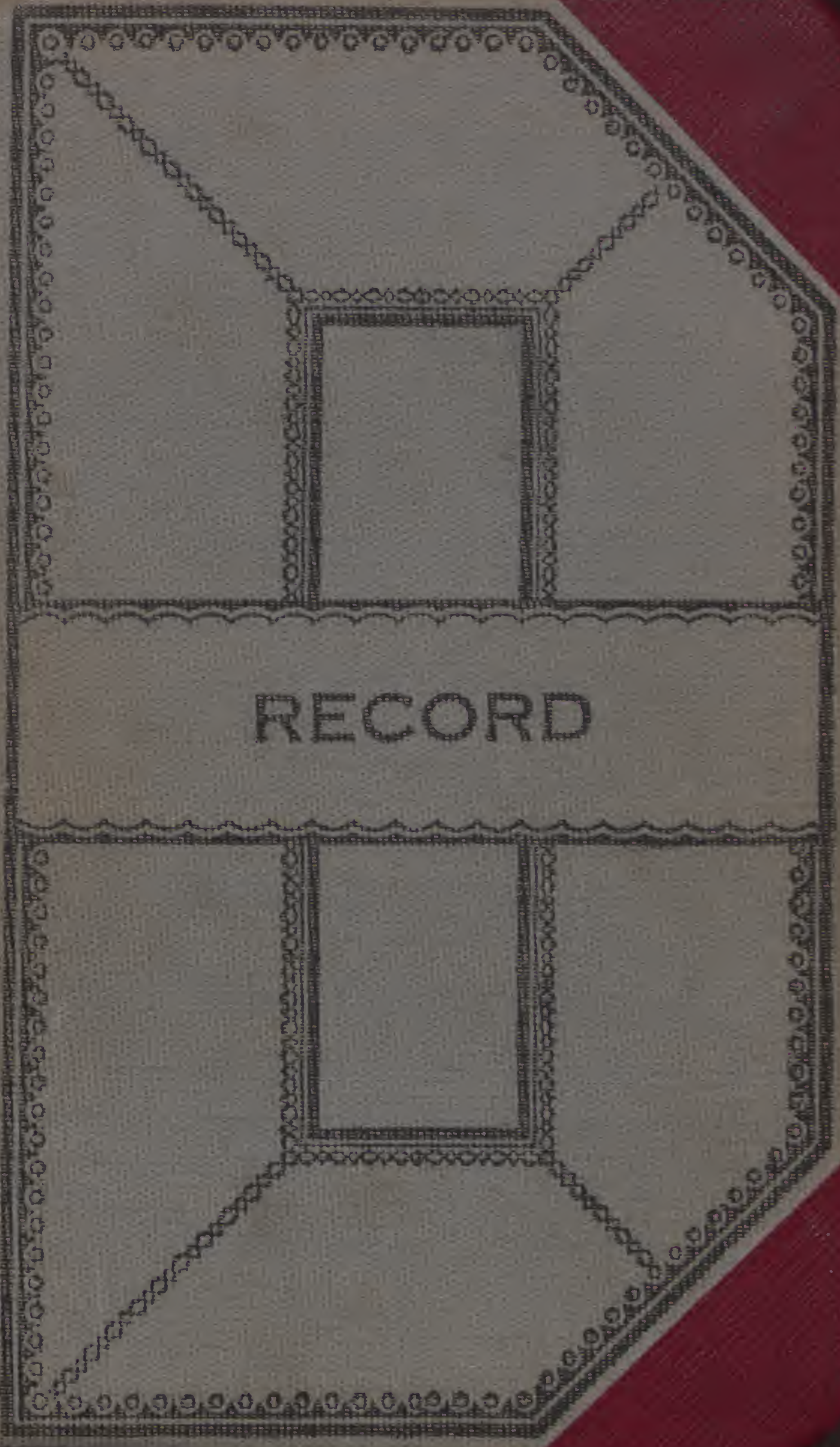


1931-32/36

1931



RECORD

Lindemann - L.

F. R. Fosberg

Collection No Book #11

Nos 21393 - 22136

Dec. 8, 1943 - Aug. 20, 1944

Colombia

If found please return to
F. R. Fosberg.

~~408 Edificio Samper Bruch
Av. Jiménez de Quesada #10-78
Bogotá Colombia~~

or R.F.D #1 Holmes Run Road
Falls Church Va.

and receive reward.

(continued) II .02

(COLOMBIA)

Males	
186-187	2204-2218
186-188	2204-2218
186-189	2204-2218
186-190	2204-2218
186-191	2204-2218
186-192	2204-2218
186-193	2204-2218
186-194	2204-2218
186-195	2204-2218
186-196	2204-2218
186-197	2204-2218
186-198	2204-2218
186-199	2204-2218
186-200	2204-2218
186-201	2204-2218
186-202	2204-2218
186-203	2204-2218
186-204	2204-2218
186-205	2204-2218
186-206	2204-2218
186-207	2204-2218
186-208	2204-2218
186-209	2204-2218
186-210	2204-2218
186-211	2204-2218
186-212	2204-2218
186-213	2204-2218
186-214	2204-2218
186-215	2204-2218
186-216	2204-2218
186-217	2204-2218
186-218	2204-2218
186-219	2204-2218
186-220	2204-2218
186-221	2204-2218
186-222	2204-2218
186-223	2204-2218
186-224	2204-2218
186-225	2204-2218
186-226	2204-2218
186-227	2204-2218
186-228	2204-2218
186-229	2204-2218
186-230	2204-2218
186-231	2204-2218
186-232	2204-2218
186-233	2204-2218
186-234	2204-2218
186-235	2204-2218
186-236	2204-2218
186-237	2204-2218
186-238	2204-2218
186-239	2204-2218
186-240	2204-2218
186-241	2204-2218
186-242	2204-2218
186-243	2204-2218
186-244	2204-2218
186-245	2204-2218
186-246	2204-2218
186-247	2204-2218
186-248	2204-2218
186-249	2204-2218
186-250	2204-2218
186-251	2204-2218
186-252	2204-2218
186-253	2204-2218
186-254	2204-2218
186-255	2204-2218
186-256	2204-2218
186-257	2204-2218
186-258	2204-2218
186-259	2204-2218
186-260	2204-2218
186-261	2204-2218
186-262	2204-2218
186-263	2204-2218
186-264	2204-2218
186-265	2204-2218
186-266	2204-2218
186-267	2204-2218
186-268	2204-2218
186-269	2204-2218
186-270	2204-2218
186-271	2204-2218
186-272	2204-2218
186-273	2204-2218
186-274	2204-2218
186-275	2204-2218
186-276	2204-2218
186-277	2204-2218
186-278	2204-2218
186-279	2204-2218
186-280	2204-2218
186-281	2204-2218
186-282	2204-2218
186-283	2204-2218
186-284	2204-2218
186-285	2204-2218
186-286	2204-2218
186-287	2204-2218
186-288	2204-2218
186-289	2204-2218
186-290	2204-2218
186-291	2204-2218
186-292	2204-2218
186-293	2204-2218
186-294	2204-2218
186-295	2204-2218
186-296	2204-2218
186-297	2204-2218
186-298	2204-2218
186-299	2204-2218
186-300	2204-2218

Collection and Field Note Book

No. 11

(Dec. 8, 1943 - August 20, 1944)

(21393 --- 22136)

COLOMBIA

Cundinamarca

Pages

Santuario	21393-21395	2-3
San Miguel, below	21447	20-21
Paramo de Guasca	21448-21466	20-25
Rio Blanco	21469-21493	24-31
near La Sierra	21494	30-31
	21682	82-83
Paramo de Guasca	21683-21703	82-87
n. of Tocancipa	21704	86-87
Quebrada Malagana	21857-21864	126-129
Rio Muna headwaters	21865-21869	128-129
El Salto	21869	128-129
near La Sierra	21869-21870	130-131
Hilo	21871-21878	130-133
Paipa	21879-21893	132-137
upper Rio Surba	21894-21903	136-139
Paramo de Birolin	21904-21907	138-139
near head Rio Negro ..	21908	138-139
Coromoro	21909-21918	140-143
San Juan	21919	142-143
Magdalena Valley	21920-21922	144-145
Magdalena River	21923	144-145
San Gil, s.w. of		144-145
Rio Guavio Valley	21960-21961	152-153
Finca Santa Elena	21962-21964	152-153
Gachalia	21961	152-153
San Ysidro		154-155
Gachala	21965-21972	154-157
Suba, s. of	21973-21987	156-159
Choachi	21988	160-161
	22009	164-165
Ubaque, s. of	22010-22019	164-165
El Chico	22020-22034	166-169
Granadas	22035	168-169
Rio Seco	22036-22053	170-173

Cundimarca (continued)

Bucaramanga	22047-22053	172-173
Quebrada San Francisco ..	22054-22064	142-175
Cerro Paramo de Guadalupe	22065	174-175
btwn Guayabital-Servita ..	22066-22067	176-177
s.e. Servita	22068-22071	176-179

Santander

Puente Nacional, s. of ..	21396-21397	2-3
La Corcoba, above	21760-21764	100-101
	21764-21765	100-101
La Gomez	21766-21789	102-107
Rio Chicamocha canyon ..	21790-21792	108-109
El Retiro	21793-21799	108-111
near Helida	21800	110-111
Jordan, s. of	21801-21802	110-111
Villa Alicia, Pena de Velez ..	21803	110-111
Velez, n.w. of	21804	112-113
Jordan	21805-21820	112-117
San Juan	21821-21842	116-122
Rio Quayabito	21843-21844	122-123
Barbasa, n.w. of	21845-21846	124-125

Norte de Santander

Balcones	21404-21408	8-9
La Camarona	21413	10-11
	21414-21423	10-13
Highway, Cartagena-Barranquilla		14-15
Circuta, Rio Pamplonita ..	21723-21724	90-91
Quebrada Riocito	21725-21735	92-95
Gramalote, n.w. of	21735	94-95
La Cueva	21736-21739	94-97
Quebrada Babilonia	21740-21751	96-99
Rio Pamplonita Valley ..	21752-21757	98-99
Quebrada Zapa hwaters ..	21758-21759	100-101

Atlantica

Barranquilla	21424-21440	16-19
	22129-22136	194-195

Boyaca

Frutilla	21705-21706	86-87
Paipa	21707	86-87
Paramo de Consuelo	21708-21716	88-89
Rio Susacon Banks	21717-21722	90-91
Moniquira, s.e. of	21850-21856	124-127

(see next page)

Mila made - L.

No. 11 (continued)
(COLOMBIA)

Magdalena

Gamarra	21398-21403	.....	6-7
Torre de los Indios	21409-21412	.....	6-7
Fundacion.....	22089-22093	.....	186-187
Santa Marta	22094-22128	.....	186-195

Meta

Villavicencio, n.w.	21441-21443	.....	18-19
	21444-21446	.....	20-21
Cana ravine.....	22072-22075	.....	178-181
Servita, s.e. of	21953-21959	.....	150-151
Bogota-Villavicencio Rd.	22076-22078	.....	180-181
" Sabana .....		.....	184-185
Villavicencio	21924-21929	.....	146-147
Buenavista	22079-22087	.....	180-183
Finca Rosa Blanca..	21930-21952	.....	146-151

Tolima

btwn Las Delgaditas-Brasili			
	21677-21680	21495-21502	..... 30-33, 80-81
Aquadita, east of..	21681	.....	82-83
Choco..Quebrada Minas	21503	.....	32-33
Rio Girardot	21504-21509	.....	34-35
	21510-21525	.....	34-37
Rio Dauro-Quebrada Ciervo.	21526-21544	.....	36-43
Alto de Carmen.....	21545-21547	.....	44-45
Quebrada El Sucio..	21548-21551	.....	44-45
Rio Carmen	21552-21568	.....	46-49
Quebrada La Fragua..	21569-21571a	.....	48-51

Antioquia

Cruces	21572-21584	.....	50-55
Rio Pabon	21585	.....	54-55
Don Matias, s. of..	21586-21588	.....	54-57
Rio Nechi Valley....	21589-21597	.....	56-59
Quebrada Santa Rita Valley			
	21598-21602	.....	58-61
Angostura	21603-21633	.....	60-66
" s.w. of, Quebradona			
	21634-21645	.....	68-69

Antioquia (continued)

Hoyo Rico, s.e. of	21646-21647	.....	70-71
Leticia	21648	.....	70-71
Quebrada Tobon Valley...	21649-21654	.....	70-73
Yarumal.....	21655-21662	.....	72-75
btwn Alto San Miguel-			
Alto Alegrias	21663	.....	74-75
headwaters Rio Medellin..	21664-21669	.....	76-77

Caldas

s.w. of Rio Sucio	21670	.....	78-79
n. of San Clemente ...	21671-21676	.....	78-81

El Valle

Cali	21989-22002	162-163
Cali, n. of (Rio Yumbo)	22003-22007	162-163
Cali, n.n.w. of	22008	162-163

s y recibe por pura.

December 7, 1944

To: Fred W. Pearman, Chief, Colombian Cinchona Division
From: Tom Bellis, Chemist
Subject: Antioquia Remijia as a Possible Source of Quinidine

Reference is made to my memorandum of November 22, subject "Quinidine Sources and Experiments," in which I promised to review our files of analyses with the purpose in mind of locating possible sources for the alkaloid quinidine.

I find that our Dr. Core submitted 10 samples of Remijia bark from a region which we designate as number 46, at elevations below 650 meters, in the Departamento de Antioquia. These samples were submitted under Dr. Core's Nos. 666, 667, 669, 670, 839, 857, 859, 860, 861, and 864. One of these samples gave no more than traces of any of the alkaloids quinine, cinchonidine, cinchonine, and quinidine. The other nine samples gave interestingly high quinidine assays, the average for the nine amounting to 0.8% quinidine. I have drawn from storage these nine samples and have reanalyzed them. The reanalyses agree within the expected errors of analysis with the original work. The greatest deviation between reanalyses and original analyses on the percent of quinidine is 0.1%. The average of the nine reanalyses amounts to 0.8%.

This Antioquia Remijia bark would not appear to be exploitable either as a source of quinine or as a source of totaquina. Most of the samples did not yield sufficient tartrate precipitate of quinine plus cinchonidine to enable me to determine the proportion of quinine. However, it is my judgment that the nine samples analyzed will not average more than 1% of the alkaloid quinine. The average for the sum of the alkaloids quinine, cinchonidine, cinchonine, and quinidine for the nine samples amounts to less than 1.7%.

Upon original analysis I was somewhat skeptical that the material appearing as quinidine in the analysis was actually that alkaloid. Hence upon reanalysis I have converted the quinidine hydriodide precipitate into quinidine alkaloid and thereafter into quinidine sulfate. I am convinced that the alkaloid reported as quinidine is actually quinidine. I attach hereto a small exhibit of the quinidine sulfate prepared from the residue obtained upon reanalysis of these samples.

The first paragraph of Mr. McDermott's letter on the subject "Quinidine Sources and Experiments" is:

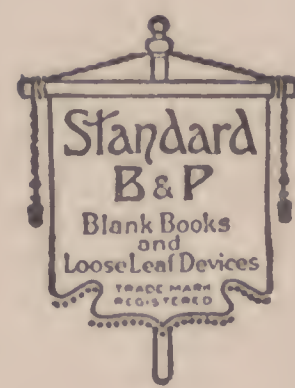
"The demand for quinidine is so great that all possible sources must be developed in an effort to maintain minimum stocks of this drug."

2-Fred W. Pearman-12/7/44

We think that this gives voice to a sufficiently urgent need for quinidine to warrant our making the following suggestions with respect to further investigation of Antioquia Remijia as a source of quinidine: We suggest that it would be advisable for Dr. Core's reports of these explorations to be reviewed and for one of our men to return to the region from which Dr. Core's Remijia samples were collected and harvest from a large number of trees a composite lot of bark which will weigh when dried as much as 50 kilograms. This very thin bark offers no problem in drying. We wish to have sent to our laboratory in Bogotá a 10 kilogram representative aliquot from the 50 kilogram composite. The remaining 50 kilograms should be properly packed and shipped by air express to our administrative offices in Washington. In connection with the shipment of this bark, we think that a memorandum should be sent concerning it and asking that from the lot of bark large samples be furnished to each American extractor which is regarded as capable of producing USP quinidine sulfate. We think that they who receive samples from this lot of Antioquia Remijia should be requested to advise whether or not they can use this bark for the manufacture of quinidine sulfate USP. If one or more of the American extractors does regard this bark as a promising source for quinidine, we think that the administrators in Washington should issue an authorization for the purchase of this bark, suggesting prices based upon the amount of quinidine contained in the bark. We think that the authorization should designate the bark as Remijia bark.

FB GHB

begin 71393



Standard Miniature Blank Book

No. 662	$7\frac{7}{8} \times 5\frac{3}{8}$	200 Pages no Units
No. 663	$7\frac{7}{8} \times 5\frac{3}{8}$	300 Pages no Units
No. 664	$9 \times 5\frac{7}{8}$	300 Pages Units
No. 665	$9\frac{1}{4} \times 6\frac{1}{2}$	120 Pages Units
No. 667	$9\frac{1}{4} \times 6\frac{1}{2}$	200 Pages Units
No. 668	$9\frac{1}{4} \times 6\frac{1}{2}$	300 Pages Units

Made in the Following Rulings
Journals, Day or Cash Books, Double \$ and Cts.
S. E. Ledgers, Double \$ and Cts.
Double Entry Ledgers
Records with Margin Line

Made in U. S. A.

TO REORDER THIS BOOK, SPECIFY
NUMBER, RULING AND THICKNESS
AS INDICATED ON BACKBONE OF BOOK

A BOORUM & PEASE PRODUCT

Si encontrada remitase a
Sr. F. R. Fosberg
408 Edif. Sampedro Bensch
17ve. Financ. de Quesada 10-78
Bogotá - Colombia
y recibe propina.

✓
Lithographs - L.

F. R. Fosberg.

Collection No Book #11

No. 21393 - 22136

Dec. 8, 1943 - Aug. 20, 1944

Colombia

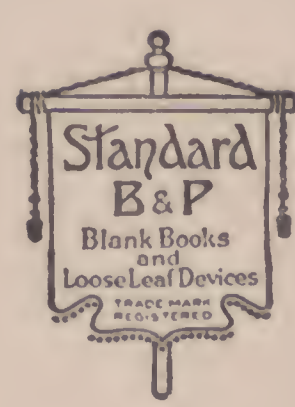
If found please return to
F. R. Fosberg.

~~408 Edificio Samper Bensch
Av. Jimenez de Quesada #10-78
Bogota Colombia~~

or R.F.D #1 Holmes Run Road
Falls Church Va.

and receive reward.

begin 71393



Standard Miniature Blank Book

No. 662	7 $\frac{1}{8}$ x 5 $\frac{3}{8}$	200 Pages no Units
No. 663	7 $\frac{1}{8}$ x 5 $\frac{3}{8}$	300 Pages no Units
No. 664	9 x 5 $\frac{7}{8}$	300 Pages Units
No. 665	9 $\frac{1}{4}$ x 6 $\frac{1}{2}$	120 Pages Units
No. 667	9 $\frac{1}{4}$ x 6 $\frac{1}{2}$	200 Pages Units
No. 668	9 $\frac{1}{4}$ x 6 $\frac{1}{2}$	300 Pages Units

Made in the Following Rulings
 Journals, Day or Cash Books, Double \$ and Cts.
 S. E. Ledgers, Double \$ and Cts.
 Double Entry Ledgers
 Records with Margin Line

Made in U. S. A.

TO REORDER THIS BOOK, SPECIFY
NUMBER, RULING AND THICKNESS
AS INDICATED ON BACKBONE OF BOOK
A BOORUM & PEASE PRODUCT

Si encontrado remitase a
Sr. F. R. Fosberg
408 Edif Samper Bensch
Ave. Jimenez de Quesada 10-78
Bogota - Colombia
y recibe propina.

Ft	M	Ft	M
0	0	3000	925
10	3	3100	955
20	6	3200	985
50	15	3300	1015
100	30	3400	1045
200	60	3500	1075
300	90	3600	1110
400	120	3700	1140
500	155	3800	1170
600	185	3900	1200
700	215	4000	1230
800	250	4100	1260
900	280	4200	1290
1000	310	4300	1325
1100	340	4400	1355
1200	370	4500	1385
1300	400	4600	1415
1400	430	4700	1445
1500	460	4800	1475
1600	490	4900	1505
1700	525	5000	1540
1800	555	5100	1570
1900	585	5200	1600
2000	615	5300	1630
2100	645	5400	1660
2200	675	5500	1690
2300	710	5600	1725
2400	740	5700	1755
2500	770	5800	1785
2600	800	5900	1815
2700	830	6000	1845
2800	860	6100	1875
2900	890	6200	1905

1

Ft	M	Ft	M
6300	1940	9600	2990
6400	1970	9700	3030
6500	2000	9800	3060
6600	2030	9900	3090
6700	2060	10000	3135
6800	2090	10100	3165
6900	2125	10200	3200
7000	2160	10300	3230
7100	2200	10400	3260
7200	2230	10500	3290
7300	2260	10600	3320
7400	2290	10700	3350
7500	2325	10800	3380
7600	2355	10900	3415
7700	2385	11000	3445
7800	2415	11100	3475
7900	2445	11200	3505
8000	2475	11300	3535
8100	2515	11400	3565
8200	2550	11500	3600
8300	2580	11600	3630
8400	2610	11700	3660
8500	2645	11800	3690
8600	2675	11900	3720
8700	2715	12000	3750
8800	2735		
8900	2765		
9000	2805		
9100	2835		
9200	2870		
9300	2900		
9400	2930		
9500	2960		

with F. J. Hermann
Dec. 8 - Santuario, west shore of Laguna de Fúquene, ~~5 km~~ 2 km. n. of Ubaté, Cundinamarca lake shore, hard clay.

L 21393 Polygonum segetum HBK 2650 m. det. MCF.

L 294 Scirpus forming patches on shore and islets just off shore, solid stand

L 195 Lemnabium floating

Dec. 8 - 5 km. s. of Puente Nacional, east of Rio Suarez, Santander in second-growth 2050-2150 m. brush along roadside.

L 7 96 Cinchona pubescens Vahl ~~near roadside~~ steep slope

L 8 97 Cinchona pubescens Vahl ~~near roadside~~ steep slope

more or less erect, fls. bright pink. culms up to 3 m. tall, rhizomes deep in mud, culms ~~triangular~~ 3-sided with rounded angles. leaves with very thick spongy aerenchymous tissue beneath.

2050 m. tree 4 m. tall, 10 cm. thick, lvs. very slightly glossy above, red-veined beneath, old leaves red. (bark sample X bark dead in spots) tree 5 m. tall, 10 cm. thick, diseased, trunk partly dead, fls. red without, pink within.

Dec. 9 - La Gomez, Magdalena Valley, Santander (Obs. from train)
 While this ^{flat} country is mainly wooded, in the vicinity of the railroad are large open flats of white sand, like the N.J. pine barrens. Whether these ~~flats~~ clearings are

Dec. 11 - Magdalena River opposite Simiti, (Obs. from steamer)

Here the real forest is usually some distance from the actual river banks, the intervening space being sand-flats covered with *Cuphea* sp., *Cassia* sp. (aff. *alata* but without winged pods), *Gynerium*, *Salix humboldtii* (diffuse form), clumps of a large sedge (*Scleria*?), and masses of a large grass. The latter is the first important successional stage. Forest apparently seldom becomes established on these flats because they are cut away and redeposited so frequently. The first forest stage is *Cecropia*, in almost pure stands. Occasional *Ceiba* trees persist long enough to become quite large. A number of other trees, probably

man-made or not is not at all apparent from the train. It is interesting that when *Remijia purdieana* grows here also should be in sterile acid soil.

legumes, come in after a time. This is the first place I have seen *Salix humboldtii* where it is undoubtedly natural.

A heron, called "gansa" is very common, similar to our great blue h. Kingfishers + terns also common.

Rather few people here. Occasional villages and isolated houses. *Cocos nucifera* grows in the villages. A small palm is common on the flats.

✓ Dec. 11 - Gamarra, east bank of Rio Magdalena, Dept. de Magdalena muddy weedy flat ⁶⁰ m. back from river.

L 21398 Mimosa

L 299 Malp.

L 21400 Ipomoea

L 201 Ipomoea

L 302 Jussiaea ~~prostrate~~, spreading over mud in sun, occasional branches climbing in bushes

L 603 Cassia dominant plant in flat

✓ Dec. 12 - Torre de los Indios, head of quebrada Santa Inez, on cable way e. of Gamarra, Dept. de Magdalena talus below road 1200 m. in eroded land, appearing rather dry, at least at this season.

L 209 Salvia

L 210 Corp.

L 211 Borreria

L B 12 Lobelia siphocampylus

spreading, vine-like shrub. fls. whitish, turning brown.

leaves very sensitive

twining vine climbing over bushes, petals yellow.

twining vine, ^{lactiferous,} climbing over bushes, corolla yellow.

twining vine climbing over bushes, juice watery, fls. white.

prostrate, clusters of roots enlarged, white, spongy, petals white, obovate, about 1 cm. long, quickly caducous in afternoon, shrub up to 3 m. tall or more, flowers greenish yellow, pods pendent, cylindrical.

fls. blue-lavender

fls. lavender

fls. white

fls. bright red, mouth almost closed

✓ Dec. 13 - Balcones, ridge at head of quebrada de Miraflores, 7 km. n.n.w. of Convención, Norte de Santander 1400 m. moist second growth forest on steep slope.

L 21404 *Cinchona pubescens* Vahl

L 14 05 *Ladenbergia hookeriana* undergrowth, occasional

L 1 06 *Cephaelis* undergrowth, occasional

L 8 07 *Cosmibuena* abundant in a colony of several acres.

L 3 08 *Coccyzpselum* common along trail

(for next no. see p. 6)

Two quinas have been harvested here - C. pub. + # 21405

Anal Bellis
q+c = 1.0
cin = 0.7
quin = n.m. tr
T.C.A = 1.7

groun sprouts from an old stump, largest sprout 4 cm. diam., 4 m. tall, leaves with red veins, turning red when old. (bark sample, compare with # 21405) "quina roja"

Anal Bellis
q+c = n.m. tr
cin = 0.9
quin = n.m. tr
T.C.A = 0.9

small tree 6 cm. diam. 5 m. tall, young leaves dark purple, fls. white, corolla lobes thick, fleshy. (bark sample, compare with # 21405) "quina morada"

shrub 3 m. tall, bracts scarlet, fl. yellow.

tree 8 m. tall, 2 dm. thick at base, leaves glossy, coriaceous, turning red when old, fls. white, turning cream-yellow when old, very fragrant with a heavy, cloying sweet odor.

prostrate, fls. purple, fruits soft, fleshy, bright blue, dropping readily.

✓ Dec. 14 - La Camarona, 8 km. w. of
 Ocana, on Magdalena - Norte de
 Santander boundary 1350 m.
 moist wooded ridge
 21413 *Ladenbergia hookeriana*

✓ Dec. 14 same loc. but in
 Norte de Santander 1700 - 1800 m.
 moist forest

L 2 14 *Borreria*
 edge of thicket in grass along trail

L 4 15 *Borreria*
 edge of thicket in grass along trail

L 8 16 *Ladenbergia*
 edge of woods

L 9 17 *Stachytarpheta*
 common along trails in openings

L 7 18 *Rondeletia*
 common in woods on ridge

L 2 19 *Selaginella*
 common in woods on ground

L 10 20 *Cinchona pubescens* Vahl
 common

L 1 21 *Rub. cinchonoides*

Anal Bellis
 q+c - n.m. tr
 cin - 0.6
 quin - n.m. tr
 T.C.A - 0.6

Anal Bellis
 q+c - n.m. tr
 cin - n.m. tr
 quin - n.m. tr
 T.C.A - n.m. tr
 Branches
 q+c - n.m. tr
 cin - n.m. tr
 quin - n.m. tr
 T.C.A - n.m. tr

sparsely branched
 small tree 7 cm. thick, 5 m. tall,
 young leaves purplish-green,
 flowers white, fragrant,
 corolla lobes ~~thick~~ thick, fleshy
 (bark sample) "quina morada"

fls. white

tree 10 m. tall. fls. white.

erect herb ~~1.5 m. tall~~
 fls. rose-red.

small tree 5 m. tall,
 fls. rose pink within,
 coral red without

small tree 20 cm. thick,
 10 m. tall, leaves with
 reddish veins, a few turning
 red when old, buds only.
 (bark samples from trunk
 + branches less than 5 cm. thick).
 sterile tree, fallen but
 still growing, stipules pale green.

- 714 22 *Ladenbergia calyptra*
dense forest, tangled with lianas,
clay soil.
- 2 23 *Cephaelis axillaris*

Dec. 15 - Region around Ocaña,
Norte de Santander 1000 m. ±
This area presents one of
the most serious cases of
erosion I have seen in Colombia.
The surface soil seems
to be completely washed
away, leaving in places
bare rock other places
a reddish subsoil. Where
the subsoil remains a
thin grass cover exists. In
other places there is deep
gullying. The only tree
vegetation is patches
of scattered *Clusia* sp.
with a few other trees.
Long years of misuse are
indicated. The aspect
is dreary and much
more desert-like than
the climate would
suggest.

Anal. Bellis
q. + l. mm. tr.
Ci (?) 0.7
qui m. m. tr.
TAX 0.7 (?)
see
C. pub.

tree 20 m. tall, 30 cm. thick,
fruit immature.
(bark sample)
suffrutescent herb, m. tall,
fls. white, fruit blue, fleshy.

Dec. 15 - Region between
the divide ~~and~~ bet. the
Magdalena drainage and
that of Ocaña, and
the Rio Magdalena, along
the cable-way. 1500 - 60 m.

The forest on the steep
upper slopes is a dense
moist type where it hasn't
been cleared. Lower down
it very soon becomes
dry, with many leguminous
trees. On the flat part,
it is quite dry, in
places open and grassy.
Legumes, Bombacaceae,
Cochlospermum, and other
dry-land trees predominate.
The gullies and low
spots have much more
dense vegetation, much
over-grown with lianas.

Near Yamana are a
couple of fair-sized lakes
with a well developed
shore vegetation.

Jan. 31 - Highway between
Cartagena and Bananquilla,
Bolívar - Atlántico

(Observations made from
automobile window)

Practically all of this
area would be classed
as "thorn forest" and,
at this season, is so dry
that many of the trees
are bare of leaves.

The eastern half is
a low bushy vegetation
with scattered larger
trees, largely *Hura crepitans*,
with some *Bombacaceae*
and larger legumes.
Much of the smaller
vegetation is of leguminous
shrubs and small trees,
also *Cordia* sp.

The western half
is more hilly, of tilted
sedimentary beds,
more moist, and with
a more luxuriant vege-
tation. The lower places
are almost marshy,
while the slopes are wooded.
Bombacaceae and palms
of a number of sorts
are the most prominent
components of the vegetation.
This part is also much

more cultivated than
the other, much of
the cultivation being
of plantains and
cotton (all apparently
Gossypium arboreum).
Quite a few cattle
were seen in both
sections. They were
a much mixed
stock, with a
considerable number
showing zebu
characters. They
appeared well-fed
and, surprisingly,
there were no evidences
of whatever, of
"muchis" or bot-flies.
The local people did
not recognize the term
"muchis". There was
no obvious evidence
of over-grazing, but
the soil looked gray and
sterile.

In the west were
some low, flat
marshy-grassy
areas, as well as
a large lake. The latter
had little marsh or
aquatic vegetation
around it.

- Feb. 1 - Barranquilla, (outskirts of Barrio del Prado), Atlantico
Dry roadsides and bush patches (0 m.)
- L 2 1424 *Tournefortia*
open vacant lot
- L 3 25 *Heliotropium*
common in open vacant lot
- L 2 26 *Boerhavia*
roadside, common
- L 3 27 *Legum. glaberrima?*
bush patch
- L 2 28 *Boerhavia*
common along roadside
- L 3 29 *Tribulus cistroides*
common along roadside
- L 3 30 *Euphorbia*
common along roadside
- L VI 31 *Euphorbia*
roadside
- L 3 32 *Evolvulus*
open vacant lot
- L 2 33 *Amaranth.*
abundant in edges of thickets
- L 3 34 *Legum.*
bush patches
- L 4 35 *Trixis*
common in bush patches

- spreading-ascending
suffrutescent herb, fls. white.
- ascending herb, much
branched at base, branches
up to 0.7 dm. long, fls. white.
- ascending herb, leaves
white beneath.
- shrub 2.5 m. tall, leafless
at this season. flowers
white, banner with
yellow-green center,
outlined with purple pencilling.
- ascending herb from
thick root, lvs. white beneath.
- very prostrate, extensively
spreading, flowers bright yellow.
- arching, gland white,
plant lactiferous.
- arching, stems and
inflorescences pinkish.
- prostrate
- tangled herb 0.5 m. tall
and 1 m. across.
- shrub 2 m. tall, leafless
at this season, banner
white with greenish-yellow
center, wings lavender.
- straggling shrub 1-2 m. tall
heads yellow, rays fading
to white.

- L. 21436 5 *Yupponia* *sp. nov. v. latifolia?*
bush patches, occasional
- L. 37 *Boerhavia*
occasional in bush patches
- L. 2 38 *acanth*
edges of thickets, common
- L. 2 39 *ayenia*
occasional in bush patches
- L. 3 40 *Boerhavia*
common along roadside

Feb. 7 - small tributary of Rio Negro s. of Serwitá, 7 km. n. w. of Villavicencio, Meta moist forest on steep s. slope 1000 m.

- L. 2 41 ~~*Calypophyllum*~~ *Scheyocalyx*
- L. 9 42 *Remizia pedunculata* (Kerst.) *Flueck.*
"mancha" or patch with a considerable number of trees.
- L. 7 43 *Remizia pedunculata* *Flueck.*
(same as #21442)

Anal Bellis
q+c 1.7
air 0.3
quin 5.5
T.C.A 2.0

- semi-scandent shrub forming tangled patches, leaves stiffish, flowers yellow-green.
- tangled weak shrub forming a mound, 1 m. tall, ~~so~~ corolla yellow-green, leafless, stems green, corolla red.
- shrub 1 m. tall, tips of branches dying back as it ~~is collected~~ ~~is~~ is a dry season.
- erect ~~or~~ or ascending, apparently annual, leaves white beneath.

- slender tree 8 m. tall, 1 dm. thick, flowers white, calyx ~~white~~ greenish white.
- slender tree 8 m. tall, part of fruits open, mostly not.
- slender tree 8 m. tall, fruit not quite mature (bark sample)

Feb. 7 - just ^{n.} of Servitá,
10 km. n.w. of Viblaricencio,
valley of Rio Negro, Meta.
patch of moist forest
on bench on side of canyon.

L. 21444 Eugenia
edge of clearing
L. 45 Acauth.
common in under-growth

L. 46 Cephaelis
common in under-growth

Feb. 13 - just below San Miguel,
toward Fusagasuga on road
from Bogotá, Cundinamarca
L. 47 Begonia
common on vertical banks
in ~~the~~ wet brush

Forberg & E.S. Valencia
Feb. 13 - Paramo ^{de Guasca,} 8 km. ^{n.e.} of
Guasca, Cundinamarca
open bushy slopes with
seeps of water.

L. 48 Hedysotis mutica Wedd.
small rocky opening

L. 49 Jamesonia
ledges

L. 50 Gentiana
vertical banks

1000 m.

small tree, fls. white,
ripe fruit black
suffrutescent herb 1 m.
tall, fls. between crimson
and scarlet.

shrub 2 m. tall, fls. white,
bracts whitish, turning
purple, ripe fruit purple-black.

plant fleshy, elongate,
fls. brilliant scarlet,
pendent.

forming a mat. flowers
scarce at this season, lavender.
fronds strictly erect.

1000 ft.

forming abundant
rosettes on slender
decumbent stems,
fls. purplish (really
whitish with dark purple
markings).

- L. 2 1451 *Bomarea*
vertical bank
- L. 2 52 *Luzula*
vertical bank
- L. 2 53 *Lycopodium*
vertical bank
- L. 1 54 *Juncus*
wet place
- L. 2 55 *Carex*
small openings, common
- L. 2 56 *Gaultheria*
in dwarf bush
- L. 2 57 *Chusquea weberbaueri* Pedersen
common in various places
- L. 3 58 *Hedyotis* ~~sp.~~
common on brushy slopes
- L. 1 59 *Vicia*
- L. 2 60 *Senecio*
common in open places
and along road.
- L. 1 61 *Galium hypocarpium*
in dwarf bush
- L. 2 62 *Paepalanthus*
rare on grassy wet slopes

- plant from deeply buried
tuberiferous rhizome, tubers
white, translucent,
flowers orange-red with
anthers and tips of
perianth green.
leafy stems decumbent
- culms + bracts cylindrical.
in tufts
- fls. pink, fruits black, fleshy.
- clumps, culms very
variable in size and
height, infl. black.
erect, up to .7 m. tall,
leaves white beneath,
fls. purple outside,
white within.
fls. dark purple.
branching at base,
erect, heads nodding,
stem and involucre
maroon, rays brilliant
purple, disk maroonish.
vine-like, tangled in
bush, fruits orange, fleshy.
forming small dense
cushions.

L. 2 1463 *Hedyotis mutica*
common on ledges, banks and
in openings.

L. 3 64 *Juncus*
common in muddy places

L. 5 65 *Gunnera*
common in wet places

L. 2 66 *Nertera granadensis* *Mutis*
common creeping over
ledges.

✓ Feb. 13 - Rio Juiquia, 15 km.
e. s. e. of Guasca, drainage of
Rio Sueva, Cundinamarca
~~moist forest.~~ 2800 m.

15 67 *Ladenbergia undata*
common

L. 3 68 *Nertera granadensis*
common in openings

✓ Feb. 19 - Rio Blanco, a small
affluent of Rio Piedra de Sal,
drainage of Rio Sueva,
12 km. w. s. w. of Junin, Cundinamarca
moist bushy forest, in places
with dense and extensive
Chusquea thickets. 2800 m.

L. 6 69 *Palicourea*
steep slope

forming extensive mats,
buds very scarce at this
season, purple, leaves
conspicuously glossy
and 4-ranked.
small tufts, culms
and bracts terete.
rhizome short, apex
without mucilage,
leaves extremely rough.
prostrate, flowers
greenish-white, fruit
~~is~~ vermillion.

small tree 4 m. tall, others
much larger, ^{leaves} flowers
white, very fragrant.
prostrate, extensively
creeping, fruit vermillion,
juicy.

In this valley *Cinchona*
officinalis (form with short
fruit and carinate stipules)
is well distributed between 2500 m.
and 2700 m., not seen above
this. called "quina tuna".
all had stem cankers.
weak shrub 3 m. tall, infl.
yellow, corolla pale yellow,
turning dark purple with age

L 70 70 *Cinchona officinalis* L.
edge of clearing

L 71 *Cinchona officinalis*
~~edge of clearing~~ clearing with
many young trees

L 72 *Cinchona officinalis* L.
small patch of woods
on ridge top.

L 73 *Cinchona officinalis* L.
wooded ravine, w. slope.

L 74 *Orchid*
epiphytic on trunk of
Cinchona tree

L 75 *Cinchona officinalis* L.
wooded ravine, w. slope

L 76 *Palicourea*
wooded slope

L 77 *Cinchona officinalis* L.
wooded ~~slope~~ ridge

L 78 *Cinchona officinalis* L.
wooded ridge

Anal. Pellis
q+c 5.3
(9504 5.8) →
Ca=4.3 Col 1.0

2500 m. slender tree 8 m. tall,
6 cm. thick, leaves
somewhat glossy, older
ones tending to be reddish
on veins + petiole, buds
purple, fruit immature.
stipules carinate.

2600 m. tree 5 m. tall, slender,
flowers dark purple
with white hairs.
lvs. somewhat glossy, green.

2600 m. tree 7 m. tall, leaves
crimson when old,
green when young, fruits
reddish.

2675 m. tree 12 m. tall, 16 cm. thick,
leaves green, rather glossy.
flowers purple with white
hairs. (bark sample)
leaves thinly fleshy,
flowers scarlet.

2675 m. sapling 4 m. tall 4 cm. thick,
stem with dead spots,
very brittle. sterile
leaves green, somewhat
glossy above. (bark sample)

2700 m. shrub 3 m. tall, flowers
and infl. purple, nodding.

2700 m. sapling 3 m. tall, sterile,
leaves glossy, midribs
red.

2700 m. small tree 5 m. tall, 6 cm. thick
sterile, leaves slightly
reddish. (bark sample)

Anal. Pellis
q+c 1.4
(9504 0.2)
Ca=1.0 Col 1.0

- L. 21479 Fuchsia
bushy ridge
- L. 80 Centropogon ferrugineus ^{glabrous}
bushy ridge
- L. 1 81 Tropaeolum
bushy ridge
- L. 3 82 Fuchsia
bushy ridge
- L. 1 83 Solanum
Trail-side
- L. 3 84 Bobberia bogotensis
pasture
- L. 6 85 Psychotria
wooded slope
- L. 7 86 Hedysmum
wooded slope, abundant
- L. 5 86a Weinmannia
wooded slope, abundant

- 2750m weak, semi-scandent
shrub 3 m. tall, flowers
bright vermillion, pendent,
leaves rather glossy
on both surfaces, slightly
paler beneath, fruit
fleshy, purple when ripe.
- " weak sprawling shrub,
flowers deep orange,
paler within, column
pale yellow, anthers black.
- " vine tangled in bushes
spur of flower vermillion,
lobes green
- " weak, semi-scandent
shrub, stem purple,
leaves dark green ~~and~~
dull above, pale and
slightly glossy beneath,
corolla ~~is~~ deep crimson,
pendent.
- 2800m erect, suffrutescent,
- fls. white, pendent.
- " forming hummocks,
densely tangled and
mat-like, fls. white,
- leaves stiff.
- erect shrub, up to 1 m. tall,
calyx and young leaves
purple, fruit blue.
- small tree, aromatic
- when broken. "graviño"
- tree 10 m. tall, bark used
for tanning. "encino".

- L. 21487 *Hedyosmum*
wooded slope, abundant
- L. 188 *Asplenium*
dense woods, Chusquea
thicket
- L. 589 *Weinmannia*
dense woods, common
- L. 390 *Hydrocotyle*
openings in woods, common
- L. 391 *Drymaria vesta*
along trail in woods
- L. 492 *Cestrum*
edge of ravine.
- L. 193 *Drymaria*
open grazed slope

21 km. w. of Facatativá

Feb. 26, - near La Sierra, (at km. 70 on road from Bogota to Cambao), Cundinamarca ¹⁹⁵⁰ ~~2000~~ m.

- L. 9 94 *Cinchona pubescens* Vahl
shade tree in coffee plantation, occasional on n. w. slope.

Feb. 27 - Between Las Delgaditas and Brasili, ~~20~~ km. 50 on road from Manizales to Honda, about 12 km. n. w. of Hervey, Tolima
mossy road cut in 3150 m.
wooded ravine, open to sun.

- L. 1 95 *Epilobium*
- L. 1 96 *Castilleja*

- 2900 m. small tree, fruits translucent white.
- " "
- " tree 10 m. tall, fls. white.
- " extensively creeping
- " prostrate, fls. white, petals bifid to middle.
- 2800 m. bush 2 m. tall, flowers greenish yellow.
- " prostrate, flowers white.

Areal	Bellis
g+c	traces
ci	3.3
qui	m.m. Tr
T.C.A	3.3

tree 30 cm. diam. and 15 m. tall, flowering abundantly.

bushy, fls. purple, nodding when in bud.
suffrutescent, 0.8 m. tall, calyx red, corolla yellow.

L. 21497

Drosera

L. 3 98

Nertera granadensis ^{Mutes.}
abundant

✓ Feb. 28 - ^{1 km. n.} ~~near~~ San Clemente,
north of Anselma, Caldas
wooded ridge top 2230 m.

L. 6 99

Palicourea

L. 21500

Palicourea

L. 4 01

Ladenbergia
occasional

L. 11 02

Cinchona pubescens
common

✓ Feb. 28 - Headwaters of Quebrada
Minas, one of the headwaters
of Rio Medellin, just north
of Alto San Miguel, ⁷⁵ m. s.
of Caldas, Antioquia 2300 m.

L. 7 03

Cinchona pubescens
bushy slope

small tufts, fls. minute,
straw-colored.
forming mats, fruit scarlet.

shrub 2.5 m. tall, infl.
deep orange, corolla
- deep blood red, fruit black.
shrub 2.5 m. tall, infl.
purple, fruit immature.
small tree 5 m. tall, all
seen were sterile.

small tree or clump
of stump sprouts
5 m. tall, leaves dull above,
quite purplish beneath,
turning red when
old, flowers fragrant,
dull dark coral red outside,
lobes whitish within.

small tree 6 m. tall, leaves
dull above, veins slightly
reddish beneath, flowers
fragrant, dull red without,
pinkish within.

with ✓
S. L. Cole ✓
Mar. 2 - Rio Girardot, ^{affluent of Rio Atrato,} 14 km. s.s.w. of Carmen de Atrato, Choco, 1300 m

- L. 21504 *Boneria*
4 ^{abundant in pasture}
- L. 7 05 *Gynandropsis*
along stream
- L. 8 06 *Clusia*
marshy place in pasture
- L. 7 07 *Gynandropsis*
along stream
- L. 6 08 *Clusia*
steep wooded slope, rain forest
- L. 7 09 *Clusia*
steep wooded slope, rain forest

with ✓
S. L. Cole ✓
Mar. 2 - Ridge bet. Rio Girardot and Quebrada Palestina, ^{affluents of Rio Atrato,} 10 km. s.s.w. of Carmen de Atrato, Choco
dense rain forest on ridge

- L. 4 11 *Piperaceae*
- L. 1 12 *Orchid*
on tree trunk, rare.
- L. 2 14 *Faranhea*
- L. 2 13 *Hoffmannia*

ascending, flowers white.
malodorous
bush 2 m. tall, fls. deep orange, fruits springing open when ripe, ^{but not dry} valves recurved.
prostrate, fls. pale violet.
brittle herb 1 m. tall, fruits dehiscing with the valves recurving when ripe but not dry.
erect suffrutescent herb. bracts and calyxes deep purple, corolla white, fruit blue. leaves completely distichous plant ascending.

fl. pale salmon

1400 m. - single stemmed shrub 1 m. tall, fls. white, fruit rose color, fleshy, oblong.
1500 m. - bushy plant 1.5 m. tall, fls. white.
fls. green with brown center.
shrub 2 m. tall, fls. white, fruit green.
shrub 1.5 m. tall, scrambling, fls. pinkish.

L 21515 Psychotria

L 3 16 Faramea

L 7 17 Rub

L 1 18 Balanoph
root parasites

L 1 19 Cephaelis

L 1 20 Balanoph
root parasites

L 2 21 Vaccinium
ridge top forest

L 1 22 Orch
terrestrial

L 1 23 Gesner

L 1 24 Psychotria

L 4 25 Mesleria

with S. L. Cole
Mar. 3 - Confluence of Rio Daura and quebrada Ciervo, affluents of Rio Habita, 3 km. S.W. of Alto el Plateado, 2325 m. 6 km. S.W. of Carmen de Atarés, Chirico.
L 11 26 Cinchona pubescens Vahl.
forest along stream

Anal Bellis	
q+c	0.6
cin	m.m. fr
qui	m.m. fr
Tc.A	0.6
branches	
q+c	0.6
ci	0.4
qui	m.m. fr
Tc.A	1.0
frunk	

single stemmed shrub
- 1 m. tall, fls. greenish-white.
- shrub 2 m. tall, fruits dark green.
- shrub 2 m. tall, fls. white, fruit green.
- rose-purple.

- shrub, bracts purplish, rose-color, some smooth outside, others tessellate.
- vine like shrub, bracts bright red, corolla pink. fls. dark red-purple.

- vine climbing in trees corolla scarlet with yellow mouth
- single stemmed herb 1 m. tall, fruit white.
- erect shrub 1.5 m. tall, flowers bright orange

tree 3 m. tall, 19 cm. thick at base, leaves with veins prominent beneath, dull dark green above, paler and more glossy beneath, fls. fragrant, red outside, pale pink within, hair white. (bark samples, one from trunk, one from smaller 7 cm. diam.)

with
E. L. Cole

✓ Mar. 3 Rio Dauró (e. fork of R. Hábita),
8 km. w. of s. of Alto El Plateado, 7 km. e. n. e.
of Carmen de Atrato, Chocó
patch of bushy woods on
steep slope.
Melast.

L 21527

L 6 28 Cinchona pubescens Vahl

L 5 29 Cinchona pubescens Vahl

with
E. L. Cole

✓ Mar. 4 - Alto La Unión, headwaters of
Rio Dauró (e. fork of Rio Hábita), 6 km.
s. of Alto El Plateado, 10 km. e. n. e. of
Carmen de Atrato, Chocó-Antioquia border.
thick bushy woods on n. slope. 2550 m.

L 2 30 Phyllanthus
along trail, common.

2400 m. spreading bushy tree, fls.
pink, waxy. Lvs. grayish,
leathery.

2400 m. tree composed of 4 stumps
sprouts about 10 cm. diam.,
7 m. tall, ~~fls. for~~ leaves
dull, dark green above,
paler, smoother and
with prominent veins
beneath, turning red when
old, fls. fragrant, red
outside, ~~with~~ pale pink
within, hairs white.

2500 m. tree 15 cm. diam., 3 m. tall,
leaves dark dull green
above, paler, venalose
beneath; flowering abundantly,
fls. red without, pale
pink within, fragrant.

Anal. Millis
q+c n.m.v.
cin 0.2
quin n.m.v.
T.C.P. 0.2

2500 m
Anal. Millis
q+c 0.3
cin traces
quin n.m.v.
T.C.P. 0.8

shrub 1 m. tall, young
growth purplish.

L 215 31 *Palicourea*
 L 32 *Cinchona pubescens* Vahl
 edge of clearing, in full sun

L 33 *Liabum*
 along trail

L 34 *Liabum*
 along trail, common

L 35 *Bl.*
 common along trail

7 36 *Ladenbergia*
 on ridge

L 37 *Chusquea*
 common in forests

with
 E.L. Cole
 Mar. 4 - Rio Daurio near headwaters,
 7 km. s. of Alto El Plateado,
 9 km. n. of e. of Carner de Atrato,
 Choco 7450 m.
 Bank above trail in this woods.

L 38 *Ancinina*

Anal	Pellis
g+c	1.4
lin	0.8
quin	m.m. tr
Te. A	2.2

shrub 2 m. tall, scarcely
 branched, fls. pale lemon yellow.
 tree 8 m. tall, 15 cm. thick,
 leaves dull green above,
 deep purple beneath, flowers
 red outside, center of lobes
 pink within, border white
 with white hairs, very
 fragrant. (bark sample).

tall herb, definitely
 lactiferous, fls. bright
 yellow.

tall herb, up to 2.5 m., definitely
 lactiferous, fls. bright
 chrome yellow.

bushy much branched
 herb, branches pendent,
 flowers blue-purple.
 tree 10 cm. thick, 8 m. tall,
 fls. white, fleshy, fragrant.
 "azuena" (bark sample)

forming tangles of arching,
 scrambling canes, climbing
 up into trees! Fruiting
 simultaneously throughout
 region.

tufts

with ✓
 ✓ Mar. 4 - Rio Daurio ^{1.5 km} just above
 confluence with Rio Hábita,
 6 km. S. of Carmen de Atrato, Choco
 wooded ravine in pasture 2200 m.
 L 21539 *Ladenbergia magnifolia*

L 5 40 *Viola*
 grassy banks above woods

L 1 41 *Lycopodium*
 grassy banks above woods

L 3 42 *Drymaria*
 marshy open grassy place

✓ Mar. 4 - e. slope of Alto de Carmen,
 west side of valley of Rio Hábita,
 3 km. S.E. of Carmen de Atrato, Choco
 bushy wooded slopes.

L 10 43 *Cinchona pubescens* Vahl

L 9 44 *Cinchona pubescens* Vahl

2325 m
 Anal Bellis
 q+c 0.8
 cin 1.0
 quin 1.5
 T.C.A. 0.8

2525
 Anal Bellis
 q+c 1.5
 cin 0.2
 quin 1.5
 T.C.A. 0.2

tree 10 m. tall, leaves glossy,
 fls. white, fragrant "azuceno".
 creeping, fls. pale violet.

fls. white.

tree 10 cm. diam., 6 m. tall,
 leaves dull dark green
 above, paler, red-veined
 beneath, fls. fragrant, red
 without, lobes red in center
 within, white bordered and
 with white hairs. (bark sample)

tree 8 cm. diam., 5 m. tall,
 leaves dull green above,
 purple beneath, fls.
 fragrant, red without,
 pale pink with deeper
 pink centers within.
 (bark sample).

with ✓
 ✓ Mar. 4 - summit of Alto de
 Carmen, 2.5 km. s.e. of
 Carmen de Atrato, Choco
 densely bushy, tangled 2590 m.
 ridge-top forest.

- L. 215-45 *Lycopodium*
cut bank above trail
- 43 46 *Ladenbergia*

- L. 7 47 *Cephaelis axillaris* Sw.

✓ Mar. 4 - quebrada El Lucio,
 above Carmen de Atrato, Choco
 bushy wooded slope
 along trail.

- L. 5 48 *Gonzalagunia*

- 7 49 *Lobelia*

- L. 5 50 *Fuchsia*

- L. 51 *Fuchsia*

trailing, fertile
 branches erect.
 spreading, much branched
 tree 5 m. tall, flowers
 white, fleshy, very fragrant.
 slender, unbranched shrubs
 2 m. tall, fl. white, fruit blue.

2500 m. arching shrub. 1.5 m. tall,
 fls. coral pink outside, white
 within, fruits white,
 fleshy when ripe.
 - semi-scandent herb
 - pendent, flowers scarlet.
 erect, spreading herb,
 leaves dull, fls. with
 calyx + hypanthium
 dull crimson, petals deep
 purple, erect.
 - weals shrub, fls. scarlet,
 petals flaring.

with
S.T. Cole

Mar. 6 - Rio Carmen, 2-3 km. n.
of Carmen de Atrato, Choco 2160 m.
banks above trail in cleared valley.

L 21552 Galium hypocarpium

L 3 53 Fuchsia

L 1 54 Rubus

L 1 55 Stellaria

Mar. 6 - Headwaters of Rio Carmen,
7 km. n. of Carmen de Atrato, Choco.
partly cleared woods, steep slope
2675 m.

L 5 56 Fuchsia
banks above trail

Mar. 6 - same but 3 km. n.
2850 m.

L 7 37 Nertera granadensis
common above trail

L 8 58 Fuchsia
steep bank above trail

4 59 Centropogon ferrugineus
common

twining in bushes, fruit
orange, fleshy.
erect shrub 2 m. tall,
inflorescences pendent,
flowers deep crimson
semi-woody vine.
fls. white.

erect herb, inflorescences
drooping, calyx varying
from greenish-red to crimson,
corolla from crimson to purple.

prostrate, fls. pale green,
fruit translucent scarlet.

2900 m. erect herb, ^{infl.} flowers pendent,
calyx crimson, corolla purple
(with #21560 but color not
intergrading)
scrambling weak shrub
corolla deep orange with
yellow lobes, column white
anthers blue-gray.

L. 21560 Fuchsia

2 61 Centropogon minimus McVaugh, n. sp. ined
common along trail
V 62 Burmeistera

with E.L. Co. Mar. 6 - ridge at head of Rio Carmen (Alto de la Raya), 10 km. n. of Carmen de Atrato, Choco-Antioquia + order. bushy woods. 3150 m.

L. 3 63 Trichomanes
cut bank above trail

L. 5 64 Rynchospora
cut bank above trail, common

L. 3 65 Palicourea

L. 1 66
along trail

L. 1 67 Lycopodium
open place along trail

L. 5 68 Loranthus
parasitic

with E.L. Co. Mar. 6 - quebrada La Fragua, west fork of headwaters of Rio Parana, 7 km. w. of Alto El Plateado, 37 km. s. of Urac, Antioquia, 3000 m.

erect herb (m. tall, infl. drooping, calyx. by perianthium green, ~~corolla~~ corolla red (with # 21558 but colors not intergrading).

2960 m. lactiferous herb, fls. magenta. weak pendent shrub hanging over banks above trail, 2 m. long. fls. bronze green, fruits purple, inflated leaves purple beneath.

tufts

shrub 2 m. tall, fruit green. forming small cushions

sterile branches appressed to ground, fertile erect. basal part of corolla red, distal half yellow.

on Antioquia side.

dense wet forest, tangled with lianas and chusquea

21569 *Centropogon capinoides* Gleason Rued along trail

L 1 70 *Miconia*

L 11 71 *Cinchona pubescens* Vahl

trunk
q+c 0.7
cin. 0.1
qui m.m. 1.5
T.C.P. 0.8

L 5 71a *Palicourea*

✓ ^{Cauces} Mar. 7 - w. side of valley of Rio Pabón, n.e. of Alto Torqueta, 27 km. s. of Urrao, Antioquia 2600-2800 m. dense tangled bushy forest on east slope.

(Most of *Cinchona pubescens* observed was affected by large stem cankers).

L 4 72 *Miconia*

L 10 73 *Cinchona pubescens* Vahl scattered throughout woods

L 10 74 *Cinchona pubescens* Vahl scattered throughout woods

trunk
q+c 0.9
cin 0.5
qui m.m. 1.4
T.C.P. 1.4

herb, fls. white except blue-gray anthers, lobes patent.

shrub, m. tall, fruit dark red.

tree 18 m. tall 20 cm. thick, leaves green, a few old ones red, (bark samples one from trunk, one from branch 7 cm. or less in diam.)

Anal Bellis
Branches
q+c m.m. 1.5
cin. 0.3
qui m.m. 1.5
T.C.P. 0.3

(Arenas took his #3, 7 & 2 here. I took herbarium specimens from them but no bark. His nos. are in () with the proper ~~specimen~~ collection below)

The *Cinchona* here is ^{more or less} uniform and all in flower. It is a narrow leaved form of *C. pubescens* similar to that around Carmen

2750 m. slender shrub, m. tall fls. yellowish, mostly only buds. tree 20 m. tall, 30 cm. thick.

2800 m
Anal Bellis
Branches
q+c m.m. 1.5
cin. 0.2
qui m.m. 1.5
T.C.P. 0.2

trunk
q+c m.m. 1.5
cin. 0.4
qui m.m. 1.5
T.C.P. 0.4

2800 m
Anal Bellis
Branches
q+c 0.8
cin. 0.4
qui m.m. 1.5
T.C.P. 1.2
tree 20 m. tall, 25 cm. thick, fls. fragrant, dull red without, dull pink within, darker in center of lobes (bark samples from trunk & branches under 7 cm.)

L 21575 *Chusquea*
2

L 6 76 *Ladenbergia*
common in woods

L 3 77 *orchid*
trunk of tree, epiphytic

L 10 78 *Cinchona pubescens* Vahl

L 7 79 *Cinchona pubescens* Vahl
open sun in pasture, steep slope

L 9 80 *Cinchona pubescens* Vahl
open sun in pasture

L 31 *Rondeletia*
wooded ravine along river
L 82 *Rondeletia*
wooded ravine along river

2750 m. forming tangled underbrush
in forest, fruiting over entire
region, largest stems
2 cm thick.

2750 m. tree 15 m. tall, 20 cm. thick,
(others seen much larger)
fls. very fragrant, white,
lobes fleshy, fruit dry
"azuceno".

2750 m. small tufts, leaves
only slightly thick, flowers
dull dark red or pale maroon.

2700 m. clump of grown stumps
sprouts up to 10 m. tall,
10 cm. thick, fls. fragrant
dull red without, lobes pink
within with white border
(Arenas bark sample #2 taken Dec. ~~1944~~ Jan.)

2600 m. slender tree 8 m tall, 10 cm
diam. older leaves turning
red. (narrowest leaved
C. pubescens I have seen)

(Arenas bark sample #3 taken Dec.-Jan.)
2600 m. tree 8 m. tall, 15 cm. diam.
older leaves turning reddish,
fls. dull red outside, pink
within but lobes with a
white margin. (Arenas
bark sample #7, taken Dec.-Jan.)

shrub 4 m. tall, infl.
erect fls. yellow.
erect shrub 3 m tall,
corolla tube coral-red,
lobes pink

L 21583 *Billia colombiana* Pl. & Seeds.
edge of clearing

L 684 *Cinchona pubescens* Vahl
edge of clearing

✓ Mar. 8 - Headwaters of Rio
Pabon, north of Alto de la Raya,
Antioquia 2800 m.

85 *Centropogon carpinoides* Gleason Rued
along trail in wet forest

✓ Mar. 10 - highest part of
highway, about 4 km. s. of
Don Matias, Antioquia
scrubby forest very bushy 2400 m.
undergrowth tangled with
vines

L 86 *Ladenbergia*

L 87 *Palicourea*

spreading tree 6 m. tall,
fls. white with yellow
center, fruits immature.
tree 12 m. tall, 15 cm. thick
leaves green, unusually
thick and coarse, flowers
fragrant, dull red
without, pink within,
lobes with whitish borders
and hair. (bark sample).

Anal Bellis

g.c. 1.2

cu 0.3

quin n.m. 5

T.C.P. 1.5

{trunk

herb 1 m. tall, branched at
base, fls. white with
dark gray anthers, corolla
irregularly salverform.

tree 8 m. tall, 15 cm. thick,
leaves revolute, flowers
white, fleshy, very fragrant
with a heavy gardenia-like
odor.

unbranched shrub 1 m.
tall, infl. yellow,
immature fruit black.

L. 71588 *Cinchona pubescens* Vahl
almost covered by vines

Mar. 11 - s. ridge of valley of
Rio Nechi, 10 km. e. of Yanumal

Mar. 11 - country for 20-25 km
n. of Santa Rosa, Antioquia,
along highway, is a rolling,
somewhat dissected plateau
between 2900 + 3100 m. alt. The
southern end, around
Santa Rosa and north, is
completely deforested and

✓ Mar. 11 - south ridge of
valley of Rio Nechi, 10 km.
s. of Yanumal, Antioquia.
bushy wooded slope 2960 m.

L. 4 89 *Palicourea*

L. 3 90 *Nertera granadensis*

open grassy places along road

L. 2 91 *Palicourea*

L. 3 92 *Palicourea*

L. 9 93 *Palicourea*

small leaning tree 5 m.
tall, 6 cm. thick, sterile,
leaves dull green
above, purple beneath.
(bark sample).

rather badly eroded.
To the north appear patches
of woods, almost
solid *Quercus humboldtii*.
This was evidently the
dominant tree at these
altitudes before deforestation
occurred.

No *Cinchona* observed at
this altitude, although
sterile *Ladenbergia* was
present.

shrub, veins red-purple
beneath, white above,
flowers rose purple, lighter
without, short-styled.

prostrate, mat-forming,
fruit scarlet.

shrub 2 m. tall, fls.

dull yellow, turning purplish.

shrub 2 m. tall, fls.

rose-purple, short-styled.
shrub 3 m. tall, fls. dull
yellow, turning purplish.

L. 21594 *Palicourea*
4

L. 95 *Psychotria*

✓ Mar. 11 - Valley of Rio Nechi
6 km. s. of Yarumal, Antioquia
bushy second-growth slope 2550 m.

L. 96 *Cinchona pubescens* Vahl
uncommon

L. 97 *Sarauja*
one bush seen

✓ Mar. 11 - south side of ^{valley of} quebrada
Santa Rita, half-way between
Yarumal and Angostura, Antioquia
pastured north slope with
scattered small trees 2260 m.

L. 98 *Cinchona pubescens* Vahl
along road

L. 99 *Cinchona pubescens* Vahl

Anal. Bell's
Q+C m. m. 0.2
Cin 0.2
Quin m. m. 0.2
T.C.F. 0.2

shrub 2 m. tall, attacked
by a fungus, fls. rose-
purple, lighter without,
long-styled.
- slender shrub 2 m. tall,
flowers white.

sterile sprout 3 m. tall,
3 cm. thick, leaves dull,
turning red when old.
- shrub 3 m. tall, flowers
white.

leaf
margins
and fls
reddish
toward base

- a peculiar form of *C. pubescens*
here, with short fruits and
with the outer layer of bark
peeling as in *Remigia pedunculata*,
bright red flowers. "ayacucho colorado"
shrub 3 m. tall, leaves
red-veined beneath, turning
red with age, flowers
red without, deep pink
within but lobes with
white borders and hairs, rather
fragrant.

- small tree, 7 m. tall, 10 cm.
thick, leaves purple beneath
with deep red veins, flowers
somewhat fragrant, red without,
pink center, white border within,
immature fruits red. (bark sample F)

L 21600 *Cinchona pubescens* Vahl

L 2 01 *Cinchona pubescens* Vahl

L 4 02 *Cinchona pubescens* Vahl

✓
✓ Mar. 11 - Angostura, Antioquia
(just outside town)
in ravine filled with large
granite boulders. 2000 m.
Camp

L 3 03

L 7 04 *Vismia*
abundant, weedy

L 11 05 *Cinchona pubescens* Vahl

stump sprout 3 m. tall,
leaves red-veined, turning
red, immature fruit red.

stump sprout 3 m. tall,
leaves red-veined, turning
red with age, immature
fruit red.

Anal. P. 115
RTE 0.3
W 0.3
Q 0.3
P.C.P. 0.3

stump sprout 5 m. tall,
5 cm. thick, leaves red-veined,
becoming purple beneath,
fls. red without, red within
except narrow white border
and hair on lobes, somewhat
fragrant, immature fruit
reddish green.

same form of *C. pubescens* here
as above. Have harvested 9 tons
of bark.

tree 5 m. tall, 7 cm. thick, bark
warty, with exudations
of resin which burns with
an aromatic odor. "pata gallina".

tree 7 m. tall, with orange
latex which is said to
color fabrics with a fast color
"carate Colorado".

stump sprout 6 m. tall,
5 cm. thick, leaves enormous,
purplish beneath, red veins,
fls. somewhat fragrant,
red without, red center within
white borders + hairs on lobes.

✓ Mar. 12 - Angostura, Antioquia
pastures just above town.

2100 m.

- L. 21606 *Ranunculus*
grassy slope
- L. 4 07 *Eupatorium*
common in pastures and fence rows
- L. 3 08 *Acalypha*
fence row, in sun.
- L. 4 09 *Tournefortia*
bushy fence row
- L. 3 10 *Boehmeria*
bushy fence row, common
- L. 4 11 *Acalypha*
bushy fence row, shaded
- L. 2 12 *Cestrum*
grassy slope
- L. 5 13
bushy fence row
- L. 4 14 *Piper*
bushy fence row
- L. 5 15 *Rubus*
bushy fence row
- L. 4 16
bushy fence-row
- L. 3 17 *Tournefortia*
bushy fence row

petals bright yellow

~~erect~~ erect herb 1.5 m. tall,
fls. white, fragrant;
~~believed to produce~~ to produce "wches"
or spin-worms in cattle.
"salvia". considered a serious weed.
erect shrub 2 m. tall.

- shrub 3 m. tall, spreading,
tangled, fls. white.
- shrub 2 m. tall, spikes
pendent.
- shrub 2 m. tall, styles
pinkish.
- erect shrub 2 m. tall,
fruit green.
- vine climbing in bushes,
woody, fls. white.
- shrub 3 m. tall, with
balsam-like odor when
broken, spikes erect.
- canes scrambling through
bushes, no proper "primocanes"
seen, flowers white, fruits
black when ripe, sweetish
but without much flavor.
- erect shrub 2 m. tall,
fls. white, fruit purple.
- tangled shrub, flowers
white

- L 1618 *Nephrrolepis*
earth banks, common
- L 1919 *Baccharis*
bushy fence row
- L 220 *Borreria*
shaded in bushy fence row
- L 221 *Stachytarpheta*
bushy fence row
- L 222 *Pterisanthus*
edge of bushy ravine
- L 223 *Myrsine*
edge of bushy ravine
- L 224 *Tournefortia*
edge of bushy ravine
- L 225 *Mallotus* 7150m
bushy slope
- L 226 *Gaultheria*
bushy slope
- L 227 *Vaccinium*
bushy slope, common
- L 228 *Cinchona pubescens* Vahl
bushy fence row
- L 229 *Coccoloba*
shaded bank

erect

shrub 3 m. tall, tangled,
heads white.
fls. white.

suffrutescent herb 1 m.
tall, fls. blue-lavender.
shrub 1.5 m. tall, leaves
glaucous beneath, fls.
pink, petals spreading.
small tree 4 m. tall,
fruit black.

shrub 1 m. tall (others
nearby attain tree dimensions)
fls. white, leaves glossy.

woody vine climbing in
bushes, wings of fruit red.
shrub 2 m. tall, fls.
pink, ripe fruit black,
eaten by small boys. "uva"
tangled weak shrub,
leaves glossy, bracts
deep purple, corolla
deep purple with white
apex.

small tree 4 m. tall, 6 cm.
thick, leaves with
reddish veins, immature
fruit reddish, "aguacero verde"
(bark sample)
prostrate, fruit blue,
fleshy.

L 216 30 Aroid
base of tree in bushy
fence row

L 2 31 *Coccoloba psidium*
shaded bank

L 4 32 *Coccoloba*
bushy fence row

L 1 33 *Coccoloba psidium*
sunny slope
El Salto, on
Mar. 13 - ridge bet. quebrada las
Calleas and quebradona, 10 km. s.e.
of Angostura, Antioquia
thicket in pasture 2475 m.

~~34~~
L 10 34 *Cinchona pubescens* Vahl

L 7 35 Mar. 13 - Ridge between quebradona
and Rio Concepcion, on side facing
quebradona, 13 km. s.w. of
Angostura, Antioquia
very bushy, decadent forest, on slope. 2650 m.

L 35 *Psychotria*
edge of clearing

fruits dull lavender, fleshy

prostrate, fls. lavender.
- fruit deep bright blue
small tree 5 m. tall,
acorn-like fruit immature.
prostrate, fruits bright
blue.

above 2400 m. in this general
region is a pubescent form of
C. pubescens which apparently
completely replaces the almost
glabrous form found below.
- small tree 3 m. tall, 3 cm thick,
flowers fragrant, red without,
pink within (bark sample)
(tree had stem cankers) "ayacahaco"

(all seen had stem cankers)
C. pubescens common here,
the pubescent form mentioned
above. This forest was
almost destroyed by a
hail storm 20 days ago.
The trees were almost
entirely stripped of leaves.
4 calves were killed, and
the people report that all
the birds were killed. They
report hail-stones were
a bit, but this must be exaggerated.
- slender shrub 2.5 m. tall,
fruits green.

L 21636 *Cinchona pubescens* Vahl
in forest

L 4 37 *Cinchona pubescens* Vahl
in forest

L 2 38 *Cinchona pubescens* Vahl
edge of clearing

L 2 39 ~~Rub.~~
edge of clearing, common

L 2 40 *Ladenbergia magnifolia*
edge of clearing, only one seen

L 3 41 Rub.
edge of clearing, common

L 3 42 *Coccolobos*
edge of clearing

12 43 ~~42~~ Mar. 13 - Quebradona, 12 km.
s.w. of Angostura, Antioquia
edge of forest, dense 2425 m.
with brush, Chusquea and vines.

L 3 43 *Ladenbergia undata*

L 3 44 *Drymonia subcapillaris* (Sw.) Morton
~~Polypodium~~ det. Lellinger 1971
epiphytic on tree trunk

L 1 45 ~~Polypodium~~
epiphytic on tree trunk

Anal. Bellis
q+c n.m. tr
ci 0.4
qui n.m. tr
f.c.A 0.4

tree 20 m. tall, 30 cm. thick,
leaves dull, badly
damaged by hail. (3/ bark
samples, one from trunk, one
from branch 8 cm. thick, one from
branch 4 cm. thick) "azuena Colorado"

Anal. Bellis
q+c n.m. tr
ci 0.3
qui n.m. tr
f.c.A 0.3

tree 10 m. tall, 15 cm. thick,
leaves dull, badly damaged
by hail. buds deep coral pink.
(bark sample) "azuena Colorado"

Anal. Bellis
q+c n.m. tr
ci 0.3
qui n.m. tr
f.c.A 0.3

sterile tree 5 m. tall, 5 cm. thick,
leaves dull green, damaged
by hail. (bark sample) "azuena Colorado"
small tree 4 m. tall (others
much larger), stipules
pale green.
sterile tree 6 m. tall.

tree 8 m. tall, in bud only,
stipules pale green
prostrate, fls. lavender,
fruit bright blue, fleshy.

tree 12 m. tall, 15 cm. thick,
flowers white, fleshy,
very fragrant with a
Gardenia-like odor.
pale green

leaves somewhat thick, flowers
pale maroon red.

✓ Mar. 14 - 4 km. s.e. of Hoyo Rico,
11 km. s.e. of Santa Rosa, Antioquia
cleared land with sparse
second growth brush, on
side of ravine 2850 m.
L 21646
16 *Cinchona officinalis* L.

L 47 *Dioscorea*
climbing in *Cinchona* tree

✓ Mar. 14 - "Leticia", e. end of Alta
Buena Vista, 10 km. s.s.w. of
Yarumal, Antioquia 2900 m.

L 24 48 *Cinchona officinalis* L.
side of wooded ravine

Valley of Quebrada Tobon
✓ Mar. 14 - 1.5 km. n.n.w. of Yarumal,
on road to Valdivia, Antioquia
steep brushy slope 2775 m.

L 10 49 *Cinchona pubescens* X *officinalis*

Anal. Bellis	
q. + c.	m. m. v.
cin	0.6
quin	m. m. v.
T.C.P.	0.6

small tree 5 m. tall, 7 cm.
thick, leaves sub-glossy
above, with reddish veins,
turning reddish with age,
fls. clear maroon, with
white hairs, fruits red
when immature.

(bark sample).
vine climbing in trees,
fls. greenish yellow.

tree 12 m. tall, 20 cm. thick,
fls. maroon with white
hairs. leaves with red
midrib, sub-glossy above,
tending to have revolute
margins. (bark sample).

seems to be considerable hybrid-
ization here between *C. pubescens*
and *C. officinalis*.

Anal. Bellis	
q + c	m. m. v.
cin	0.8
quin	m. m. v.
T.C.P.	0.8

tree 5 m. tall, 6 cm. thick,
older leaves with veins
reddish, upper surface
glossy, fls. ^{somewhat fragrant} red without,
deep pink within, lobes with
narrow white border + hair (bark sample)

L 21650 *Cinchona officinalis* L.
3

L.1 51 *Galium hypocarpium*
vertical bank in road cut

L.7 52 *Cinchona pubescens* Vahl
common

L.2 53 *Meritena granadenensis*
vertical bank in road cut

L.6 54 *Cinchona pubescens* Vahl
common

~~55 *Palicourea*~~

Mar. 19 - 3 km. n. w. of Yacumal
on top of plateau bet. Yacumal
and Quebrada Tolón, on road
to Valdivia, Antioquia.
remnants of second growth 2800 m.
in ravines and on ridges
in pasture.

L.1 55 *Palicourea*
on top of ridge

L.3 56 *Chamaecrista*
on top of ridge

Anal. Bellis

q+c	0.7
cin	0.7
quin	0.7
T.C.F.	0.7

small sterile tree, 4 m.
tall, 3 cm. thick, leaves
sub-glossy, margins
revolute. (bark sample)
fruit fleshy, orange

small tree 5 m. tall, 5 cm. diam.,
leaves dull, turning reddish
with age, especially
the veins, fls. red without,
pink within, lobes with
white border and hair,
fragrant. (bark sample).
prostrate, fruit orange,
fleshy.

small tree 5 m. tall,
5 cm. diam. leaves dull,
turning reddish with
age, flowers red without,
pale pink within
fragrant, (bark sample)

C. pubescens apparently
hybridizes here with
C. officinalis.

shrub 2 m. tall, infl.
and flowers deep purple.
small shrubby tree,
leaves stiff, white beneath,
fls. yellowish green.

L. 21657 *Guettarda*
common on ridge top

L. 17 58 *Cinchona officinalis* L.
rare on ridge top

L. 5 59 *Cinchona pubescens* (*X officinalis*?)
ravine

L. 8 60 *Cinchona pubescens* x *officinalis*
ravine

3 61 *Centropogon ferrugineus*
shade in ravine, common

L. 8 62 *Cinchona pubescens* x *officinalis*
ravine

Mar. 15 - saddle bet. Alto San Miguel and Alto Alegrias, 15 km. s.s.e. of Caldas, Antioquia 2800 m. thickets along road near houses

L. 6 63 *Fuchsia*

small tree 4 m. tall, flowers with bronzed tube and thick part of lobes, margins of lobes white and crisped.

Anal	Mellis
g+c	n.m. 1/2
lin	0.4
quin	n.m. 1/2
T.C.B.	0.4

tree 6 m. tall, 3 cm. thick, (really a sprout from a somewhat larger stump partly rotted away) leaves sub-glossy above, margins revolute, flowers maroon with white hair. (bark sample).

sterile sapling 3 m. tall, leaves green.

sterile sapling 4 m. tall leaves green (bark sample) scrambling, semi-scandent shrub, flowers orange-scarlet with yellow lobes, anthers black, column white, becoming black distally.

sterile sapling 4 m. tall, leaves with reddish midrib (bark sample)

shrub 4 m. tall, forming a dense thicket, lower stems 5-8 cm. thick, tangled, inflorescence pendent, flowers deep crimson-red, fruit fleshy.

✓ Mar. 15 - headwaters of Rio Medellin, just n.e. of Alto San Miguel, 12 km. s.e. of Caldas, Antioquia
bushy ravine 2550-2580 m.

L 21664 *Cinchona pubescens* Vahl
edge of ravine, common in second growth

L 65 *Ladenbergia magnifolia*

L 2 66 *Dioscorea*

L 67 *Besleria*
in underbrush

L 4 68 *Geomium*
in underbrush

L 69 *Selaginella*
common in shade

Cinchona pubescens sprouts and small trees occur commonly in the brush and second growth along the road from 2325 to 2800 m. alt.

2580 m.
Anal Bellis
q+c n.m. 1/2
cin 0.5
qui n.m. 1/2
T.C.P. 0.5

tree 4 m. tall, largely of stump sprouts from a stump 20 cm. in diameter. whole tree with a ~~pa~~ dark purplish cast, fls. very fragrant, dull red without, pink ~~see~~ within, deeper at center of lobes. (bark sample from stump).

tree 15 m. tall, 30 cm. thick, flowers white, disagreeably fragrant.

~~vine~~ herbaceous vine, climbing in trees, leaves stiff, dull and rugulose above, fls. yellowish green.

shrub 1.5 m. tall, flowers orange.

vine climbing on shrubs, enlarged portion of corolla bright violet, constricted part white, lobes pale green with purple-black markings within, flowers erect.

erect or ascending.

✓ Mar. 16 - 7 km. s.w. of Rio Lucio, Caldas 2475 m.

L₂ 1670 Cinchona pubescens Vahl
14
open pasture

✓ Mar. 16 - 1 km. n. of San Clemente, 13 km. n. of Anserma, Caldas ~~2475~~²⁷⁰⁰ m.
wooded ridge-top, bushy and tangled with Rubus.

L₃ 71 Asplenium
epiphytic on tree trunk

L₁ 72 Orch.
epiphytic on tree trunk

L₃ 73 Sarapija

L₆ 74 Rubus

L₅ 75 Rubus

tree 8 m. tall, 15 cm. thick, leaves dull green, veins reddish beneath, fls. red without, pale pink within, fragrant. (bark sample)

C. pubescens common for some miles along the summit of this series of ridges.

fls. bronze-maroon

tree 5 m. tall, pubescence harsh, whitish, leaves pale beneath, fls. white with yellow stamens. tangled thicket, canes slender, white, leaves white beneath, fruit dark red when ripe, sweet-sour, with good flavor. tangled thicket, canes green, leaves gray beneath, fls. pale pinkish, fruit black when ripe, sweet but with a poor flavor.

L. 21676 *Cinchona pubescens* Vahl
common

Mar. 16 - Between Las Delgaditas
and Brasili, near km. 50
on road from Manizales
to Honda about 13 km. n.w.
of Herveo, Tolima 3300m.
bushy slope, disturbed
by road work.

L. 1 77 *Palicourea*

L. 2 79 *Ribes*

L. 3 79 *Fuchsia*
common

80 *Bumelia*?
common

Anal Pelles

g+c	n.m.t.
Cin	1.9
Qui	n.m.t.
P.C.A	1.9

stump 20 cm. thick
with grown sprouts
8 m tall, 7 cm. thick,
leaves dull green, veins
reddish beneath, leaves
turning red with age,
flowers fragrant, red
without, pale pink
within, immature
fruits bronze-reddish.
(bark samples from trunk
and sprouts separate) C

shrub 0.8 m. tall, fruit green.
slender arching shrub
1 m. tall, fls. red,
fruit immature.
shrub up to 2 m. tall
fls. pendent, scarlet,
lactiferous shrub up
to 2 m. tall, sparsely
branched, fls. greenish
with bronzed ~~edges~~
ovary and corolla lobes,
hairs on anthers dull
golden, fls. with strong
mercaptan odor, fruit green!

✓ Mar. 16 - just east of Aquadita, 3 km. w. of Fresno, Tolima 2325 m.

L 1681 *Cinchona pubescens* Vahl
bushy steep slope

✓ Mar. 17 - near La Sierra, (near km. 30 on road from Bogotá to Cambray) 21 km. w. of Facatativa, Cundinamarca 2200 m

L 32 *Cinchona pubescens* Vahl
in patch of second growth on steep slope

✓ Mar. 19, - Paramo de Guasca, 8 km. e. of Guasca, Cundinamarca ridge above tree-line, 3500 - 3600 m. grassy with cross ridges of limestone, bush patches especially in sheltered places and on these ridges.

L 83 *Puya*
occasional on ridge tops

L 84 *Paepalanthus*
common

L 85 *Puya*
occasional

Alphagium common in wet places.

Anal Bellis
g+c n.m. tr
li 1.0
qui n.m. tr
T.C.A 1.0

tree 14 m. tall, 25 cm. thick, leaves dull green with veins red beneath, fls. fragrant, red without, pale pink within. (bark sample) □

Anal Bellis
g+c n.m. tr
li 1.0
qui n.m. tr
T.C.A 1.0

tree 7 m. tall, 10 cm. thick, leaves dull green with reddish veins, fls. fragrant, pink (bark sample).

caespitose, scape 1 m. tall, fls. dull bronze-purple, forming compact grayish cushions.

caespitose, forming patches, scape 0.8 m. tall, fls. pale green.

- L. 21685a *Weinmannia*
5 ridge top
- L. 2 86 *Polypodium*
limestone ledges and crevices
- L. 1 87 *Geranium*
common
- L. 6 88 *Aragoa*
common on ridges
- L. 5 89 *Orchid*
rocky slopes
- L. 1 90 *Galium hypocarpium*
- L. 3 91 *Apium*
rocky slope
- L. 1 92 *Lisiphyllum*
rock ledges, rare
- L. 4 93 *Lycopodium*
under bushes
- L. 2 94 *Berberis*
- L. 2 95 *Bomarea*
under bushes
- L. 3 96 *Hedyotis caracasana*
common on ridges
- L. 4 97 *Thippa*
common on ridges
- L. 98 *Hedyotis*
common on ridges

- prostrate shrub between rocks (one seen 1 m. tall and more or less erect).
- prostrate, fls. bright rose without, white within.
- shrub up to 1 m. tall, fls. white.
- fls. pale lemon yellow, inflorescence nodding.
- vine-like, fruits orange, fleshy.
- oily odor when broken
- fruit immature
- erect, large clump.
- erect shrub, flowers orange
- fls. scarlet with green tips to petals, green anthers.
- rounded shrub, 1 m. tall, young stems yellow, under side of leaves yellow, fls. white, buds pinkish without.
- erect shrub 1 m. tall, fls. red.
- rounded shrub 1 m. tall, young stems yellow, under side of leaves yellow, flowers white, buds pinkish without.

- L 21699 *Senecio*
occasional on ridges
- L 21700 *Rubus*
common in bush or ridges
- L 1 01 *Pernettya*
occasional in open spots
on ridges
- L 3 02 *Rhizocephalum*
grassy patches, locally common
- L 3 03 ~~Salaginella~~ *Lycopodium*
open grassy slopes, rare

with N.C. Farwell
to get set.
April 4 - just north of
Tocancipá, Cundinamarca
(bet. Tocancipá and Gachancipá)

- L 4 04 *Lalix humboldtii*
roadside
- April 4 - Frutillar, 5 km. S. of
Padua, Boyaca
sub-paramo 3000 m.

- L 2 05 *Galium hybocarpium*
- L 3 06 *Hedyotis nitida*

April 4 - Paipa, Boyaca
ditch in salt flat 2575 m

- L 10 07 *Ruppia maritima* L.
very abundant

bush up to 1 m. tall,
heads yellowish.
single stems 0.5 m. tall,
fls. pink.
prostrate, ripe fruit
black, under side of
leaves purple.
corolla tube yellow, lobes
white, inside of throat
red-punctate, anthers
black.
compact clumps, dull
slightly grayish green.

diffuse tree note staminate
& pistillate fls. in same spike.

fruits orange, roots yellow
shrub 0.7 m. tall, fls. white,
purplish without

podogyne very easily
deciduous when mature,
fruiting peduncle slender.

~~Colombia~~ 1944 - Colombia
 Paramo de ~~Frontina~~ Consuelo.

✓ April 5 - s.e. slope of Cordillera
 de Consuelo, headwaters
 of Rio Guina, 20 km. n.e. of
 Belén, Boyacá 3475 m.
 paramo with scattered huge
 boulders.

L 21708 Aragoa

L 3 09 Senecio

L 4 10 Baccharis

L 10 11 Hedyotis nitida

L 7 12 Vaccinium

L 8 13 Weinmannia

L 4 14 ~~Plantago~~
 between rocks

L 1 15 Vaccinium

L 4 16 Apium

A tall and one or two aculeate
 species of *Lespedeza*, the former
 extremely abundant.
Sphragnum common in wet
 places.

gray-green shrub up to 0.3 m. tall,
 flowers four-parted, white.
 shrub, ~~much branched~~
~~at~~ many stems, 1 m. tall,
 fls. yellow. leaves
 thick.

small shrub, fls. whitish.
 prostrate shrub, appressed
 against rocks, fls. purplish
 without, white within,
 leaves with whitish
 line beneath.

colonies about 1 m. wide,
 3 dm. tall, buds bright
 red, fls. pink, leaves
 stiff, pale beneath.

tree with rounded crown,
 5 m. tall, 20 cm. thick,
 fruits red.

dense cushions.

dense cushions, fls. pink.
 oily odor, fls. white.

✓ April 5 - Banks of Rio Susacón,
14 km. s.w. of Susacón, Boyacá
flat grassy river bank 3350 m.
Solanum?

L 21717

L 2 18 *Melast.*

L 2 19 *Mimulus*
mud at edge of river

L 3 20 *Hedyotis*
abundant

L 2 21 *Pernettya*

L 1 22 *Netera granadensis*

with N. C. Fassett
✓ April 7 - Cicuta, Rio Pamplonita,
Norte de Santander 370 m.
flat dry stony place, thorn
forest dominated by *Prosopis*,
~~many~~ *Opuntia*, etc.

L 23 *Prosopis*
dominant

L 24 *Leg.*

very prostrate, fls. white
within, with purple
stripes without.

leaves closely appressed to
ground, fls. white.

~~fls.~~ tangled clumps,
~~fls.~~ stems succulent,
fls. bright yellow.

dense cushions, fls.
crimson-purple.

buds reddish, fls. white,
fruit black.

prostrate, fruit red,
fleshy.

conspicuously flat-topped
tree, 2 m. tall, trunk 15 cm.
thick, fls. yellowish,
fruit immature.

tree, almost leafless at
this season, fls. bright purple.

with M.C. Powell

Apr. 8 - Hacienda Banduis (part of Hac. San Roque), quebrada Rincito, headwaters of Rio Peralonso, ^{6 km.} n. w. of Gramalote, w. of Cicuta, Norte de Santander steep slope, rather 2300-2400 m. dry woods (at least at this season), (not a rain forest)

L. 21725 *Cinchona officinalis* L. var. 940 - 3.1
open pasture, common.
Ra: 2.3
Cd: 0.8
lin - 1.2
gini - 7.0
T.L.F. - 4.3
(9504) - 3.1

L. 26 *Cinchona officinalis* L. var.
open pasture, common

L. 27 *Columnea*
thick woods

L. 28 *Psychotria*
thick woods

L. 29 *Piper*
edge of woods

L. 30 *Cinchona officinalis* L. var.
common in open pasture

L. 31 *Podocarpus*
one tree seen in thick forest

C. officinalis, common in an open pasture, small trees, a few meters apart, heavily fruiting and in bud, few flowers, very uniform. ~~scarcely~~ ~~seen~~

2300m. small tree, 4 m. tall, 7 cm. thick, fls. very dark purple with white hairs. (bark sample). stipules green slightly paler than leaves. leaves rather dull green, scarcely any tendency to turn red.
2300m. small tree

vine climbing in lower story in forest, flowers pendent, orange stems + petioles purplish. ^{veins impressed above.}
2400m. erect, unbranched, 1 m tall, fls. greenish white.
2400m. shrub 1.5 m. tall, leaves rugose, pale beneath. aromatic when broken.

2350m. small tree 4 m. tall, ~~fls.~~ leaves dull dark green, fls. very dark purple with white hairs.

tree 10 m. tall, 15 cm. thick, branches conspicuously whorled. tree sterile.

L 21732 *Cinchona officinalis* L. var.
common in open pasture

L 1 33 *occultus*
one seen in thick forest

L 4 34 *Cinchona officinalis*
rare in thick forest
(no large trees seen in forest except
one which had been cut).

with n.c.f. ✓ April 8 - 5 km. n.w. of Gramalote,
w. of Cucuta, Norte de Santander
L 35 *Cinchona pubescens* Vahl.
strip of woods on steep side
of ridge, common 2000 m.

✓ April 10 - La Cueva, quebrada
Babilonia, affluent of q. Aguas
Blancas (cf. castus), affluent of Rio Arboledas,
13 km. w. s.w. of Arboledas,
Norte de Santander

L 36 *Impatiens sultana*
wooded ravine 1600 m.
growing spontaneously around
house.

L 37 *Cinchona pubescens* Vahl
occasional in woods
in ravine.

2350 m. small tree 4 m. tall, leaves
dull rather dark green,
veins reddish,
fls. very dark purple
with white hair.

2400 m. fls. pale lavender.

2400 m. sterile sprout 2.5 m. tall,
leaves thin, light green.

C. pub. common bet. 1800 + 2000 m.
in second growth + in open.

tree 10 m. tall 25 cm. diam.
fls. pink, fragrant,
leaves with red veins.
(bark sample)

herb, many ^{thick} stems from
root crown, flowers
bright coral pink
(in Antioquia commonly
called "beroz".)

clump of stump sprouts
5 m. tall, 6 cm. thick,
flowers pale pink,
very fragrant
(bark sample)

- L 21738 Myrsine
edge of clearing
- L 5 39 Miconia
edge of thicket

✓ April 11 - upper quebrada Babilonia, affluent of quebrada Agua Blanca (Q. Castro), affluent of Rio Arboledas, 15 km. w.s.w. of Arboledas, Norte de Santander in and around clearing in rain forest on ^{steep} slope 2400 m.

- L 5 40 Cinchona officinalis L.
open pasture

- L 1 41 Neurolepis?
thick forest, common

~~42 Chusquea
common in thick forest~~

- 3 42 Lippocampylus
edge of forest

- L 4 43 ~~Miconia~~ Miconia 2500 m.
small clearing on ridge-top

- L 1 44 Cephaelis axillaris
dense rain-forest

- L 2 45 Cinchona officinalis L.
dense rain forest

- L 9 46 Cinchona officinalis L.
shallow ravine in pasture

small tree 3 m. tall
vine climbing in bushes, flowers scarlet.

collected seeds, many from several trees, in small thicket, few from the ground

C. officinalis scattered in pasture, small trees about 4-5 m. tall, seedlings abundant in forest but no large trees seen. Veins 5-7 on a side, otherwise as in the Gramalote form. sterile tree 5 m. tall.

clumps, "hoja larga":

~~High arching canes, emerging from ground both scattered and several together, mostly in fruit and up to 4 cm. thick, with #21743. "serwitana" semi-scandent shrub, flowers scarlet. shrub 2 m. tall,~~

shrub 1 m. tall, fls. white, fruit blue, fleshy. seedling 1.5 m. tall, sterile.

small tree 6 m. tall, leaves green, turning red when old, fls. deep purple with white hair.

L 21747 *Cinchona officinalis* L. shallow ravine in pasture

L 7 48 *Cinchona officinalis* L. open pasture

Q+L - 5.6
cin - 1.9
quin - traces
TCR 7.5
(9504) 1.1
Ra = 0.8
Cd = 4.8

Ra = 3.7
Cd = 3.2

L 3 49 *Trichomanes* dense forest, steep slope

L 4 50 *Cinchona officinalis* L. dense forest, ridge top

L 1 51 *Quercus* dense forest

with M.C. Fassett April 12 - Valley of Rio Pamplonita, 15 km. s. of Cucuta, Norte de Santander valley bottom with alt. 650 m. stony flats of tall grass (*Panicum maximum*?), and scattered bush.

L 5 52 *Legumin* common

L 3 53 *Conop* common

L 5 54 *Apta*

L 3 55 *Acalypha* common

L 3 56 *Crotalaria* roadside

L 1 57 *Bignon* (Lobostylis) climbing on fence along road

Q+C 6.9
cin 0.8
quin traces
TCR 7.7
(9504) 5.0

small tree 6 m. tall, 9 cm. thick, fls. deep purple. (bark sample)
small tree 5 m tall, 8 cm. thick, leaves green, in age turning reddish. (bark sample, regrowth after strips have been cut)

seedling 1.5 m. tall, no large trees seen.

scandent shrub, leaves gray-green, flowers magenta. erect shrub 2 m. tall, heads yellow.

vine tangled in bushes, fls. yellow.

erect shrub 1.5 m. tall fls. yellow.

vine, fls. white with yellowish throat

✓ April 13 - headwaters of
Quebrada Zapa, 7 km. s.w.
of Pamplona, Norte de Santander
sub-paramo slope 3200 m.

L 21758 Calceolaria minobefaria Kränzl. subsp.
growing up through brush

L 659 Vallea stipularis

with N.C. Fassett ✓ April 13 - grade above
La Creoba, 20 km. e. of
Bucaramanga, Santander
cut bank above road, in
sparse forest 2400 m.

L 1 60 Galium hypocarpium

L 2 61 Merterea granadensis

L 1 62 Orch
terrestrial

L 2 63 Orch
terrestrial

L 3 64 Panicum

✓ Apr. 13 - just above La Creoba,
18 km. e. of Bucaramanga,
Santander 2230 m.
bushy steep slope below
road, second growth.

L 1 65 Cinchona pubescens Vahl
rare, one tree seen

minobefaria slender shrub 1.5 m. tall,
det. Molau 1984 flo. bright yellow.
small tree, ^{dull} reddish green,
fls. bright pink.

- vine-like, fruits orange, fleshy.
prostrate or vertical banks,
berries scarlet.

- ~~erect~~ erect, leaves fleshy,
flowers dull pink.
flowers pinkish white

spreading clump

tree 3 m. tall, 10 cm. thick,
fls. pink, fragrant

April 15 - La Gorney, on
 Quebrada de Gomez, 40 km.
 e. of Puerto Wilches, Santander
 flats of gray to white sand, with little
 or no humus, partly
 open with bunch grass
 and scattered shrubs
 (*Byrsonima?*), maintained
 open apparently by burning,
 in some places the bush
 is thicker, becoming sparse
 forest, other hammock-like
 patches of denser
 woods with large trees,
 and small streams
 lined with bush or trees
 or open marshy banks.

hot
 with
 N.E. Fasset

- L 21766 Jussieae
 moist sand near stream
- L 4 67 grass
 wet sand along stream, common
- L 4 68 orch.
 dry, sparsely bushy sand flat
- L 4 69 Annon.
 common in woods and bush
 (Fasset has color photos)
- L 2 70 Xyris
 moist sand
- L 3 71 *Blechnum*
 abundant in wet
 sandy places

Remijia purdieana
 is here very common,
 especially in the
 bushy areas, forming
 clumps of sprouts
 2-3 m. tall, flowering
 and fruiting abundantly,
 prevented, apparently,
 from growing to tree
 size by the fires. In the
 hammocks were a
 few sterile sprouts
 which reached 4-5 m.
 tall. The local people
 said there were larger
 trees but some distance
 away. Collected seeds from
 various individuals (most)
 erect shrub 2 m. tall
 flowers ~~or~~ butter-yellow.
 rootstock extensively
 creeping.
 perianth vermilion,
 lip orange, leaves fleshy.
 tree 6 m. tall, leaves
 more or less apparently
 distichous, flowers
 white, fruit immature
 flowers yellow.
 fronds erect.

- L 2 72 *Palicourea*
common along stream
- L 2 73 *Rynchospora*
common in wet sand
edge
- L 3 74
common in wet sand
- L 3 75 *Baneria*
dry sand
- L 6 76 *Rernijia purdieana*
bushy edge of sparse woods
common
- L 5 77 *Eugenia*
bushy flat
- L 6 78 *Rub*
thick woods
- L 4 79 *sapot.*
~~edge~~ sparsely bushy flat,
common
- L 3 80
edge of woods
- L 3 81 *Erigeron*
bushy flat
- L 7 82 *Cephaelis*
common in undergrowth
in thick woods.

shrub 1 m. tall, fl.
yellow with red lobes,
buds and suff. vermilion
fruiting inf. dark red,
fruits blue-black.

large clumps.

fls. white.

small tree 4 m. tall,
4 cm. thick, fls. white,
fragrant. (bark sample)
shrub 2.5 m. tall,
fls. white, with a
Philadelphia-like odor.
slender shrub 4 m.
tall, in bud only, young
leaves bronze beneath,
Terminalia-like branching
characteristic on lateral
branches.

small tree 4 m. tall,
~~flowers~~

shrub, fruit red,
seed with white fleshy aril.
shrub 1.5 m. tall
most fruits immature,
ripe ones red.
shrub 2 m. tall,
bracts red, flowers
yellowish.

- L. 21783 *Cephaelis*
 common in undergrowth
 in thick forest.
- L. 4 84 *Melast. Miconia?*
 bushy flat.
- L. 4 85 *Xylocoma*
 common in sparse forest
 and bushy flat.
- L. 7 86 *Legum*
 sparse forest
- L. 5 87 *Palicourea*
 common in sparse forest
 (Fassett has color photos)
- L. 4 88 *Byrsonima crassifolia*
 very common, dominant
 shrub in open flats
- L. 8 89 *Rernizia purdieana*
 common in flats

- shrub 1.5 m. tall,
~~fls.~~ bracts greenish, fls. white.
- weak shrub 1 m. tall,
 spreading, fls. greenish,
 but with crimson, strongly
 exserted stamens.
- tree 6 m. tall, branches
 long and drooping, fruits
 dark brownish purple.
- tree 4 m. tall, most of
 leafy branches near
 top, clumps of pods
 all along trunk, pods
 opening when still
 green, seeds with thick
 fleshy aril covering dorsal side.
- shrub 1 m. tall (at there
 2 m.). thyrse ^{of pods} vermillion,
 fls. yellow with dark
 red tips.
- shrub 2 m. tall
 petals bright yellow
- shrub 2 m. tall,
 flowers white, lobes of
 petals recurved, very
 fragrant.

✓ April 16 - canyon of Rio Chicamocha across from Pescadero, mouth of Rio Umpala, Santander barren dry crumbly cliffs and talus slopes

L 21790

Bourbonia

steep slopes, scattered bush

L 4 91

Tournefortia

dominant shrub on slopes at top of cliffs.

L 2 92

Selaginella

under bushes on slopes at top of cliffs

✓ April 17 - El Retiro, on quebrada Colnada ^{10 km} ~~not far from Beroco~~, ~~W~~ of Veley, Santander thick second growth 2475 m. woods on dissected plateau.

L 7 93

Rub.

L 2 94

Palicourea

L 4 95

Palicourea

L 3 96

Meriania granadensis

forming a mat on fallen log.

L 3 97

Palicourea

700 m.

low spreading irregular bushes, gray-green, flowers greenish white. shrubs 7 m. tall.

forming loose mats.

tree 8 m. tall, fruits green. seeds in a single layer embedded in the periphery of a fleshy placenta.

shrub 2.5 m. tall,

immature fruit blue-green.

shrub 3 m. tall, bracts purplish, fruits black. leaves very rugose.

prostrate, berries scarlet.

shrub 3 m. tall, fls. white, immature fruit bluish green, infl. greenish.

- L 21798 *Galium hypocarpium*
in ^{edge of} brush
- L 99 *Palicourea*
edge of brush

Cuchillo de los Micos

with M.C. Fassett ✓
April 17 - near Helida, 15 km. ^{n.} of Velez, bet. ~~Guabada Berros~~ ^{Rio Negro} and ~~Guabada Las Cruces~~ ^{Las Quiratas}, Santander

2100 m.

- L 21800 *Ladenbergia macrocarpa*
isolated small tree in clearing

with M.C. Fassett ✓
April 17 - just south of ^{Jordan} ~~La Dalia~~, 20 km. n.n.w. Velez, Santander

1700 m.

- L 01 *Spiranthes*
grassy bank
- L 02 *Quararia*
wooded ravine

Villa Alicia,

with M.C. Fassett ✓
Apr. 17 - top of Peña de Velez, 8 km. ^{n.} of Velez, Santander
more or less open plateau

- L 03 *Cinchona pubescens*
isolated tree in pasture
(Fassett has color photo)

wine-like, climbing
- in bushes fruit orange, fleshy.
shrub 2 m. tall,
fruit immature, somewhat
compressed. infl. purplish
green.

tree 5 m. tall.

fls. white.

wine climbing over trees,
fls. orange with yellow
stamens.

5 m. tall
grows sprout from
stump of large tree,
leaves dark green above,
dull-glossy, flowers
fragrant, unusually
large, deep crimson
without, pink within
border of lobes white, hairs white.

with M.C. Fassett

April 18 - 1 km. n.w. of Velez, Santander 2300 m. *Cinchona pubescens* var. *resulenta* steep bushy slope.

L 1804

18

with M.C. Fassett April 18 - Jordan, ^{n. side of} ridge bet. drainages of Rio Horta and Rio Guirata, 8 km. s.s.e. of Landázuri, n. of Velez, Santander 1100 m. patch of thick forest, tangled with vines, on steep slope.

L 12 05 *Cinchona henleana*

Anal Bellis
g+c n.m. h
cin n.m. h
quin n.m. h
TCA n.m. h

L 14 06 *Cinchona henleana*

Bellis's report
Grade test neg
no extraction

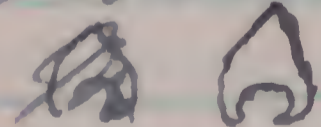
L 2 07 *Eugenia*

L 4 08 *Psychotria*

scattered patch of *C. pubescens* on bushy slope. ^{variable in pubescens} see Fassett 25088, 25089
clump of grown stump sprouts about 8 m. tall, ^{largest} 15 cm. thick, leaves dull dark green above, paler beneath, fls. ^{fragrant} crimson-pink without, pink within, lobes with broad white ~~tooth~~ margins, white hair. (bark sample)

"quinon"

slender tree 5 m. tall, with fragrant white flowers. Colla lobes spongy. (bark sample)

slender tree 7 m. tall, ^{8 cm. thick} branched at base, fls. fragrant, white, lobes spongy, in cross section  (bark sample)

"quinon"

vine climbing in trees, fruit red, turning black, elongate (ellipsoid) shrub 1 m tall, fls. pale green.

~~April 12~~
L. 21309 *Asanth.*

L. 5 10 *Psychotria?* *Cephaelis*

L. 4 11 *Macrocotyle trianae*
steep slope just below forest

L. 11 12 *Cinchona henleana*

L. 5 13 *Rub. Palicourea?*

L. 7 14 *Psychotria*

L. 7 15 *Palicourea*

L. 1 16 *Rub*

L. 8 17 *H. sp.*

L. 11 18 *Remijia pedunculata*
a small "mancha" or patch.

shrub 2 m. tall, bracts
dull orange-red.

shrub 1.5 m. tall, flowers
white.

stems reddish.

"quinon"
slender tree 6 m. tall,
5 cm. thick, fls. white,
fragrant, corolla lobes
spongy. (bark sample)

tree 6 m. tall, infl.
purple, calyx rose-purple,
corolla deep lavender,
with white lobes each
with a fleshy appendage
that is lavender. fruits

green with dark purple lobe.

shrub, 1 m. tall, fls. white.

shrub 2.5 m. tall,
infl. vermillion, flowers
yellow, fruit immature.

fls. white, calyx lobes
erect in flower, spreading
in immature fruit. Plant
with licorice-like odor.

"granizo" used boiled
in water for kidney trouble.

slender tree 5 m. tall.

tree 6 m. tall, 3 cm. thick,
stipules stiff, leaves
dull green. "bark sample"

"quina punta de lanza".

Anál. Bellis	
g+c	1.2
cin	0.4
quin	maess
T.C.F.	1.6

L. 21819 *Remijia pedunculata*
small "mancha" or patch

Anal Bellis	
q+c	2.8
cin	0.5
quin	traces
TcA	3.3
(asou)	3.2

qa 2.4
cd 0.4

L. 17 20 *Remijia pedunculata*
small "mancha" or patch

Anal Bellis	
Branches	
q+c	1.7
cin	0.5
quin	traces
TcA	2.2
(asou)	nothing

fruit

q+c	2.1	qa-1.8
cin	0.8	cd-0.3
quin	traces	
TcA	2.9	
(asou)	2.4	

bet. quebrada Campoalegre (G. Willis)

with m.p. forest
April 20 - San Juan, Quebrada
San Juanito, Rio Guayabito
17 km. w. n. w. of Landazuri, Santander
steep slope of gray loamy
soil above a flat of coarse
sand, slope densely wooded,
flat sparsely so. 230-330 m.

those of *R. purdieana* being
much longer. The barbs
are distinct, that of *R. purdieana*
being flexible and bright
yellow within, that of
R. pedunculata being
brittle and hard, white
within.

tree 10 m. tall, 15 cm. thick,
buds white, leaves
dull green, stipules stiff.
"quina punta de lanza"
(bark sample)

tree 10 m. tall, 12 cm. thick,
stipules stiff, leaves
dull green.

"quina punta de lanza"
(bark samples from trunk
+ branches 7 cm. thick).

Remijia pedunculata and
a glabrous, large-leaved
form of *R. purdieana* (or
something similar) both
found on this slope, their
ranges overlapping, but
the *R. purdieana* extending
lower ~~and~~ than the *R.*
pedunculata and the
latter extending on
up the slope, beyond
the *R. purdieana*. The
two remained quite
distinct, but the *R. purdieana*,
as compared with that
seen at La Gomez, had
a number of *R. pedunculata*
characters, especially
in being glabrous and
in the almost flat
stipules. The fruits
of the two are distinct,

- L 2 21 *Cephaelis* *bediata*
edges of clearings on sandy flat
- L 2 22 *Cephaelis*
woods on sandy flat
- L 6 23 *Miconia*
open sandy flat
- L 7 24 *Rub. patris, Schimper*
common along road and trails
in sandy flat
- L 2 25 *Rub.*
lower slopes
- L 3 26 *Cephaelis*
sandy flats, thicket in open
- L 4 27 *Lipouma*
sandy flat
- L 4 28 *Cephaelis*
common on sandy flat
- L 4 29 *Palicourea*
lower slopes and sandy flat
- L 7 30 *Remijia ~~fractata~~*
lower slopes
- L 7 31 *Schizocalyx*
wooded slopes, common

- shrub 1 m. tall
- fruits fleshy, blue.
bracts scarlet.
- more or less prostrate,
fls. white.
- shrub 2.5 m. tall, infl.
and ovaries vermillion,
collar ~~as~~ yellow,
turning reddish with age.
dwarf shrub
- sprawling shrub,
bracts violet, flowers violet.
- shrub 3 m. tall, strongly
lemon-scented, disk
pinkish.
- shrub 1 - 2.5 m. tall,
bracts scarlet, flowers
pale yellow.
- shrub 2 m. tall,
- infl. and fls. yellow.
- small tree 5 m. tall,
3 cm. thick, leaves dull
green, stipules flexible
but not soft, fls.
white, fragrant, lobes
recurved.
- ~~tree~~ small tree 5 m. tall
3 cm. thick (others seen
much larger), fls. white,
enlarged calyx lobe
greenish white, smaller
one, brown-margined.

L 21832 *Remijia bracteata*
~~*pubescens*~~
wooded slope, occasional.

L 1 33 *Melastom*
wooded slope

L 5 34 *Schizocalyx*
edge of clearing on wooded slope

L 6 35 *Schizocalyx*
edge of clearing on wooded slope

L 7 36 *Schizocalyx*
wooded slope

L 11 37 *Remijia pedunculata*
sparsely wooded slope,
common

Anal. Bellis	
q+c	1.5
cin	0.4
quin	Traces
TCA	1.9

L 10 38 *Remijia bracteata*
~~*pubescens*~~
wooded slope

Anal. Bellis	
q+c	N.M.T.
cin	
quin	
TCA	N.M.T.

L 5 39 *Remijia pedunculata*
edge of clearing on wooded slope
abundant

L 10 40 *Remijia pedunculata*
edge of clearing on wooded
slope, abundant

"quina punta de lanza" or "quina roja"

300 m.
"quina amarilla"
tree 3 m. tall 6 cm. thick,
leaves dull green, stipules
flexible but not soft,
(bark sample 9) bark flexible

calyx brown, enlarged
lobe greenish white.
calyx brown, enlarged
lobe greenish white.
corolla white, calyx
brown when open, enlarged
lobe greenish white

300 m.
"quina punta de lanza" or
"quina roja"
tree 15 m. tall, 15 cm.
thick, leaves dull
green, stiffish, paler
beneath, stipules stiff
(bark sample 1) bark
brittle, reddish, white within.

300 m.
tree 8 m. tall, 6 cm. thick,
~~trunk~~ leaves dull green,
stipules flexible but
not soft, bracts
& calyx reddish
(bark sample E) bark
flexible, yellow within.

330 m.
tree 15 m. tall, 12 cm. thick,
leaves dull green, stipules
stiff, fruit immature.

330 m.
"quina punta de lanza" or "quina roja"
tree 12 m. tall 10 cm. thick,
leaves dull green, stipules
thick, fruit immature. (bark
sample C) bark reddish, white
within, brittle & hard.

330 m. Anal. Bellis	
q+c	1.6
cin	0.3
quin	Traces
TCA	1.9

L₁ 21941 *Remijia bracteata*
7 wooded slope, common

L₆ 42 *Remijia pedunculata*
wooded slope, common

Anal Bellis
g+c 1.3
cin N.M.T.
quin N.M.T.
TC 7 1.3

↓
Apr. 20 - Rio Guayabito, 14
km. below Landayuri
Santander 300 m.
disturbed ground along
road

L₂ 43 *Neurolaena lobata*

L₄ 44 *Hamelia patens*

Anal Bellis
g+c N.M.T.
cin -
quin -
TC 7 N.M.T.

tree 7 m. tall, 5 cm. thick,
leaves dull green,
stipules flexible but
not soft, calyx and
bracts reddish, bark
flexible, yellow within
(bark sample) "quina
amarella"

tree 6 m. tall, 10 cm. thick,
leaves dull green,
stipules stiffish,
fruit immature. bark
reddish, white within,
hard & brittle (bark sample)
"quina punta de lanza" or
"quina roja"

herb 1 m. tall. "contra garrilana"
said to be quite effective
against ~~the~~ fevers.
upper part rather
bitter, lower part scarcely
so. said to become much
more bitter later.

bush 2 m. tall, stems
and cymes red, corolla
vermillion, becoming
darker with age, fruits
red, becoming darker.

✓ April 21 - 5 km. n.w. of Barbosa
Santander 2000 m.

L. 21845
brushy ravine
Cinchona pubescens Vahl
common in brush on ~~the~~ south slope

✓ April 22 - 4 km. n. of Moniquirá,
Boyacá 1700 m.

L. 7 46
Cinchona pubescens Vahl
cleared country, edge of
steep bank of river

✓ Apr. 22 - 2 km. s.e. of Moniquirá,
Boyacá 1850 m.

L. 5 47
steep brushy slope in
cleared country
Cinchona pubescens Vahl

L. 2 48
Borreria
base of slope

L. 2 49
Viburnum
base of slope

✓ April 22 - 8 km. s.e. of
Moniquirá, Boyacá 2150 m.
brushy second growth on
sides of ravines

L. 2 50
Hedyosmum

L. 51
Cinchona pubescens Vahl

tree 12 m. tall, 15 cm. thick,
(bark sample).

clump of stump sprouts
4 m. tall.

clump of stump sprouts
4 m. tall, 4 cm. thick,
fls. white, hairy within.

bush 2 m. tall, fruit
immature.

small tree, fragrant
when broken, fruit
translucent white.

clump of stump sprouts
4 m. tall, up to 7 cm. diam.
fls. fragrant, pink lobes
with white margins + hairs
(bark sample)

April 27

- L 21852 *Cinchona officinalis* L. small mancha on steep slope

Anal	Thick	Trunk
q+c	3.5	Ca = 0.8
Cin	1.8	cd = 2.7
Quin	1.4	
T.C.A.	5.3	
(2504)	1.1	

stump	sprout	Ca	cd
q+c	3.5	1.3	
Cin	2.0		2.2
Quin	1.4		
T.C.A.	5.5		
(2504)	1.8		

- L 4-53 *Cinchona officinalis* L. small mancha on steep slope
- L 3-54 *Coccoloba psidium* steep bank above road
- L 3-55 *Gesneria* *Kohleria eximiosa* (Benth.) Horn & Saff. det. Wiehler 1972 steep bank above road
- L 7-56 *Gurania* steep bank above road

April 30 - Quebrada Malagana, below San Miguel, road from Bogota to Fusagasuga, 28 km. s.w. Bogota, Cund.

- L 3-57 *Chimaphila*? thick forest on steep slope
- L 5-58 *Palicourea* thick forest on steep slope
- L 3-59 grass road embankment
- L 3-60 *Lymbolanthus* steep bushy slope

clump of grown stump sprouts, largest 10 m. tall, 12 cm thick, fls. maroon with white hair, fruit immature. (bark samples from large trunk 12 cm. and small ones 4-6 cm.) stump sprout 3 m. tall fruit immature.

fls lavender, fruit blue, fleshy herb 0.8 m. tall, fls. scarlet vine hanging from bushes, fls. orange.

2600m.

tree 6 m. tall, 6 cm. thick, buds unopened.

2600m.

shrub 3 m. tall, infl. and fls. bright purple. fruit immature large clumps

shrub 2 m. tall, fls. fls. rich crimson with 3 white lines within on each lobe.

- L 21861 *Carex*
roadside
- L 1 62 *Fuchsia*
cliff above road
- L 4 63 *Fuchsia*
bushy steep wall of ravine
- L 6 64 *Juncus*
marshy place above road

✓ April 30 - ~~Rio~~ Headwaters
of Rio Muña, just below
San Miguel, 26 km. s.w. Bogota
Cundinamarca. 2800 m.
cleared slopes with small
patches of second growth.

- L 7 65 *Borreria bogotensis*
road cut
- L 8 66 *Quiodendron toqua*
evidently not parasitic
- L 3 67 *Galium hypocarpium*
grassy, bushy bank

✓ April 30 - El Salto (Falls)
de Tequendama, Rio Bogota
of Bogota, Cundinamarca

- L 7 68 *Passiflora*
slope above river

- 2800 m. small clumps, culms
- spreading-ascending.
fls. pendent, deep crimson
- shrub 1.5 m. tall, fls.
scarlet, ovary square
- in transverse section.
- 2850 m. in clumps. (mass collection
of upper part of ~~flowers~~
fertile culms taken,
each piece from a different
clump.)

- prostrate, flowers purplish
without.
- tree 5 m. tall, fls. white,
fruit reddish when
mature or almost so.
- fls. yellow, fruit
fleshy, bright orange.

- 2450 m. spreading tree, fruit immature
(same tree as # 21032)

✓ May 1. near La Sierra, (km. 80 on road from Bogotá to Puerto Cambao), 21 km. w. of Facatativa, Cund. steep slope, cleared and planted to Manihot, coffee plantation just below.
Cinchona pubescens Vahl

L. 21369
10

L. 9 70 *Cinchona pubescens* Vahl

drainage of quebrada Chiniata,
 ✓ May 1 - 5 km. s.e. of Hills, 12 km. w. of Facatativa, Cund. along cascades in bottom of wet steep ^{wooded} ravine

2150 m.

L. 4 71 *Psychotria*

L. 2 72 *acanth.*

L. 1 73 *Psychotria*

scattered *C. pubescens* trees, some used as shade for coffee.

1950 m.

Anal. Bellis
 q+c m.m.tr
 ci 1.4
 qui m.m.tr
 T.C.A. 1.4

small tree 6 m. tall, 8 cm. thick, leaves green, dull dark above, paler beneath, fruit immature (bark sample B)

Anal. Bellis
 q+c m.m.tr
 ci 1.4
 qui m.m.tr
 T.C.A. 1.4

stump 25 cm. thick, partly decayed, with clump of grown stump sprouts 6 m. tall, 3-7 cm. diam. lvs. ^{dull} green, paler beneath, fls. fragrant, pink with paler margins to lobes, white hairs. stems badly cankered, fruits diseased. (bark sample A)

fls. pale green, fruit immature.
~~fls.~~ fls. pale lavender shrub, growing more or less horizontally, 1.5 m. long, nodes enlarged, fls. and fruit white.

✓ May 1 - Drainage of quebrada
Chimista, 8 km. e. of Nilo,
9 km. w. of Facatativa, Cund.
sparsely bushy slope

L 21874

Oenothera

grassy slope

L 7 75

Cinchona pubescens Vahl

L 4 76

Euphorbia peplos

grassy slope, abundant

May 1 -

just w. of Madrid, sabana
de Bogota, 25 km. n.w. of
Bogota, Cund. 2650 m.

L 5 77

Eleocharis

in water in roadside ditch

L 11 78

Limnobiium spongiu

floating in water in roadside
ditch

✓ May 6 - Paipa, Boyaca 2577 m.

with subparamo bushy steep slope
H. St. John just above salt flats

L 7 79

Senecio

L 30

Hedyotis nitida

rocky places

fls. yellow

stump with several
grown stump sprouts
6 m. tall, leaf veins
red, fls. fragrant,
crimson red without,
pink within with
white hair.
flat-topped

leaves with a thick ^{pale green} pad of
large air-cells beneath,
dark green above, fls.
greenish white just
erected above water.

diffuse round-topped bush
3 m. tall, fls. yellow.
more or less decumbent brittle
shrub, buds pink, ^{purple} fls. white within.

- L 21881 *Asclep*
climbing in bushes
- L 5 82 *Vernonia*
- L 4 83 *Phytolacca*
- L 6 84 *Palicourea*
- L 4 85 *Vernonia*
- L 6 86 *Dodonaea viscosa*
abundant
(specimen for St. John)
- L 3 87 *Gnaphalium*
- L 1 88 *Vicia*
growing up thru bushes
same loc. salt flats
- L 4 89 *Leavenworthia portulacastrum* L.
edges of streams from hot springs (specimen for St. John)
- L 6 90 *Polygonum*
bank of depression
(specimen for Breckle)
- L 1 91 *Oxalis*
higher places in flat, rare

- lactiferous vine, fls. white
- bush 2 m. tall, loosely branched, fls. purple.
- much branched herb 0.5 m. tall, 1 m. wide, stems fleshy, fls. pinkish white, fruit immature.
- shrub 1 m. tall, branches ascending, fls. white, virgately branching
- shrub 2 m. tall, fls. purplish.
- shrubs 1-2 m. tall (specimens from several different plants growing together), fruits reddish.
- shrub 1.5 m. tall, fls. white, fragrant.
- fls. violet
- ~~erect~~ large mats, leaves fleshy, fls. pink, stems with only traces of red color.
- erect
- fls. pink, cernuous

- L 21892 *Cardiomena ramossissima*
banks and raised sandy
places, roadsides
- L 393 *Borreria*
raised places, common

✓ May 7 - Upper Rio Sarba, 15 km.
n. w. of Duitama, Boyacá 3300 m.
luxuriant subparamo brush

- L 4 94 *Hedyotis nitida*

- L 5 95 *Hypericum*

- L 6 96 *Hedyotis nitida*

- L 1 97 *Viola*
rare in grassy banks along trail

- L 1 98 *Castilleja*
only one of this color seen

- L 4 99 *Weinmannia*
common

- L 21900 *Castilleja*

prostrate from strong
tap root, buds tipped
with dark red, ~~fls~~ corolla
white, pilose within,
drooping ~~at~~ at slightest
provocation.

2 species of *Espeletia* common
(*E. cymboza* type not in flower).

shrub branched at root
crown, 0.6 m. tall, leaves
whitish beneath, buds
purplish, ^{fls.} white inside.

shrub 2 m. tall, fls.
bright chrome yellow.

shrub 1 m. tall (others
seen up to 2 m.), buds
purplish, fls. white
within, leaves white
beneath.

fls. white with ~~at~~ deep
purple markings, especially
on lower petal.
bracts, calyx and corolla red.

shrub 2.5 m. tall.

upper bracts red distally,
calyx red, margined with
yellow, corolla red but upper edge
green distally.

- L 21901 Geranium
mostly in grass clumps
- L 02 Galium hypocarpium
climbing on Espelletia
- L 10 03 Espelletia
very common

35 km. s. Charalá

✓ May 7 - Páramo de Birolin, on
Santander - Boyaca boundary,
~~20 km. s. of Encinas, Santander, 25~~
km. n. w. of Duitama, Boyacá

- L 5 04 Hedyotis mutica ^{3700 m. recently burned}
common on ledges and rocky
places
- 1 05 Lobelia tenera
occasional in shallow soil
- L 3 06 Hedyotis nitida
common
- L 3 07 Apium
occasional

30 km. s. of Charalá

✓ May 7 - near head of Rio Negro,
affluent of Rio Pienta, 16 km.
s. s. w. of Encinas, Santander 3050m

- L 13 08 Cinchona pubescens Vahl
common in partially cleared
woods, only seen above Quercus belt

fls. rose-purple.

fruit orange, fleshy.

~~stem~~ large rosette on
columnar stem 1 m. tall,
flowering cymes erect,
ray fls. bright yellow, ^{dull} disk brown.
(fruiting cymes spreading,
from different plant).

forming dense mats,
fls. purplish white.

fls. violet

low shrub 2-3 dm. tall,
leaves white beneath,
buds purple without,
fls. white within.
fls. white.

Kunal Bellis	
a+c	1.3
lin	0.4
quin	N.M.T
T.C.H	1.7

tree ~~10~~ m. tall, 12 cm thick,
veins reddish beneath, fls. fragrant,
dull crimson, paler inside with white
borders to lobes. (bark sample)

✓ May 8 - just above Cromoso,
13 km. e.n.e. of Charalá,
Santander 1850 m

L 2 1909 (~~Ladenbergia~~) *linchuna*
second growth on sterile steep slope

✓ May 8 - ridge 3 km. n.e. of
Cromoso, 15 km. e.n.e. of
Charalá, Santander
bushy second growth 2030 m.

L 3 10 *Reb.*
tangled in brush

L 3 11 *Ladenbergia*

L 3 12 *Palicourea*
along trail

✓ May 8 - ridge ^{5 km.} n.e. of Cromoso,
17 km. e.n.e. of Charalá,
Santander 2300 m.
wet forest on slopes

seedlings + sprouts, saplings
common in forest.

trees here seem infected
by the disease that elsewhere
attacks *C. pub.* *C. pub.* is not
found here, but is at much
higher altitudes in the region.

L 4 13 *Cinchona officinalis*
open clearing, rather recent.

L 3 14 *Palicourea*
occasional

tree 6 m tall, 8 cm. thick,
fls. white, fragrant.

~~tangled in brush~~, woody vine,
fls. white.
- tree 5 m. tall, 7 cm. thick,
fls. white, fragrant.
- shrub, 1 m. tall,
infl. and calyxes rose,
corolla lavender.

C. officinalis has been
taken out of this area
in considerable quantities -
20 tons acc. to the owner.
Stripped trunks are
lying here and there,
other, peeled trees still
standing, peeled up as
high as 10 m. by bark thieves.
The trees are common but
not evenly scattered
stump sprouts probably
less than ~~year~~ 1 year old,
from harvested trees.
- shrub 2.5 m. tall, infl.
& fls. brilliant deep purple.

L 21915 *Cinchona officinalis* L.
steep slope

Anal. Bellis
q+c 4.7 Qa = 1.9
cin 0.9 Cd = 2.8
Quin. N.M.T
T.C.A 5.6
(Q504) 1.4

L 2 16 *Cinchona officinalis* L.
steep slope

L 5 17 *Cinchona officinalis* L.
small flat place

Anal. Bellis
q+c 4.2 Qa = 0.8
cin 0.5 Cd = 3.4
Quin N.M.T
T.C.A 4.7
(Q504) 1.1

L 4 18 *Cinchona officinalis* L.
steep slope

Anal. Bellis
q+c 3.3 Qa = 1.3
cin 0.4 Cd = 2.0
quin N.M.T
T.C.A 3.7
Q504 1.7

San Juan,
May 11 - ridge bet. Quebrada San
Juanito and Q. Campoalegre
(Q. Quillás), valley of Rio
Guayabito 17 km. w.n.w. of
Landayuri, 5 km. s.e. of Cimatara,
Santander
2500 m.

L 1 19 *Trichomanes*
steep wooded slope

tree 15 m. tall 20 cm.
thick, buds purplish,
infl. diseased, old leaves
bright crimson. (bark
had been peeled up
10 ~~10~~ m.) (bark sample).
fruiting panicles from
a tree that has been
cut some time ago, just
to show fruit and disease.
small tree 8 m. tall,
7 cm. thick, sterile.
(bark had been removed
from base, sample
taken from above this,
to see if it differs
significantly from
nearby healthy tree.)
~~set~~ sterile sapling 7
m. long, 5 cm. thick,
leaning. (bark sample)

Remigia pedunculata trees
here have on twigs nests
of small ants, housing
mealy-bugs,



Magdalena Valley,

✓ May 11 - 20 km. e. of Puerto Olaya
(~~Antioquia~~) Santander 150 m.

L 219 20 *Gonzalagunia*
4 wet roadside, low flat land.

✓ May 11 - Magdalena Valley,
4 km. e. of Puerto Olaya, Santander
roadside fence-row, 150 m.
low flat land.

L 3 21 *Bixa*

L 12 22 *Colaptes phyllosus?*

with H. St. John ✓ May 11 - ^{River} Magdalena Valley,
Puerto Olaya, Santander 150 m.

L 23 *Hamelia patens*
edge of marshy place

May 9 - 5 km. s.w. of San Gil,
Santander
on the rocks of a dry waterfall
were dead bodies of a large
neuropterid, several hundred
of them, a few with the
abdomens distended

✓ May 14 - Villavicencio, Meta
Cultivated (Bates garden)

L 24 *Solanum*

L 25 *Commelinaceae*
(said to be from nearby forest)

L 26 *Piper*
(grows wild in region)

shrub 0.7 m. tall, very bushy,
fls. white.

small tree
tree 8 m. tall, enlarged
calyx lobe ^{bract} purplish pink.

shrub 1 m. tall, fls. deep
orange.

with eggs, most with
the abdomens burst
and the eggs lying
in piles and patches or
scattered over the stones
to several cm. from the insect,
stuck to the rocks.

vine climbing on house.
- fls. lavender, fruit scarlet.
- sparsely branched vine,
fls. lavender, fruit purple.
shrub 2 m. tall, spikes
erect.

- L 21927 *Lil.*
- L 28 *Isertia*
(brought in from llanos ~~no~~
on road to Puerto Lopez)
- L 29 *Acanth.*
(brought from nearby forest)

with
Mr. Grant ✓
May 16 - Finca Rosa Blanca,
foothills just south of
Villavicencio, ^{9rd. de} Meta 500-700 m.
wet forest, partly cleared.

- L 30 *Rub. Faramea?*
slope, edge of clearing, rare
- L 31 *Rub.*
slope, edge of clearing

L 32 *Solan.*
wooded slope

L 33 *Rub.*
wooded slope

L 34 *Cephaelis*
wooded slope

L 35 *Marant.*
wooded slope

L 36 *Phytolacca*
edges of clearings

clumps, fls. white.
bush 3 m. tall, infl. ^{7-8 cm}
coral-vermillion, buds
yellow, flowers turning
orange.
shrub 2 m. tall, bracts &
collars scarlet.

tree 15 m. tall, fls. white,
fragrant, ~~also~~ flowering abundantly.
tree 20 m. tall, sterile,
trunk corded & granular
(Marston Bates interested in
identity because of tree
holes housing mosquito
larvae)

shrub 1 m. tall, ^{sparsely branched,} fruit dark
purple, fleshy.

shrub 1.5 m. tall, fruits
greenish white.

shrub 0.7 m. tall, bushy,
bracts bright purple,
fls. purplish-white.

shrub forming thicket
2 m. tall, 2 m. across,

fls. white, fruit deep orange
herbs 1-2 m. tall, infl.
rose-red, fls. pinkish, fruit
immature. (mass collection
from different plants) (for fruit)

- L 21937 *Cephaelis*
wooded slope
- L 38 *Psychotria capitata* R. & S. det. Kirkbride, 1977
wooded slope
- L 39 *Neurolaena lobata*
clearings, occasional
- L 40 *Duroia hirsuta* (P. & E.) Schum.
flat wooded at foot of slope
- L 41 *Selaginella*
flat wooded at foot of slope
- L 42 *Acanth. Justicia unguiculata* ^{Stern} ^{det. Wankhede} 1937
edges of trail on wooded flat
at foot of slope
- L 43 *Cephaelis*
wooded flat at foot of slope
- L 44 *Geophila*
wooded flat at foot of slope
- L 45 *Ilex?*
wooded flat at foot of slope
- L 46 *Peperomia emarginella* (Sw. ex W. H. S.) O. D. C.
^{det. M. J. N. Nov. 2005}
wooded flat at foot of
slope, epiphytic on twigs
of shrub.
- L 47 *Geophila herbacea*
carpeting ground in spots
in wooded flat at foot of
slope.
- L 48 *Pleopeltis percussa* (Cav.) Hook. & Grev. det. Seelinger 1978
on tree trunk
- L 49 fern
on tree trunk

- shrub 0.8 m. tall, bracts
- deep purple.
- shrub 0.3 m. tall, bracts
green, fruits (immature)
- deep purple).
- herb 2 m. tall, heads
- yellow, plant very bitter.
- shrub 3 m. tall, fruit ^{red}
eaten by monkeys when
ripe. ~~Ants~~ swellings
in stem inhabited by
small ants. "terma de mica"
prostrate on ground
- fls. rose-purple.
- fls. white, fruit reddish,
- when not quite mature.
- prostrate, fls. white,
- fruit orange when mature.
- shrub 2 m. tall, loosely
branching, fls. white.
- leaves fleshy, lenticular.
- prostrate, fls. white.

L 1950 *Psychotria poeppigiana* M.-Arg. det. Kirkbride, 1977.
Wooded flat at foot of slope

L 51 *Palicourea punicea*
common in wooded flat at foot of slope.

L 52 *Amorphophallus*
wooded flat at foot of slope

with ✓
m. l. quest ✓ May 17 7.5 km. s.e. Servita,
just above Buenavista, 6 km. n.w.
of Villavicencio, Meta 1000-1100 m.

wet wooded slopes and ridges

L 53 *Blechnum polypodioides* Raddi det. Selleniger 1978
wet road cut

L 54 *Acanth.*
wet road cut

L 55 *Rub.*
wet road cut

L 56 *Coccolobium*
wooded ridge

L 57 *Isertia*
common on wooded ridge
(and throughout region)

L 58 *Rub.*
steep wooded slope

L 59 *Remijia pedunculata* (Karst.)
steep wooded slope, common.

shrub, 1 m. tall,
bracts scarlet, fls.
yellow, fruit bright blue.
shrub up to 1 m. tall,

leaves with ^{main} 3 parts.
"yerba de la culebra"

fls. white with yellow
center.

vine, fls. white.

prostrate, fls. purple,
fruit bright blue.
tree 6 m. tall, spreading,
fls. white, fragrant.

shrub 1.5 m. tall, fls.
white, fruit immature,
many-seeded.

tree 8 m. tall, bark bitter,
leaves dull.

~~with M.L. Grant~~ ✓ May 24 - s. side of Valley of Rio
Guavio, 5 km. s.e. of Ubalá
Cundinamarca 1700 m.

L 21960

Rhuja?

planted along road in large
finca.

with M.L. Grant ✓ May 24 - Gachalá, Cundinamarca
1760 m.

L 761

Abutilon

planted in gardens.

with M.L. Grant

✓ May 24 - Finca Santa Elena,
just e. of Gachalá, Cund.
1750 m.

L 362

Rhododendron

in garden

L 263

Galium hypocarpium

climbing in bushes

L 564

Thea sinensis

in small tea plantation
on cleared slopes.

tree 15 m. tall, branchlets
with weeping habit.

shrub 3 m. tall, fls. pendent,
petals with ~~to~~ yellow
ground color, deep red veins,
stamens dark red, column
flesh color. "hostensis".

bush 1.5 m. tall, fls. white.

vine-like, fruits orange, fleshy.
"coralito".

tree 6 m. tall, fls. white.

(These trees let grow large
to produce seed. The seeds
fall to the ground and
germinate, producing
thousands of seedlings,
which are then transplanted.
A seedling, a seed, and a
cutting are planted together,
in hopes that one will survive.
The trees from which leaves are taken
are kept pruned down to about 1 m. tall.)

May 26 - San Ysidro, s. of
Gachala, Cund. - 2450 m.

Dense rain-forest, on various
slopes and flat places.
The area forming the
headwaters of a large
quebrada, with many
small streams. *Cinchona*
officinalis is common on
steep slopes and ridges,
but most of what we saw

May 27 - Gachala, Cundinamarca
region of Rio Guarivo
along trail in cultivated land.

21965 *Lobelia*

4

May 28 - 10 km. s. of Gachala on
trail to Medina, Cord. de Farallones
(Cord. de Heliconia), Cundinamarca
bushy steep slope, scattered
trees, probably second-growth
2150 m.

L. 66 *Vismia*
commonest tree in second growth

was small. Seedlings
and sprouts are quite
abundant, small trees
less so, and large trees
quite rare. Collected
bark from trunk & branches
of one (Grant & Fosberg # 9309).
The men said they have taken
679 arrobas of green bark
from this immediate region.
A tree lower down is Grant & Fosberg 9352.

immediate vicinity of
village cleared and in
cultivation or pasture, with
patches of second growth
here and there, especially on
ridges and steep places,
Vismia sp. (~~# 21966~~ # 21966)
most common tree.
herb with many
arching stems from base,
flowers bright red.

small tree, fls. with
greenish-bronze petals,
brown calyx. sap orange.

L 21967 ³ Loranthe
parasitic on Ladenbergia

L 13 68 Ladenbergia

L 15 69 Cinchona officinalis Anal. Bellis Walde

near base	
q+c	4.1
cin	0.3
quin	Traces
T.C.A.	4.4
(Q+c)	2.9

from above	
q+c	3.7
cin	0.3
quin	N.M.T
T.C.A.	4.0
(Q+c)	2.7

L 5 70 Mops Cybiantus laurifolius (Max) Agostini
in thick brush Ed. Agostini 1956

L 6 71 Coccolysium
along trail, common

L 8 72 Bromelid
occasional on ridges

✓ June 12 ^{hills} - 1 km. s. of Luba, 13 km. n. of center of Bogota, land. grayed subparamo slope 2700 m. with scattered ^{small} Myrsine trees.

L 4 73 ~~Familid~~ ^{small} ~~in~~ ^{small} ~~open~~ ^{small} ~~places~~
common in open places

L 3 74 Eryngium paniculatum
occasional small colonies

L 6 75 Vaccinium
in patches of low brush

ripe fruit orange-red.

small tree
tree 6 m. tall, 8 cm. thick,
fls. purple with white
hair. (bark samples, one
from near base of trunk,
one from above a part where
1/2 5/8 of bark had been
removed some time before)
sprawling shrub 1 m. long,
fruit immature.

prostrate herb, fls.
purplish, fruit blue.
rosettes with ~~upper~~
leaves erect, outer divergent-
ascending inflorescence
almost 2 m. tall, ~~and~~
~~the~~ branches of the
first order forming
racemes of bright
scarlet flowers.

individuals solitary,
fls. white.
shrub 20.7 m. tall, fls.
coral red, pale green
distally, fruit reddish when ripe.

- L 21976 *Asclepias*
common in low bush
- L 3 77 *Cissampelos*
rare on ridge
- L 4 78 *Ischaemum*
common, terrestrial
- L 4 79 *Alnus*
small colony ~~in~~ in somewhat sheltered place
- L 4 80 *Gaultheria*
common on exposed open spots
- L 4 81 *Hedyotis nitida*
occasional in low bush
- L 5 82 *Calea pennellii* det. S. F. B.
common
- L 5 83 *Myrsine*
common
- L 2 84 *Castilleja*
cultivated around ranch-house
- L 4 85 *Prunus* *Prunus*
Prunus
- L 4 86 *Solanum jasminoides*
- L 2 87 *Cedrella*

vine, fls. white.

shrub 0.2 m. tall.

~~fls.~~ leaves very thick,
fls. varying shades
of pink, fruit reddish
shrubs 1.5 m. tall

fls. deep pink, fruit black.
fleshy

bushes 0.5 m. tall.

buds purplish, flowers
white within, leaves
whitish beneath.

bush up to 0.5 m.

fls. bright yellow.

tree 3 m. tall, fls.

yellowish white.

fruit immature.

upper part, + calyx scarlet distally,
corolla green with lower edge orange.

tree 6 m. tall, leaves

rather young, flowers

white, with a rather

nauseating odor, fruit

immature.

vine climbing over

trellis, flowers white.

large tree 1.5 m. tall,

leaves dark green.

fruit very immature, mature

ones out of reach several cm. long.

✓ June 25 - Choachi, Cundinamarca
~~cut~~ street tree, common,
usually cut back for
firewood, giving a pollard-
appearance.

L 2.1933 *Salix humboldtii*

✓ June 30 - Cali, El Valle
old road on a weedy, bushy
slope 1040 m.

L 4 89 *Psidium guineense*

L 6 90 *Lasiacis*
thicket

L 3 91 *Labi*

L 4 92 *Wattheria*

L 7 93 *Melast.*

L 5 94 *Jacquemontia*

L 4 95 *Lida*

L 5 96 *Tecoma stans* L.

L 3 97 *Stercul.*

L 3 98 *Passiflora?*

L 6 99 *Eugenia*

diffuse habit.

- shrub 2 m. tall
cane-like but bushy 2 m. tall

- erect herb with sage-like
odor, fls. whitish.

- erect shrub 1 m. tall,
fls. yellow.

- branched shrub 1 m.
tall, fls. white, fruit
purple-blue. Leaves
greasy-lustrous above.

- vine with blue flower.
fls. yellowish

- bush 2 m. tall, fls.
bright yellow, pods
hanging vertically.

- herb 1 m. tall, flowers
violet.

- herb 1.5 m. tall, fls.
pale pink

- shrub 2 m. tall,
fls. white, fruit immature

L 22000 *Rut.*

L 3 01 *Stylosanthes*
in road

L 5 02 *Richardia scabra*

✓ July 1 - N. fork of Rio Yumbo,
5 km. W.N.W. of Yumbo, 15 km.
N. of Cali, El Valle 1450 m.
wooded ravine, second growth.

L 4 03 *Tournefortia*
eroded open slope

L 2 04 *Galium hypocarpum*
growing up thru brush
at edge of woods

L 8 05 *Cosmibuena*

L 4 06 *Chiococca alba*
underbrush in ravine

L 10 07 *Cosmibuena*

✓ July 1 - near small affluent of Rio Paros,
half-way bet. La Cumbre & Pitaco,
17 km. N.N.W. of Cali, El Valle 1650 m.
hedgerow along road, cleared land

L 9 08 *Ladenbergia*

shrub 2 m. tall, branches
long, spreading, fl. white.
fls. yellow

ascending herb, decumbent
at base, fls. whitish.

bush up to 1 m., fls. dirty
white.
fruit orange, fleshy.

tree 10 m. tall 25 cm. thick,
leaves coriaceous, smooth,
turning deep red when
old, fls. white, turning
orange-brown when old,
unpleasantly very fragrant.

fruit immature
elongate shrub, fruits
white, fleshy, then dry.

tree 10 m. tall, 20 cm. thick,
leaves coriaceous, smooth,
turning deep red when
old, fruit immature (bark sample)

tree 10 m. tall, leaves glossy,
fruits reddish when not quite ripe.

hills n. of

July 9 - Choachi, Cundinamarca

brushy patch on cleared steep slope 1900 m.

L.

22009

3

Tournefortia

July 9 - hills s. of Ubague, Cundinamarca

steep ~~badly~~ eroded slope 2150 m.

L.

6 10

Orch.

common

L.

5 11

Vaccinium

common

brush 1/2 m. tall, fls. yellow

L.

4 12

Dodonaea viscosa L.

common

L.

7 13

Dicromena

common in grassy places

L.

1 14

Borreria

rare

L.

7 15

Solanum

occasional, ridge top

L.

1 16

Coccyzpselum

rare in brushy patch

L. 72018a Lencin

L.

4 17

Symbolanthus

scattered

L.

2 18

Passiflora

in brush patch

L.

5 19

Eupatorium

common

shrub 1.5 m. tall, fls. white.

large clumps, leaves thick, leathery, fls. translucent buff color.

low bushes up to 0.8 m. fls. coral pink with green distal 1/3, bracts dull coral, fruit immature. young leaves red.

shrubs up to 0.8 m. tall.

fruit dark maroon purple. bracts white

fls. white.

low shrub, corolla purple, stamens orange-yellow, androecium slightly zygomorphic.

prostrate herb, fls. violet

shrub 1-2 m. tall, fls. light green, somewhat zygomorphic.

vine, fls. greenish white

infl. & involucre maroon, fls. white, herbage aromatic

✓ July 16 - El Chico, just at northern outskirts of Bogotá
brushy subparamo slopes
3000 m.

L 22020 *Gaultheria*
common in brush up to a much higher altitude

✓ July 16 - Paramo above El Chico, just north of Bogotá, the highest point of which bears ^{marks} ~~the place~~ where the municipios of Bogotá, Usaquen and La Calera come together paramo on mostly 3150 - 3350 m sandstone ledges.

L 21 *Lycopodium*
occasional

L 22 *Jamesonia*
common

L 23 *Nertera granadensis*
shaded by deep brush in ravine

L 24 *Bartschella*
common

L 25 *Melast*
common, scattered

L 26 *Rynchospora*
common on open slopes

27 *Siphocampylus columnae*
common in sparse brush

shrub 1.5 m. tall, flowers yellowish-white.

erect

erect, rhizome deeply buried

forming mat on ground
flowers yellow-green, fruits bright red, fleshy.

erect, calyx purple, corolla yellow.

shrubs 1.5 m. tall, calyx and hypanthium red, corolla deep purple.
isolated plants, culms erect.

bush 1 m. tall, erect, corolla somewhat inflated, orange-red with yellow-green lobes, sap milky.

- 220 28 *Lobelia canera*
occasional, especially in sandy
burned places
- L. 8 29 *Pinguicula*
local on flat ridge tops
in black soil with admixture
of sand.
- L. 6 30 *Xyris*
local
- L. 31 *Eriosorus lindigii* (Mett.) Watschki det. Torgon 1970
~~with~~ west-facing rock
crevices.
- L. 32 *Graphalium*
common on rocky slopes
- 33 *Fenecis*
common on rocky slopes
- L. 34 *Hesperis*
common on rocky slopes

July 25, Granadas, on Rio Less,
one of headwaters of Rio Lobia,
7 km. s.w. of Charquitos, Cund.
pasture, fence row 2300 m

- L. 12 35 *Cinchona pubescens* Vahl. var.

rosettes occasionally mat-forming
fls. blue-violet

hairs on leaves with
droplets of fluid, flowers
violet.

small clumps,
flowers yellow.

heads straw-color

leaves leathery with
impressed veins, fls.
greenish white.
- roots orange, leaves
distichous, fls. yellowish.

Anal. Mellis	
Q+C	1.6
di	0.7
Qui	mm. to
P.C.H.	2.3

tree 3 m. tall, ~~15~~¹⁵ cm. thick,
young growth sticky, stipules
reflexed, veins of leaves
reddish, leaves appearing
rugose ^{above} from impressed
secondary veins.

✓ July 25 - head of Rio Leco, one of headwaters of Rio Subia, 5 km. s. w. of Charquito, Cund. 2750 m. w. slope, partly cleared and grazed.

L 22036
8

pasture

L 37 *Polygonum nepalense* Meisn. det. NCF. pasture, the most abundant plant but mostly not flowering.

L 5 38 *Fuchsia* opening in edge of forest

L 4 39 *Cinchona pubescens* Vahl edge of forest

L 4 40 *Fragaria* pasture, abundant

L 2 41 *Galium hypocarpium* on old stump in pasture

L 3 42 *Lophocampylus Benthamianus* Walf. Rubi climbing in tree in pasture

L 3 43 *Nertera granadensis* abundant in pasture in sheltered places and on hummocks

2 km. n.e. granadas.

rounded tree 5 m. tall, fruit immature, ripest ones turning reddish. fls. pink

shrub 3 m. tall, fls. scarlet, pendent, ripe fruits oval, black, fleshy, unripe green, cylindrical.

small crooked tree 5 m. tall, 6 cm. thick, sterile, young growth sticky, leaves not especially rugose above, dull.

flowers white, fruit red, pleasantly acid, prostrate, fruits orange, fleshy.

vine, flowers crimson-purple, anthers black

prostrate, fruits scarlet, fleshy.

172

1944 - Colombia

L. 22044 Solanum
5
common along trail in
forest

L. 5 45 Solanum
common along trail in
forest

L. ^{with Valencia}
e. w. Valencia, 46 Solanum

✓ July 28 - Bucaramanga, Sant.
weedy roadside 1025 m.

L. 47

L. 48 Polygala

L. 49 Croton

L. 50 Diodia

L. 51 Chloris

L. 52 Cissus?

L. 53 Phlox drummondii

cultivated in window
boxes and patios of Hotel Bucarica

✓ July 30 - hills around headwaters
of quebrada San Francisco,
back of Bogota, Cund.

paramo slopes 3400-3500 m.

L. 54 Pinguicula

flat sandy burned place
on top of ridge, one plant seen.

L. 55 Aragoa

abundant on steep rocky slopes

L. 56 Valeriana
in bush

(3150 m.)

Cundinamarca 173

- Santander

shrub 2 m. tall, fls.
white with yellow
anthers (appears same
as #22045)

- straggling weak shrub
3 m. tall, fruits translucent
shining red. (appears
same as #22044)
fls. white.

- stungly aromatic, fls. purple.

- fls. pale greenish

- fls. white

- prostrate, stiff,
fls. white.

flowers magenta with
darker eye.

hairs with a droplet of
liquid at apex, flower
blue-violet.

- plant gray-green, 1.5 m. tall

scandent shrub, climbing
on other shrubs, fls. white.

- L. 22057 *Aragoa*
abundant on rocky slopes
- L. 58 *Apium*
common locally, especially on flat places.
- L. 59 *Castilleja*
common locally
- L. 60 *Aragoa*
rare on rocky slopes
- L. 61 *Orthozanthus chimborazensis*
common, especially in disturbed places.
- L. 62 *Solan.*
occasional in bushy ravine (3300m)
- L. 63 *fern*
vertical earthy bank (3700m)
- L. 64 *Berberis*
bushy ravine (3200m)
- July 30 - ^{Cerro} Paramo de Guadalupe,
back of Bogota, Cund.
- * subparamo with somewhat scattered brush
- L. 65 *Eccelemis coarctata*

- shrub 1.5m. tall, gray green, fls. white.
- strong odor, fls. white.
- bracts + calyx scarlet distally, corolla green
- ~~the~~ above, orange yellow below.
- shrub 1 m. tall, green, fls. white, ^{growing} with the common species represented by # 22055 + 22057.
- clumps, leaves + scapes erect, fls. blue-violet.
- spawling herb leaning on other plants, fls. lemon yellow, fruit purple-black when ripe (but only one seen ripe) erect.
- shrub, leaves white beneath, fls. chrome yellow.
- small clumps, leaves and scapes erect, flowers violet, seeds apparently ripe when fruit is still green and somewhat fleshy. Stamens 4.

with
J. Bellis

✓ Aug. 5 - half way bet.
Guayabital and Lervita,
Canyon of Rio Negro, Cund.

steep bushy slope, second
growth

L. 22066 Laranija

L. 867 Rondeletia

with
J. Bellis

✓ Aug. 5 - 2.5 km. s.e. of Lervita,
just w. of Buena Vista,

0.5 km. n.w. of Villavicencio, Meta
~~steep slope~~ ^{edge of clearing} ledge 1000 m.

of steep side of ravine

6 68 *Remijia pedunculata*
semi-shade

Anal	Bellis
g+c	0.6
cin	0.6
quin	traces
TCA	1.2

11 69 *Remijia pedunculata*
semi-shade

Anal	Bellis
g+c	N.M.F.
cin	1.00
quin	traces
TCA	1.0

2 70 *Remijia pedunculata*

Anal	Bellis
g+c	N.M.F.
cin	0.5
quin	N.M.F.
T.C.A.	0.5

small tree 4 m. tall,
buds white

shrub 2.5 m. tall,
fls. with dull red tube,
bright rose throat, white
lobes.

mancha of *Remijia*

partly cleared
all trees collected have a sticky
substance between stipules)

collection
of stipules
taken at random
from same
tree

small tree 7 cm. thick, about
5 m. tall, flowers white,
lobes recurved. (Bark sample)

small tree 9 cm. thick, about
6 m. tall, flowers white,
(bark sample) (collection
of stipules taken at random ^{from same} tree)

base of clump fused
with several other
species into a common trunk,
this sprout about 7 cm. thick,
6 m tall fls. white, (bark
sample) (collection of stipules
taken at random, from same
tree)

22071
4

Remijia pedunculata
semi-shade

smaller branch
q+c 1.7
cin 0.6
quin 0.1
T.C.F. 2.4

Anal Bellis
q+c - 1.5
cin 0.9
quin. est. 0.1
T.C.F. 2.5
larger branch

✓ Aug. 6 - low hills just
~~top of the~~ edge of ravine
of ~~the~~ Caña in alluvial
fan just above Villavicencio,
Meta 660m.
densely wooded ravine

3 72 *Remijia pedunculata*

Anal Bellis
q+c - N.M.T
cin 0.9
quin N.M.T
T.C.F. 0.9

bark
closely
tightly
adherent,
rather dry.

4 73 *Remijia pedunculata*

Anal Bellis
q+c - 1.5
cin N.M.T
quin 0.2
T.C.F. 1.7

L 3 74

edge of woods

tree 5 m. tall, 2 forks,
from near base, one 4 cm.
the other 7 cm. thick,
flowers white (2 bark
samples one from each
fork) (collection of
stipules taken at
random from branches
of same tree) sticky substance
between stipules)

Remijia pedunculata
common, but not dominant,
all trees seen small.

small sterile tree 7 m.
tall, 3 cm. thick (bark
samples) (collection of stipules
taken at random from same
tree) (sticky substance
between stipules)

small tree, almost
sterile, a few buds present.
6 m. tall, 10 cm. diam.
sticky substance between
stipules (bark sample)
(collection of stipules
taken at random from same
tree) (bark peels easily,
moist).

vine, fls. white

22075 *Remijia pedunculata*
7

Anal	Bellis
q+c	1.7
Cin	0.2
Quin	0.4
T.O.A	2.3

✓ Aug. 6 - along Bogota - Villaviciencis road in gulch above Villaviciencis, Meta alt. 900 m. steep gulch side below road.

L5 76 *Warczewiczia coccinea*

L2 77 *Qurania*
climbing in shrub by road

L1 78
climbing in *Warczewiczia*

Aug. 6 - Buenavista, hills above Villaviciencis, Meta second growth forest on 1200-1230 m. steep east slope

L4 79 *Mikania*
common along roads + trails

small tree 5 m. tall, 8 cm. thick in lower horizontal part of trunk, mainly a group of sprouts from broken trunks, lower portion of this peeled, youngest growth sticky + copper-red, flowers white (bark sample) (stipules collected from same tree at random) sticky substance between stipules.

small tree, ~~small~~ ^{enlarged calyx} brilliant scarlet, ~~flowers~~ ^{bracts} yellow.

vine, calyx deep ^{red} orange, ~~flowers~~ petals orange. immature fruits green, shiny, ^{longitudinally} variegated with pale green.

vine climbing in shrubs + trees, flowers white.

L 2 2030
5

Columnnea
in dense shade, common

L 2

81 *Symbolanthus*
lower edge of forest

L 4

82 *Palicourea*
upper edge of forest

L 4

83 *Lechizocalyx*
upper edge of forest, common

L 4

84 *anon.*
upper edge of forest

L 4

85 *Liparuna*
upper edge of forest

L 1

86 *Phoradendrum*
parasitic on *Remijia pedunculata*,
upper edge of forest

12

87 *Remijia pedunculata*
upper edge of forest, rare

L 5

88
edges of forest

stem fleshy, leaves
deep purple beneath,
deep green ~~above~~ above,
calyx vermilion,
corolla silvery-coal.
~~shrub~~ shrub with
sharply square stems,
flowers pale green,
somewhat zygomorphic.
small tree 5 m. tall,
infl. purple in fruit.
small tree 5 m. tall,
infl. dry.
shrub, fls. green,
leathery, stripes of green fruit red
shrub, aromatic, fruits
red, fig-shaped.
plant olive-green.

Anal Bellis
g+c 1.2
cu 0.9
aim. wt. 0.1
TCF 2.2

small tree 5 m. tall, 7 cm. thick,
cankers on lower part of
trunk, leaves yellowish, small,
veins impressed above,
fls white (bark sample from
above cankered part) (stipules
collected at random from same
tree) sticky substance between
stipules
spreading by runners
flowers scarlet.

Aug. 13 - Went out into the Sabana de Bogota, and a day or two later flew over parts of it.

Large areas have been submerged since April by the heavy rains. The water does not seem to drain off. I do not know the reason for this. The people say that it is just that there are more rains this year than before. It is obvious that the denuding of the hills accounts for the accumulation of water, but its failure to run off must be due to something else, possibly a slight tilting of the strata of the valley, possibly connected with the earthquakes

of a few months ago. Floating aquatics such as *Azolla* and *Limnobium* are covering parts of the area.

The *Eucalyptus globulus* that lines many of the boundaries is finally showing the effects of the prolonged submergence of its roots. Whole rows are dying. The *Falix humboldtii* is not affected.

~~a notable effect~~
A peculiar thing about these *Eucalyptus* is that in certain places, large trees have preserved their blue, juvenile foliage. The reason for this is not obvious, as they are growing side-by-side with normal trees of the same size.

Aug. 17 - Fundacion,
Magdalena
along city streets and ~~and~~
railroads, weedy places.

- L. 2 89 *Sida*
L. 2 90 *Cuphea*
L. 2 91 *Euphorbia pilulifera* L.
L. 2 92 *Borreria*
grassy place along road
~~93~~
L. 3 93 *Hedyotis corymbosa*
grassy place below curbstone.

Aug. 18 - Santa Marta, Magd.
along water-front 1 m.

- L. 2 94 *Mollugo verticillata* L.
railroad embankment
L. 3 95 *Portulaca oleracea* L.
around buildings
L. 3 96 *Boerhavia*
along road, common.
L. 3 97 *Amaranthus crenatus?*
along road
L. 3 98 *Boerhavia*
along roads, common
L. 2 99 *Ipomoea*
cultivated, climbing
on buildings + fence

fls. orange-yellow
fls. magenta, branches
more or less in one plane.

fls. white, hairy within,
turning pinkish, leaf
veins impressed above.
fls. white, corolla
short - salverform.

hills above beach thru-forest
of *Prosopis* & *Cereus*.

prostrate or almost so,
fls. white.
plant fleshy, ascending
fls. yellow stamens few 10-15
"verdulaga" used medicinally.
ascending, annual.
fls. pale pinkish.
leaves white beneath, margins
undulate - crispate.
erect red stemmed
herb, ~~to~~ up to 1 m. tall.
sub-prostrate, extensive
herb, much branched,
fls. crimson to dark red.
vine, partly hirsute,
partly glabrous, fls.
white with purple
throat.

- L. 2 100 *Heliotropium curassavicum* L.
common along paths
& around seeps.
- L. 3 01 *Trianthema portulacastrum*
common along roadsides
- L. 3 01 *Lesuvium portulacastrum*
common along roadsides
- L. 2 03 *Eclipta alba*
in seep just above beach
- L. 4 04 *Jussiaea*
in seep just above beach,
with # 22105
- L. 3 05 *Jussiaea*
in seep just above beach
with # 22104

- very glaucous, fleshy,
flowers white with
greenish center, nutlets
coherent, externally
fleshy.
- prostrate, leaves
thin-fleshy, stems
reddish, fls. pink.
- prostrate, stems
green, leaves spreading,
glaucous, somewhat
compressed but fleshy,
fls. very pale lavender.
(this is common form,
but others seen ^(set 22100)
with more anthocyanin)
- large herb, spreading
and much branched,
stem ^{dark} red-brown, fls. white.
- herbaceous, forming
large deep mat,
fls. yellow, 5 parted,
petals ^{broadly} oblong-obovate,
easily caducous.
- herbaceous forming a
large deep mat, fls.
5 parted, petals clawed,
~~cream~~ broadly obovate,
cream-white distally
yellowish at base,
leaves with "metallic"
sheen, especially beneath.

thorn forest on flats
back of beach, mostly
Prosopis, Guaiacum, Acacia,
Pereskopsis, Calotropis, ^{leaves}
L. 22106 Sesuvium portulacastrum
on flat in openings

L. 7 07 Calotropis procera (L.) Ait. f.
abundant, this plant
on sand dune, others
on flats and slopes

L. 4 08 Prosopis
abundant, dominant
in vegetation

L. 4 09 Guaiacum
abundant, conspicuous
in vegetation

L. 3 10 Acacia
common

shaly talus slope above beach,
at base of cliff.

L. 7 11 ledge at top of talus.

prostrate, carpet-forming,
stems red, leaves
spreading, green,
flat, fleshy, fls.
pink.

small tree 2 m. tall,
wood weak, trunk
10 cm. thick near
base, leaves gray-
green, sap milky,
fls. white with
inside of lobes dull
purple, crown segments
bright purple distally,
fruit strongly
inflated.

flat-topped tree 4 m. tall,
fls. greenish yellow,
mostly on rather
old wood.
tree 5 m. tall, fruit
orange-yellow.

bush 2 m. tall, fls.
orange-yellow.

~~small~~ suffrutescent herb
forming rounded clump.

L₂ 12 Sporobolus

2 13 Portulaca

✓ grounds of Prado of Magdalena Fruit Co.

L₁ 14 Heliotropium
weed in lawn around house

L₄ 15 Spilanthes unguis fusc.
weed in lawn around house, common

L₃ 16 Heliotropium
weed in lawn in prado

L₂ 17 Quisqualis indica
cultivated, climbing on fence

L₅ 18 Tribulus cistroides
abundant weed

L₄ 19 Prosopis
in grounds, cultivated
but probably spontaneous.

L₃ 20
parasitic on Prosopis,
commonly seen also on
Terminalia catappa and
other trees.

L₃ 21 Euphorbia pilulifera L.
weed near house

L₃ 22 Ixora
ornamental in lawn, cult.

L₃ 23 Jasminum azoricum
cult. climbing on bushes

L₃ 24 Alcaimanda cathartica
cult, climbing on trellis

small tufts, spikes
— mostly erect.
fleshy herb with enlarged
roots, leaves sub-terete,
appressed to stem,
bronze-green.
— erect, fls. lavender

— prostrate, mat-forming,
heads white.
flowers white

— vine, buds red without,
fls. white, turning red.
prostrate, flowers
bright butter yellow.
— flat topped tree 6 m.
tall, 25 cm. thick,
branches drooping,
leaves slightly blue-
green.

— flowers white, ripe
berries red, oblong.

— shrub, flowers scarlet,
ripe fruit red (only 1 seen ripe)
— vine, fls. white with
yellowish tube, very fragrant
— vine, sap somewhat
milky, fls. bright yellow.

- L. 2 25 weedy roadside
Cassia
- 4
- L. 2 26 trampled place
Ruellia
- L. 4 27 Rauwolfia tetraphylla L. det. S. Smith, 83
- L. 4 28 Amaranth
very abundant
- 16
- Barrio del Prado,
✓ Aug. 20 - Barranquilla, Atl.
- L. 3 29 Tabernaemontana
cultivated, grounds of Hotel del Prado
- weeds in vacant lot.
- L. 4 30 Melochia
common
- L. 1 31 Melochia
common
- L. 1 32 Abutilon
- L. 2 33 Pilea
common
- L. 2 34 Passiflora
common
- L. 1 35 grass
- L. 2 36 Passiflora

- prostrate, fls. yellow
- fls. blue-violet, throat plicate
- shrub 1 m. tall (others 2 m.) fls. white, fruit red. forming mats
- tree 15 m. tall
- fls. magenta
- fls. white
- fls. orange-yellow
- fls. white

196

197

198

199

Correction for temp. °C.: _____
 Corrected polarimeter reading: _____
 % Quinine sulfate heptahydrate ----- %
 % Cinchonidine sulfate trihydrate ----- %

Cinchonine & gooch -----
 Gooch -----
 Cinchonine -----
 For solubility in c.c. alcohol -----
 Corrected weight cinchomine -----
 % Cinchonine (anhydrous) ----- %

Quinidine hydroiodide & gooch -----
 Gooch -----
 Quinidine hydroiodide -----
 For solubility in c.c. alcohol -----
 Corrected weight quinidine hydroiodide: -----
 % Quinidine (anhydrous) ----- %

% Total of quinine, Cinchonidine, Cinchonine & Quinidine (each anhydrous): -----

-- Report sent to office

Signed - Analyst

*Start
 with notes page 168*

-- Received at laboratory

Date

-- To drying room

-- From drying room

Description of dry bark:

Tests - Grahe:

Dragendorf:

Ulan:

Bark sample weight-----: _____ gms.

Quinine & cinchonidine tartrates & gooch:

Gooch-----: _____

Tartrates-----: _____

For solubility, filtering temp: _____ °C: _____

Corrected weight tartrates-----: _____

% Quinine plus cinchonidine (anhydrous)-----: _____%

Polarimeter reading-----: _____ min

Correction for temp. _____ °C.: _____

Corrected polarimeter reading: _____

% Quinine sulfate heptahydrate-----: _____%

% Cinchonidine sulfate trihydrate-----: _____%

Cinchonine & gooch-----: _____

Gooch -----: _____

Cinchonine-----: _____

For solubility in _____ c.c. alcohol---: _____

Corrected weight cinchomine-----: _____

% Cinchonine (anhydrous) -----: _____%

Quinidine hydroiodide & gooch-----: _____

Gooch-----: _____

Quinidine hydroiodide-----: _____

For solubility in _____ c.c. alcohol--: _____

Corrected weight quinidine hydroiodide: _____

% Quinidine (anhydrous)-----: _____%

% Total of Quinine, Cinchonidine, Cinchonine & Quinidine (each anhydrous): _____

-- Report sent to office

Signed - Analyst

Handwritten notes and signatures in red and black ink, including the number 168.

Name

Sample No.

Address

Date received

Source

Roots

Identification

Trunk

Branches

Geographical data

Zone

Altitude

Color

Instructions to Laboratory

Priority Status

1

2

3

Special Instructions

Signed

Name of Lab. and Date Delivered to Lab.

Remarks

Date

-- Received at laboratory

-- To drying room

-- From drying room

Description of dry bark:

Tests - Grahe:

Dragendorff:

Ulan:

Bark sample weight-----: _____gms.

Quinine & cinchonidine tartrates & gooch:

Gooch-----: _____

Tartrates-----: _____

For solubility, filtering temp: _____°C

Corrected weight tartrates-----: _____

% Quinine plus cinchonidine (anhydrous)-----: _____%

Polarimeter reading-----: _____ min

200



