

**RECORD**



## ACCOUNT BOOKS

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5255

10 17 20  
18 (10) 20

pa 10

Handwritten notes: *Handwritten notes*

Shade

# specimens of ...

# ...

Control

12 (10) 2 1

GRAY HERBARIUM, HARVARD UNIVERSITY  
PLANTS OF BOLIVIA

Prov. of La Paz: Dept. Larecaja, 6-10 km E of Consata along new road. (68°30'W - 15°15'S). Montane forest. Alt. 1350-1400 m. Steep slope along waterfall. Terrestrial fern. Leaves dimorphic.

Det.

Coll. Calvin R. Sperling, S. King, S. Beck, J. Solomon

No. 5438

14 December

1981

T Y M



5255

GRAY HERBARIUM HARVARD UNIVERSITY  
PLANTS OF COLOMBIA  
Basellaceae

Boussingaultia

Department of Cundinamarca, Southwest of Bogotá, 1 km. Northwest of the represa de Muña on the road to El Colegio. Steep slopes Southwest of the road overlooking the Rio Bogota. Dry rocky slopes with hard clay soil, scrubby brush and brambles. Succulent vine to 4.0 m. climbing over brush. Inflorescence dense, much branched; Flowers yellow-orange in bud, cream colored when open, not expanding fully, becoming yellow-orange then black when fruit is mature; perianth surrounding fruit at maturity; fruit falling early; flowers observed visited by many small flies. Stems red or reddish, dextrosely twining, base of stem very fleshy, with a brown papery epidermis at base, sending up new shoots from base; leaves, especially the larger, cordate, younger leaves not obviously cordate, leaves reddish, the margins red, very fleshy, not producing tubercles in the leaf axils; perianth segments not keeled, stamens reflexed; anthers withering or falling quite early; stigma capitate, not divided, scarcely lobed but more or less triangular. Many seedlings observed.

Coll. Calvin R. Sperling

No. 5255

3 October 1981

10 17 2  
 18 (10) 2 2  
 per

5255

#      #      #      #  
 12      (10)      2      1  
 # *specimens*      # *specimens*      # *specimens*      # *specimens*

T Y M  
 5504

Live material

5255, 5295, 5297, 5293, 5294, 5303, 5309, 5314

5253

10 sheets

5254

6 sheets

October 10, 1981

outer layer. Ecuador, Prov. of Carchi,  
w. of Tulcan & west of ~~IT~~ Tufiño.

At the Aguas Hediondas, a sulphurous  
spring of very hot (almost boiling) extremely  
malodorous water. 3,450 m.

Open areas were paramo with Espeletia  
and Buaya. Collections made at the  
head & side wall of the valley in  
Forest. Polytrichum? & Wernmannia?  
on twigs. of ~~branches~~

(77° 55', 5000)

5256

(1), 1 - Lichen, on twigs.

5257

(1), 1 - Lichen, on twigs.

5258

(1), 1 - Lichen, on twigs.



October 3, 1981

Colombia, Cundinamarca. Sw of Bogotá  
1 Km NW of the represa de Muña on  
the road to El Colegio. Steep slopes  
SW of the road overlooking the Rio Bogotá  
Dry rocky slopes with hard clay like soil  
scrubby brush, brambles. *Rubus*, *Passiflora*,  
Loranthaceae shrubs etc.

5255 *Boussingaultia*

① <sup>QCA</sup> 4 Vine climbing over brush, to 4+ meters  
long. Inflorescence dense, much branched.

Flowers cream colored - not expanding fully, becoming  
lime green at yellow-orange, then black when fruit is mature.  
QCA. Flower abscising around mature fruit. Fruit falling early  
above the 2 perianth bracts. Flowers yellowish-orange  
in bud. Observed visited by many small flies.  
Stems red or reddish, leaves, especially the larger  
cordate, the younger leaves not obviously cordate  
leaves reddish, the margins red, very fleshy  
and mucilaginous. Stems turning dextrorsely  
about twigs. Perianth segments not keeled  
stamens reflexed, anthers withering or falling  
quite early. Stigma capitate not divided  
scarcely lobed but more or less triangular.  
Not producing tubers at the base. Sending up new  
shoots above ground from near the base  
base of stem very fleshy, with a brown papery  
outer layer. 1 tuber  $\approx$  fistful. Seedling seen.

Oct 16, 1961

Ecuador. Prov. of

N. of Ibarra on old Panamerican Hwy, for a few Km. then right on road to Mariano Acosta. on Road  $\frac{1}{2}$  way between Yura Cruz and Mariano Acosta.

Alt. 3450m. Semidry ravine shrubby with Alnus. ( $78^{\circ} 03' W$ ,  $0^{\circ} 20' N$ )

5259

3(2) 1, - shrubby, to 0.75 m. Velvety. - flowers white (2)  $\rightarrow$  4

5260

5(5) 1, - Ericaceae, shrub to 2.5 m. ~~Flower~~ Tips of calyx ~~lobes~~ lobes and Corolla pink.

5261

3(3) 1, - Echinaceae shrub to 2.0 m.

shrub, Corolla red orange on exterior, orange on interior, exserted? anther with black anthers?

5262 Viburnum?

5(3) 1, - opp. leav. ~~color~~ spreading shrub. ~~flower~~ calyx white

5263 Viburnum?

5(3)1, - shrub to 3.0 m. color white

3550 m edge of paramo - forest  
transition in burned paramo.

5264

5(3)1, - Asteraceae, shrub to 1.0 m. rays pink  
turning white.

Oct. 17, 1981

78° 03' W 0° 20' N

Dense forest at 3500 m. of no East slope  
very steep slope. cloud forest - elga forest

5265 Polypodium.

7, 5, 1, - pendant from underside of overhanging tree.  
rhizome creeping along underside of tree.

5266

7(4)1, - filmy fern. epiphyte on lower parts of tree trunks

5267 Grammitis

5(2)1, - epiphytic & pendant on mossy tree trunks

5268 Polypodium

4(3)1, - epiphyte on tree trunks and on rocks.  
leaves arising out and becoming pendant.

5269. Grammitis  
 1 - forming colonies on steep very mossy slopes.
- 5270 Thelypteris  
 4(2) 1, - in deep moss on steep slopes, rhizome more  
 a less horizontal in moss.
- 5271 Elaphoglossum  
 5(5) 1, - rhizome erect and free standing, growing over  
 the trunk of moss on steep slope.
- 5272 Elaphoglossum  
 3(3) 1, - in deep moss on steep slope.
- 5273 Lycopodium  
 5(4) 1, - Terrestrial on steep mossy slope.
- 5274  
 2(2) 1, - Araceae, stem erect. inflorescence arching  
 out, becoming pendant.
5275. Peperomia  
 2(2) 1, - abundant on mossy slopes.
- 5276  
 2(2) 1, - Ericaceae, corolla red, tips of calyx  
 whitest, calyx and pedicel red.  
 a shrubby epiphyte.

5277 *Cladina*

(1) 1, - Terrestrial, on mosses.

5278

1(1) 1, - Orchidaceous, Terrestrial *achit* on mossy  
cliper, spher. brown down the median, margins  
of spher. yellow. Petal yellow w/ brown  
spots on inside. Stomode with brown  
spots on the upper back side.  
lip w/ 4 firm like projections.

---

3550 m. shly <sup>pin</sup> *brist* & edge of *paran*.  
*paran* burned

5279

8(1) 11 *Antreas*, shut to 3m brist the-purple

5280

10(1) 11 shut to 3.0m, fruits mucous  
2. ate spher, succate. Stomam yellow  
dark the J.

5284

8(5) 61 Tree to 5.0m, petal yellow  
Stomam fused & much convolute or contorted

5282

7(6) 1,1 Polygonaceae, climbing on shrubs.

5283

4(4) 1,1 Asplenium, creeping on many tree trunks.

5284 Lycopodium.

2-1,1 growing over many old fallen trees.

5285

12(4) 1,1 Loranthaceae.

small tree to 4.0m. flowers yellow-orange.

5286

4(2) 1,1

<sup>Loranthaceae on tree</sup>  
shrubby ~~erect~~ <sup>tree</sup>, corolla red to tinge and  
brown - orange in between: interior of  
calyx orange-yellow.

5287

9(4) 1,1

Loranthaceae, parasite on large woody  
erectaeae (Cavendishia?). leaves brownish  
fruit white - gelatinous.

5288 Oropogon

(1) 1, - dark brown - on twigs (dead)

5289 Oropogon

(1) 1, - dark grey

5290

7, (3) 1, 1 *Moraceae*, tree to 5.0 m.

5291

(1) 1, 1, portula? on exposed (scald) soil along road  
in park

X  
1 det  
14/10

Oct 19 Mariano Acosta,  
ca 2950 m. (77° 59' - 0° 18' N)

5292 *Physalis peruviana*

4(4) 1, 1 cultivated in garden, readily rooting  
itself about the garden, fruit very tart &  
tart (red sample taken)

Hacienda Yura Cruz, above Hacienda Yura Cruz  
3 km. Alt 3350. semi-dry disturbed  
shrubland semi-dry shrub with some Alnus  
and large Lobelia. (78° 03' - 0° 20' N)

5293 *Tournefortia hookerii*


(35) 3, 1 climbing on shrub in shady ravine.

Live mat. lower stem running along ground and  
at QCA occasionally rooting. lower stem with  
exfoliating epidermis.

Live

40 sheets

(red sample (12) taken)

older leaves & those in direct sun yellow -  
otherwise leaves green - succulent.  
lower part of petioles reddish, especially on  
the upper side, leaf veins ending in  
enlarged tips. stems & nodes succulent  
flowers green. ovule large - is  
encompassed by velvety. the style  
root very short - the part to top  
of ovule? stamens detaching  
away from stigma sepals (bracts)  
green and have a line the same as  
velvety patch  - not topped  
like velvety, encompasses apparently  
thickening slightly after flowering.  
seeds falling or soon as mature or  
earlier.

flowers greenish - to cream greenish.  
after flowering sepals & petals again  
come in and surround the developing  
seed, leaves in shade much  
larger, leaves dropping - yet the  
stem (quite old stem) will produce  
new shoots at a node.

one stem I was used between the  
nodes where the stem was curved and  
rising but not at the nodes.



5

October 20. ~~Field~~

steep slope overlooking Ibarra & Log  
 La... 3 km S. on the road to  
 Maricao Acote that turns off the old  
 Panamerican Hwy. Alt. 2500

Very dry scrubby slopes ( $78^{\circ} 05'W$   $0^{\circ} 23'N$ )

5294 *Boussingaultia*

four (4) small seedlings found growing  
 live mat. on low dry soil - will send back to  
 at QCA. HUH for growing, very red colored leaves

Live

$0^{\circ} 56' S$   
 $0^{\circ} 56' S$

October 23. Poon Cotapaxi

road to Zumbagua through Pudili  
 2 km west of Zumbagua. Intensive Agriculture  
 growing in shrubby cactin. 3.670m

at Poon  
 Sarausha

Very readily ~~root~~ climbing over 2 hanging  
 down. along road.  $78^{\circ} 54' W$   $0^{\circ} 56' S$

5295

*Boussingaultia*

$78^{\circ} 54' W$   $0^{\circ} 56' S$

18 1, 11

Live mat.  
 at QCA.

growing on cactin. reproducing  
 extensively by vegetative means - stem  
 rooting. Stone thickening at base  
 n.v. "Loto". Taken with water  
 for stomach distaste. and also leaves  
 for ~~crystals~~ applied to inflammation  
~~common~~ ~~parachute~~ ~~a~~ ~~parachute~~  
 lower greises

Live

5295

32)

much branched - little twining.  
Inflorences mostly single from axils.  
stems & leaves very brittle.  
leaves mostly folded - tapered to a  
point - not hardly if at all cordate

flowers yellow orange in bud, white  
when fully opened - petals succulent  
and bent in bud.

style pistillate - stigma capitate  
not divided

seeds of former - early falling  
leaves extremely succulent  
an attractive plant.

Oct. 24.

On road 3 km east of <sup>Tuzo</sup> Latacunga  
2550 m

5296 *Lupinus* *metabilis*?

<sup>10</sup>~~10~~ 1.1 cultivated in row at edge of garden  
dry soil, plant woody at base 2 m tall  
staked ~~(A)~~ <sup>white,</sup> yellow blue-purple  
N.V. ch. ch.

Prov. Tungurahua

S. of Latacunga, then East on the  
road to Golpan - 2 km past Pillaro  
16 Km from the Pan Am Hwy.  
3,000m. Alt. 78° 32' W - 1° 10' S

growing on steep bank alongside road and  
on top of concrete walls.

petals white - buds orange-yellow  
petals corolla, style pink.  
stigmas 3-lobed. Stem reddish  
leaves & stems very succulent & brittle

5297 *Boussingaultia*  
2 or 1- + live material

Live mat. -

at ACA

13 Km from Pan Am Hwy.  
at ~~to~~ Puerto Pillaro 78° 33' W - 1° 10' S

5298 *Cyphomandra*

1, 11 cult. in garden, fruits red with  
Longitudinal darker stripes,  
corolla reddish in bud, cream in flower  
tree to 2.5 m.

Paraná Tungurahua

10 km from road Pan <sup>Am</sup> ~~Am~~ <sup>to</sup> ~~to~~ <sup>Pillaro</sup> ~~Pillaro~~  
Just w. of a bridge over the river  
what name? (major valley). Rio Ambato ✓

Dry ~~see~~ loose rocky soil. Rio ~~estuary~~  
Att. 2600 m. on R. 10 km east

7832'w - of Pan Am on Road  
From Ambato to Pillaro  
Pillaro's Rio Ambato.

5299. Polypodium

♂ 1/1 rhizome much branching & covered with  
dense roots.

5300

♂ 1/1 petals 1/2 white, low shrub.

5301

♂ 1/1 shrubby legume, fls rose. (Leguminosae)

5302 Tortula

65

Oct. 25

road from Ambato - Riobamba  
West of road on side road to  
Tisaleo.

In town of Tisaleo, 3150m.  
78°31'W - 1°21'S

5303 *Boussingaultia*

1,1 on earthen fences, n.v.

Live  
Five mat. Tana yuyo - a moraho form higher  
at. 40A. up is said to be used for brushes  
style pink, stem  $\heartsuit$  3-lobed  
very succulent, low stem reddish,  
stem brittle, base of red stems bark  
much thickened

1 Km ~~sw~~ of Tisaleo. in section  
called Calvario. 3550m.

5304. *Ullucus tuberosus*

1,1 cultivated, in mixed planting with Vicia four  
(in flower) potatoes and scatter.

Oca y Mashua. plant w/o leaves  
and said to be 7 months old.

Stems. round, red. light red.  
base of stems red.

Tuber shape: round 1.5-4.5 cm.

Tuber color: light red, turns maroon in sun.  
inner layer red then white

5305 *Ullucus tuberosus*

~~7~~ 1/1 Cultivated in mixed planting with  
*Vicia faba*. plants 4 month old.  
Just starting to produce tubers. Tubers  
long slightly curved - white with occasional  
light pink dots. flowers yellow.  
one flower seen with 6 stamens.

5306 *Tropaeolum*

1, 1/1 flowers orange. a few plants mixed  
with *Ullucus*. tubers cream yellow, long

8 3450m 1 km w of Tisaleo

5307 *Ullucus ~~tuberosus~~ tuberosus*

~~4~~ 1/1 plants being harvested, tubers white  
much fewer white plants cultivated than red, 10 mo. old

Sold in markets in Guayaquil.

mashed & fried in tortilla

- plants lighter colored than red tubers was  
these with old inflorescences apparent.

on red plants of same age none present.

These also with more than aerial stolons

→

5307. cont. Tuber stupa. long & curved with few eyes 1.5 x 2.0 cm —  
3.0 x 11.0 cm. Tuber color: white, with faint hint  
of green. Occasional pink-red dots. Inner layer white  
dot color 1/2 way in only.  
3400 m.

5308 Oxalis

8-1/1 — fls yellow, mixed with ulucus

(Liu et)

3250 m

5309 Boussingaultia

3-1/1 on earlier coll. Same date as 5303

west St. Lucia (Sector) 1 Km west of  
Puerto Pifaleo.

~~3400 m~~ 3370 m

5310 Ullucus tuberosus

1 1/1 plts with been red tubers.

3 north ed. w/ flowers

3400 m

5311 Ullucus tuberosus

8, ~~1~~ red tubers (ca. 150) in flower  
1/1

5312

5.7

schon

/

5313

5314

SAT.

5313

4.2

5314

5315

5314

4.2

not.

5315

↓

5321

5316

11.2.15

Edwards

non



5314

quite  
pressed material with  $\circ$  at top

53

S.E



ca same

5297  $\circ$

the small etc

etc  
/

||

ca equal { 5304  $\circ$   
5303  $\circ$   
5295  $\circ$

531-

4

5295 possibly different  
 $\circ$

~~5295~~

not.

531

4

531

↓

532

read # la arat  
flowing  
5294?

to be read

then

3400 m.

5312 *Ullucus tuberosus*

5.???. The plant with leaves not curved and each other more plane. The plant with flowers other w/ leaves curved w/o flower. This plant a little lighter green, & more spreading.  
taken apparently red.

prov. Cotapaxi

October 26.

(78°38' 0" 43'S)

San Juan de Pastocalle

Pastocalle, at Boliche, 3300

5313 *Ullucus tuberosus*

4.???. occasional plants w/ 6(?) petals & stemless

Oct. 27. Quito

Dr. Carlos Montenegro 569

ca 2850 m

5314 *Boussingaultia*

+ live mat.

4.???. cult. over stone wall, hanging to 3 m.

5315

↓

5329

} Tuber collections of *Ullucus tuberosus*  
no herbarium vouchers.

dates out of sequence with main tuber collections

Oct. 23. 1981.

#5315 *Ullucus tuberosus* Celdan.

Pro. Cotacachi, collected from a store in Zumbagua. ~~old~~ Plants were said to be harvested in July. Aug and ~~then~~ Sept. and planted in Oct & Nov. These tubers were starting to sprout and were to be planted.

Tuber shape: round 2.0-4.5 cm.

T. col. : yellow, w/ many red dots.

Inner layer yellow.

Tubers only

5316 *Ullucus tuberosus* Celdan.

mixed w/ above.

shape: round, 2.0-4.0 cm.

col: pinkish red-orange, with occasional darker red dots.

inner layer orange-yellow then white.

Tuber collection only.

37  
53 1110  
9900  
240

5317 Ullucus tuberosus Colden

mixed w/ above.

shape: round 2.5-4.0 cm.

color: yellow, occasionally with small red dots, inner layer all yellow  
tuber collection only.

§

Oct. 24. Prov. Cotacachi

collected in Latacunga market.

Said to be grown at Guanasli and Churuloma. Said to have been harvested the previous day.

5318 Ullucus shape: more or less long and zig-zag.  
to 2.5 x 8.5 cm

color: yellow, with occasional red streaks and dots. inner layer thick yellow - becoming white

Tuber collection only.

5319. Ullucus tuberosus Colden.

" " said to be grown east of Latacunga at Patrevillo. Said to have been harvested yesterday.

Tuber shape round: 2.0-4.0 cm

Color: yellow, w/ many red dots and patches. inner layer yellow.

Red dot color only in outer half

Tuber collection only.

5320 Ullucus tuberosus Celdan

Same as above

shape: round to 5-4.0 cm

Color: maroon red, inner layer orange yellow

Tuber collection only.

5321 Ullucus tuberosus Celdan

Same as above.

shape: oblong and knobby to 4.5 x 6.5 cm

Color: yellow with red dots.  
inner layer yellow.

Tuber collection only.

5322 Ullucus tuberosus Celdan

Same as above.

shape: oblong & knobby to 5.0 x 6.0 cm

Color: yellow, inner layer thicker than root.

yellow becoming white.

Tuber collection only.

Oct. 24, 1981.

5323

<sup>Ullucus tuberosus</sup>

Prov. of Cotacachi, collected in field east of Latacunga near Potrerillo. Plants cultivated with vicia faba, but now all were dead and some tubers starting to sprout.

Shape: round: one day - long & curved 4.0 cm

Color: darker yellow, with many red dots inner layer. orange yellow

5324

Ullucus tuberosus Caldas

Prov. Tungurahua. Collected in market in Ambato, said to be grown at Pinillo, east of Ambato. Oct. 25 1981

Tuber shape: round 2.0 - 4.5 cm.

Tuber color: red, with very faint orange tint. also with faint red dots in a few tubers.

Inner layer red with faint orange color.

5325

Ullucus tuberosus Caldas

Prov. Tungurahua. Collected in Ambato market. Oct. 26, 1981. Plants grown at Tisaleo.

Shape: roundish, slightly oblong 2.5 - 4.5 cm

Color: orange red with very faint red dots.

inner layer orange-yellow.

#5326 Ullucus tuberosus Calder.

same as above.

Shape: round, oblong to knobby long (rare)  
4.0 cm, 4.5 x 7.0 cm, 3.0 x 11.0 cm.

Color: red with faint hint of orange and  
some faint darker spots. Inner layer  
red, then white.

#5327 Ullucus tuberosus Calder

same as above.

Shape: round & oblong knobby 2.0 cm,  
3.5 x 5.0 cm.

Color: dark red. Inner layer red then  
orange-red.

5328 Ullucus tuberosus Calder

same as above.

Shape: round 3.5 cm  
Color: yellow with red lines through the  
eyes at the navel. Inner layer orange yellow.  
main flesh of tuber yellow except whitish  
at very center. Tubers looking oldish.

5329 Ullucus tuberosus

same as above / Shape: round-oblong  
2.0 cm, 4.0 x 6.0 cm.

Color: orange-red with faint red dots.  
inner layer yellow-orange.

5330-5334 Tulcan Tulcan

5332 Oropisa Tulcan

Tulcan market (Calone) Oct. 29. '81

5330 *Ullucus tuberosus*

collected in Tulcan market, said to be grown at El Carmelo.

shape: round to 3.5 cm

color pink, inner layer white

5331

" "

Shape: round, a few slightly oblong to 3.5 cm

Color: inner layer white - inner white - with rough patches on skin

5332

" "

shape: long knobby with many eyes eyes recessed

Color: pink, inner layer white

5333

" "


Shape: round, to 4.5 cm a few rough patches on skin.

Color: white, with faint pink in places inner layer white



5334

" "

Shape: round to  4.5 cm  
with some rough patches on skin.  
Color: dull orange, inner layer pink.


5335

" "

Shape: long and curved to 120 x 20 cm  
Color: inner layer yellowish white  
outer pink.

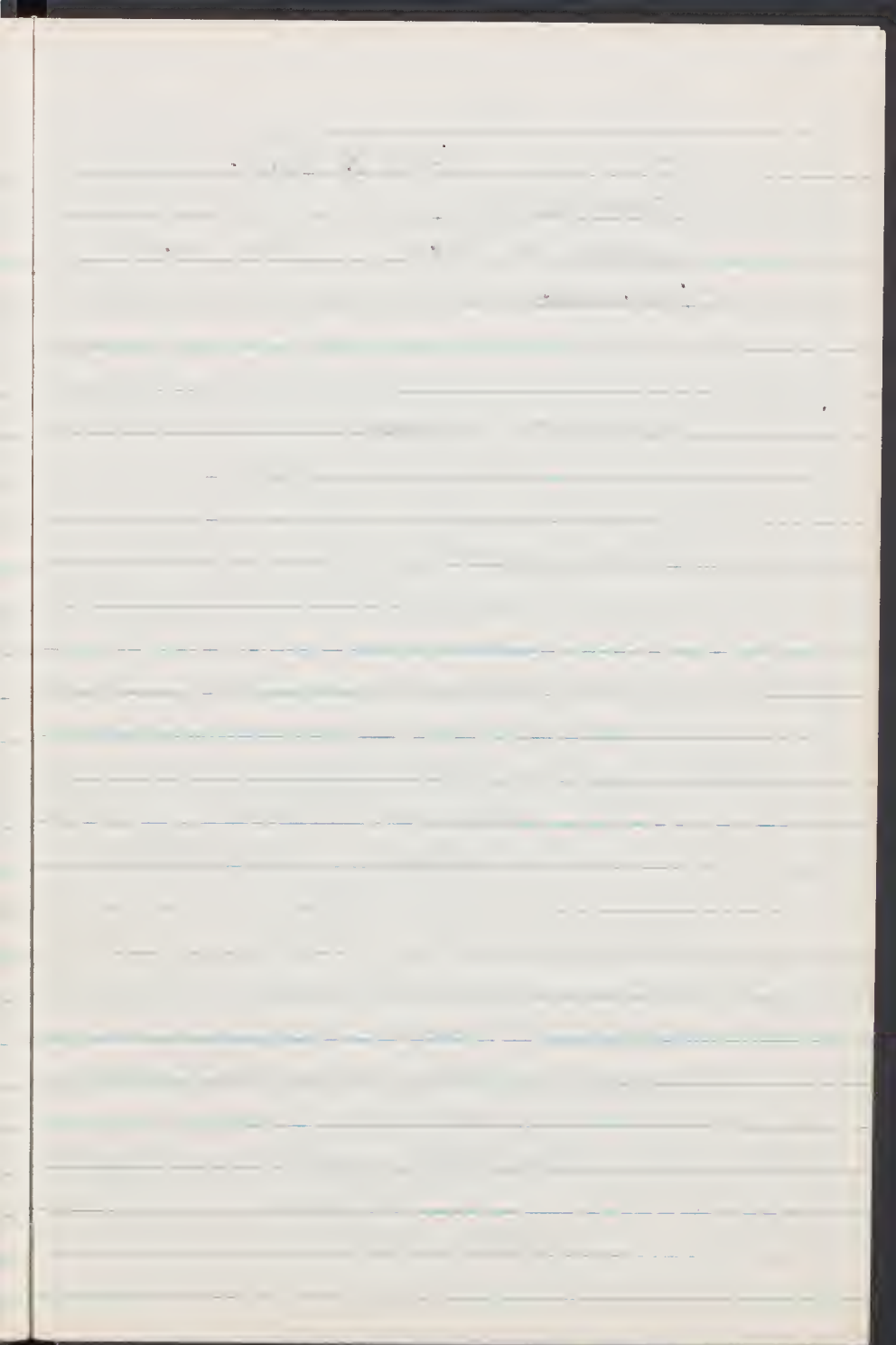
5336

" "

Shape: round to  4.0 cm  
Color: dark red maroon, inner layer  
violet, violet color extending a little  
into ~~the~~<sup>flesh</sup> of tuber

5337 Oropogon

† sold in market at Tulum, tied up in  
first sized bundles. Now "Contrahierba" or  
"Contra yerba". Used medicinally: taken  
with a shot of rum in morning when not feeling  
well. Eaten on ground and mixed with  
liquor 20-30 ounces per bunch



Peru. 1981

Nov. 14. Calan R. Speights

Steve R. King.

Department of Pasco 1 Km west of  
Ninacasa

5338 *Lepidium meyenii*

=

Huancayo market

5339 *Ullucus tuberosus*

tubers only. curved long to 7.0 cm x  
2.0 cm.

Tubers

color. yellow with red dots  
inner layer yellow, flesh yellowish  
oldish tubers

Ayasucho market Nov. 23

5340 *Ullucus tuberosus*

~~long narrow~~ oblong range 00 6.0 cm x  
3.0 cm.

color light orange, inner layer  
orange + a little light yellow.  
flesh yellowish

5341

Knobby orange Knobby, flatish - deep set eyes  
to 4.5 cm  
chr. orange. inner layer orange then  
yellow, flesh yellow.

5342 Ollucus tuberosus

~~leaves yellow~~ long curved. to 8.0 cm  
Tubers chr. yellow to yellow orange.  
inner layer yellow. (a very few  
small red spots)


5343 Ollucus tuberosus

small round pink orange, to 2.5 cm  
round to flattened  
pinkish orange, inner layer pinkish.  
flesh yellowish.

5344 Ollucus tuberosus

dried ollucus

5345 Ollucus tuberosus

red ollucus oblong  } 5.5 cm x 4.0 cm  
chr. reddish orange to pink  
inner layer pink red → then yellow  
orange.  
flesh yellowish

Nov. 24., with Steve King

3 km from center of Ayacucho on the  
road towards Cuzco. c. 2950 m.

5346 Bourdinguetia

(2100)

growing on ~~side~~ wall (wall) along  
road. Stems reddish, producing  
small bulbils in leaf axils  
no flowers.

n.v. enrecedera.

said to be cultivated and not wild.  
~~used~~ leaves applied to reddened  
bruises. Said to be propagated  
by the bulbils.

(A hurried collection when she had  
stopped. live material only!) sent  
back to H. V. H.

Nov. 25.

with Steve King

Town of Abancay - by gas  
station above town center.

5347 *Boussingaultia*

live  
small 1 ft succulent plant growing  
atop adobe wall along street.

Nov. 26 with Steve King

5348

*Boussingaultia*

5

R. Granja K'ayra outside of

live)

Cuzco.

Cultivated in pot outside entrance  
to local Agronomy office. base of stem  
woody - one to  $3\frac{1}{2}$  inch across.  
leaves succulent. no reddish tinge!

Bolivia

Dec 6, 1981

with Steve King  
Prov. ~~La~~

Road going up from Sorata  
ca 10-15 km up road. alt. 3,570 m.  
disturbed grazed vegetation & agriculture  
near road.

5349 *Ullucus tuberosus* (Caldas)

looking not to have been planted but plants  
that had sprouted from tubers left after  
the previous harvest. Stem reddish.  
a few plants starting to form small  
white tubers from underground stolons.  
Flowers yellowish green - red tinged.

5350 *Brachyotum*,

shrub to 2.0 m along side road.  
Caly red, corolla deep <sup>purple</sup> ~~red~~ to blackish.  
melastomaceae.

5351

compositae, shrub to 2.5 m. along road  
flower cream white.

5352 Veronica

flowers blue -

~~an~~ an occasional weed in field of Ullucus tub  
and Oxalis tuberosus

5353 Oropogon

T on adobe fence, pendent, stem arching  
up & out at tips.

5354 Oropogon.

T " brownish grey.

5355

T orange Lichen "

"

5356 Ullucus tuberosus Caldas

cultivated in field. flowers greenish-yellow  
many small flowers with 6-8 stamens and  
petals.

5357 Oropogon

T on shrubs. pendent and stem arching  
up & out at tips



5358 *Digitalis*  
disturbed pasture soil. ~~flowers~~ <sup>corolla</sup> violet  
with darker spots inside

5359 *Jamosonia*?  
a road bank.

~~32~~ 3230 m.

5360

*Ericaceae*, small shrub to 0.3 m. on  
dry road cut. flower corolla white.

5361

*Ericaceae*, small creeping shrub on dry  
road cut, corolla pinkish, calyx red.  
flower buds red.

5362

*Malvaceae*, petals 5-3 parted, red,  
sepals 5, pinkish with a darker red ~~line~~  
median line. Tree to ~~2~~ 2.5 m  
growing from old rock shelter.

5363 *Lepichenia*

4. rostrate - short to 2.0 m., red inflated  
calyx present.

5364.

Lythraceae? upper two perianth segments  
erect above large diameter of corolla tube.  
Perianth dark violet.

---

December 7, 1981

with Steve King.

on road to San Pedro from  
Sorata. 1½ hour walk from Sorata  
steep rocky slope above road.

2630 - 2750 m. many terrestrial bromeliads

5365

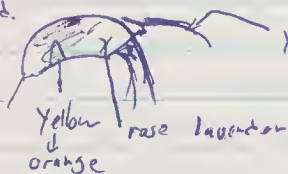
orchid to 1.3 m. sepal & upper 2  
petals magenta, Labellum magenta to  
lavender, with ~~is~~ lighter area at  
~~from~~ union of the 3 lobes of the  
labellum - lighter area turning yellowish  
~~had~~ ~~from~~ no fragrance noted  
in clumps

5366

orchid • flower rose to magenta  
outer 2 petals slightly ciliate at upper  
upper margins. Labellum greatly  
fringed, yellow down the middle  
staminode? ← curved near. cream down  
flower part. to 1.0 m.  
in dense clumps

5367

orchid.



yellow green

yellow  
&  
orange

rose lavender

forming massive  
clumps on rocks

sepals yellow orange, long tips  
yellow green. no fragrance noted

5368

orchid. flowers greenish yellow.  
forming large clumps on rocks.  
no fragrance noted

5369

orchid. flowers yellowish green.  
no fragrance noted.  
forming large clumps on rocks

5370 Peperomia.

on rocks, stems reddish.

5371 ~~Peperomia~~. Pilea

on rocks, flowers reddish.

5372 Oxalis

flowers yellow, common on rocks  
very succulent.

5373 Pilea?

leaves very succulent, flower red.  
on cracks in rocks.

5374

mass on rocks

5375

mass on rocks

5376

Toxida? on rocks

5377

mass on rocks

5378 Peltigera

↑ on rocks.

5379 Oropogon

"

5380 Cladina

"

5381

parmeliaceae "

5382 Cladina

"

5383 Oropogon

"

5384

parmeliaceae on rock

5385

gray, Lichen on rock



same but pleurophytes

5386 *Campyloneurum angustifolium* (Sw.) Fee  
*Campyloneuron* on rock. det R.T. '85

5387 *Campyloneurum angustifolium* (Sw.) Fee.  
" *Campyloneuron* ssp. *amphatenum* (Kt.) Leon  
det R.T. '85 med.

5388 *Campyloneurum angustifolium* (Sw.) Fee  
*Campyloneuron* ssp. *angustifolium*  
det R.T. '85

5389 *Niphidium crassifolium* (L.) Lell.  
*Campyloneuron* det R.T. '85

5390 *Grammitis peruviana* (Douv.) Maxon  
~~phylloides~~? det R.T. '85

- 5391 *Polypodium pycnocarpon* C. Chr.  
det R.T. '85
- 5392 *Polypodium lachniferum* Hieron.  
pedunculatum group det R.T. '85
- 5393 ~~Pellaea~~ *Pellaea ternifolia* (Cav.) Link  
det R.T. '85
- 5394 ~~Pellaea~~ *Notholaena nivea* (Poir.)  
Posu. var. *tenera* (Hook.) Griseb.  
det R.T. '85
- 5395 *Cheilanthes myriophylla* Posu.  
*Dryopteris* det R.T. '85
- 5396 *Cheilanthes marginata* HBK. <sup>det</sup> RT '85  
*Dryop*
- 5397 *Woodsia montouidensis* (Sprong.) Hieron.  
*Dryop* det R.T. '85
- 5398 *Elaphoglossum sellowianum* (Pr.) Maxon  
det R.T. '85.

5399 *Elaphoglossum jamesonii* (Hook. & Grev.)  
Mace bet R.T. '85

5400 *Asplenium praemorsum* Sw.  
*Asplenium*. bet R.T. '85

5401 *Asplenium monanthos* L.  
*Adiantum* bet R.T. '85

5402 *Asplenium praemorsum* Sw.  
*Asplenium* same as 5400. bet R.T. '85

5403.

fls yellow, shrub to 2.0 m in ravine  
or cuts

5404 *Ullucus tuberosus*

found over whole range 2630 → 2750m.  
growing in V of the ravine ~~and~~ running up  
the rock face. tubers buried in  
dirt and rocks. tubers pea size to  
marble size. pink, white or yellowish.  
very sticky mucilaginous.

just starting to grow. plants  
up to 3 m high, stem reddish.  
tubers easy to find once we had  
climbed up ravine & exposed the soil.



5405 *Physalis*

growing on dry soil above roadbank  
not cultivated! flowers yellow

alt. 2600 m.

Dec. 8, 1981, with Steve King

Town of Sorata, just below plaza, <sup>toward river</sup> left side.

5406 *Cyphomandra*

tree to 5.0 m. cultivated.

Fruits yellowish when immature, not very  
pointed. - oval. with darker stripes

2750 m

Alt. 2530 m.

5407

Rutaceae, shrub to 2.0 m. on steep rocky  
slope along trail near river.

flowers clean yellow, fragrant.

5408

Labiatae, bushy shrub to 1.5 m.

flowers red.

5409.


Ancryllibaceae flower yellow orange yellow  
style yellow, from a deep rooted papery bulb.


5410 Selaginella peruviana (Milde) Hieron  
on steep slope. det R.T. 85

5411 *Bourningaultia* <sup>florid</sup>  
over thin soil on rocks overhangs  
near, also climbing over and covering  
slat shales and debris. Lower  
succulent, ~~roots~~ protruding thickened  
tubers, stems reddish at base.

Flowers yellowish orange, stamens  
slightly longer than the style.


Stigma barely 3 lobed - not divided.


sepals -  after flowering the  
petals close but the stamens - the  
anthers are just visible above the closed  
petals. Petals turning dark - soon  
followed by the sepals. - Perianth  
black and adhearing around the first  
leaves about cordate to cordate  
leaves petioled.

sepals succulent  and  
standing out with a curve.

5412 Boissingaultia

on the side of rock. - twigs & clusters  
about (obtusely) stellate & lobed.

leaves succulent, sessile oval   
flower sessile or slightly pedicellate.

sepals greenish white  petals.

~~stamens~~ white, stamens about

2x or long as the style. stigma barely  
noticeably a 3 lobed - not divided

ovary reddish. no seeds or mature

fruits seen - apparently not

producing titers although the base of  
stem seen thicker.

sepals not succulent

flowers drooped vertically also flowers or  
stems were being photographed while hand held.

5413 Boissingaultia

Ramosa

" same habitat.

leaves succulent - more or less cordate

sepals orange-yellow, sepals

obovate -  strongly standing

at. style & stamens more or less the

same length

very dorsally

pedicels slightly thickening after fruit  
is maturing.

sepals & petals turning black- adherent  
around fruit.

2750

Town of Sorata - road to San Pedro

5414. Boussingaultia.

dry hill side near bank along road.

no flowers. long large tubers &  
thickened stems.

---

Dec. 9. with Steve King  
garden at Residencial Sorata at  
Sorata.

5415 Cyphomandra.

cult from to 30 m. fruits used to  
make marmalade.

347 - at camp.

~~341~~

Sorata Ob Reading 32227

Oropogon 47, 3920 m

Oropogon Polypodium (ob) 3560

Oropogon (with rose leaves) 12 3000 m shully

Dec. 14, 1981 with Stephen Beck,  
Jim Solomon, Steve King.  
road from Sorata to Consata, the  
high road.

Km 20 from Consata (mount near Sorata)  
3920 m. steep rock face along

road

5416 Oropogon

5417 Oropogon

Km 39 3500 m.  
on shale, shully lent

5418 Oropogon

5419 Oropogon

=

Km 65 dry sandy slopes.  
3000 m.

5420 Oropogon  
on shale.

5421 Oroposon  
on shrub.

5422 Befaria  
shrub to 2.0 m. flowers pink

or 120 part Sorata  
Part cavaata 6 Km alt 1400m  
steep slope along watershed in  
forest. on S. side of road.

5423 ~~Pteris~~ <sup>det R.T. '83</sup> Cnemidaria sparsa Presl.  
ferns to 2.0 m. rhizome horizontal  
stems and. short.

5424 Drymonia  
(Gesner) Bracts red. scandent over  
shrubs.

5425  
Ecner, <sup>sepals</sup> ~~petals~~ orange red, corolla yellow  
~~underside~~ underside of leaves  
purple.

- 5426 *Psychotria*.  
 Rubra. Small tree to 5 m.  
 flowers yellow axis of inflorescence orange.
- 5427 *Elaphoglossum latifolium* (Sw.) J. Sm.  
 terrestrial on moist bank. det R.T. '85
- 5428  
 orchid. terrestrial,
- 5429 *Thelypteris Gardneriana* (Baker) Reed.  
 terrestrial on moist rock face. det R.T. '85
- 5430 *Peperomia*  
 moist rock face.
- 5431 ~~*Asplenium*~~ *Lindsaea guianensis* (Aubl.)  
 Terrestrial Dryand. det R.T. '85
- 5432 *Blechnum confluens* Schlect. & Cham.  
 terrestrial on moist rock face. det R.T. '85
- 5433 *Polypodium fraxinifolium* Jacq.  
 epiphyte. Terrestrial fern det R.T. '85
- 5434  
 Rubra, flowers blue. woody under bark,

- 5439 *Besselaria*  
 Corolla red on outside, yellow on inside  
 large herbs to 1.0m.
- 5435 *Asplenium flabellatum* Kze. det P.T. 85  
*Trichomanes* <sup>Asplenium</sup> terrestrioid on moist rock face.  
 rooting at leaf tips.
- 5437 *Trichipteris Dumbeyi* (Dasu.) Barr.  
 tree fern, leav. to 2.7m det P.T. '85  
 young. trunk 1.0m.
5438. *Polybotrya*  
 Terrestrial, dimorphic.
- 5439 *Pityrogramma calomelanos* (L.) Link.  
 var. *ochracea* (Prasl.) Tryon  
 root rot along roadside, 2 var roots.  
 det P.T. '85
5439. *Selaginella haematodes* Spring. det P.T.  
 erect terrestrial, moist ravine. 85
- 5441 *Polypodium fraxinifolium* Jacq. det P.T.  
 Ceylonium, terrest. fern. 85
- 5442 *Selaginella haematodes* Spring.  
 erect terrestrial det P.T. 85



5443 Psychotria  
tree to 6 m. flower yellow.

5444  
Esmerianous, corolla waxy camp.  
scandent, shrubby.

5445. Phoradendron  
parasite in tree.

5446  
Benthamian, low, shrub  
petals, especially upper reflexed.  
red, white with red stripes in the throat  
= Seck 4906

5447 Polybotrya ceruina (L.) Kaulf. det RT/gm  
terrestrial. Rhiz. horizontal

Stephen Beck, Jim Solomon  
Dec. 15 with ~~Steve King~~ Steve King  
8 km past Conzota

5448 *Heliocarpus*  
tree to 4.0m along road at edge of  
forest.

5449 *Costas*  
edge of forest along road, bracts  
bright red. corolla yellow, tips of  
petals red. herb to 2.0m

5450 *Psychotria*  
Rubr. tree to 3.5m, pedicels reddish  
flowers reddish

5451 *Campyloneurum coarctatum* (Kze.) Fee  
Polypod. *Campyloneuron*, epiphyte on <sup>at P.T. 85</sup> ~~side~~  
of tree trunk at ~~2~~ 1.0m above ground

5452 *Begonia* ? *arboria*  
large herb to small tree. 2.0m.  
fls petals white, reflexed, stamens yellow

5453  
Gesner. "Large vine like shrub, growing  
high in at tree

5454

Rubia. tree to 4.0m. flowers,  
purple.

5455

Thelypteris falcata (Liebm.) <sup>det R.T. '85</sup> Tryon  
ter. - four. (sterile) leaves arching  
at an steep slope 4.5 machete length

5456

Eosnoia, small ~~shrub~~ ~~by~~ ~~the~~ ~~side~~ ~~of~~ ~~steep~~  
shrub flowers orange

5457

orchid, fallen from tree, on ground,  
sep. yell. labellum red maroon in interior  
yellowish at tip.

5458

tree to 5m.

5459

Pleopeltis percussa (Cav.) Hook. & Grev.  
Polypod., creeping rhizome on trunk of tree  
at 20m det R.T. '85

5460

man on tree trunk

5461

Hymenophyllum hirsutum (L.) Sw.  
~~Hymenophyllum~~  
~~man~~ on tree trunk det R.T. '85

5462.

melastom. shrub to 3.0 m

5463

melastom. flowers lavender, in  
upper portion of tree, ~~apparently~~ climbing  
and apparently terestrial.

5464

Elophoglossum. lingua (Raddi) Brack.  
on boulder log. at R.T. '85

5465

melastom., ~~shrub~~ to small tree to 30 m.  
flowers greenish white.

5466

near a tree trunk.

5467

Peperomia  
near epiphytic on log along road.

5468

Melastom. shrub to 2.5 m. flowers  
greenish.

5469 Psychotria  
tree to 4.0m. flower white.

5470 Psychotria  
tree to 5.0m flower white

5471

Bignon, viney alongside road.  
flower white

dt R.T. 85

5472 Hymenophyllum dendritis Rosenst.  
Hymenophyllum, ~~sp~~ cluby ~~on~~ on  
tree trunk.

5473

Melastom, flower white, shrub to  
2.5 m.

5474 Psychotria  
flower white, tree small tree.

5475

Annonaceae, flower greenish white

5476 Pleopeltis macrocarpa (Willd.) Kaulf.  
Polypod, creeping under tree trunk.  
dt R.T. 85

5477 Peperomia  
herb to 0.5 m. terrestrial

5478 Psychotria  
small tree flowers white

5479 Polypodium fraxinifolium Jacq. det R.T.  
fern, climbing up tree trunk. '85  
common.

5480 Elaphoglossum confusum Christ.  
terrestrial. det R.T. '85

5481 Piper  
shrub to 3 m. along road.

5482

Acanthaceae, Mendoncia  
flower violet. vine, hanging down in  
tree along a waterfall.

5483 Selaginella Bangii Hieron det R.T. '85  
erect up to 1 m. moist rock face  
along waterfall.

5484

malvaceae, young from cracks in  
moist rock face along H<sub>2</sub>O-fall.

5485 ~~Xiphopteris~~ Grammitis serrulata (Sw) Sw.  
young ~~at~~ atop boulder in  
stream, near H<sub>2</sub>O-fall. det RT. 85

~~5486~~ 5 km past Consata

5486

Ochnaceae, large tree, very showy.  
flowers yellow, inflorescence yellowed.  
more or less leafless below the  
shoots, inf. to 0.6 m

5487

Meliaceae, *Albizia* tree to  
large tree. flowers white

Same as 5470 site

5488

Araceae, climbing on tree trunk

5489

distinct tree. 2.5m fls pendulous  
Calyx orange, <sup>Corolla</sup> flower yellow

5490

Loranthaceae; Tree 35-40 feet  
6-8 in dia.

dark red

Dec. 16. with Steve King

Starting at end of road ca. 7 km  
from Corsata and hiking along  
trail (soon to be the road) towards  
Mapiri. ~~most~~ fruit 1-2 hours  
were on an old but unmaintained &  
undrivable road. Most collections  
made about 1/2 day walk from end of  
road (present end is by an old camp)  
elev. 1400. steep forested slopes  
above the river. quite similar to  
that collected earlier near Corsata  
Not a great deal of very large trees  
or a huge abundance of epiphytes.



5491

*Cestor*

located ravine, lower on some of the flowering shoots. bracts red. flower yellow orange, tips of corolla reddish orange. (Photos)

5492

orchid, epiphytic on fallen tree trunk

5493

*Grammitis peruviana* (Dosu.) Morton.

epiphytic on fallen tree trunk at RT. 85

note number sequence

(X)

(X) 5495

*Microgramma piloselloides* (L.) Copel.

creeping on branches of fallen tree at RT. 85

(X)

(X)

(X) 5494

(X)

?, climbing up tree from the ground.

leaves alt. bracts red. corolla

tubular.

upper portion of corolla

Top view mouth red tinged,

Cesner?



5496.

Annonaceae, small tree to 5 m.

bracts green, spots yellowish at base green at tips, petals not fully opening

yellowish base, green at tip.  
very orange yellow, flowers extremely  
fragrant.

- 5497 *Vittaria* *stipitata* Kunz <sup>Mositziana Melt. det R.T. 85</sup>  
marginal, corollum semi; <sup>det. P. Trigo</sup> pendant epiphyte  
from trunk of fallen tree 4/82
- 5498 *Lycopodium* *aqualopianum* Spring. U.R.T.  
<sup>Sampulites Lanat 95</sup>  
epiphytic on side of tree trunk at 2.0m.  
pendant, leaves 6-ranked.  
(near Skotchii.)

Subgenus Selasol

with Steve King  
Dec. 17. same trail.

Just past 2 <sup>very</sup> large gary clearings  
ca 10-11. m by lat from end of trail.

1350 m.

5499

Commelinaceae; large erect herb to 1.5m.  
near water mount shady ravine near Ho-fall.  
flower in bud, lavender on upper surface  
lighter below; underside of leaves  
purple streaked.

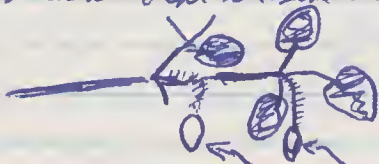
5500 Cyphomandra.

along trail, small tree to 6.0 m.  
arching out from steep slope.

fruits yellow with green stripes when  
mature. (see my photos).

inflorescence terminal. tree only with  
~~the~~ fruits - no flowers. the fruits  
usually arise from the last few flowers  
of a 2. fruits from an inflorescence.

often 2 series of inflorescence each had  
fruits about the same size.



Fruits from terminal

inflorescence, but the same size bit  
over height you must be younger

, tree which may fruit, leaves  
early fallen & brittle.

fruits falling to ground when mature.

back of tree granular roughened.

5501

orchid on epiphyte on trunk of fallen tree  
flowers yellow

5502

orchid, flowers greenish yellow, epiphyte on  
fallen tree



Top of lobellus slightly darkened lobellus  
sharply bent down down near the base  
& also with a dark <sup>round</sup> spot at the bend

~~5503~~

1260 m. dense forest on flatish  
ridge. on west side of large river  
with eastern side near river.

Forest looking much like a lowland forest  
with many palms, including large  
trunkless palms and many large trees.  
Deep moist humus a forest floor.

many more lianas and fewer epiphytes  
at lower level in forest.

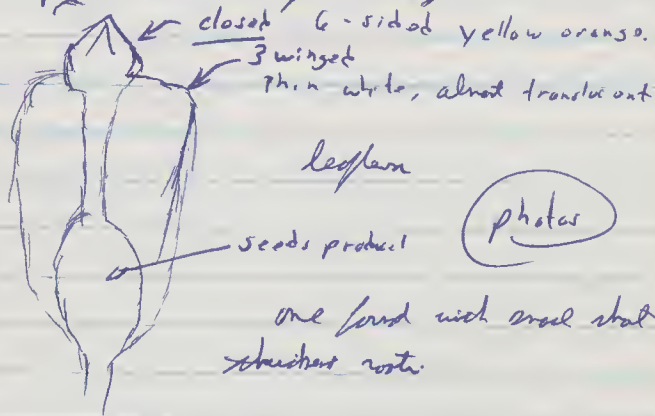
5503

Magnoliaceae. - found fallen from tree  
on the forest floor, petals yellow orange  
reflexed, stamens reflexed, filaments green.

pedicel orange, <sup>orange</sup> very orange  
 nectar gland with 2 orange wings.  
 nectar tube orange, except top very  
 bottom which is green, flower very  
 sweet smelling

5504.

*Burmahianae* (?) saprophytic, ~~as~~ found in forest floor.  
 stem white, apparently 3 locules.  
 flower or fruit 3 winged, structure at  
 top 6 sided, yellow orange

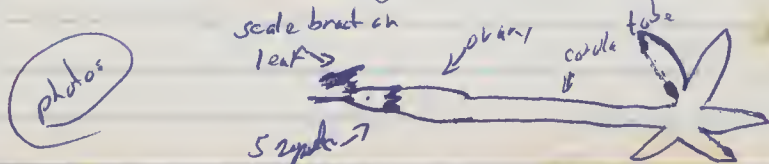


one found with small short  
 structure roots.

5505

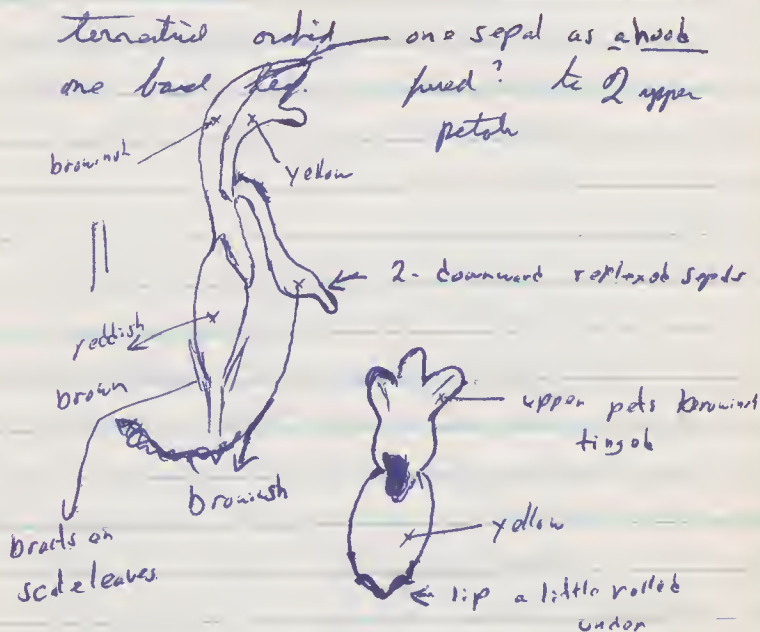
? saprophytic?, leafless, flower  
 yellow orange to orange. 5 petals  
 inferior ovary

*Gentianaceae*



Sarcoglossis

5506



roots very tuberous.

after crossing large stream  
900 m.

5507 *Anemia phyllitidis* (L) Sw. det R.T. 85  
*Anemia?*

little  
stems  
moist bank along trail

det R.T. 85

5508 *Microgramma piloselloides* (L) Copel.  
creeping on branches of small trees

1/2 hour walk from Santa rosa  
along new road, these distinct  
forest, but this tree looking to have  
come from primary forest. tree to  
6.0 m.

5509.

melastom?  
clusia? , couliform

sepals green, buds pinkish

(5) petals inner pink on either side, the  
mid rib on the outside, white inside  
each petal with a roughed claw like  
blaze on one side where it folded under  
the outer petals, filament white

(10) anthers yellow, style white  
stigma white with 10 lobes to stigma  
Clawer extremely fragrant

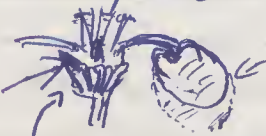
Dec 18 w/ Steve King  
road between Santa Rosa y  
Mapiri  
ca 4 Km from Santa Rosa

5510

Palacouria Robiaceae small tree  
to 5.0m in partly disturbed or cut  
primary forest along road. pedicels orange red.  
flowers & flower yellow.

5511

small to large trees in forest.  
flower yellow, petals cucullate & reflexed  
when open, petals with small brown dots  
in pairs around margin

  
5 petals, 5 small  
brownish papery  
sepals - 2 10 bract like  
lobes (yellow) forming a cup.



Prov. ~~La Paz~~ La Paz  
Larecaña  
Dkt

Dkt

Ce 8° 08' W

15° 15' S

Dec 19. w/ Stova King  
across river from town of Mapiri  
at ca 840 m.

Oribales (steeply cut trail + river)  
primary forest. Lot of Herea.

5512

tree (Euphorbia?), leaves alternate hairy  
fruits becoming yellow when mature.  
tree producing abundant tan latex.  
stigma not colored.

5513

(Panaeolus?) fruits becoming reddish  
small tree. 3.0 m.

5514

Moraceae? milky sap ~~present~~ present,  
small tree 3.0 m. in forest.

5515

Euphorb. large Herb. 1.5 m. flower orange  
fruits green.

5516

Bigon. vines shrub epiphytic in ~~the~~ ~~large~~  
large tree, flowers white.

5517

Moraceae, climbing about trunk of  
large fallen tree, branches arching out.  
inflorescence erect.

5518 *Thelypteris arcana* (Max & Mort) Morton  
large terrestrial fern on moist bank. det R.T. 85

5519 *Peperomia*  
creeping over rotting log.

5520

Cycadaceae: terrestrial fern palm like -  
from a short stem: apparently the stem  
appearing first. stem of inflorescence  
white, later green when fruit mature  
leaves 5 or 6

5521

Urticaceae, small tree. 4.0 m. (Perly)  
receptacle yellow translucent, red on  
receptacle. green  
pedicel reddish

5522

creeping on steep moist bank in forest.  
forming a dense stand not like.  
flowers white (5 pet)

5523

(Madroa) Herb to (2.0 m)

~~shrub~~ entire plant with red hairs, petals white, stamens yellow

5524

Tectaria incisa Cav. det R.T. 85.  
Tectaria?

large terrestrial fern on moist bank in forest

5525

tree 6.5 m flowers lemon yellow

5526

Theobroma

tree with several trunks from base each trunk up to 8 cm diam. flowers coral/pink. petals white reflexed.

5527.

Heliconia.

large herb. ~~leaves~~ blade 5 feet long petals green, bracts of inflorescence pink towards outer half white towards base. may antiprost in inflorescence.

5532

Trichomanes angustatum ~~leaves~~ Cav. 4

terrestrial fern, dense mat on trunk of tree fern. epiphytic det R.T. 85

(some herb in all det. int.)

==

Along trail to Charo pampa across Rio

5528 Heliconia

in large herb in ~~along~~ secondary growth along trail.

large herb. bracts red. green on margin yellow at tips - petals yellow  
leaves: 6 feet long, width 1.0 m long

5529 Heliconia

" large herb, bracts red at top, base of bract yellow, petals yellow - tips of petals green - leaves 5 feet high  
*red flowers.*

5530

small shrub, all leaves 5 green regular corolla tubular, petals light lavender. corolla tube darker lavender.  
Brunfelsia?

5531

Zingiberaceae, large herb along ~~the~~ stream to 2.0 m. forming dense colony.

petals white, the lower with a light green blotch near the base.

very beautiful. Cultivated in area

the one possibly cultivated.

← + + + + + + +

Dec. 20.

~~along road~~ ~~between~~ Road between  
Santa Rosa y Mapiri ca 1/2 way  
above ~~at~~ <sup>or</sup> below the Rio Tarapo  
primary forest on steep slope  
where large legume fruits are gathered.

5533

tree (Copa diem) cauliflorous from  
permanent flowering sites on trunk.  
flowers small greenish, ~~late~~ ~~pedicels~~  
pedicels pinkish and fruits green  
when mature, pedicels much enlarging

5534 Polystichon muricatum (L) Presl  
Polystichon, stenactis det R.T. '85  
steep forest slope

5535 Manihot.

growing at edge of brushy roadside.  
— not apparently cultivated.

5536

Cyclanthaceae, flowers for ~~the~~ pond.  
calyx red, petals yellow, largest leaves  
to 9 feet

5537

tree (max to 40m)  
(melastom?) fruits orange, elongate  
a thin ~~of~~ (mossy?) gray ~~for~~ layer  
surrounding the large large seed.

5538 Peperomia

creeping on log

5539

Annonaceae, small tree to 5.0m,  
bark, sap & pet greenish, good varnish  
in flower size on the same branch even  
older & large flower turning into pollen  
& with odor of apples

5540

Palm, one incl trunk, powder  
home below leaves  
fruits orange, tree to 5.0m.  
leaves to 1.0m

5541

melastom, tree to 6.0m.  
fruits blue black when mature

5542

shrub to 1.3 m. flowers white  
fruits small globose, red.

5543

Arborescent, small tree, to 4.0 m  
arching at a steep bank. bract sepals  
& petals greenish yellow.

5544.

large tree, fruits ovate, pubescent  
orange, fruits with milky latex  
2 seeds w/ (Hilum) S, line down seed.  
juicy delicious pulp surrounding the  
2 seeds, only tree seen.

5545

*Asplenium radicans* L. U.R.T. '85  
terrestrial fern on steep bank

5546 *Peperomia*

creeping over rocks.

5547

(medusa stem) tree to 5.0 m  
leaves white beneath.

5548

tree to 7.0m. fruits orange  
pulp yellow, core red.  
(Pithecellobium?)

5549

Cydonanthus tenuiflorus Lab.  
no flower, fruits green

Dec 26, 1981 w/ Steve King  
Bolivia, Cochabamba

Courtyard of Residencial Copacabana  
Calle Esteban, City of Cochabamba  
2600 m.

5550 Boussingaultia

dense extensive vine, collector in climbing.  
ornamental, propped by the tubercles found  
on leaf axils, almost fruit used  
mainly of tubercles produced along stem.  
in bud, photos taken  
very little reddish tinge



Hymenaea coubartii L.

legum tree fruit color

Outrigger Potosi on Rock towards  
Puno, just Past Airport  
ca 3 Km.

3830 m.

5551 Ullucus

said to be planted in August &  
harvested in May. Tubers will be  
yellow or yellow with red dots.

5552 Ullucus

Esloven  
Marangani

Peru 1982

Jan 9 (Friday) Antakillca  
mt. behind Chinchero.  
Alt. 4100m.

5553 *Oropogon loxensis* (Fée) Th. Fr.

growing on dry soil & rocks in  
grazed puna.

det T.L. Eslinger

Jan 14.

S. of Chinchero - Trail from  
Tauca up past town between  
two ridges along stream trail  
4200 m.

5554 *Oropogon loxensis* (Fée) Th. Fr.

growing on rock faces in puna.

det T.L. Eslinger

Feb 4  
Peru, Dept. of Cuzco,  
Province of Urubamba  
Chinchero, South of Chinchero  
at Pueblo called pucattamarca.  
Cultivated fields along Piuray lake.  
Alt.

Informant Graciano S. L  
my Compadre José Cusiñuaman Choque

5555 *Ullucus tuberosus*,  
cultivated, stems becoming elongated  
and recurved. Axillary tubers  
present. called Zanchoria Liras  
or Q'ello Chujcha.

José Familia  
Liras

planted in Sept and harvested in  
May and June. This variety  
was farther along in development of  
Tubers than 2 other varieties  
grown ~~at the~~<sup>in the</sup> same ~~site~~ as field  
and planted at the same time.

Tuber color yellow, shape.

Plants becoming decumbent, stems reddish

( No insecticides used as *Ullucus* because none  
needed - All Types of *Ullucus* ~~make~~  
are equal for making Linqli  
(Same as King et al # 156 )

5555

col. h no plants seen with more than 5 stamens  
(photos taken)

5556 *Ullucus tuberosus*

Cultivated in Field, n.v. Papes Liras  
Tuber color. yellow w red dots stems <sup>only</sup> ~~not~~ slightly

RP at all reddish no plants seen with more  
than 5 stamens, flowers yellow green  
photo. taken planted in Sept.

& harvested in May & June. stems not  
decumbent at collection.

(= King et al. # 157)

5557 *Ullucus tuberosus*

Cultivated in Field.

n.v. Arequipa Liras stems not  
reddish, leaves held more erect  
than the other 2 varieties collected.

many flowers seen with 6 stamens  
and 6 petals. Tubers big like oranges  
photos taken. yellow orange.

planted in sept & harvested in  
May & June

(= King et al. # 158)

Feb 4, 1982

Dept. of Cuzco, Province of  
Urubamba.

South of Tauca, Trail  
up the stream. Elev. 4200m

(collected by Steve King  
and Ed Franquemont.)

Steep rock slopes in grazed  
puna.

5558 *Oropogon loxensis* (Fée) Th. Fr.  
growing on rock faces in  
grazed ~~paramo~~ puna  
Det. Esslinger  
n.v. Chapu Chapu

5559 *Oropogon loxensis* (Fée) Th. Fr.  
growing on rock faces  
Det. Esslinger

5560 *Oropogon loxensis* (Fée) Th. Fr.  
Det. Esslinger

5561 *Oropogon sperlingii* Essl. ined.  
Det. F.L. Esslinger.

~~5562~~ ~~Chopagon~~

Feb 5, 1982

Chinchero, in village at  
house of Crasiano \_\_\_\_\_

Alt. 3800m

5562 *Boussingaultia* cf. *diffusa* (CR + R)  
~~diffusa~~ Volkmans

Cultivated on rock face wall

Vern Succulent vine with reddish  
stems. Petals white - not reddish

triped. ~~style~~ <sup>style</sup> not divided

stamens  $\leftarrow$  (centripetal?)

ovary white. Flower turning

black with age. <sup>stem</sup> Becoming thickened  
at base. - Plants growing

in full sun under drier conditions

had denser & smaller leaves

which were much redder.

n.v. Verguylawas

The plant was brought to  
the garden by the owner grandfather  
many years ago from somewhere  
lower down.

(= King et al # 202)

ground and used as a palette for toothaches

NE of Chichero - at base of  
Antaikilka. Alt. 3300m.  
steep scree slope with dense  
shrubby vegetation and rocky openings

5563 *Ollucus tuberosus* Caldas

Trailing succulent vine on steep scree  
slope under shade. ~~Flowers~~

Petals yellow green, red tinges  
especially at margins. no seeds  
seen. Producing small pink, white  
and red tubers from axillary  
stolons. Tips of stems with  
reduced leaves & burrowing into  
soil. ~~Forms~~ <sup>pits</sup> in deep shade  
lacked red coloration, had much  
larger leaves & large petioles.  
Forms in sun were much redder.

~~photos~~

no. \_\_\_\_\_

photos taken.

(note = Kirz et al. # 211) and  
Calle Davis et al # \_\_\_\_\_

Feb. 9, '82

SE of Chinchero at the  
village of Taula. elev. \_\_\_\_\_  
(a little below town from Chinchero)

5564 *Ullucus tuberosus* Culdas  
n.v. Arequipa Liras

Herb Succulent herb collected  
in field for its edible tubers.  
Flowers yellow green. Many flowers  
with abnormal numbers of stamens  
(4-10) and often double the  
number of petals. Stems green, with  
scattered red ~~to~~ lines. Leaves  
held more erect in this variety than  
others. Tuber color yellow orange.  
Tuber shape round to oblong.  
Some plants observed with mature  
seeds.



5565 *Ullucus tuberosus* Caldas  
nv. Zambora Liras

Succulent herb cultivated in field  
for its edible tubers.

Flowers yellow green, red tinged.  
Stems red. Plants becoming  
decumbent, Terminal shoots with  
reduced leaves, burrowing in soil  
and bearing tubers.

Tubers white when immature, becoming  
~~tan~~ oblong and orange yellow when  
mature. Only flowers with 5  
stamens seen.

(King # 233)

5566 *Ullucus tuberosus* Caldas  
nv. Yurac Liras

Succulent herb cultivated in  
field for its edible tuber  
Flowers yellow green, Stems  
green, only slightly tinged  
with mottled lines of red.

Terminal shoots becoming partially  
decumbent

tuber long and curved. Tuber color  
white, a few with small pink blotches

(Note this may be a mixed collection  
of (2-3) varieties).

(→ King #234)

5567 Ullucus tuberosus Caldas

no. Fantasma Lizar

Succulent herb cultivated in  
field for its edible tuber.

Flowers yellow green. Stems green,  
mottled with red lines. Stems  
becoming decumbent. Tubers round,  
yellow orange with red dots.

Only flowers with 5 stems seen.

(→ King #235)

5568 *Ullucus tuberosus* Caldas  
Succulent herb cultivated in field  
for its edible tubers.  
n.v. Tejte haro  
(which means with bumps)  
Flowers yellow green, stems slightly  
tinged with red, especially at base.  
Tubers long, white with pink-  
red blotches and dots —  
Stems becoming ~~decumbent~~ slightly  
decumbent, leaves quite erect.  
(> King # 236)

5569 *Ullucus tuberosus* Caldas.  
n.v. Arogipa Liras

Succulent herb cultivated in field  
for its edible tuber. Flowers  
yellow green. Many flowers with  
abnormal numbers of stamens, 4-10

Many flowers with double petals  
Ovaries on most flowers nodding.  
Mature seeds found on many plants  
Stems green, slightly red tinged on  
ridges. Stems darker green  
at upper portions where the leaves  
become reduced and stems retorted. (lex)  
Leaves held very erect - much more  
than other varieties. Becoming  
slightly decumbent. Tubers yellow  
orange roundish.

(= King # 232)

This variety grown in area for  
only 3-4 years & purchased in Cuzco  
initially.

Beetles observed eating the anthers  
~~and stamens~~ photos taken.

5570 *Ullucus tuberosus* Callus

n.v.

(Also listed)

Trailing herb growing over stone fences -  
not cultivated. Flowers yellow green with  
red tinges. Stems red. Leaves red  
tinged. Tubers small round, white -

becoming pink.

Feb. 11, 1982

Chincheru

at East end of lake S. of  
Chincheru about 1 hour walk.  
elev. ca 3700 m.

5570 *Ollucea tuberosus* Caldas

— — — — — ru. Yuraj Litas

Succulent herb cultivated in field  
for its edible tubers. Flowers  
yellow green. Some flowers had  
a developing 2<sup>o</sup> flower coming off the  
way. (very small)  
Stems green. Tuber - long curved  
white.

Feb. 22, 1982, 3100 m.

growing on exposed rock faces. very on  
east 2 small shrubs. Above ~~east~~  
Urquillos about 1 km on trail from  
Chinchero.

5572 *Boussingaultia* ~~cf. *Volcanensis* GRR.~~  
*Volcanensis* GRR.

occident  
Vining herb twining about cacti  
and shrubs. stems reddish, midveins of  
leaves reddish. Twining dextrorsely

Bract <sup>at base</sup> of peduncle Acute, reddish.

~~Floral~~ <sup>Peduncle</sup> bracts ( $\Delta$ ) almost triangular  
& only slightly  $\nabla$  at all succulata  
Floral bracts (sepals?) reddish and  
succulata. First 2 petals  
reddish & succulata, last 3 petals  
golden yellow-green.

When flowers first open the stamens  
are erect & exserted about the  
style. Anthers are held  $\approx$  horizontal  
& completely hide the style.

later stamens arch out,  
stamens longer than style.  
stigma not divided. white

ovary white. ~~Floral~~ Sepals & petals  
adhering to fruit when mature -  
black when mature, seeds produced



Producing thickened tubers at base  
Twining dextrorsally,  
No tubers in axils seen

= King stat # 243, 305

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Tubers from Cuzco market  
Feb 18

5573 *Ollucus*

Tubers <sup>very</sup> long mostly  but some 

Color white with pink red blotches  
inner layer white

5574 *Ollucus*

long red, straight & some curve  
Color red, inner layer white.

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Tubers from Chinchero market  
Sun Feb. 21

5575 Ullucus

Tubers long curved, white with pink red lines & spots, inner layer white.

5576 Ullucus

tuber round, orange with round pink-red spots, inner layer orangish center of tuber yellowish

5577 Ullucus

Tubers oblong, yellow to orange tinged pinkish lines <sup>through</sup> ~~around~~ eyes. inner layer yellow, except all pink where pink on outside

5578 Ullucus

Tubers long slightly curved, all white



5579 *Ullucus*

○ Triangular - all pinkish orange  
only one.

5580 *Ullucus*

long, slightly curved, red.  
inner layer red then pink - finally white.

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Pers., Lima

beach at Agua Que. (Miraflores  
ca. 50 m

5581 *Boussingaultia*

cult in garden, climbing on tree.

(Live)

I  
=

Some site on early collection of  
Bourmyatia below Tournai site  
2400m.

5582 Bourmyatia

rise

max ca 8

4/17/11 SEM prepis

- 1 I. t. J. 9a #1
- 2 greenish green chab  
B. rubra
- 3 Prick green down  
B. alba.
- 4 \*fresh green down  
5563 U.T.
- 5 5569 U.T.
- 6 5293 Tanna

