Peveril Meigs 3rd.
2121 Anacapa St.
Sta. Barbara
Calif.

Field-Notes.

2

1927

(Overall 6)

Author. (S.B., 7434 mi.)

(In 19st notebook, 10 days scheduled on return, of which 9 are N. + at Ensenada.)
Also, 2 days at San Diego.

Ask:

Return: 2 day at Arroyo Seco.
1 day ~~off~~ road between San Antonio & San Isidro.
2 hr. San Antonio Valley.
1 day Sto. Domingo Colonia 2 days Camalú 1 day San Ildefonso

Rainfall record, San Ant.
~~Vos Siberia Colonia~~
1 day Sn. Quint. Bay
1 day " Volcanos
1 day Salt-water Sand. Dunes
1 day " back country.
1 day

Be back at S.Q. July 13.

1927

1 day Sta. María.
1 day, Socorro to Sta. María
1 day ~~Rosarito~~
1 day Socorro Valley.
~~1 day Cañon Hondo.~~
~~1 day Round Mt.~~
~~1 day, Rosario Coast~~
~~1 day, Santa Úrsula (?)~~
~~Cano La Palmita~~
~~San Juando Dios~~
San Fernando

All by myself this trip

June 16	Silvia	8791 mi.		
June 17	Colnett Photo,	8799 "	8	
" 18	Sn. Telmo	8805 "	6	
" 19	Sto. Domingo	8830	25	
" 20	Sour Sto. Dom.	8835	5	
" 21	Sn. Quintín Plain.	8845	10	
" 22	N. of Socorro Traverse route inlet	8876	31	
" 23	S. " "	8880	4	
" 24	Cañon Amargo	8892	12	
" 25	El Rosario Cantera mining	8905	13	
" 26	Onyx	8976	71	Fernando Sandes
" 27	Puerto Sta. Catarina	9026	50	
" 28	Sn. Augustín	9065	39	
" 30	Sn. Fernando Mine	9110	45	
Jul. 1	Aquajito	9137	27	
" 2	El Rosario	9159	22	
" 4	Rosario Mesa	9171	12	
" 6	Arroyo Amargo	9177	8	
" 7	Socorro Shells	9190	13	
" 9	Socorro Cañon	9194	4	
" 11	Rosario Mesa	9213	19	
" 12	East Mt. traverse Shells	9219	6	
" 14	Cañon Rodillo	9230	11	
" 15	Sn. Quintín	9244	14	
" 16	Cones; measurement	9255	11	
" 17	S.Q. Mill	9276	21	
" 18	N. Cones	9289	13	
" 19	Cañon Nueva York	9304	15	
" 20	Hamilton's	9321	17	

P. 1/2

1/2 (0)

June 15, 1927 (Continued). (Solo)

At Johnson's Ranch (San Antonio Del Mar)

Cult + Veg. Pigs live on vidrio, though they don't grow fat on it. Would sheep eat it? Wild honey, too, is made from it (vidrio). (Mrs. Johnson).

Cult. William Johnson, the patriarch, came here, via Tia Juana, from Texas, in 1890, with his family + cattle and horses, + settled at San Antonio del Mar. It was the seventh net year, + grass, clover, + alfilerilla were nearly as high as the cattle.

Clim. Climate keeps rain records (7 yr.)

This yr., 6 ½", + a ~~good~~ ~~fair~~ ~~total~~ crop of beans and barley.

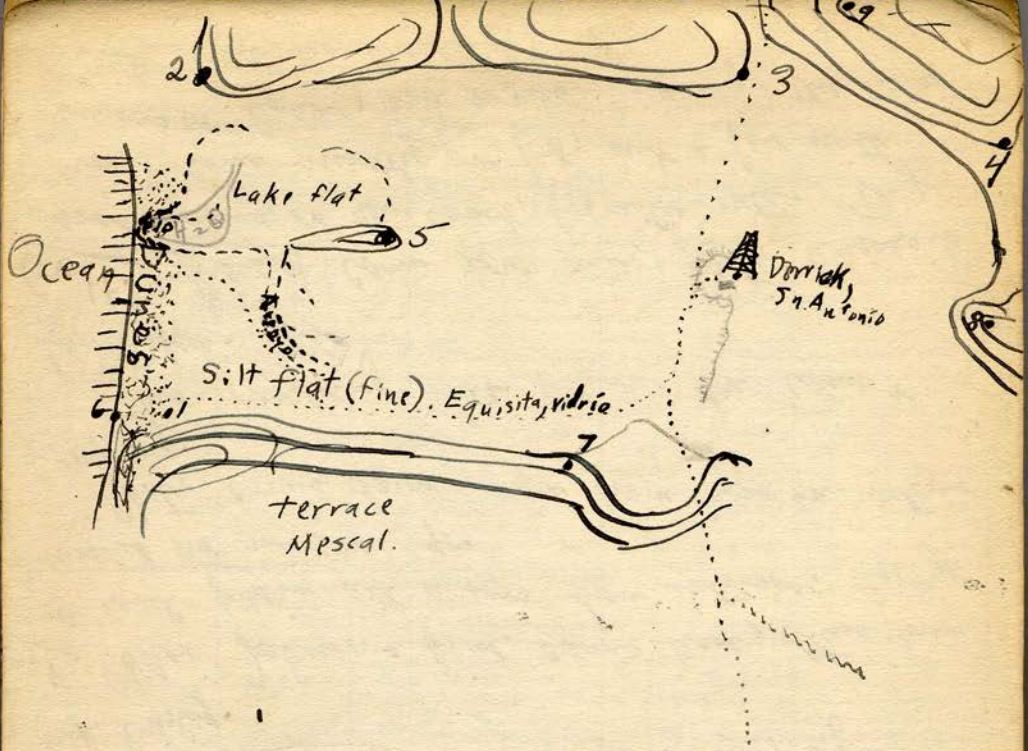
L.F. When Johnson's first came here, there was a level plain all across San Antonio. Arroyos washed out in one yr.

Water comes down canon from hills to San Antonio ~~profusely~~.

Two rumbling mts. between San Telmo + San Rafael.

Cult. Indians came down every winter, because it was warmer on the coast, from the mts. They would come mostly on foot, but a few with burros or horses, and would live off the shell-fish (+ some mescal). Would carry great burro-loads of shells up to the cave

Anthy. (S.B., 7434 mi.)



1 to 2 N. 2° W.
" " 3 N. 66° E.
" " 4 N. 88° E. 2¼° up.
" " 5 (~~hard dune fossil~~) N. 36° E. 775 yd. Old silt remnant (E-W) fine
" " 6. 500 yd. Steep slopes, pk. W. 45 yd. wide. Has small pitahaya, cholla, mescal, siempre vive, ~~[illegible]~~ thorn.
" " oil rig: N. 85½° E.
5 to Sn. Antonio Oil rig, S. 84½° E
" " 2 - N. 17½° W.
" " 3 - N. 77° E.
" " 4 - S. 82½° E.
" " 7 - S. 70° E.
" " 8 - S. 78° E.
" " 9 - N. 84° E.
" " 10 - N. 69° W.

Relek, 45' above valley floor.

About 550 yd. from W. end of knoll 5 to #10.

Silt bottom to arroyo.

1½

on the mesas, + at mouth of San. Antonio Cañon. Some would work on the ranch.

Along coast toward San. Isidro was much-frequented by them. Remains in caves, etc. (Henry, the cowboy, told me about the San. Isidro caves.)

Cult. Modern. Cow-hides it does not pay to ship out: they have tried it often.

Cult. Calentura, is a settlement with, at present, 8 families, in the C. branch of the San Antonio Arriba plain. Many of the families still subsist largely, in a slipshod way, upon "semillas" and roots del campo.

Cult. Siberia was so named by one of ~~Chron~~ Johnson's men. They had to work there raising wheat some of the time (spelled wheat) and the place was so forlorn and bleak, that it came to be known as "Siberia". The men didn't like to be spiled to "Siberia" for a couple of days.

June 16, 1927. Thur.

Beach, mi. from San Antonio del Mar.

C.F. Sand-dune belt ~~600~~ 450 yd. wide across ~~opp.~~ the end of the valley. Indian clam-shells + charcoal + chips of rock in the dunes.

Read, Sea-level, 9:45 A.M., 210'. Road, landward foot of dunes, 202'.

(2)

Water level, lagoon, read 11 A.M., 198!

Sea-level, 200 yd. W., " 192!

S. 10° W. to Cape Colnett's vertical cliff.

N. 15° E. to #2 (from sea edge).

L.F. Dunes are of the rejuvenated type. A general mass of moving sand, with frequent vegetative-covered remnants here & there. Dunes ~~[illegible]~~ 30' high at Sta. 1. [Map p. 1½]

Cult. Indian rock chips, abundant clams of all sizes (usually pretty well sorted by size), charcoal, burned rocks, & ~~[illegible]~~ pottery. The pottery fragments in my sample #10 are from three distinct heaps.

Read 304', top of first mesa, S. of #1. [167' above sea]

Veg. Mescal, sempre viva, fat bush with much

L.F. Ordinaria. Land Dunes have here mounted 10' above the mesa to W. Slope of mesa sides, 15°.

Cult. Littered Indian shells.

Veg. Occasional cholla, crucifixion thorn, & "tuft" cactus. The tuft cactus has ripe fruit now that is perfectly delicious. About 1½" × ¾" O.

1st. mesa, then, is 100' above valley floor. Soft sandy surface.

1½ mi. from Sta. 1, road to S. Read, 72.3 mi.

250' to Oil Rig N. 15° E. Mescal, sempre viva, "black sage".

" " Sta. 2 N. 32° E.

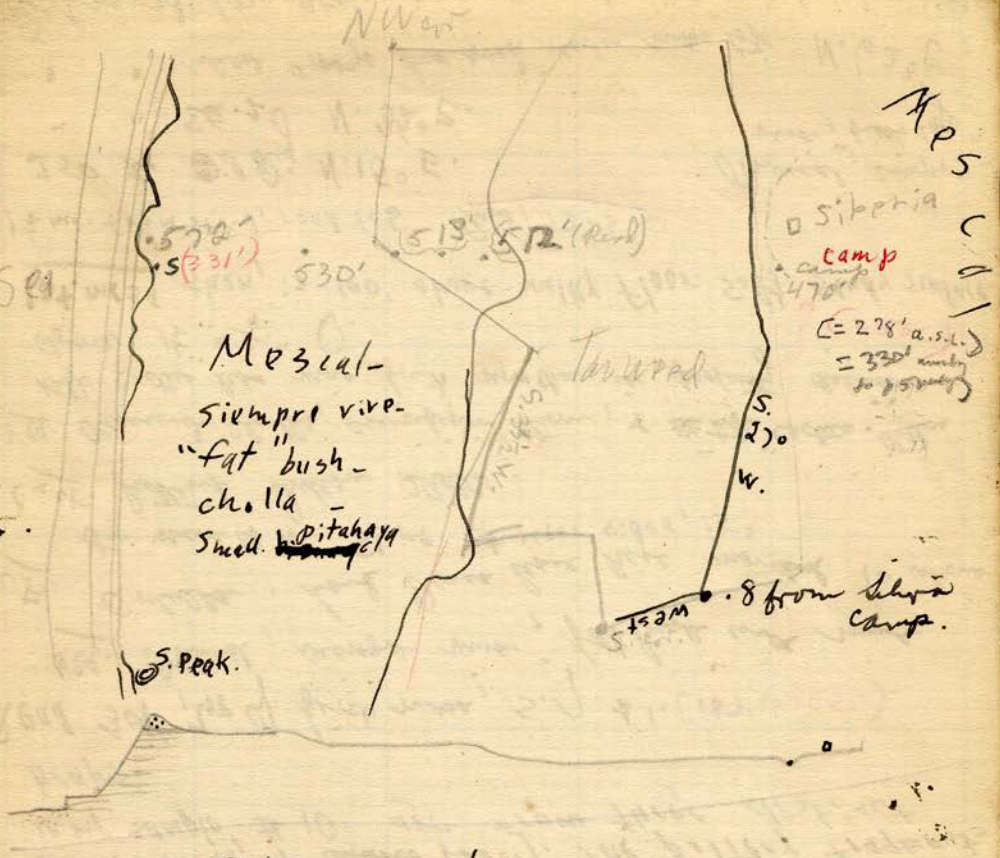
" " where arroyo ~~[illegible]~~ road reaches mesa top N. 63° E.

Cult. Roadway from 250', mussel & clam shells 1½' deep in the silt; burned wood, barbecued shells.

(13)

Antlr. (5.8., 7434 mi.)

100' contours.



Siberia plain.

one from camp: N 88° W

512' is 1260 yd. from camp; slight grassy ~~tree~~ more, yellow tarweed on all sides.

513' is 200 yd. from 512'.

At 100 yd. from 513', edge of old alk. line was S. 57° E.

530' is 250 yd. beyond 513'. (Gentle swales).

572' is 450 yd. beyond 530'.

572' to sea level, down 19°.

572 to E. edge little bottom terr., 24°.

572' to S. edge tarweed, S. 430 E.
" to N.W. cor., N. 530 E.
" to S. Peak, S. 100 W.

Siberia. Read 470' at 2:45 P.M. Rice puts it on the 250' mesa. The mesa is here very unbroken. Good flat areas. Just W. of the little shack (which is now a haven of birds) a dirt dam has been thrown across a small subdued channel, & a little reservoir of water created. Many cattle scattered about the plain here & W. From here W. the mesa is repeated by tarweed, with some patches of sidpio: the land that was cultivated to wheat. Cattle are eating sidpio.

veg.

Clim. A bleak wind is blowing, and wisps of slate-looking fog are blowing across the flat plain. No wonder the mormons called it "Siberia."! (This is just high enough so the fog hits it, whereas at San Antonio it is 250' above the valley). Temp., 62°. Fine-spray mist. Sunny only on the E. foothills & M. Wind, N 75° W.

Siberia camp: 3:20 P.M. Read 470'.

Cut. Volcanic at 5:2'; also mesas.

L.F. From 572' (read 4 P.M.) after climbing an almost imperceptible ascent (av. ½° slope), I got one of the biggest thrills of the trip: a precipitous drop to the ocean, with great bare cliffs of layer upon layers of slightly-consolidated sandstones + shales, conglomerates, yellow, red, gray, white, brown. From Siberia plain, it looks as if there is a range of hills along the edge of the mesa, but it is just the uplifted edge, irregularly worn back. The promontories then appear as the peaks, the embayments, the valleys. A slight old sand dune or two accentuates peaks.

Anthr. (S.B., 7434 mi.)

To S. Peak (cliff edge) 5.43° W. from Siberia camp.

Siberia camp is 185 yd. S. 23° W. from Siberia shack.

June 17.

from 8th S. ~~[illegible]~~ is 5 48' W. Red 10:15 A.M., 421.

up 2 1/4°

Cult. Ind. Burned, ~~lump~~ Semi-fossilized clam, bright shells, ~~some burned~~, + tar + chips of rock (?) near top of cliffs, 100 yd. S. of 572'. Cliffs can be descended here.

Pers (I descend).

Geog. ~~Fossil clam beds~~ Tubular concretions in ~~various~~ upper strata in face of cliffs.

Sea-level, 4:40 P.M., Read 241'

Cult. Our old trail descends the cliffs from ~~the big~~ shell-gap. In ~~many~~ some places it is worn 2' deep in the soft material. In many places it abruptly ends, to continue on the other side of a small wash. At some place the ridgelet along which it now has crumbled away. It has evidently not been used for years. At one place a mescal pits right across it, yet has not been ended. At several places along the trail are heaps of shells, bones, + chips.

Geog. Strata dipping landward + a little S., from 9° to 7½°.

Read 5:40 P.M., Silver Camp: 571'.

Veg. It looks as though the wheatland were formerly covered with tar-weed, rather than mesca, for there is less-dense tarweed on the borders (uncultivated ?)

June 17. Fri.

Cult. Also, wild burros at Silver.

Veg. The wheatland ~~was evidently fo~~ has on its margins black sage + "Characteless" plant

Cult. Indian shell fragments abundant 50 yd. SW of .8. Clam + mussel, many burned. On low ridge running N.?

5

Arthur. (S.B., 7434 mi.)

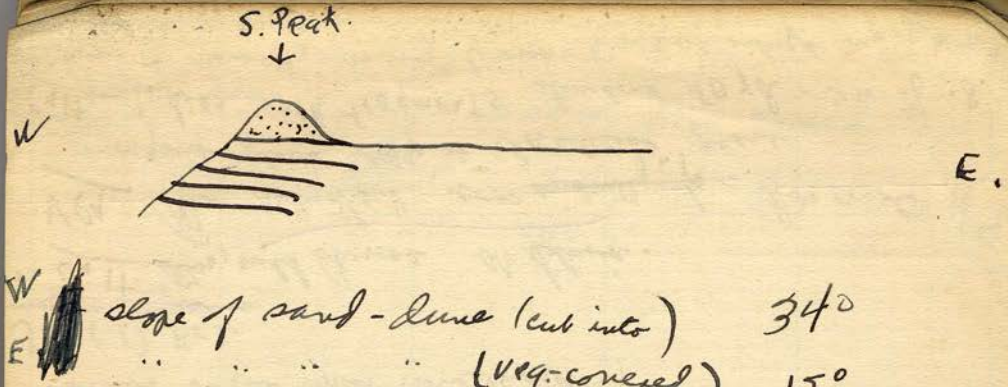
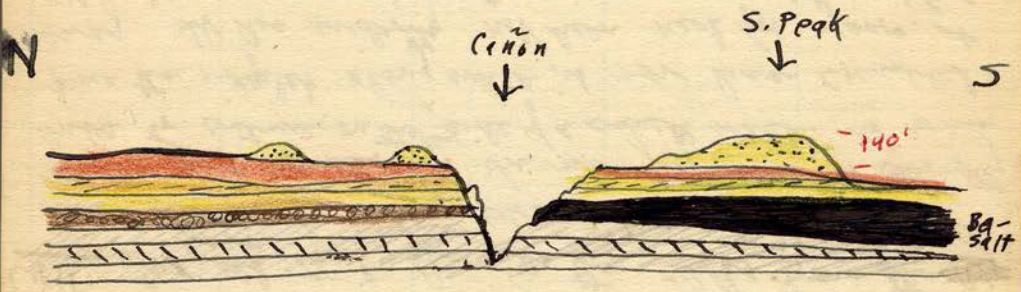


Fig. 1.



Section of sea-cliff, showing where the basalt pelters out. Upper + lower layers of sediments can be picked up across the canon.

Fig. 2.

Colr. scheme as shown (not so bright).

L.F. Just N. of S. Peak, the plain has been invaded by a fresh gully some ½ mi. long, flowing Seaward. Gully has various flat levels, representing diff. strata.

The plain is not level, but gently rolling, with broad swales trending SE.

11:15 A.M. Read, ft. of S. Peak 441'.

11:25 A.M. " top of S. Peak, 580'.

S. Peak is a ~~[illegible]~~ mantled sand-dune!, 140' high (see above diagram, Fig. 1).

Geog. Here as well as at the end of yesterday's section, there is a profuse accumulation of mussel-shells just below the sand-dunes (mantled & fossil). The specimen (Anthro. #11) of today was 18' below the top of the cliffs, in a 3" layer between sand & sandstone. Not Indian: just shore deposit.

Photo # 9, 8. Looking N. from N. of S. Peak across big gully (canon mouth). Strata dip ½° to 1½° E. Sand-dunes on top visible.

12:15 P.M., Bright Cloudy. f 22, 1/10".

Geog. The Cañon walls limit between cliff of entire sedimentary rocks (N.) and basalt ~~[illegible]~~ (S.) layered cliff. The basalt was deposited before the top layers on both sides of present cañon were laid.

At the end of the flow, by the cañon, basalt is only 2' thick. Increases rapidly to 20'. ~~[illegible]~~

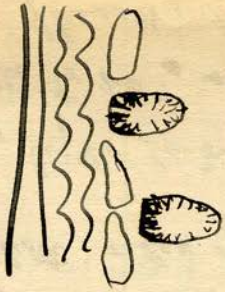
Read near N. end, top of basalt, 1 P.M., 360'.

9:30 A.M. Read, top S. Peak, 585', 1:15 P.M.

Str. Breeze, S. 70° W. .6 cloud: overhead, not E. or W.

Arthur. (S.B., 7434 m.)

Sea



Inclosed Depressions.

Veg. Mesembryanthemum, vidrio; fort Quale, nessal, scrub vine.

L.F. on N. end of S. Peak, unnamed depression 100 yd. wide + 20' deep, caused by blocking of embayment by old sand-dune, ages ago (drainage is good in sand that depression has not filled in).

Going S., I find there of these depressions, shaped, on the whole, like above F.9. Probably the upper ends of old low-gradient swales, sloping to sea, before uplift, (still slope seaward now).

Photo # 9,9. Point Sur. f 11, 1/25": Considerable wind.

Basalt cliffs 50' thick with sediments above + below. 1/2 mi. S. of S. Peak. Facing S.

Top of land in photo, read 550', 2 P.M.

3 P.M. At edge by Cape Colnett: Basalt comes right to top, with 4' dirt on top of it. Read 522! Vertical cliffs straight to the bottom: in fact, overhanging 2°! About 50' sediments at base of cliff make this possible!

(Pers. just billed a settler).

Photo # 9,10. Cliffs at Punta Colnett. Looking N. Just slight sedimentary layer at foot of cliffs. 3:15 P.M. Bright sunny. f 16, 1/50".

Read, 3:30 P.M., Top of photoed cliffs, 538'. (5)

L.F. Great cracks at edge of cliffs, 4' wide + unknown depth, where the next big chunks will break off.

Photo published by photo.

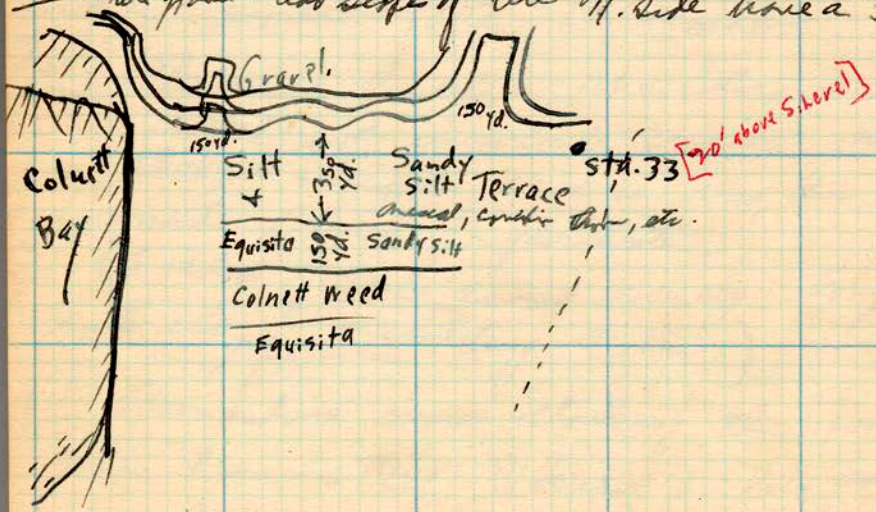
Pers- 4:45 P.M. Killed another rattler.
5:30 P.M. Reading, Silveria camp, 41!

81 mi. Silveria road-forks.
81.6 Edge of a "playa" 3/4 mi. wide: a circular shallow depression, w/ flat bottom. a little farther along another is visible.
83.3 Big clam mound across road.
84.1 More shells.
84.5 Edge Colnett valley. Read 380'. 6 P.M.
Valley edge gravelly all the way down.
84.8 Lower terrace (gravel) read 262'. Shells.
85.7 Camp (down valley, N. side.)

Sta. 33 Colnett (camp) 6:20 P.M., read 200'. [2.2 miles from S. Sta.]

June 18, Sat.

L. F. The gravel-clad slope of the N. side have a 30° slope.



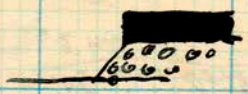
8

On the sea-slope, the brown-gravel, veg.-covered, 30° slopes are replaced by cliffs of glacial white gravel + sand, wave-cut, of 68° slope. Very slightly consolidated. Some layers very hard conglomerate.

9:15 A.M. Reef, sea-level (high tide) 80'.

L.F. Mixed with the other gravel, & lower down on the gravel storm wall, are heavy black basalt pebbles some 6" – 1' in dia. Soon a thin layer of basalt begins to appear at the top of the cliff as I walk along beach toward Point Colnett.

This ~~[illegible]~~ thickens more & more



toward the point. By 10 A.M. ½ the height of the cliffs was made up of basalt when I was. The gravel beach has become great basalt sub-angular boulders, often 15' across.

2.00. These big boulders, at & below sea-level, are covered with diminutive snails, mussels, & abalones & limpets, as are also the big fragments of hard conglomerate.

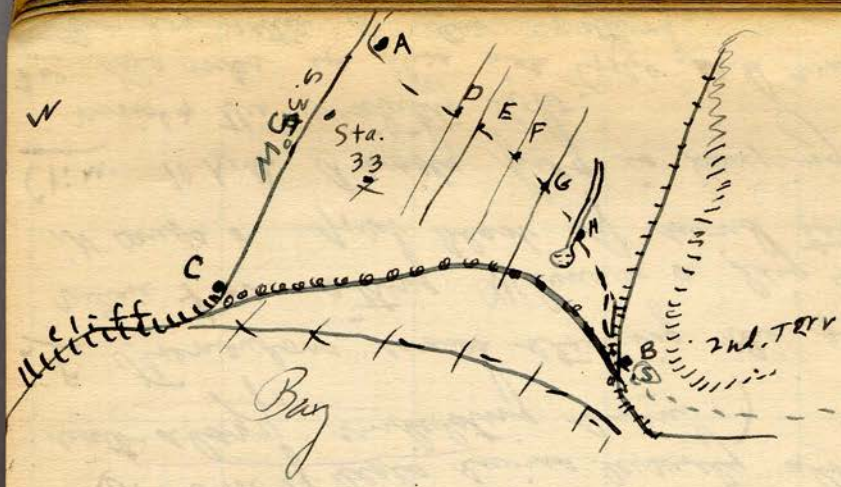
(A school of seals swims leisurely along the coast, with a lazy, undulating swim.)

L.F. Tremendous waves striking the rocks below where I am sitting. Whenever a big one hits it sends a great blast of wind toward me.

Clim. 10 A.M. A wooly fog is keeping me moist & the visibility low.

2.00. The rocks are alive with crabs. I walk & hear the dry rattle of their scuttling.

(9)



Sta 33. to A, .15 mi.

A to B, S.29° E. { A, read 85.75 mi., 102', 2:30 P.M. / B, read 87.15 mi., 130', 3 P.M.

A to C, S.40° W.

Read A, 2:30 P.M., 102'.

A to D, .5 mi. Read at D, 95'. D, real sand.

D to E, .1 mi., Marsh grass + equisetum. Hard sandy silt.

E to F, .05 mi., Sand, Bermuda grass (old arroyo bed) Read, petr. E + F, 89'

Circular pit, 2½' deep, with water + cattle

F to G, .2 mi. Same as D to E. Read G, 96'

G to H, .15 mi. Same as A to D. H, narrow arroyo. Small lagoon 20 yd. sq. at end of H.

H to S. edge valley floor, .3 mi., 100', read, Second equisetum flat.

B to C N.65° W.

Read, top 2nd. terr., 3:10 P.M., 297'.

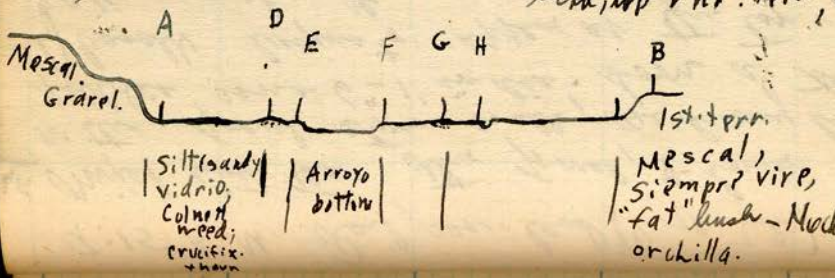


Photo # 10, 2. Waves on basalt cobbles (3' long cobbles), Calnett Bay. Conglomerate cliffs in background. f 7.7, $\frac{1}{100}$". 11:30 A.M., Bright Cloudy. Facing SW.

(10,1 = moved)

Photo # 10, 3. Bulls, facing E. Calnett. Bright Cloudy. 12 noon. f 11, $\frac{1}{50}$", 75'

Sea-level, 12:15, peak 75'

Top of sea-wall, " 85'

Valley floor by sea-wall, 75'

Sta. 33, 12:45 P.M., 97' (4' above ground).

Sta. 33 has a good silt terrace, with indrift, sandy brus, thorn, Calnett weed, grass. Much orchilla on crabapple thorn. Valley side (S. facing) has moss and various Cocti: Cholla, pitahaya, cochal, small pitahaya, & "clarkeblanca" bush.

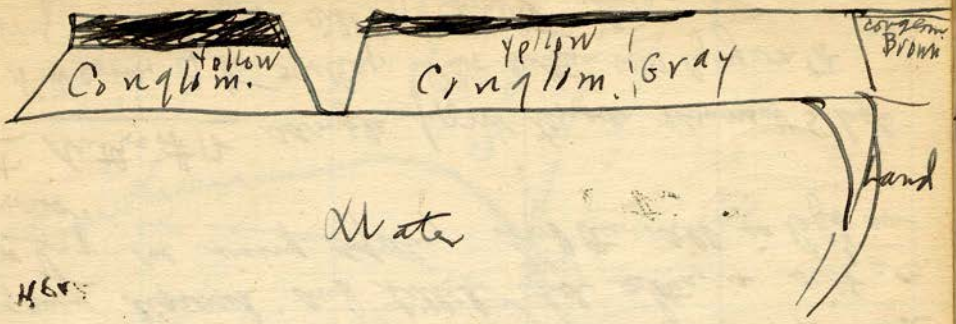
L.F. (Theory) These flat valleys were cut by streams into V. valleys long ago during an uplifted period (absence of big side valleys due to drier climate along coast). Then they were depressed and filled with estuarine silt, etc. Now they are rising again, and the silt is left as terraces.

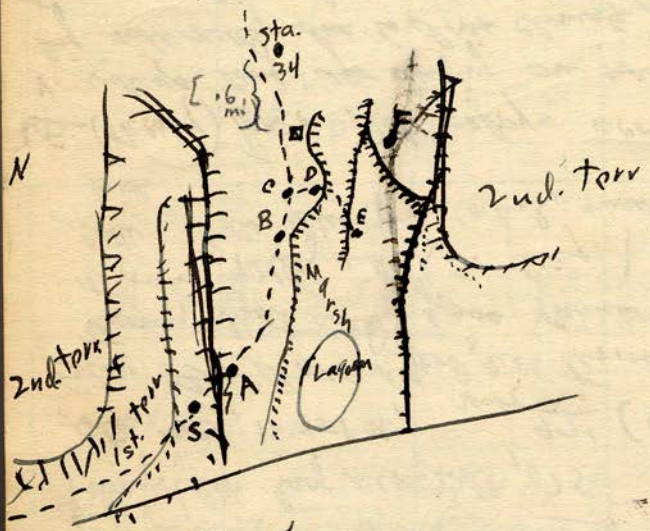
Cult. Artifacts #12 sample from terrace remnant 5' high at NW corner of the valley. Deer antlers were lying on top. Many shells along N. side of Calnette valley.

L.F. Valley here trends S. 35° W.

(10)

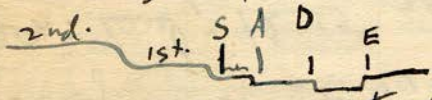
↓ Pt. Colnett.





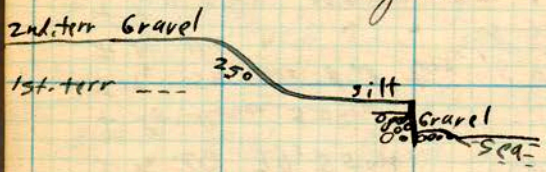
~~San Telmo~~
Valley

Sea



S, shells (valley silt terr.) read 3:45 P.M., 120'. 89. mi.
A, in valley floor, ~~sand~~ soft silt, with ~~Bermuda grass~~ equisita, marsh grass cover, read 111', 89.05 mi.
B, read 89.85 mi.; 130' (some cruciff. joining the equisita)
C, ~~road forks~~ to right, read 90.1 mi. Abandoned house further inland
D, Colnett weed replacing equisita. Read 90.25 mi., 135'
In Marsh grass land S. of D, read 124'. 90.3: standing water in 2' deep pit.
E, Same as B, C, & D. Read 90.4 mi.; 132'. 4:18 P.M. The arroyo wells just crossed are the only ones now active.

Same veg. on top of 2nd. terr. as on first terr.
Gravel on top, 2nd. terr. stretches far E.
1st. terrace (road) 150 yd. wide. Cliff shows gravel, with 4' layer sandy silt on top.



Profile just S. of Colnett.

Shell - heaps along road every now & then
at N. edge of low Telmo valley a big deposit:
Clams, limpets, chips of black rock, charcoal.
Read 89. mi.

The "E" terrace, just East of here (vy valley) is nicely
covered. Evidently formerly cultivated. Opposite abandoned
adobe house. Old cult., with mesquite fence. 300 yd. wide at "E."
"F", another wet terrace, rest 160'.

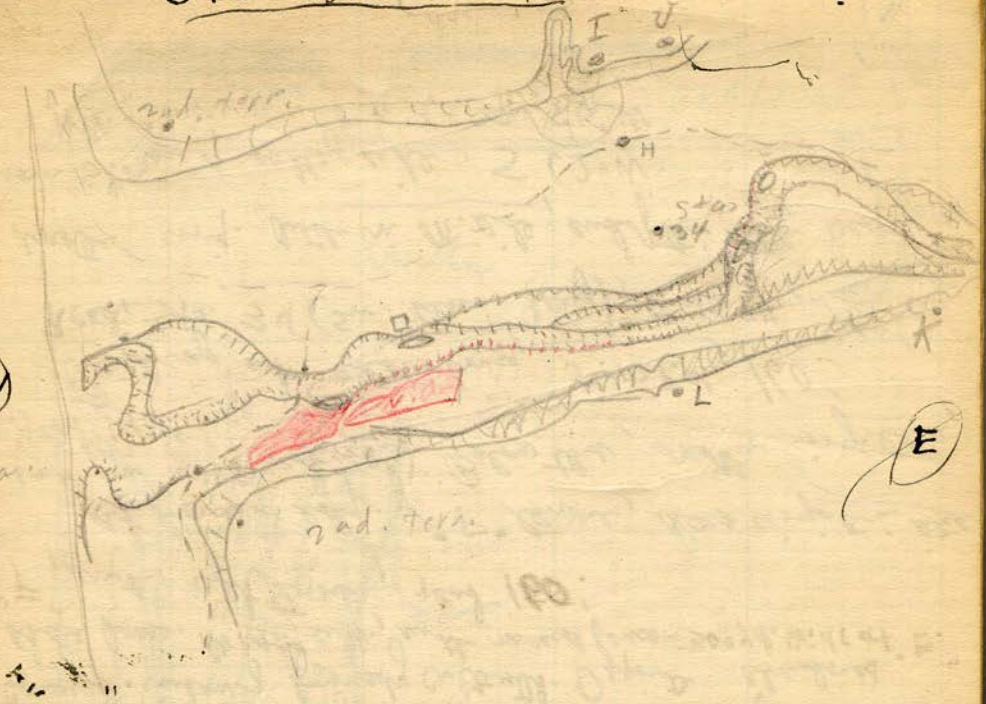
At lower edge of "F" terrace, dear irrigation ditch
cut in silt (rest 158'). Below this, another irrigation,
rest 140'.

Reading at adobe house, 5:10 P.M., 160'.
Read, sta. 34 (Sw. Telmo Valley), 5:15 P.M., 168' [about 100' above Sea]

Another irrig. ditch on N. side, end of this ditch bears
from S.W. corner of valley side, S. 62° W.
NW " " " " , S. 80° W.

(11)

San Telmo Valley.



Sta. 34 to H, 600 yd. H, read, 131!

W to foot of I slope, 125 yd. Read, foot (in fan) 142!

I, read 260', at 9:25 A.M.

I to Sta. 34, S. 50° W.

I to house, S. 47° W.

I to SW nose, 2nd terr., S. 49° W.

I to NW " " " S. 70° W.

I to J nose, N. 80° E., 250 yd.

I to K nose, S. 65° E.

I to N. edge lagoon, S. 62½° W.

J to K nose, S. 62° E.

J to Peak, N. side of valley, (see blue map), N. 68° E.

J to 2 white spots (roofs?) N. 80° E. (Legaspe?),

L, read, 11:15 A.M., 361!

L to house, N. 60½° W.

L to small nose, 2nd terr., N. 82° W.

L to Legaspe roofs, N. 66½° E.

L to Peak N. 68° E. from J, N. 60° E.

L to SE cor. vineyard, N. 79° W.

L to NE " " " N. 79° W.

L to Sta. 34, N.

Sta. 34 to SW nose, 2nd terr., S. 62½° W.

June 19. Sun. 1:10 P.M., 142!

Read Sta. 34, 8:45 A.M., 130! 10:30 A.M., 132! 12 Noon, 131!

Veg. Soil. From Sta. 34 to X, colnett weed, with mesad patches, on a sandy silt flat. Mesad comes in just S. of X, + ~~son~~ "characteless" plant. Gravelly-hard sandy floor of mouth of little canon.

Slope (27°) of valley side, below I, is gravelly, with same sort of veg. as S. facing slope of Colnett valley: mesad, coolad, petalonyx (2 kinds), rock rose, sierpe vine, characteless plant, low lupin, heather, little "button" cactus, "hedgehog" cactus.

Veg. On the I mesa: mesad, "fat" lupin, characteless lupin, stunted lupin heather, sierpe vine, hedgehog cactus, + much orcutta on the alluvial gravel + "fat" lupin.

Geog. Between I + J, some caliche.

Bodies show this terrace + one on S. side of valley to be made of a gray-white conglomerate.

Veg. All is an olive gray landscape, except for arroyo, which is larger green in spots, with willows.

Cult. Great accumulations of clam shell fragments, + limpets, especially along the north bank of the arroyo, but thinly scattered around the "Fort Helmo plain".

L.F. Along the N. edge of the arroyo (arroyo is all headed over), there is a string of little ponds, apparently the centers of attraction for the Indians, as at present they are for birds, animals, + men.

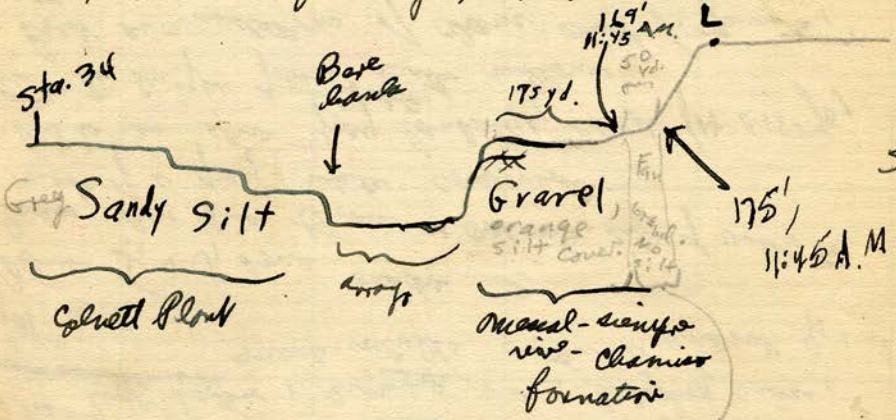
[Herd of 12 wild burros grazing in the valley.]

175 yd. from Sta. 34 to ~~arroyo edge.~~

115 yd. thence to arroyo edge. Read, arroyo edge, 10:40 A.M., 123'.

Read, bottom of arroyo, 110' (80 yd. wide). Arroyo has much grass all the way across, except for Colwell-weed and bushes.

Read, left bank of arroyo, 148'.



(~~Back to main map.~~) Read, house, 1:20 P.M., 140'.
1:45 P.M., 141'.

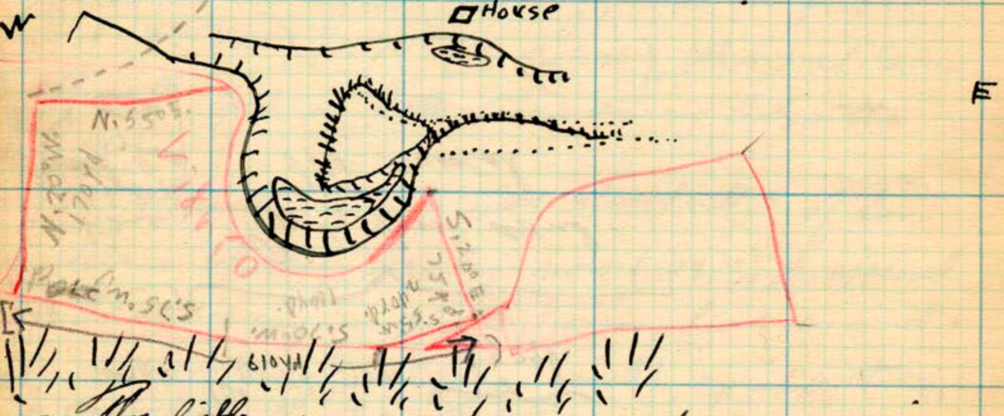
~~House to where road climbs 1st. terrace, S side valley north, S. 57° W.~~
~~" " SW nose, S. 50° W.~~
~~" " NW nose, S. 86° W.~~
" " NE cor. vidrio, S. 26° E.
" " W end, E point of Vidrio, S. 14° W.
~~" " NW end, 1st. terr., S. 61° W.~~
~~" " N. side of arroyo, road crossing, S. 63½° W.~~
~~" " W. End of irrig. ditch, E. of W. v. Vidrio gate, S. 16° W.~~

Veg. The vegetation on the high mesa "L" is the same as that on "I"; but the valley slope below "L" (27°: same as S) is totally different consisting of a close-formation of "characterless "plant" and dwarf bulseye. The soil, too, is much less rocky than below I (probably due to plant-cover); & I slope is very open formation. All the difference due to N vs. S. exposure. For at both "I" & "L" the mesa surface is of the same gravelly soil.

Soil.

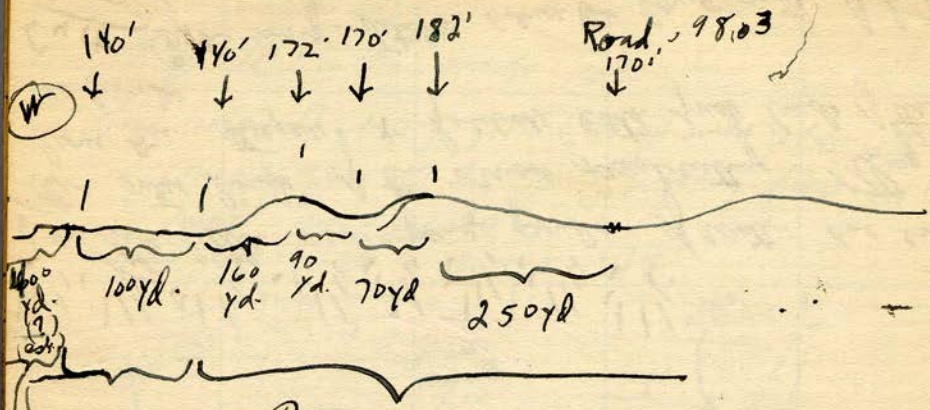
Veg. Rushes in marsh by house.

L.F. At end of irrig. ditch (S. side of ~~valley~~ arroyo), a big embayment has been washed in the silt terrace



L.F. The little swamps & ponds of water are in the outer bends of the most recent cutting. They all have the steepest & freshest cuts just back of them as banks.

Cult. Both irrig. ditches are on the lower sides of fields. The lower ditch borders an area of sandy silt, freshly sluiced by stream action.



Fairly loose sand.
No mescal

Good amount but hydr, mescal, here + there

Gravel at surface,
instead of loose sand.
Abundant mescal, to sea.

Photo #104. Vibrio, San Telmo Valley. Facing S. 55° E. Bright sunny. f22, 1/5", Color. 3 P.M. (Vibrio is red, so I used color.) Apparently on an old threshing floor. Fine silt. (Sample #3) (Vibrio grows best on compact silt.) (Silt is flowest in parts of terrace near ocean.) (Flowest silt found in semi-alkali, Equisetum flats)

3:20 P.M., where road hits top of first terrace, S. side:

To N. edge mesa N.75° W.

to NW nose, valley mouth N.58° W.

to S. edge mesa S.87° W.

to N.W. end of 1st. terr. S.74° W.

Road, 170'. About .6 mi. from where road climbed onto valley terrace. Road, 93.8 mi.

At 97. mi. we climb off first, onto 2nd. terrace, which here has a sandy silt covering, like the first. Road (98.3 mi.), 170' (3:50 P.M.). (Not 2nd. terrace after all: just another ~~[illegible]~~ terrace entering below the first).

Veg. Mesical, which was abundant S. of San Telmo Valley, has by now (98.3) disappeared. The accompanying plants, however, have remained. Sempre vive, pitahaya (small), cowhide thorn, brush heather, characterless brush, & "Cojoba."

250 yd. W. of road, elev. [redacted] 182': higher than E!

Can this height orange sandy silt be an old dune?

(14)

(A little S. of San Telmo, the ~~[illegible]~~ second terrace, brought receded several hundred yards, and now (98.3) has disappeared)

At 95.7, down onto a lower plain, harder, with no cactus or mescal. Much fed: bush & beaded "sage". Sandy pale orange silt. Rest, 1.3 mi., (at a small gully crossing this plain), 1:45 P.M., 142'.

At 2.7 mi., another little active gully 8' deep with upstanding orange sandy silt walls.

At 3.1 mi., another older but active gully. Some silt, some gravel walls.

At 4.3 mi., another gully.

At 4.6 mi., up on narrow terrace again, out of plain, with mescal, ~~[illegible]~~ ocotillo, etc., all the way to coast. Higher terrace just to E. of road. ~~5 P.M.~~

At 4.9 mi., rest, 5 P.M., 190', on colluvium some 20' above terrace.

At 5.5 mi., & at 6.2-6.4 mi abundant clam & limpet shells & chips. Many others here & there.

At 6.4, down in Camalú plain, near edge of 15' cliffs; rest, 5:15 P.M., 160'.

Sea-level, rest, 125' (est.)

June 20 (Sun.)

Harkness themes:

Cantú:

When he came, chickens died, old women, steers.
Tried to resist govt.: Yaquis came to San Felipe.
Alec repulsed him.
Why can't Mexs. have such a ranch?

Missions:

Old Indian sold vestments to him.
Altar-bread irons, in "horno" of stone.
No priest been here for three or four years; formerly, Italian priest from Ensenada.

Camalú Valley.

Formerly siempre vive: burros ate it off.

San Telmo:

A Spaniard settled there; water gave out, wife was lonely, left.

San Ignacio:

Chinaman who runs the town, dates (in "cuero" barrels) + date + grape wine exported; cattle; hotel: Liu Mindo. Mines opening up along the way. 1200 people.

Veg.

Mexicans very fond of pitahaya fruit. Will go thru apparently impenetrable stands of it to gather it in pails.

June 20.

Read, Hamilton's route, 16.8 mi.

" , end of road by lagoon, 22. mi.

Lgth. Abundant Indian shells (clams + limpets) + some pottery + chips + charcoal. (See outline # 13)

Pers: Spent 6½ hours today (with an hr. out for lunch) getting the ear out of a hog.

Pk. to 10½ P.

June 21, Mon. 1927.

2.00 Last night, a bull-frog chorus from the tules.

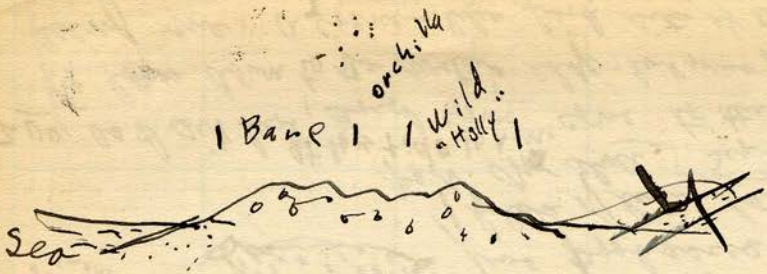
Lt. Veg. 2.00 Cliff W. of Sto. Domingo Comp, long spits of gravel + sand extend out 200 yd. from the sandy head. They are partially exposed at low tide. Covered with eel-grass + other sea-weeds. On the pebbles are limpets (the only other shell-fish besides clams); this then, the explanation of why the Indian shell-heaps back of here are clams + limpets. Numerous crabs (common + spider) sand-dabs, etc. Also, shoals of leopard-sharks 3'-4' long, keeping in shallow water, fine cutting water in all directions; a seal fishing just off the sea-weed.

Pers. I saw one snail-like creature, 8" long by 4" wide + thick. Had two flaps coming together on his back, which he kept closed except for 3 funnels. A reddish brown with dark brown spots. Had

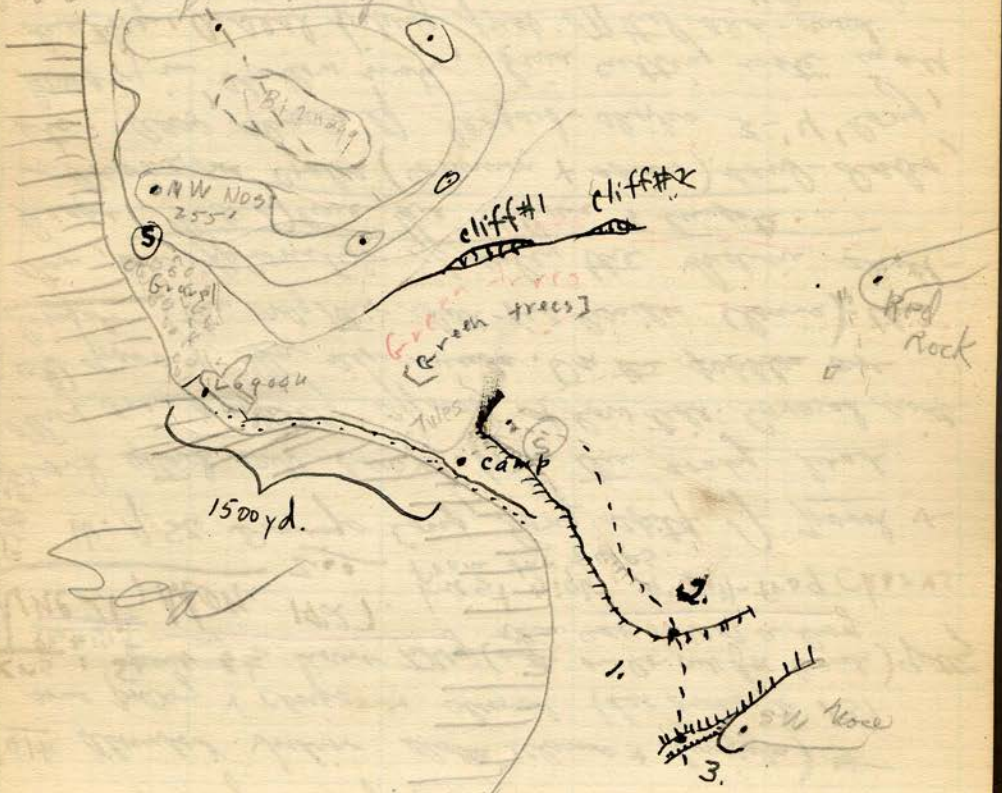
(Saw several others smaller.)

two short fleshy horns, & two proboscises below them, & folds of his lower part. No shell. Sea-gulls flit by.

2.00 as I sit here at low tide 10 A.M., several cows come to the beach. A coyote comes down to the water's edge, but turns away upon seeing me. A crane-like bird sits at the edge of the water. (smaller head). Not only Indians fish.



Sea-wall 14' high + 15 yd. across. Back layer covered with orchilla; front layer with "holly" & other bushes.



Sea-level read, 11:30 A.M., 131'.

Top of N.W. Sto. Domingo Nose, 386'.
255' high; 50' of sand on top.

N.W. Sto. Domingo Nose.

Bearing, NW nose to Red Rocks: N.86½° E.
" " " " SW Nose: S.30° E.
" " " " Lagoon: S.
" " " " Hill, E side Biznaga flat: N.70° E. up ½°.
" " " " where road enters Biznaga Basin, N.: N.5° E. up 0°.
" " " " another rim-hill of Biznaga flat: S.69° E. up 0°.
" " " " part of same ridge, S.36½° E., down ¼°.
" " " " SE house in La Colonia, S.78° E.

NW Nose is of soft sedimentary rocks in horizontal Geol. layers.

Veg. Vibró on the sand on top of NW nose; pitahaya + mesquit on S. facing slope. Beaded sage, "fat" plant, "Characterless" plant in Biznaga Basin, (except in the flat, which is first grass + Biznaga), crucifix thorn, occasional chalk, dwarf huckaye.

Lith. Abundant (S), Clam, Cringed, & black chips, on a point terrace as indicated.

Bearing, Camp to Red Rock: N.60° E.
" " " SW Nose: S.57° E.
" " " NW " : N.12° W.

(18)

Sea-level read, 3:15 P.M., 180'. } Camp at sea-level, + 204 yd. from sea.
Road, at Camp, 178'.

.3 mi., comp to where road turns off S.
.9 mi. thence to where road goes down 6' terrace to comp level again.
.3 mi. thence to 6' terrace again.

Bearing, SN nose to Red Rock: N.50°E
" " " " ~~Cliff~~ cliff #1 (valley edge): N.4°E.
" " " " ~~Cliff~~ cliff #2 " " : N.16°E.
" " " " M. end salt plain: S.12°W.
" " " " M. end, grassy plain: SN.

L.F. A narrow sand-bank strip lines the coast all the way to the lagoon. Is higher than the land in back of it.

Soil. The first level in back of the sand-wall has a silt clay soil (sample obtained at depth of 3' #4): regular estuarine mud. At camp,

Veg. it is covered with a closed formation of "Bermuda grass" + Distichlis maritima, with patches of marsh grass scattered here + there. Tules just N. of camp, in a bog with standing water.

Cult. .3 mi. from camp to village road turns N to S.

Cult. Indians did not live at coast in Summer because no water?

L.F. The valley wall on the S side of the valley is very straight and very steep (41°), with only a scant veg. cover; abundant dwarf buckeye (N. slope).

On Terrace #3 (read 3:40 P.M. 210')

Top of SW ridge, read 290', at 3.45 P.M. A red mesa remnant of some extent.

Sedimentary, with a gravel layer on top: (gravel scarce on higher surfaces)

Veg. In this gravelly stuff, grows wild rose, fat bush, + dwarf scrub vine, with stands of dwarf buckeye. S.-facing slope, much petalonyx enters in.

Zoo. Wild burros on the mesa. Also on the plain south. Also on Bizneyo Flat before referred to.

L.F. Extensive, salute salt flats stretch away to the S., going right to the coast fairly well.

Soil. Between Sto. Domingo Valley + the salt flats,
Veg. there is a sandy silt powdery soil, with vidrio + bushed sage.

L.F. At the very N. end of the salt flat, a grass + ~~flat~~ equisita flat. In fact E. of the Salt this old level of grass + equisita continues.

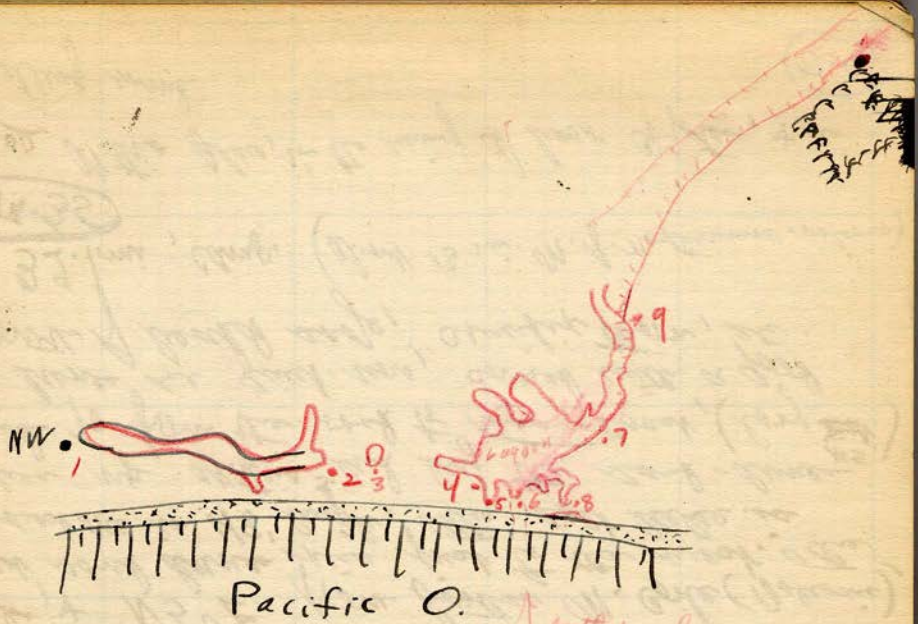
Geog. A ~~four hundred yards~~ mile or so E. of SW Nose, the south slope becomes precipitous, + cliffs of soft sediments, broken down, with apron, for the lower two-thirds of this height, are exposed. Dip slightly seaward.

L.F. The salt-flat has considerable water in it though there is a broad waterless (but soft) strip around the edge (200 yd. est.). Islands in the water. Equisita flat, by road, 5:15 P.M., Read 190!

L.F. At 29.8 mi., on side road to Bilegue Salt Works, + N 5° E. from farther N. cone (volcanic), great sand dunes rise just to the west. The nearest one is 48' high. The salt lake is broken up at this end by the sand-dunes which go from the road to the coast, (long N.S. Est.) The dunes are quiet now, covered with a good growth of beaded sage, cenicita thorn, etc.

At 32.1 mi., camp. (about 3 mi. N. of northernmost volcano)
Sta. 35

Zoo At this place, in the evening I hear coyotes, + a whistling wind.



Beach trend. S.60° E.

Extreme NW end of Sta. Maria Lagoon bearing:

To SE volcano, N.49° W.
To Socorro Dune, S.60° E.
To NE tree, lower Sta. Maria N.71° E.
To "Plug" peak, N.80° E.
To ~~Double~~ Notch Peak, S.78° E.
+ is some 300 yd. from beach.

(To SW shoulder Sta. Maria Valley N. 64° E.

1-2, 360 yd. 2-3, 80 yd. 3-4, 260 yd.
4-5, 100 yd. 5-6, 100 yd. 6-7 (est. line), N.55° E.
6-8, 160 yd. 8-7, 270 yd. 7-9, 300 yd, N.30° E.
9 to SE volcano, N.53½° W. To NE lower Sta. Maria tree, N.46° E.
To [illegible]

June 22, Tues.

Rancho Bateque is a cattle ranch. Water (somewhat ill-tasting) some 20' down.

Salt men get water from Miss Hamilton's.

Cult. Profuse clam-shells at Bombo Bateque.

L.F. Santa Maria lagoon level, 1:35 P.M., read 208'.

Sea-level read, 1:40 P.M., 202'.

L.F. Santa Maria lagoon is the largest of clear water that I have seen.

200' Covered with flocks of bell-divers now.

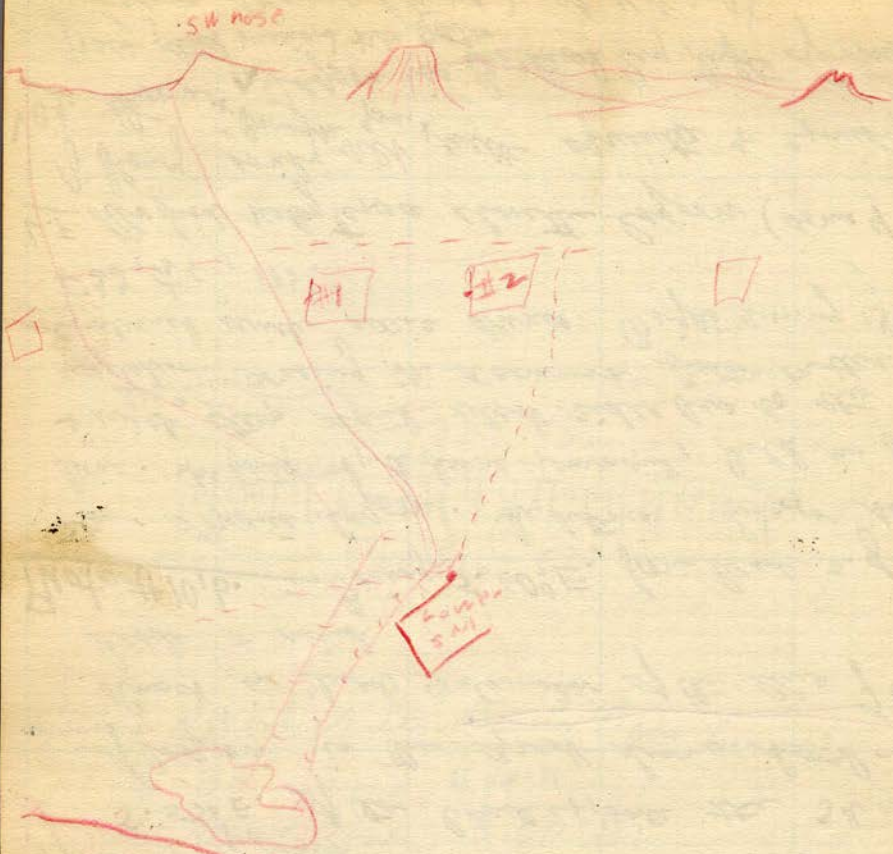
L.F. The beach opposite the lagoon is very broad & gentle, of sand.

S. 57° E. of the beach opposite the SW corner of lagoon is the great Sacramento Sand-dune, almost in direct continuation of the line of the beach & wind

Photo #10, b. Facing S. 60° E. from beach S. of Sta. Maria lagoon. In distance, Sacramento sand-dune. In foreground, a dune remnant, held in place, & with steep sand-blast sides due to the vegetation covering it. A common feature on the beach, combined with active dunes. Bright sunny. 1:45 P.M. f 22, $\frac{1}{25}$", 100'.

L.F. The first valley terrace above the lagoon (some 4') is of floury sandy silt, with exquisite & conspicuous Bermuda grass, & Veg. thereon. Lagoon is bordered by tufts of marsh grass, & occasional tule patches.

L.F. Lagoon narrow (5 yd.) at NW end.



Lower S.Maria to Plug N.80° E.
" " " Notch Peak S.77° E
" " " SE volcano N.62° W.
" " " SW nose, N.60° E.
" Other grove, #1 N.67° E.
" " #2 N.75½° E. 1.2 mi.

W. side of lower Eucalyptus triangle ~~fence~~ runs N.16° W.

Photo # 10, 7. Santa Maria Oyoon, from .4.
Facing S. 73 E. Eucalyptus grove (3) in background.
Bright sunny. 3:05 P.M. f 16, 1/25", 100'.
Sea level road 3:20 P.M., 214'.

L.F. Water in lagoon perfectly sweet.

Soil. As the lower sta. Maria eucalyptus grove is approached, the soil becomes more + more powdery. [Powdery]

Cult. Old fence posts are reached.

Veg. Vidrio comes in profusely, esp. in old Eucalyptus quadrangle

Cult. Cattle grazing on the vidrio

At 59.7 mi., road turns off to E.+ goes way inland. Take, on return.

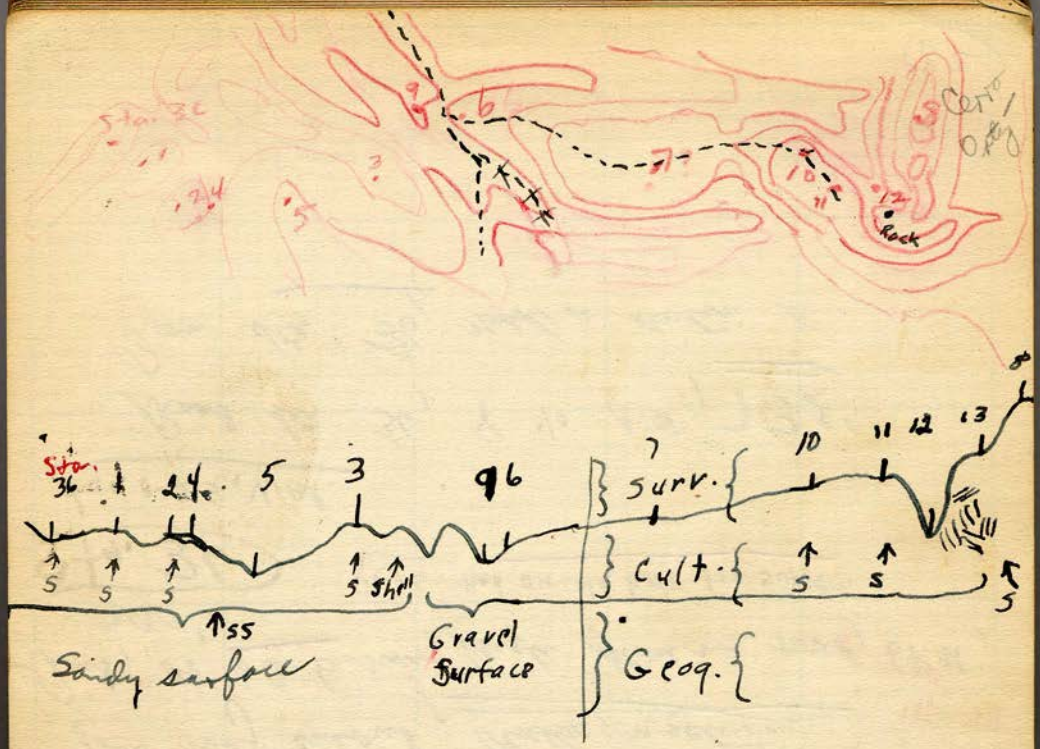
Rest, at 62.6 mi., high place in road, 6 P.M., 790'.

Sta. 36 Pers. Had an old hare for supper.

June 23, Wed.

Read sta. 36, 8:40 A.M., 732'

From sta. 36, make a section E.



36-2, 100, S.67° E, up 3°. Read, 1, 771'.
1-2, S.50° E., up 1½°.
2-3, N.78° E., up 0°. Read, 2, 789'.
2-4, 75 yd. 4-5, down 8½°. Read, 3, 775', 9:20 P.M., 5-3.
3-6, -½°, N 51° E, 740', 10 A.M.
3-7, +2½°, N 70° E, 860'; 7 to 8 (correct!) N.82° E., up 4°.
3-8, +3°, N 80° E. Read, 8, 12 noon, 1412'. (Cerro Ortiz)
6-9, -11°, S.78° W. Read, 9, 610'.
10-8, N 85° E., +5¼°. Read 10, 10:30 A.M., 1002'.
11, read 1090', 10:45 A.M. To 8, N.60° E., up 6°.
12-8, up 10°, N.55° E. Read 11:05 A.M., 906'.

Cult. Profuse clam-shells + rock chips on the sandy, Chamiso-mesced-Cholla ridge from sta. 36 to 4.

Pitahaya, button cactus, characterless, black sage, cojoba.

Geog. Between 4 + 5, outcrop of soft orange 55 amid the numerous orange rock + sandy soil.

Geog. Broken-up caliche at 1, 2, + 3.

L.F. 9 is at the fork of two cañons, with arroyo narrow and gravelly. Between 9 and 3, gravel came to make the dominating surface cover.

Veg. Also between 9 + 3, mild rose entered the formation only on the gravel.

Escoba amarga is found in the gravelly arroyo bottom.

Cult. At 10, scattered clams + chips again.

At 11, abundant clam fragment + chips.

L.F. Deep, steep V-cañon between 11 and hill 8. 32° slopes, all in gravel.

Veg. Same as usual, with mild rose especially thick on N-facing slope.

Cult. Clam + a few mussel fragment, + rock-chips, at 12.

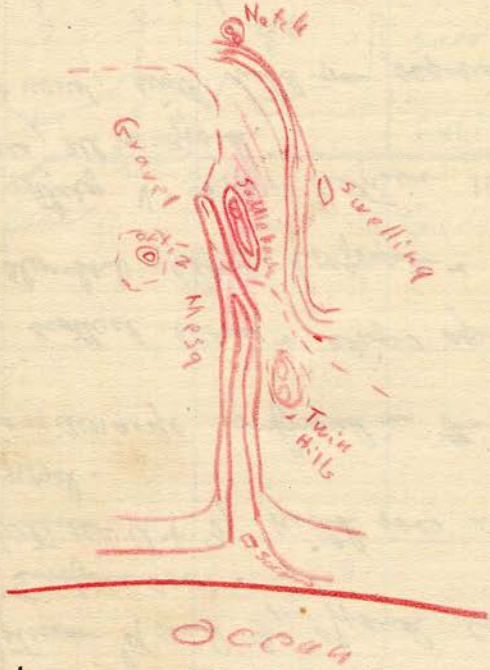
Veg. On SW-facing slope, there enters the formation abundant cactus + red-top hyziaqo (the latter has occured sparsely in all today's gravel). Very open formation on S slope, however.

Geog. At 960' rest, first real rock seen on this section. (See sample "1st. Rock E. of Socorro.") (23)

Cult. Shells + chips at 13. Also a peculiar cultural feature which I do not understand, to wit,

Cerro Ortiz to:

Picacho del Diablo, N. 26° E.
Plug Peak, Due N.
Notch Peak, S. 82° E.



N S

Cerro Ortiz to:

Swelling	S. 26° E.,	up	$1\frac{3}{4}$°
W. end high mesa.	S. $1\frac{1}{2}$° E.,	"	0°
W. Twin hills	S. 7° W.,	"	0°

Horn of saddleback, N. 51° E., up $1\frac{1}{4}$°

W

Saddleback & twin hills are metamorphic.
Notch Peak, granite; Swelling mesa, white seds.

a heap of angular rock fragments (some 4" in dia.) 12' or 15' wide + 2' high, little alumbard cedar + curly soil. Usually shells nearly, though not on the heap.

Veg. Lots of ripe button-cactus berries: very good; red.

Top of 8. Read 1412', noon.

I name this "Cerro Ortiz," in memory of Anselmo Ortiz, who lived at Socorro.

L.F., Geog. It is made up of a red metamorphic (see Cerro Ortiz sample) To the East, to the white granite Notch Peak Range is a gravel mesa area, lower than Cerro Ortiz, Plug Peak, + other metamorphic peaks on its W. fringe (contrary to the Mauland Map).

Veg. Just near the top of Cerro Ortiz, a little monte gets a foothold (high bush-heather). The mesa area East has same veg. as that W., with much mescal + wild rose.

L.F. The mesa to the E. is on the whole gently rolling, with rather shallow V-valleys.

Photo # 10, 8. Notch Peak Range, (Notch peak to right in picture), looking across gravel mesa. Facing a little N of E. Bright Sunny. 1 P.M. - f 22, 1/25". From Cerro Ortiz. Left part of picture, a suggestion of a granite mesa.

L.F. To the S. of Cerro Ortiz, the gravel mesa stretches across Socorro Cañon to the foot of a higher, somewhat irregular mesa with white patches appearing thru the "monte", instead of the red, mescal lower mesa.

Sights taken to a high spot ("swelling") on the N. edge of the white mesa, to the Western of twin hill island hill, + to W. end of white mesa. (2-4)

200 Golden eagles are soaring around Cerro Ortiz. Probably have nests in some of its numerous small caves.

Photo # 10,9. "Millite Mesa", facing a little E. of S. from Cerro Ortiz. Bright sunny. 1:30 P.M. f22, 1/4", color.

Reading, Cerro Ortiz, 2 P.M. 1430'.

Wind, N. 85° W. Gnesd. Clear, except for very slight Cumulus over S.P. Mountain, + fog cover just off the coast from Socorro S.

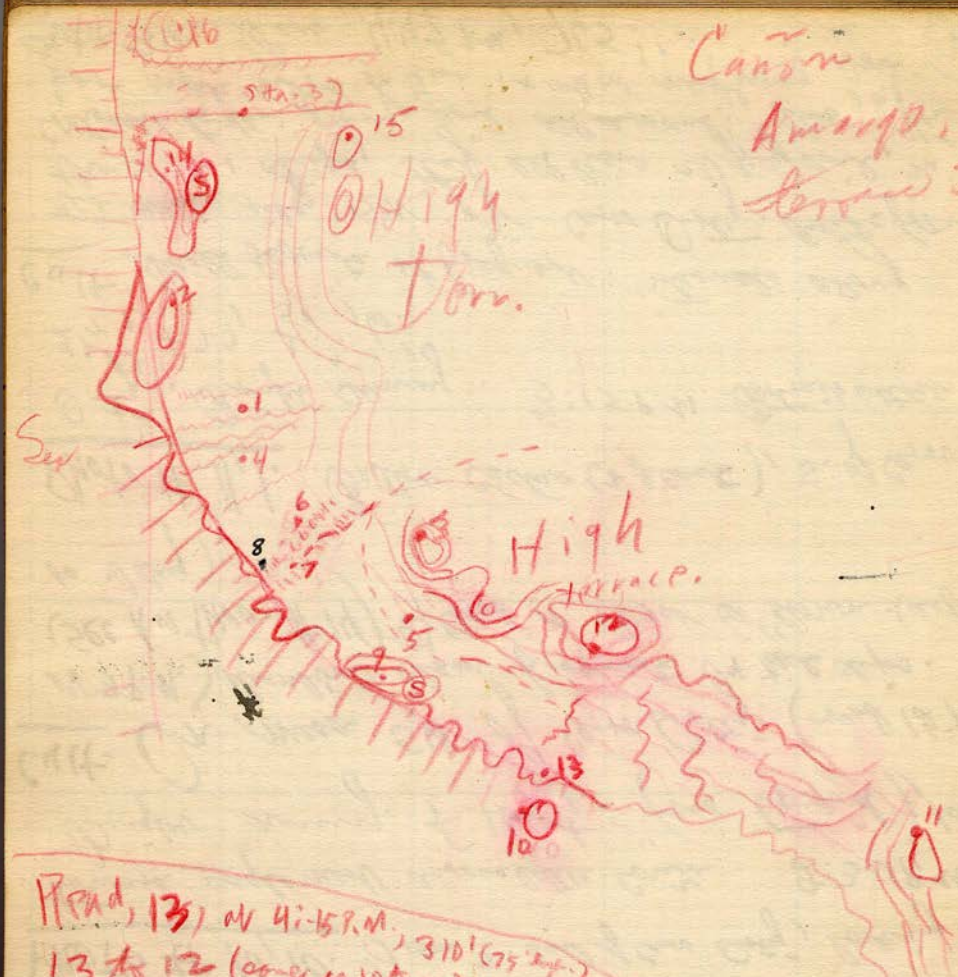
Photo # 10,10. From S. end of Cerro Ortiz, looking S. toward eagle nest across little Cañon. 2:30 P.M. Bright sunny. f16, 1/25" (no tripod), 100'.

Cult. On mesa SW of Cerro Ortiz (read 1270' W 3 P.M.) abundant clam fragments + tool chips. (See Anthro. #14) Extend at least 6" down (as far as I dug.)

Photo # 11,1. Button cactus (2 plants), S. of Cerro Ortiz. Bright sunny. 3:15 P.M. Portrait attach, 2 1/2", f7.7, 1/50", 6'.

Cult. Shell deposits at frequent intervals along the mesa ridge SW of Cerro Ortiz. Aside from the shells + chips, they all have a gray soil, in contrast to the orange soil all around. Also, often have much ashes in them, + not on neighboring soil.

~~Sta. 34, Read, 4.45 P.M., 765'.~~ [33' higher than this morning] (25)



Read, 13, at 4:15 P.M., 310' (75' up.)
13 to 12 (one on 10 to 12), N. 20° E. up 8°.
13 to "Black Butte" S. 8° E. ; to 2, N. 32° W.
Read, 1, 1:45 P.M., 278'.
1 (small side) to 2 (small dome) S. 13° E.
1 to 3 (N. point, near pennon), N. 19° W.
4 to 3, S. 17° E., up 5½°. Read, 4, 1:55 P.M. 281'
4 to 2, N. 17½° W.
4 to 5, S. 2° W. 4 to 6, 180 yd., S. 2° W.
9 (2 small conical domes) Read, 3:30 P.M., 312'.
" to 2, N (due). To 3, N. 62° E. To "Black Butte", N. Side Posanio S. 11° E.
9 to 12 (near Amargo) S. 50° E.

To 10 (Bird Rock). S. 26° E. To Hpsa 10, 11, S. 42° E.

5:20 P.M. Down in Socorro Valley, on Valley Terrace. read 345'. Soft stratified fluted barroma on S. side of valley.

Old Anselmo Ortiz' well still has good water, 25' down. Read, at top of well, 5:50 P.M., 238'.
Sea-level, read 190', 6:15 P.M.
Camp, 8 mi. (.8 mi.) S. of Socorro, Read 200'.

Sta. 37 From where road enters Socorro Valley from the N., to the sea, is 2.7 miles.

Pers. Had a young rabbit for supper.

June 24. 1927. Thur.

Read, Sta. 37, 9:30 A.M., 122'.
10:45 A.M., Read, 205' (the Arroyo Anvarga).
About ½ mi. from sea.
2 mi. N. of Arroyo Anvarga is another deep cañon, not shown on Maitland map.
11 A.M. Read 200'. In Cañon Anvarga Camp, below the road crossing.

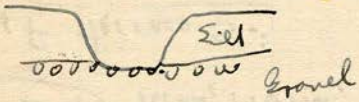
Sta. 38 Read, 1:15 P.M., 220'.

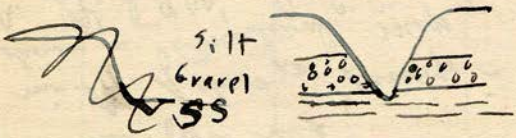
Map of terrace S.:

L.F. The gullies referred to at 1 are 18' deep, with fresh sides all of a floury sandy silt, pale buff-colored.
Cult. Deposits of mussels & rock-clings along edge of gullies, in some places much-cut into by the gullying.
L.F. At 6 there is a glorified gully in unconsolidated stuff; 40' deep. Floury sandy silt all way to bottom. (Read 251' at bottom.
Googene (?) tunnels in the silt cliffs.

Cross-secs of cañon.

at 6





at 7

The silt + gravel developed a flat valley-floor, some 40 yd. wide. As soon as the 55 is reached, a V-cañon is developed.

Profile at mouth of cañon:

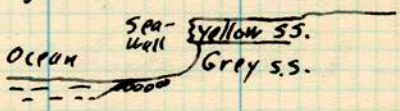
S.

N. [N] Readings, all above sea-level.

325 yd. down this cañon (about S.75°W.), at 7, stratified sandstone outcrops, at, read, 210', in bottom of cañon. Yellow.

100 yd. below 7, the sea is abruptly reached, with a ten-foot drop of overhanging sandstone cliff at the cliff of the sea, so that one cannot climb down (or at least, could not get back if once down. The cliffs startlingly like those at La Jolla, San Diego: thin layers of fine-grained sandstone (yellow + red-colored layers) overlying more massive, less resistant ss. grey,

Reading, mouth of cañon (10' above sea-level), 2:25 P.M., 201'.



Profile along cañon floor.

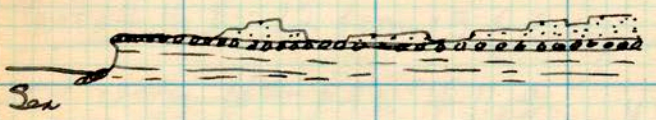
Extremely interesting cliff + stack formations, including some most weird blow-holes.

Photo #11, 2. Facing south, by mouth of cañon. (Cañon mouth to left of unconformity.) Point sun, 3 P.M., f 11, 1/50", 111'.

200. More "mussel" tracks, + also "limpet tracks", which are narrower, less regular, + have deeper into the rocks (2" sometimes)

L.F. Bad bad-land near the coastal edge of the terrace. Little of the original surface left.

L.F. To S. of this canon, the bad-land is not so bad, for the silt layer has nearly all worn off, while the gravel layer has not yet been cut through; profile much like this:



Silt is of differing hardness (e.g. some layers seem to have more iron), and thus it weathers into minor terraces, too.

Sand-dune 9 is of hardened sand, with a little vegetation.

Pressed a few specimens & put aside, S. of 9.

Photo #11,3. Facing S 25° E. from S. side of Dune 9. Bird rock in distance. Bright sunny. 4 P.M. f 22, 1/25".

Photo #11,4. Typical mesa front, same soft SS as sea cliffs along E. side of low terrace, S. of dune 9. 4 P.M., f 11, 1/50". (No tripod).

Photo #11,5. Cave in S.S. ~~[illegible]~~ just N. of bird rock. f 7.7, 1/25". Facing sun, 4:30 P.M. (No tripod.)

28

Sea-level read, 4:30 P.M., 2 35!

Geog. The soft SS here has hard conglomerate at its base. SS all dips landward. 1° or 2°.

Photo # 11,6. Ruined.

Photo # 11,7. Bird-rock, from near 13. f11, 1/50", Sunny. 4:30 P.M.

Photo # 11,8. 12 from 13 (looking across typical bad-land country for this part). f11, 1/50", 4:45 P.M. Sunny.

The gullies get deeper as I go S. Cut all way to sea-level now, thru SS & everything. SS, by the way, is thicker here now, but terrace is narrower.

(I climbed up 450 general! slope of canon side).

At 12, - flat 5 10', at 5:15 P.M.

9 is down 2½° from here.

3 is N 6° W, and up 2° from here.

12 is a small, perfectly flat mesa remnant some 150 yd. in diameter. The country C. of here is much-dissected mesa fragments of various heights.

Bald Butte is S 7° E. of here.

S. side Rosario Valley, here, S 1° E.

Dwarf brush - heather, sagebrush, ninny, "bat" brush, on top. Slopes mostly here

7.5
7.5
37 5
5 2 5
56.25 sq. in., 100 mussels (not counting babies)

2.56
56.25) 14400.
11250
31500
28125
3375 0

56.25
$2\frac{1}{2}$
112.50

$1\frac{1}{4}$" $1\frac{1}{4} \times 1\frac{1}{4}$

$1\frac{1}{25}$ in. $\frac{5}{4} \times \frac{5}{4}$

16 | 25 | 16
16
9

250 in a sq. ft.

$4 \pi r^2$ = area of sphere.

20' in dia., $\frac{1}{3}$ covered.

3 1257.
$\frac{22}{7} \times 400$ 7) 8,800

400

General N. front of mesa, 28°: all ~~[illegible]~~ soft ss & shale, with conglomerate & gravel layers near top (note: the gravel on top of the mesa here, at any rate, is derived from the capping layer of ~~gravel or~~ conglomerate)

June 25. Fri.

8:15 A.M., rel, Sta. 38, 260'. (Take on a Rosario boy as my Companero. Edmundo Sandes)

Clim. I leave for the beach, amid the whining of the canteens. (At any sudden change in temperature, e.g. when the sun begins to shine in the morning, or when it sets in the evening, or when a canteen is put in the shade or sun, the canteen may suddenly begin to whine, groan, or hum, due to the expansion or contraction of the air inside relative to that outside.) Quite startling at times. It took me 1½ months to find out what made that noise.

Sea-level rel, 8:30 A.M., 208'.

(30)

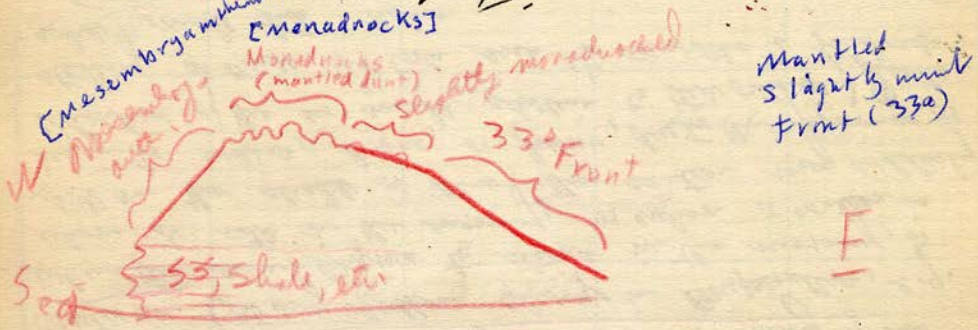
Sta. 38 is 700 yd. from mouth of cañon.

L.F. Absolutely no sign of any arroyo in the cañon. The flat floor is of buff flour-silt.

200., cult. Mussels thick on the hard conglomerate at the cañon mouth. I counted 250 mussels in one square foot, of medium size (not the tiny ones). A patch 20' in dia. ⅓ covered with mussels, would have some 400 sq. ft. of mussel-bearing surface. The big mussels, 5" long need, on average, about 2 sq. in. apiece. 3" mussels, 150 per sq. ft. All these are actual measurements. Thus, conservatively (at 100 per sq. ft. of mussel-bearing surface) a 20' patch would have 40,000 average size mussels.

14 (~~[illegible]~~ mantled dune) read 260', 11 A.M.
to 2, S. 15° W., up 2¼°.
to 3, S. 11½° E.
to 14, S. 72° E.

Reading, 2, 11:30 A.M., 325'. Dip to sea, 54°.
2 to 9, S. 10 W.
to 3, S. 17½° E.
to 15, N. 12° E. (another dune, mantled).
to 16, N. 76½° E.



Profile, middle dune 2.

E. foot of dune 2, 12 Noon, read 240'.

Here, at the mouth of this canon, the mussels occupy, vertically, about a 3-ft. strip of rock.

L.F. The little strata of sand-dune 2 dip 10°, S. 14° E., at a good, typical appearance (very accurate measurement).

The present E. slope, however, is 33°, sloping due E. (thin veg. cover.)

Sand-dune 2, is a N-S dune, pretty well-mantled with vetch and, especially, Mesembryanthemum vine (esp. on W. slopes, where it is the only growing plant.) On top, nonsprouts held in place, for wind-growing, by fine bush-heather + crucifixion thorn; with active dune sand between them. (See bot. of next p.) Dune 2D.

Zoo. Dragonfly flying into line at this dune-top. Not biting, but annoying, filling my hair, neck, etc.

Veg. Some mesembryanthemum ripe, but main crop will not be ripe for a week or two.

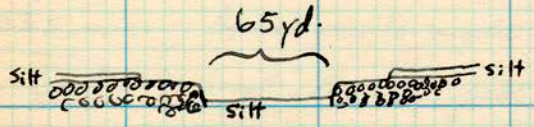
L.F. Middle of dune, E. front, is soft, vegetationless, + active. The active E. front slopes 33°.

(Wind, on top, now S.70°W.)

Cult. A major accumulation of mussel, limpet, + clam shells + rocks clinging E. of top of mantled dune 14. Small ~~patch~~ of mussel in this deposit, the only patch of mussel on the whole lower terrace, as far S. as I went, + the only important shell-accumulation. (See Anthrop. #15)

Sta. 38, read 12:30 P.M., 245!
2:30 P.M., 270!

Cañon Amargo, at Sta. 38, is only 20' (valley floor) below the first coastal terrace.



Cross sec., Cañon Amargo, at Sta. 38, showing gravel sides, from which the silt capping has been sluiced off for the most part, near to Cañon.
No arroyo.

Cult. Shells #15, as before mentioned. The deposit is 160 yd wide along the east front of the ~~fo~~ fossil dune; some 100 yd., top to bottom. The sample dgd came from the surface to 1½' down; shells + charcoal at that depth were fewer, but still present. Top 10", grey, ashy. Bottom 8" (as far as dug), orange sand.

Shell-deposit to hill 16, S. 83° E.
" to Dune 2, SW.

(Sta. 38)
Camp to hill 16, S. 50° E.
" to dune 15, N. 32° W.
" to dune 2, S. 59° W.

" to mesa, S. side of Cañon, W. 7 90 W.

L.F. Since dune 2 was killed by the waves cutting its base, the at present active parts derive their sand simply from the old dune.

16

48
16
64

2 (0 + 32
32 + 64
64 + 96)

0 1 ½ 2

0 32 64

56

$\frac{n}{2} \times 32$

−16

16' 48'
32
2 | 80
40

48
16
64

64

56'

32

1

48'
16
64'

0 96

32
56
88
44
16
60'

At 80.5 mi., 1 mi. above Sta. 38, read, 3:20 P.M., 370', still a silty cañon floor, without arroyo. (Although barranca walls are present, at last, just here & there.)

At 83.5 mi., branch road to right.

Cult. Mussel-deposit just beyond branch.

At 83.8 mi., road leaves the cañon bottom, + still no arroyo! Just unbroken silt floor. Read, 3:45 P.M., 642'.

At 85.4 mi., up on top of mesa, 4 P.M., after a most devilish bit of road. Read, 1050'.

L.F. The side cañon up which I came had no gully in its bottom except along the ruts of the former road, which had been abandoned. All this soft SS and shale along the sides. (Gravel on top.)

At 86.9 mi., top of Rosario Grade. Read, 4:15 P.M., 1040'.

At 87.9 mi., read 620'.

June 26.

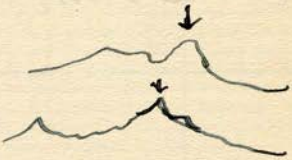
Cult. At Agua Caliente, just S. of the cañon, on the slope above the water-hole (read 1402' at 11:15 P.M.) a large deposit of mussel (some clam) fragments, rock chips, charcoal and gray soil. Some 75 yd. wide. (See Author. #16).

(37)

Onyx (600 yd. N. of), to

Mestoni ~~San Juan de Dios~~, N. 32° W.

Los Juan de Dios ~~Alto Ante~~, N. 56° W.



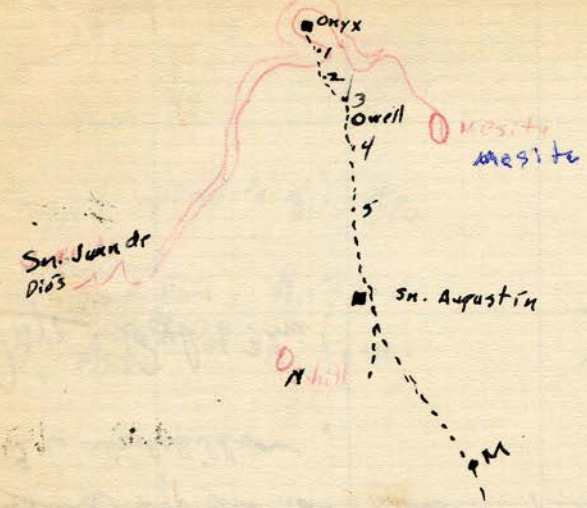
at 41 mi., road branches off to Santa Catarina.
At El Aguila, the water in the well is 54 feet below the surface.
at 52.8 miles, San Augustin Ranch.
Rest, 4:50 P.M., 2046'.
Veg. Cattle eat dried mescal leaves, & mesquite here in El Llano de Buenos Aires.
El Aquajito (correct sp.)
Cirio blooms in May.

June 27.

Phot. #11, 9. Onyx, facing S. 7:50 A.M.
Lumy. f 11, $\frac{1}{50}$".

Cult. Onyx has 120 laborers, 250 people, and 26 schoolchildren.

Onyx. Rest 63 mi.


Onyx
1
2
3
Owell
4
5
Mesita
N
S
Sn. Juan de Dios
Sn. Augustín
M

Onyx to 1, S. 82° W. 63 - 63.75 mi.
1 - 2, S. 86° W. Read, 2, 64.7 mi.
2-3, S. 68° W. Read, 3, 66.05 mi.
3-4 S. 72° W. Read, 4, 67.7 "
4-5, S. 85° W. Read, 5, 71.2 mi.
5-Sn. Augustin, S. 81° W., Read, S.A., 72.8 mi.
Read, S.A., 9:50, 2010'.
Read, 72.9 mi., to road fork.

3 to ~~S. fork~~ mesita, S. 30° W.
3 to ~~S.~~ N. hill. N. 75° W.
at 66.8, new wall, read, 9:15 A.M., 1150'.
5 to Mesita, S. 35° E.
5 to N. hill, N. 50° W

Sn. A. to S.J. de Dios, N. 31° W.
" " Matomi N. 14½° W.

cult

Santa Catarina, a Aztec pueblo. ⅔ of its houses now unoccupied, but has 6 families, all dependent upon the Onyx. Until 1908, when the Sn. Fernando copper mines shut down due to the low price ($.10) of copper, it was a flourishing town, based upon the copper.

Sea-level, 3 P.M., read 160'.

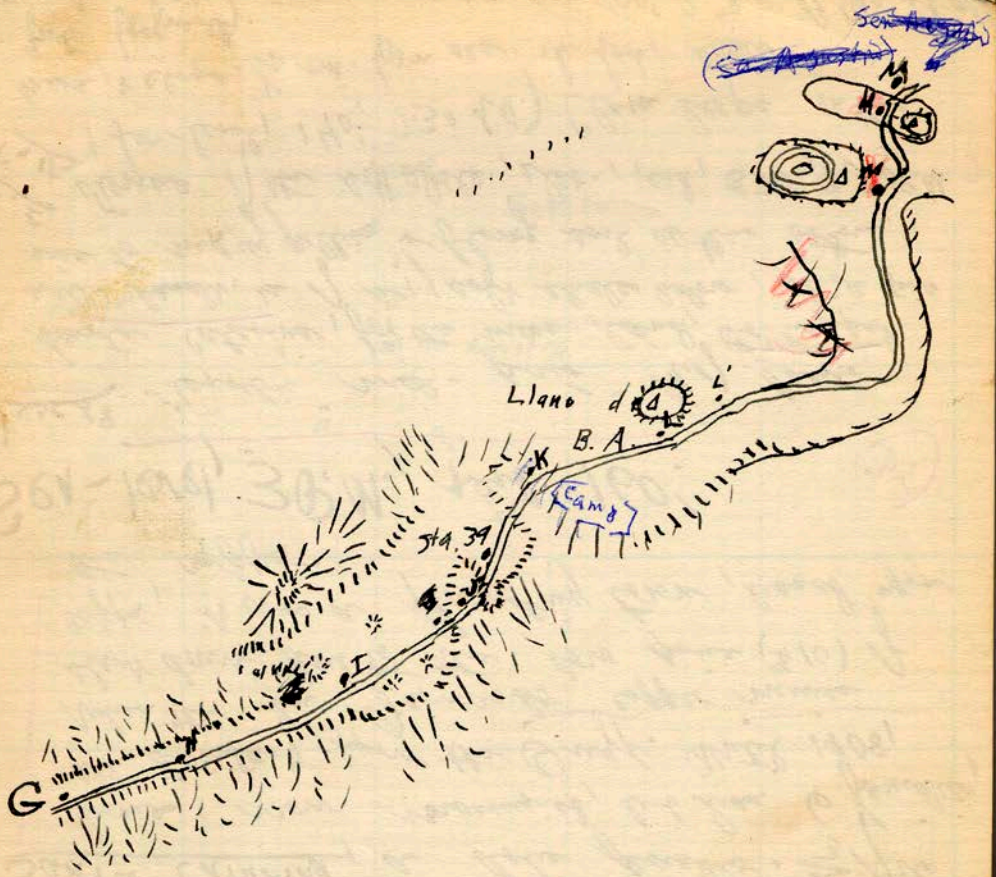
35

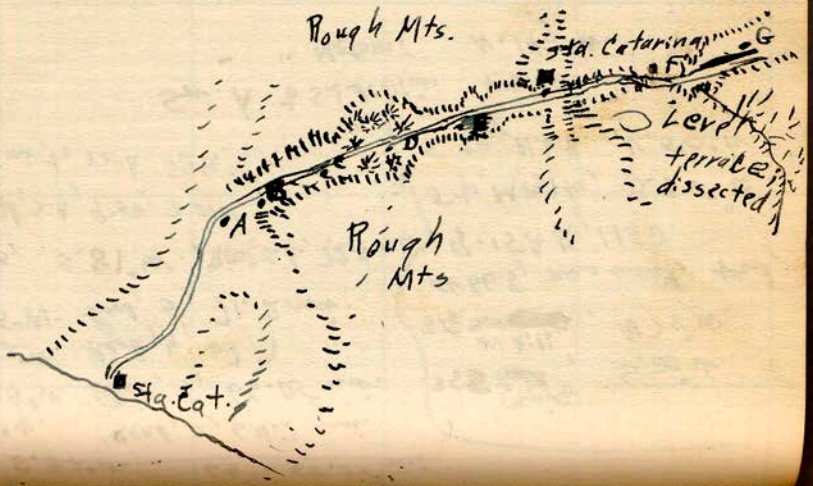
June 28. "Terrible" mal-paso N. of Puerto Santa Catarina, for the mesa land, tho' capped with basalt, is of very soft shales below, which give rise to many gullies, & flowy soil at their bottom.

L.F. Terrace of the soft shale, elev., read, 370', 8:30 P.M. ?

cult (Sea-level, 140', 7:30 A.M.) Clam heaps on this mesa, & chips. ½ mi. from sea. In fact, shells occur quite frequently.

L.F. Sea-cliffs, in some places 300' high, of this sa

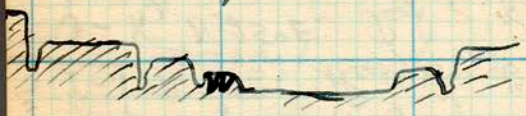

Llano d
B. A.
K
[Camp]
Sta. 39
I
G


Rough Mts.
Sta. Catarina
G
F
Level
terrace
dissected
A
Rough
Mts
Sta. Cat.

soft, stratified, buff shale + silt.

On the 230-ft. mesa, gravel surface (mostly basalt fragments). Cañon slopes mostly bare + active.

Veg. Pat brush, dwarf heather, some green single yucca, looking, from the distance, deceptively like mescal. But not a single mescal plant is to be seen, nor have I seen any mescal (except the desert type farther inland) in this Santa Catarina cross-section. Mr. Brown says there is no coastal mescal farther south. Nor appear profusely in Santa Catarina cañon, however, two plants not characteristic of the country farther north: to wit, tree-yucca (unlike that of the Mojave, I think), and elephant tree, a tree with fat, paper-barked trunk and small branches. The latter I have not observed at all north, and the former, only occasional plants between Aguajito + San Fernando.



Ideal cross-sec. of mesas (+ terraces) E. + W. of Pto. Sta. Catar.

For a couple of miles N. of the Pass, terribly cut-up mesas: bad bad-lands.

L.F. Basalt pebble sea-wall along the foot of the cliffs. A good many angular pieces of basalt on the terraces + their slopes.

June 29. Sea-level read, 8 A.M., 95°.

Santa Catarina to Mármol. At A, 9 miles.

Veg. The tree-yucca gets to within 200 yd. of the coast, though stunted. The cirio + saguaro get to

A-B, E. Read, A, 9:45 A.M., 362'.

B-C, S.80°E. Read, B., 10:20 A.M., 12.6 mi., 890'.
11:30 A.M., 870'.

C-D, N.40°E. Read, C, 14 mi., 990'.

D-E, N. 35° E. Read, D, 17 mi., 1,150'.

E to sta. cat., N. 30° W. Read, E 18.5 mi.

(Sta. Catarina) Read, 20.4 mi., 1,110', at 1 P.M.

Sta. Catarina to F, N. 25°E. Read, F, 21.2 mi., 1212'.

F-G, NNE. Read, G, 4:20 P.M., 24.9 mi., 1334'.

June 29

G-H, N.15°E.. Read, 4:45 P.M., 26.8 mi. 1460'.

H-I, N. 15°E. Read, I, 5:45 P.M., 31.2 mi, 1730'.

I-J, N. 30°E. Camp. Read, J, 6:15 P.M., 34.2 mi., 2180'

J-K, N. 25°E. Read, K, 8 A.M., 35.1 mi., 2020'.

K-L, N. 30°E. Read, L, 8:15 A.M., 36.2 mi., 1940'.

L-L', 36.6 8:50 A.M., 1945'.

June 30

L'-M, N. 75°E., Read, 9:15 A.M., 40.1 mi, 1930'

M-San Augustin, N. 75°E. Read, San Augustin, 10 A.M., 40.9 mi. 1912'.

M-"Great mass" north of Onyx, { N. end, N. 85° E., up 2°. S. end, S. 87° E.

M-Masita, S. 60°E.

Onyx, read 11:15 A.M., 1235'.

Onyx to "Great mass", S. 75°E.

two miles of the coast in Sta. Catarina Valley.
Hedge-hog cactus, dalla, pitahaya, garambullo, cochal, crucifix-thorn, ocotillo all found in the cirio-cardon-elephant tree formation.

At B, a honey cave, N. side of cañon, from which we obtained honey

Santa Catarina has 7 families and a 3-grade school.

Cont. Mines roundabout (Esmeralda, etc.), were the basis, but now just work for Onyx. This town not based upon Sn. Fernando mines, which moved direct to San Carlos. (Some 25 houses now, mostly unused).

Photo # 11,10. Tree-yucca, valley Cañon Tecolote pine Cañon Sta. Catarina. f 11, 1/50". 9 A.M. hazy. 25'.

Photo # 12,1. Santa Catarina. Facing W. f 11, 1/50", 100', Bright sunny 1 P.M.

Veg. E. of Sta. Catarina, the little dead mesquit is found.

(Note: Anthro. # 17 Skulls from Coast S. of Sta. Catarina)

Photo # 12, 2. 2 mi. NE of Sta. Catarina. "Elephant" tree, with much yellow parasite 4 P.M. f 16, 1/50", 25'. Bright sunny.

An. Juan de Dios, N. 15° W., up $2\frac{1}{2}°$, from mesa N. of L.

The dissected terrace ends at about 23 mi.
The tree-yucca is not E. of 23.3 mi.

E. of 23, granite, San Fernando-type ridges
At 24, road is in a cañon running between such ridges.
(Sta. Catarina surrounded by rusted granite.)
At 28.1 mi., in this cañon, a well with water 56' below the surface. Old adobe house, now in ruins, there too.
At 28.6 mi., road leaves cañon, & enters broad stretch.
Rather light rub. to NW.

Stop ~~June 30~~ Camp at 2115' (6:30 P.M.), 34.4 mi.
L is at edge of Llano de Buenos Aires.
L down in the plain; Mesa (Kva) just N. of L, est 2100'.

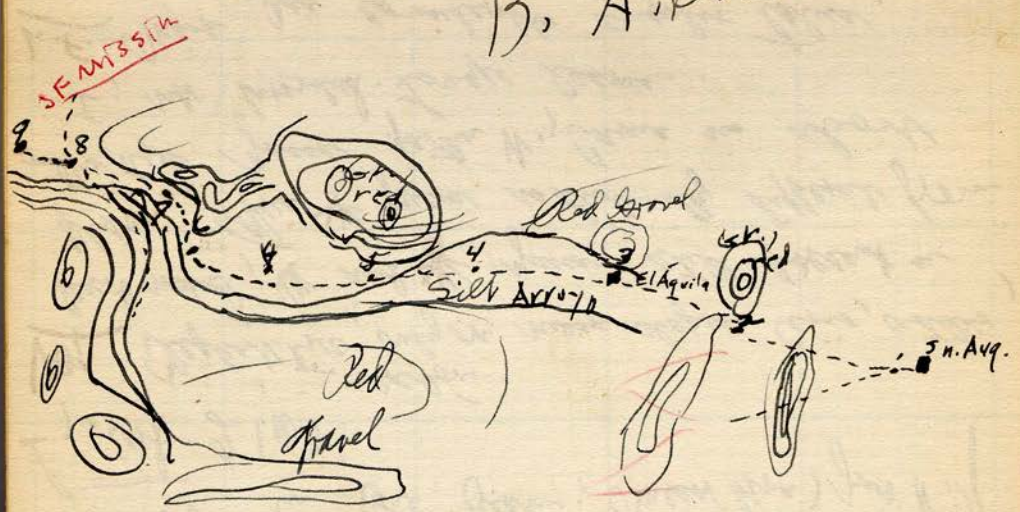
Veg. Elephant tree + cardón only on mesa slopes. Cirio, ocotillo, desert mesa, ✱ and ✱ yucca still present in plain. This ✱ yucca is distinctly different from the tree yucca farther W.; Came in about I; not branched. Longer leaves.

L.F. Mesa has considerable angular talus.

Veg. Cirio wood is fine for burning, contrary to Juniper Sierra.

S. J. de D.

B. A. Lance



Sn. Augustin, 00.
Road forks, .15 mi.
Road forks to 1, N. 55° W. Road, 2, 2:45 P.M., 5.6 mi., 1865'.
2-3, N. 60° W. Road, 3 (Cl Aguila), 6.7 mi., 3 P.M., 1858'.
3-4, S. 85° W. Road, 4, 8.3 mi., 1830'.
4-5, W. Road, 5, 3:20 P.M., 9.7 mi., 1795'.
Hill N. of 5, Road, 3:30 P.M., 1946'

Photo #12, 3. Facing N. from hill 1946', across B. A. Plains toward Sn. Juan de Dios. 3:30 P.M., f 11, 1/100". Sunny.

Veg. In the sides arroyo, under mesquite. Very principal firewood of Marmol.

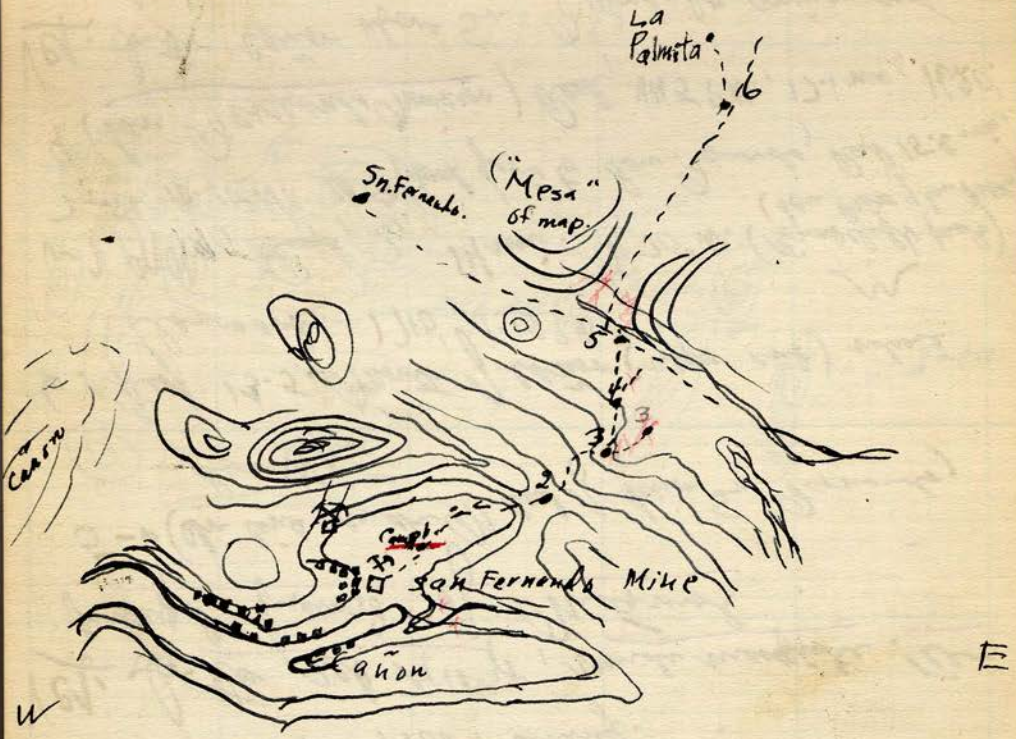
5-6 (In line with N. end of Sierra Sn. Fernando, due W.

6. Road 13.5. Mouth of cañon (upper end) where Llanos end. 1710', 4:15 P.M.

6-7 NW. Road, 7, 14 mi., N. 70° W. (Round cleft peaks) (San Pedro of San Pablo)
7-8 N. 70° W. N 8, road forks to San Fernando, Road 15.8 mi.
9 (San Fernando Mission) Road, 4:45 P.M., 17.1 mi., 1620'.

Veg. In the cañon above Sn. Fernando mine, no elephant tree. But tree - yucca.

July 1.



San Fernando Mine to Camp, NE, .2 mi. Read, Camp, 8 A.M., 1652'

Camp - 2, N. 2, read, 9:30 A.M., 1750', 1.5 mi.

2-3, N. 20° E. Read, 3, 2.5 mi.

3-4, N. Read, 4, 3.1 mi., 9:45 A.M., 1652'.

4-5, N. 10° E. Read, 5, 11 A.M., 3.8 mi., 1660'.

(5 corresponds to 8 on last map)

5 to Sn. Pedro y San Pablo, N. 80° W.

July 1, 1927

Photo # 12,4. San Fernando Mine. Going W.

8:15 A.M. Bright sunny. f 16, $\frac{1}{50}$".

C. It. There are about 8 abandoned dwelling-houses at the mine, and a deep shaft, with much machinery, + tons of unsmelted ore. Wood for the furnaces was mostly carbón, with some cirio + mesquite.

L.P. Cañon drops to the N. 65° W.

C. It. 15 more houses ½ mi. below mine.

Houses are adobe, thatched with palm.

Another, older mine ¼ mi. off of big one. Great timbers in shaft.

Going up the canon which goes to Rosario:

At 6 (4 miles from 5), road to La Palmita branches off. Road, 6, ¼ mi. (from road fork), 1952', 11:40 A.M.

(Road branch goes .3 mi. toward La Palmita); then one must walk 200 yd. up the side canon, where there is a small waterhole among the metamorphic lavas.

The Cañon by the water-hole looks beautifully green amid the brownish-gray side hills. Palo verde, mesquite, + "mild olive" (grown to tree-size, 20' high) the plants around the water-hole. Grateful shade.

The water is not running today, and the water was too dirty for us to would to drink, though we would have done it in case of necessity, as it did not taste lead.

Photo # 12, 5. La Palmita, from near end of side road. Facing W. 1 P.M. Intense sun. f 16, $\frac{1}{50}$".

Break in mileage; for awhile, speedometer did not work.

Veg. At 16 mi. Coast type mesa appears for awhile.

At 18.3 mi., vidrio: small fallen lay road; the farthest island I have seen it. At elevation of some 1800'. Where there is for the first time an uninterrupted survey to the sea.

1390' (at Aguajito, 6 P.M.), Read. 19.7 mi. from S.F. Road – Dole.

July 2, 1927. Starting (Read, 2 P.M., 1047.0) at Aguajito. At 4.0 mi. from Aguajito, large tree-yucca (like those at Ste. Catarina). Leaves measure $11\frac{1}{2}$", $10\frac{3}{4}$", 14", $13\frac{1}{2}$", $12\frac{1}{2}$" (On big basal stalks). 10", 13", $8\frac{3}{4}$", 8", $10\frac{1}{2}$" (on branches). All ~~stalks~~ leaves picked at random as representing the average max., min., + intermediate.

Veg. Opuntias came in just E. of Aguajito, too. Much richer at Aguajito.

Yucca common still. Leaves somewhat longer than tree-yucca, + single plants only.

At 5 mi. & at 7.3 mi., mussel fragments & rock chips of Indian heaps on the sandy silt terrace above the arroyo.

Cont.

L.F. Agua Fría Cañon has no regular arroyo but sliced-up gravel troughs here & there.

W. of Agua Fría, gravel valley sides, with exposures of gravel beds, or soft SS here & there.

At 10.5 mi., took sample of the silt terrace (soil #6) in Agua Fría Cañon. Sample 2½' below surface. Rest, 3 P.M., 562'.

At 13 mi., road leaves Agua Fría Cañon & goes W. in Rosario Cañon. Rest, 3:45 P.M., 430'.

At 15.9 mi., on silt terrace, Rosario Cañon, S. side of valley, mussel shells & rock chips. Rest, 4 P.M., 306'.

At 18.1 mi., big cañon to S.

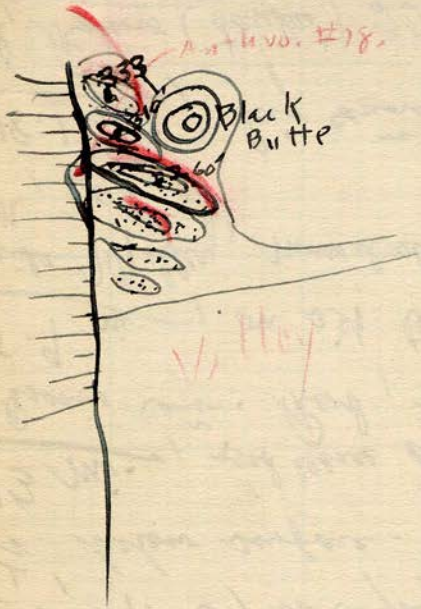
Rest, Rosario (Sandia) 22.5 mi.

42

July 3. Rosario.

Rest, 9:45 A.M., Sandia, 90'.

L.F. Opp. Sandia, silt cliffs 18' high. Silt terrace slopes down 1½' toward valley middle. Carried out from side cañon.



High, knobbed dune N. of active dune 260'. Other dunes mantled.

Highest dune part, read 333', 12:45 P.M. Knobbed, active NE front.

L.F. Deep gully (20'), 25 yd. wide in the sandy silt terrace. Some layers of pebbles; other layers of mussel-shells (15' down), indicating marine origin for this part of the terrace, at any rate.

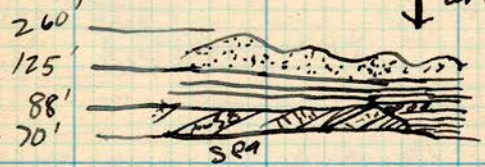
L.F. Great sand-dune at NW Cor. Rosario Valley Mouth (see sketch). NW-SE major axis. Black Butte, a horizontally stratified sandstone remnant, just NE.

Dunes yellow, instead of white like adjacent beach sand.

Read, top of highest active dune, 11:20 A.M., 260'

Base (W.), 125'. Dune cut away on W. side. Original sand source gone.

Then, 37' of soft stratified, horizontal SS, below (pink colored) which, tilted, harder SS & shale.



At this point the head, underlying rocks has been cut away, & the soft horizontals continue to valley edge (Valley one mile ?)

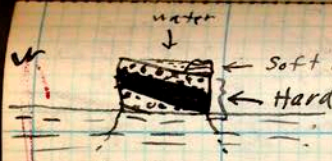
Numerous stacks, caves, & bird rocks seaward from dunes.

Photo # 12,6. Shows the above-described cliff-section. 11:47 A.M., Bright cloudy, F 7.7, 1/50".

L.F. Some sea-stacks are somewhat higher at edges than in middle, with middle at height of high waves, so a nice tank of sea-food is there for the birds (sea-weed, mussel, etc.) ~~Stack tanks~~ "tank stacks", & dub them (over).

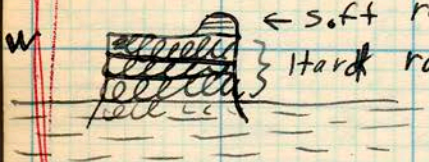
W3

"Table Stack" Sept 5, 1979



F

"Tank Stack", one form observed by me.
(Hard strata dipping inland, covered by soft strata, all better removed except landward remnant.)



E

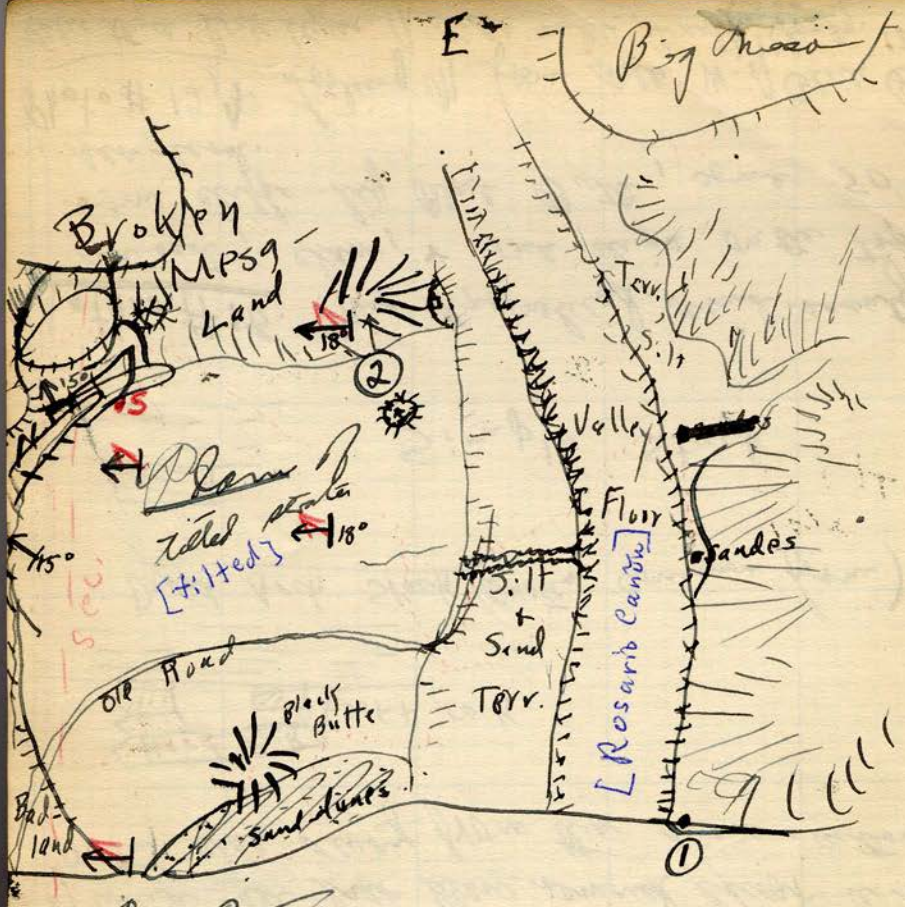
"Pommel Stack", common form observed by me here. The "Pommel" is a soft layer from which all has been removed except a remnant on the side away from the wave-action.

Druid Arch Stack (another common form).

Simple Stack.

Anthro. #18. Nice arrowhead, and scanty mussel, claw, & rock chips on the top of some cliffs by Black Butte, some 50' above sea-level.

Photo #. 12, 4. Looking N. from shelf W. of Black Butte. The three last types of stacks visible. Bright, Cloudy. 12:30 P.M.



In the Plain some little hill-remnant. Those just N. of ② has this profile:

Black B. to ① S. 24° W.
" " to ② S. 62° E.

Cut. Abundant mussel + limpet shells + rock fragments at foot S. edge of deep, dry badland canon. 3:30 P.M. 420°. Other minor heaps all over plain. Road,

3:30 P.M.; 420'.

Photo # 12, 8. 1:30 P.M. Dull cloudy. 20'. f 7.7, 1/25".
Wooded dune knob ("Crobbed dune"), facing N.
On dune 310'.

L. F. Head top of Black Butte, 1 P.M., 435'
Soft sediments, with gravel layer on top. Top level commanding 35 yd. in circumference now. Between it + the masses NE is a broad, low, pretty fed plain. The plain is made up of grey & yellow strata, dipping NW in L of 18°, as is Black Butte + the broken land just E. of S. end of Plain. Covered with some 15' of rust-colored, horizontally silty sediments.

Veg. Scrub oak, fat brush, dwarf live-oak - heather, on Black Butte + Plain. Scattered stands of mescal on the plain. Helophyg cactus abundant in plain.
On sand-dunes, mesembryanthemum Δ, lupin, fleshy plant, + sample of photo 12, 8.
The silty stuff dips seaward at rate of 1½°.

? At what is slope of S. F. Bay bottom?

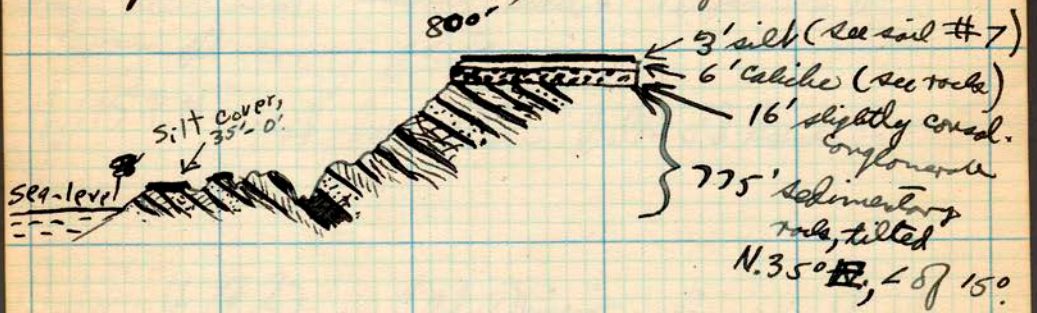
Clearly a peneplain, is this plain (or terrace)
At the edge of bot-land, the direction of dip is very clear: N. 35° E.; about 15° dip.
The basic rock varies greatly: grey soft silt to hard yellow SS, like that along heads S. Ostra. Clays. Even more weathered into caves, etc. - here than there: far —

removed from sea-action here, so wind + drip have a longer time to act. (Or old sea-caves?)

Photo #12, 9. The bad-lands N. of Rosario ~~Can~~ Valley mouth. Facing NW. Dull cloudy. 3.45 P.M. f 7.7, 1/50". Strong NW wind.

Top of mesa. Rad, 870'; 4 P.M.

16' of gravel, then 6' of caliche, then 3' of silt on mesa top, all horizontal.



W

(Slightly lower than main mesa, to E., which is up 1/2° + some 700 yd. away

E

The sandy silt on top of mesa lies in front of it soil that has washed down from the bank, + this is finer, almost flour-silt; + deposited not in water, but + miniature fans.

Bearing, 870', to Black Butte, S.W.
" " " Point, N.26° W.

Slope of mesa sides average 27°. At foot of mesa, a 2° slope of fine silt slopes towards Rosario Valley + the sea.

sea.

Vb

Read, edge of Plain, just before dropping into valley, 5:15 P.M., 280'. S. 65 E. from Black Butte. S. 15° W. from Mesa 870'. (Cut terrace course.)

Down on higher valley terrace, N. edge, read 210'; this valley terrace slopes valleyward $1\frac{3}{4}°$.

Bottom edge, this terrace, 5:45 P.M., read 165'.

Cult. abundant mussel shells & chips on this terrace at many places.

6:15 P.M., level, by stream below old house above Sandia', 130'.

July 4, 1927. Old Mission, 2 mi. E. of Sandia'. Sta. Ortiz, .1 mi. further.

Read 4.1 mi. from Sandia' (keeping to S. side of valley), by Cañada de la. Bernalo, opp. old Mission.

At mouth of Cañada, read, 11 A.M., 212'.

Ascending Cañada de la. Bernalo:

L.F. three filled terrace levels of silt.

Cult. corral in the arroyo (boulders some 12' high form the sides.)

1 P.M. Still in Cañada bottom: broad (100 yd. base) silt floor. Read, 500'.

2 P.M. (E. Corner), Read 770'.

(17)

Cult. At place indicated on map, fairly abundant mussel fragments, some burned, + broken stone + clips.

Veg. Mesquite on the ~~soft sedimentary~~ grand slopes of the valley side. Cenizo. Thorn + chaparral also on the silt floor and sedimentary soft valley sides.

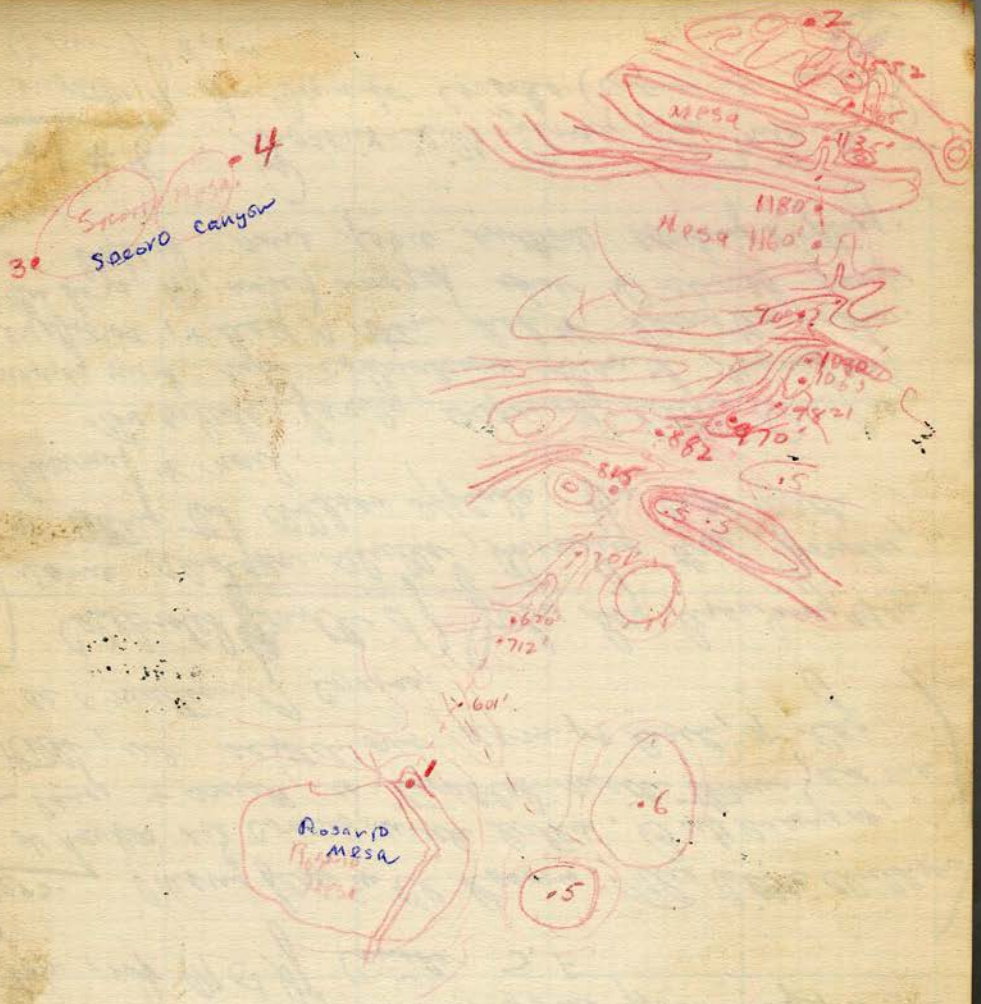
L.F. Geog. On the whole, cut sedimentary soft land on sides of valley, with some good layers on top, esp. N.E. of Cañada S.F.

Pers. Many fleas in El Rosario. The little children at Santa's are covered with bites. But everyone, large + small, is troubled with them; as we talk, we scratch our arm or back, or leg as a matter of course.

Celebrated Fourth of July by breaking open some shotgun shells, burning the powder, + letting the children explode the caps with hammer + nail.

The whole family, especially little Onofre, nearly went into convulsions when I moved my eyebrows, + half of them had to leave the room. The boys, too, were amazed that I should jump a barbed wire fence without touching anything.

So: 1 #8 : Rosario silt terrace, ½ mile S. mouth of Arroyo Fernando Cañada (continues into Cañada). Pour 2' down.


Mesa
1180'
Mesa 1160'
Sacoro Canyon
Rosario Mesa

Camp ~~Sta. 40~~ Sta. 40) All here real reddish N. edge of Rosario Mesa)
Road, 6:30 A.M., 93°!

Cult. Ignacio Saez, of Rosarito, taking horses to Sta. Rosalia for use in the mines. Brought all the way from Descanso. Some hundreds or so taken some there every year, he says. Stop several days in watering places.

He also says that the route from Sn. Juan de Dios to the desert, over which the cattle are driven annually or more often, goes to Rosarito then East, passing S. of Mistorui.

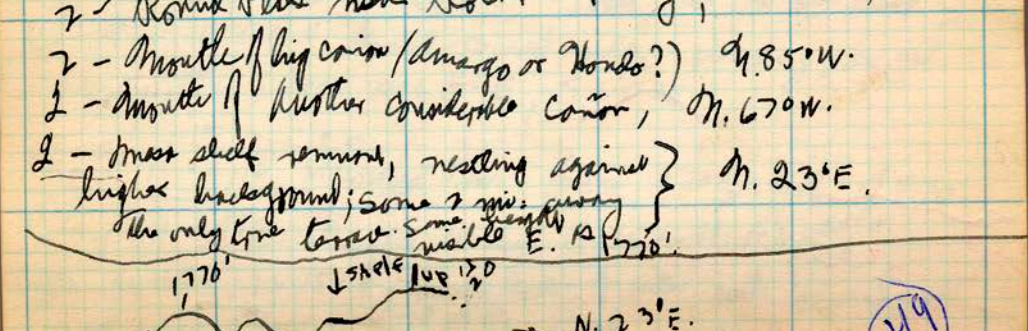
Pers. - Gave him, used of toilet-paper for cigarettes; grateful, he was.

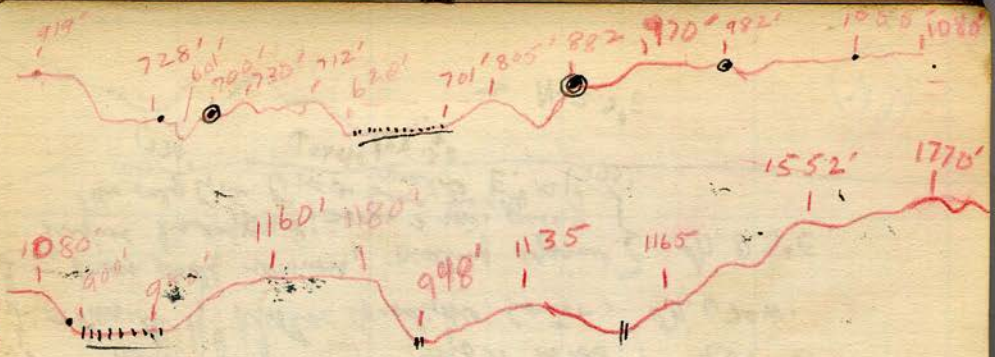
July 5, Thurs.

Bearings:
1-2, N.14°E.
1-3, N.27½°W., up 0°
1-4, N.20½°W.
1-5, S.48°E.
1-6, S.81°E.

1 - Round Hill near Rosario Valley, S. end Round Mts, N.43°E.
1 - N. end Round Mts, N.70°E.

2 - Sn. Juan de Dios, S.85°E.
2 - Mistorui, N.47°E.
2 - Round Peak near Rosario Valley, S.22½°E., down ½°.
2 - Mouth of big canon (Amargo or Hondo?) N.85°W.
2 - Mouth of another considerable canon, N.67°W.
2 - Mass shelf remnant, resting against higher background; some 2 mi. away the only time terrace. Some length visible E. is N.23°E.





• — = shells.

at 919', 9:45 A.M.

(some burned)

At 728', mussel shells & rock chips

At 601', rock running down middle canon N.25°W.

} Chonis & mussel.

At 701', abundant mussel - shells (some burned) & rock chips

At 712', 10:30 A.M.

At 628', brown & black V canon trending N.27°E. Mussel shells & rock chips on S side of canon just above bottom.

At 805', 11:05: saddle between two mesa tops.

At 982', noon. Abundant mussel shells & chips & few chalone & limpet.

Rest, 12:30 P.M., 1080' (burned stone) Same place, 1 P.M., rest 1090'

~~Pebbles~~ Pebbles frequent on some hills: e.g. 919', 712', 805', 970', 1080', 1160'.

Lots of pebbles, unassorted or soft stuff.

Veg. Generalization: Buckeye (dwarf) on N. slopes of hills + valleys, amid the usual chaparral.

Cult. All the way from 620' to 701' (about a mile: 701' reached at 10:55 A.M.) abundant mussel-shells, with some abalone, limpet, + rock fragments. Both in the silt valley bottom + on the 3'-10' terrace remnants.

L.F. This valley has a silt floor 5-20 yd. wide, without arroyo, save occasional 1' smooth depression in the silt. Slopes all mantled.

L.F. The mesa SE of 805' is same height as Rosario Mesa, + has Caliche layer + gravel on top. Base SW slope.

Cult. At 882', abundant mussel (some limpet) deposits, with clips, + few abalone + limpet fragments. Heap is 75 yd. in dia. As with all noted today, Chamiso covers the heap. Mussel all around but not in the heap.

L.F. 970', 11:30 A.M. Gravel-covered ridge, running, as in case of other ridges, N.65°E., S.65°W.

Photo # 12, 10. Round Mt., from 500 yd. N.E. of 970'. Facing N.38°E. Bright sunny. 11:45 A.M. F11, 1/100".

Cult. At 1055', 12:15 P.M., accumulation of rocks, with abundant gray ashes + few mussel shells. Thick mussel clump nearby. Mussel roast. ?

L.F. 1:47 Looking S., veg-covered slopes alone are seen, much different from the steep, lesser mesa sides seen looking N. from El Rosario.

L.F. At 900', a ~~valley~~ cañon running S. 60° W.; on 10' silt terrace (1:10 P.M.)

Cult. Just S. of 900', shells (mussel) & clips on this terrace.

Cult. From 900' to 950', numerous deposits of abundant mussels & clips, some abalone & limpet.

L.F. 1160' at 1:40 P.M. Gravel mesa, as other side of cañon.

Clim. Hot in cañons, cool breeze on mesa.

L.F. Just N of 1180', a great cañon, running N. 70° W. Cañon side, mantled, slope down 27°.

Bottom of cañon, 950', 2 P.M. Cañon bottom 100 yd. wide, with 50 yd. silt terrace on S. side, 25 yd. gravel array (boulders 3' high), + 25 yd. terrace on N. side.

Cult. Abundant clam-shells, with clips, + few mussels & limpets, at 958'.

1160' to 1186', 400 yd.

L.F. After 958', up side cañon, with ⌣ profile.

L.F. 1135', sobble, at 2:15 P.M. In the Mts. now.

Photo # 13,1. Facing due N. into the Round Mts., from near 1135'. 2:30 P.M. f 11, 1/50". Bright sunny.

L.F. Round mts. are of soft yellow sediments, nearly Geol. horizontal.

Cult. → Betwn 1135' + 1165', valley bottom; mussel-shells & clips.

L.F. 1165', at 2:40 P.M. (Base of steep slope).

L.F. 1552', at 3 P.M. Gravel terrace, on top of soft seds, dipping 30° NE. Much-cut-up country.

Smoky haze, so I couldn't take picture IV, across mesa slices.

Cult. 5:15 P.M. Read 1630'. Following hogbacks toward 2. "Mescal road" (no shells).

Veg. From 1552' to 2, monte of lesser heights on N. slope. Cocid, mesq, chamiso, on S. slopes.

L.F. Highest peak(?), red, 1770', 5:25 P.M.

Photo #13, 2. Facing N. 49° E. from Peak 2. 3:30 P.M., bright sunny. F11, 1/50". (Contrast between N. + S. sides of slope appears in foreground).

L.F. As photo shows, sedimentary country extends E. until shut off by Sierra, several miles E.

To W., horribly cut-up land of old mesa levels. Pretty just hog-backs

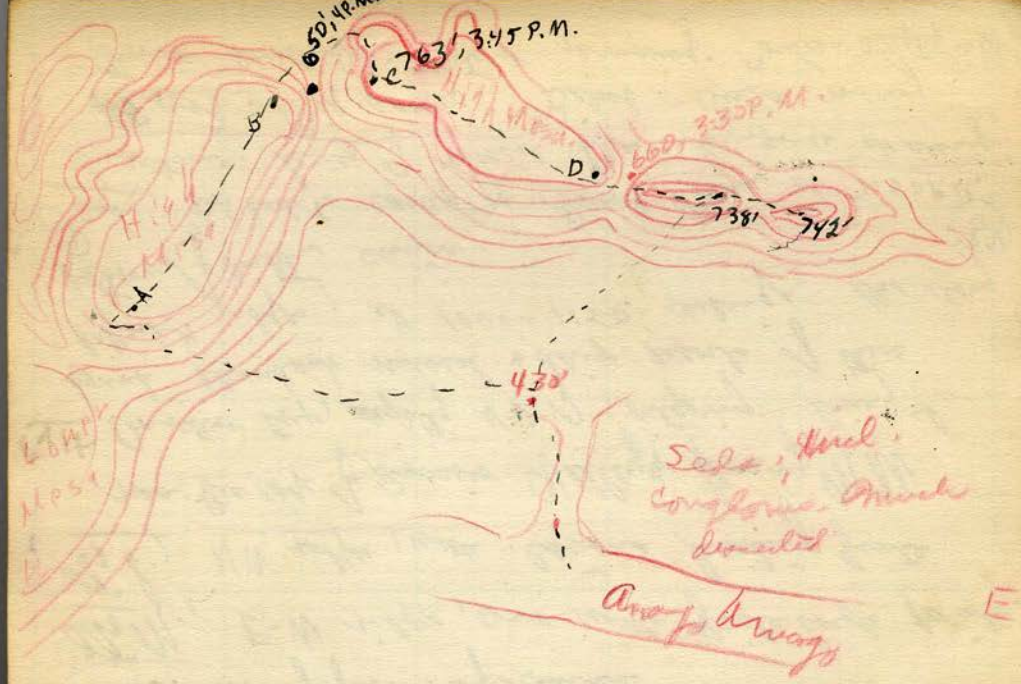
To N., E-W ridges, some with quite high points.

To S., NW ridges, with cañons heading quite near the edge of Rosario Valley + flowing NW.

Cult. On return trip, slightly NE of outgoing line, I found abundant mescal + chip sequence of three different ridges, at 1000'-1150' reaching down along bottom of another cañon.

Pass. Got back to camp, on Rosario Mesa, at 7:50 P.M. Lost twice. Series of mescal fires. Surprise at seeing road. Big supper. Picked cholla: many thorns penetrated: torture removing. Canteen empty at 6 P.M.

5v



742 - (N.67 E.) Int. back of Round Mt. up 2 1/2°.
742 - (N.56° E) another " " " " " up 2 1/4°.
742' - W end, Rosario Mesa, S. 40 W., up 1/4°.
742' - Sgl Butte (A), S. 82° E. S
742' - " " E. Slope, S. 68° E. (See next map.)
742' - N. slope, low mesa (see next map), N. 65° W. Down 2°.
742' - Mouth of little side cañon up which I came, S. 58° W.
742 1/2' - 738', N. 9° E.
742' - Round Mt. (2"), N. 71° E.
742' - Round Peak by Rosario Valley, S. 86° E.
" - N. End, Round Mt. Range, N. 48° E.
" - A, High Mesa, N. 55° W.
" - B, " " , N. 27° W.
" - C, " " , N. 22° W.
" - D, " " , N. 11° E
" - Where road hits top of Rosario Mesa } S. 23° E.
" to Top, Dune 2, S. of ~~Canon~~ N. side Arroyo Amargo, S. 75° W.
" to Mesa top remnant by Arroyo Amargo, S. 79° W., down 2 1/2°.

July 6. 12:10 P.M. (N. edge Rosario Mesa), read, 870'.

12:50 P.M. By the car, ~~[illegible]~~; read, 199' (near mouth of side canyon)

I head for mesa M. 22° E.

at 1:05 P.M., heading M. 55° E., up side canyon, read 270':

Cy 1+. Abundant mussel- ~~clamp~~ fragments & rare clamp.

Some limpets. On sill terrace 4' above canyon floor.

Photo # 13, 3. Facing M. 60° E. from 430'. Read, hung. f 11, $\frac{1}{100}$"

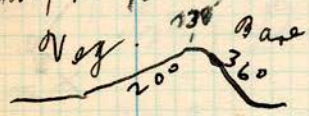
soft sediment mass remnants, dipping M. slightly in N. dell.

Photo #13, 4. Facing S. 10° E. from 640'. 2 P.M. Point

Sun. f 11, $\frac{1}{50}$". Reached 742'.

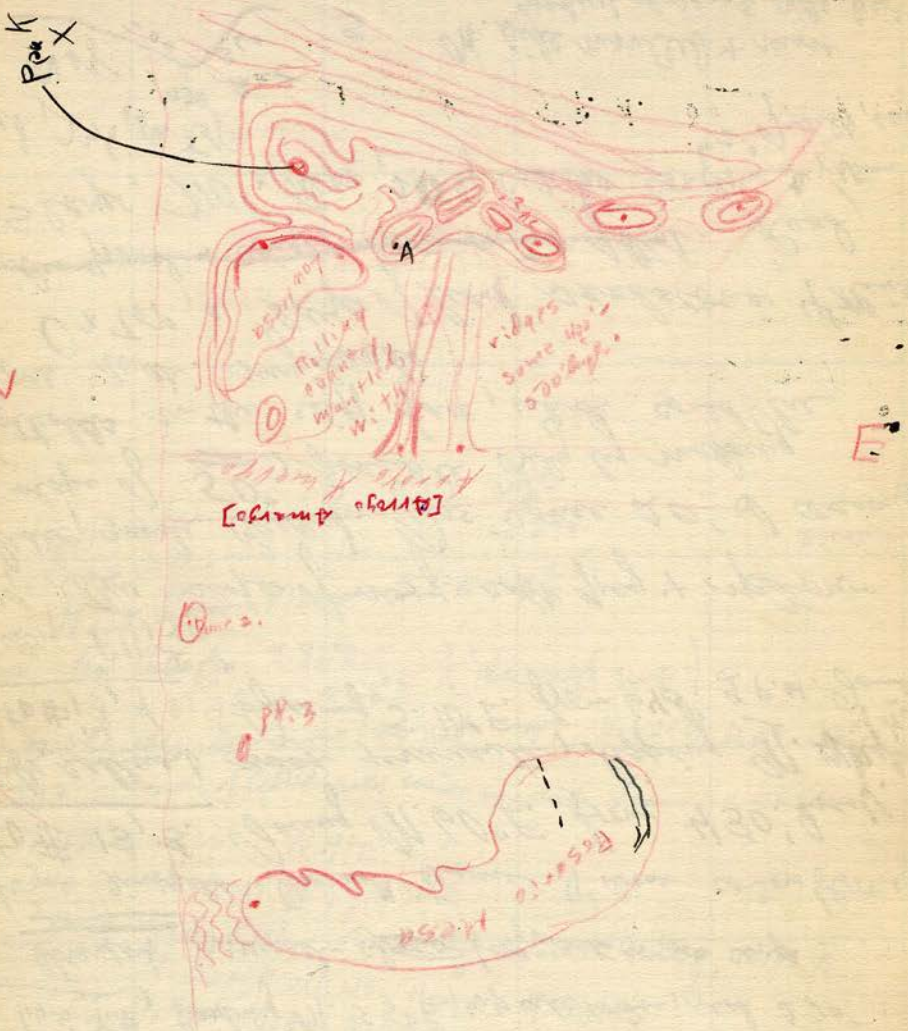
Geo. The slopes of very soft grey & yellow shale, much eroded. For some 20' I ascended a slope of 50°, possible only by making footholds in the cliff face, which could be done with my hands.

On top, a layer of hard sandstone 4' thick, ~~with gravel & conglomerate on top of it~~. Read 55 layer, 710'. Then, 20' of caliche conglomerate; then, 2' of silt, sandy. Read, 738', on top.



N. side mantled & more gradual slope. S. side, bare.

Read, 742', at 3:15 P.M., 767'. 10.3 mi. from Espinosa's



Rest, D, 3:35 P.M., 780'. D to Dune 2, 5.67 W. - Round Mt., N.77°E.
D to A, W.

C - B, N.30°W. C - Dune 2, S.59°W. Rest, C, 3:45 P.M., 763'.

Rest, B, 770', 4:05 P.M. B - Round Mt., N.82°E.

650 yd., SW, ½ to A. Read A, 4:15 P.M., 750'.

A - N. end low mesa, N. 68° W. Down 4°.
A - Dune 2, S. 58° W
A - Butte Remnant, N. side Arroyo Amargo, S. 42° W.
A - Round Mtn., N. 80½° E.
A - Peak X, N. 48° N.
A - Mouth, N. side cañon, S. 35° W. (Next cañon W. of last).
A - Peak 3 (S. Arroyo Amargo Terrace Map) of June 24th. S. 26° W.

A - West, Rosario Mesa, S. 5° E.

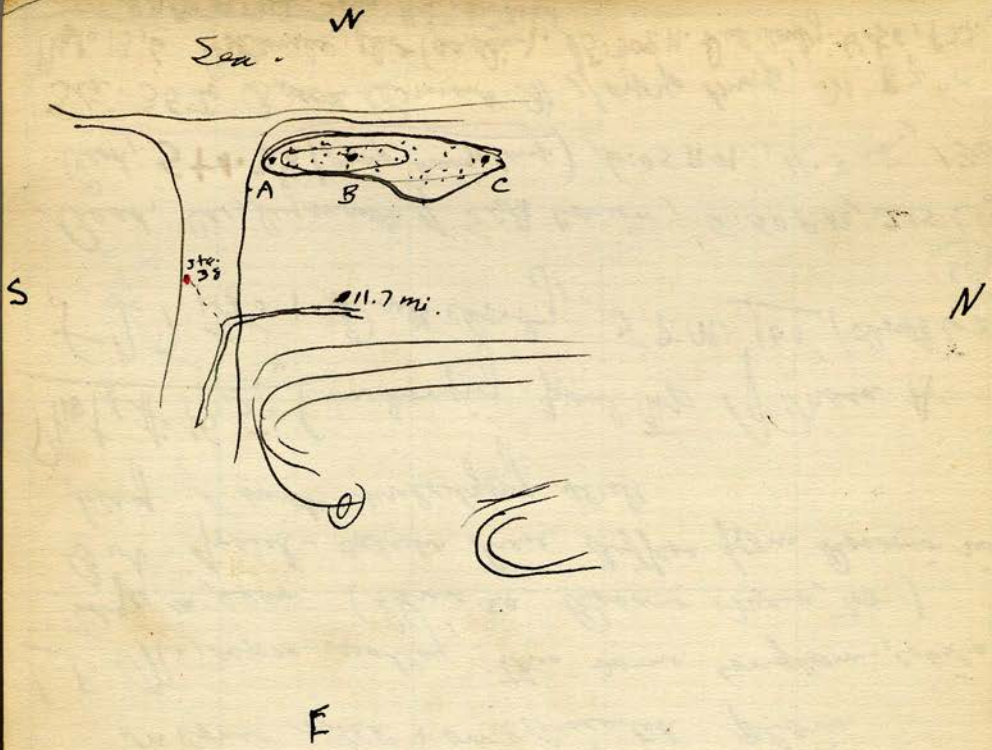
Veg. on Top of Mesa A - 74½', Chamiso & scenpe vine. No mesical. Mesical enters formation on lower mesa + on dissected plain.

L.F. M., across valley this same conglom., caliche layer is seen. (Same as Rosario Mesa, too.) But gravel - caliche here differs from Rosario in being ∥ with underlying shale.

Photo # 13,5. Overhanging gravel top of Mesa A.
f 7.7 1/125", Dull cloudy, 5 P.M. 180' (slowly to 25')

(54)

Read, Car, by mouth of Side cañon, 5:50 P.M., 215! (0.3 mi.)
Read, Sta. 38 (Arroyo Amargo Camp), 6:05 P.M., 11.3 mi., 130'
Sta. 38 to Butte Remnant N. of Arroyo Amargo, N. 82° E.
Photo 13,6. Pallenaka, Clive (see slide). 5:30 P.M. Dull cloudy. 6'½", f 7.7.
Photo 13,7. Sma. 4½", Portrait.



Read, 11.7 mi. to A of dune, S.83°W.
" " B " , N.83°W. 565 yd. to base opp. B.
" " C " , N.54°W. Read, 85' at base.

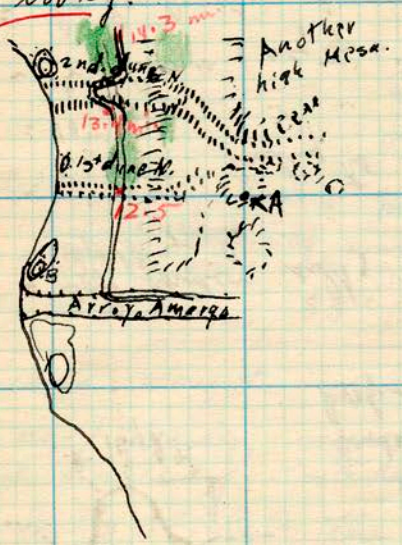
B, read, 160', 9:45 A.M.

B-C, N 10°E. B to yalahaya A, N.78°E., up 5°

B-Nept dune N., N.7½°E. (little left of it.)

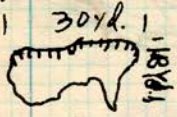
B-Second dune N., N.6°E. (fairly fresh-sized.)

July 7. Road Sta. 38, 9 A.M., 70'. (Sta. 38 is 52' above sea-level) 11.3 mi.
Headed N. Road, terr. floor, 100', 9:30 A.M., 11.7 mi.
L.F. A-B-C is mantled with vitrio, mescal, gentlemen, beaded sage, Black Brittle bush green. But much have yellow sand. Somewhat troubled.
Cult. veg. 200. Now & then a man passes with a "tambor" of wild honey.



Mescal

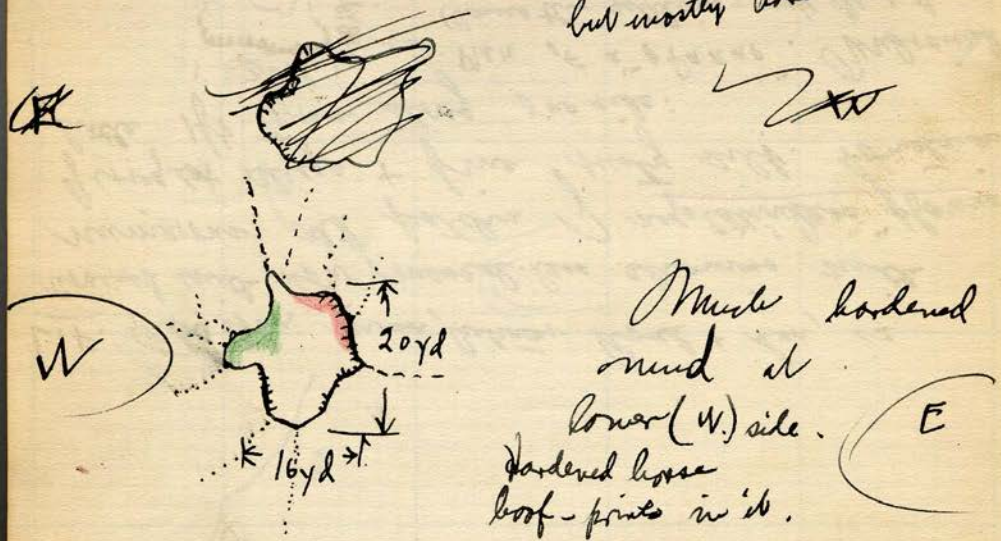
L.F. The lower mesa, between Road + Sea, is covered with low, mescal-less chaparral with numerous odd patches of vegetationless "pfanne" of irregular shape + fine pasty silt. Sometimes little 1 ft terrace along one side:



Plan of a "pfanne". Unbrained, (hence the settling - not effect of fine soil within) Rabbits + Quail abound in them.

Phot. #138. "Pfanne" on the terrace between Road + 11.7 mi. 10 A.M., Bright sunny, facing E. f 11,50".

Another Pfouve: (Charred all around; scant vitrio in pfow, but mostly bone



Much hardened mud at lower (W.) side. Hardened horse hoof-prints in it.

= soft powdery silt, much scratched by birds. Robin tracks.

..... = 6" trail leading to Pfouve.

--- = 10" " " " "

TTTT = 1½' barrows (only top 6" vertical: silt talus on rest).

= hardened clay. Some burro hoofs fronts, made while drying, 2"-4" deep. Cracked soil.

Photo # 13, 9. Another pfan, quite ideal: near circular, 20 yd. in dia., and, like others, absolutely undrained. Much weathy in center, scratched over all round.
11 A.M., bright sunny. f 11, 1/50, 35'.
Facing E.

Facing → E.

Sometimes pans higher than surrounding country

Some big pfanne, a hundred yards long + 20 yd. wide; some are ~~evidently~~ apparently washed channels: but # with cliffs: so maybe old trails, after all.

11:15 A.M. Road, 11.7 mi., 85' (15' lowering altimeter.)

L.F. The cliffs along the road ~~west~~ N. of arroyo Amargo are of harder, more distinct layers than the high mesas of yesterday's trip. Dipping slightly E. Evidently underlie the high mesas.

L.F. At 12.5 mi., arroyo (not major) cutting thru low mesa to sea. Active.

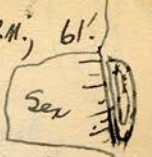
At 13.4 mi., deeper & broader Cañon (see 1st. yd. photo, with car).
Road, top, 13.4 mi., 11:35 P.M., 110'.
Road, bottom, 13.55 ", 29'.
Gravelly wash N bottom.
{ Strata dip slightly E.: conform, shale, ss.

Road, top, N. side, 13.8 mi., 11:45 P.M., 110'. Thus, 80' deep.

13.8 mi., to ~~[illegible]~~ High Mesa, ~~[illegible]~~ S. 81° E.
" , to 2nd. dune N. 31° W.
" , to big dune, N. of arroyo Amargo, S. 15° W.

14.3 mi., ~~road~~, 12:05 P.M., 145'.
14.3 mi. to 2nd. Dune N., S. 79° W.

Base of dune, 500 yd from 14.3 mi., read, 12:20 P.M., 61'.
Top of dune, 12:25 P.M., Read 116' (45' high).



It is a fossil (hardened) dune, with knobbed top, + shoestring - gullied E. + W. fronts. On top of vertical sea-cliff. Major axis, N. 10° W., E. front, 34°.
All more dunes N. now visible.
Very hard for sandstone at bottom of sea-cliffs here.
L.F. Pfanne between dune + 14.3.

C + H. Clamshells, some mussels, some burnt, + stone chips on this 2nd. dune N.

14.3 mi. to A, 2nd. Dune N., S. 68° W.
" " " B, " " " , S. 79° W.
" " " C, " " " , W. (due)

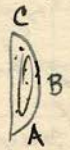


Photo # 13,10. 2nd. Dune N. 1:15 P.M.
Bright sunny. f 11, 1/50".

Photo # 14,1. Same, from 14.3 mi. Camera resting on car. f 16, 1/25". 1:30 P.M.

Read, 14.3 mi., 1:45 P.M., 140'.

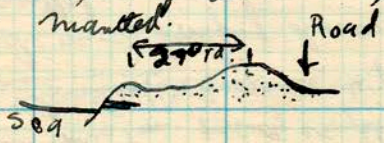
15.8 mi., at S. edge of deep cañon, read, 1:55 P.M., 181'.
15.9 mi., at bottom of " " , " , 2 P.M., 160'.
Gravel bottom, + unstratified gravel sides, with lenses of silt.
16.1. on top, opp. bank.

Change in note-taking policy: from now on, use left margin, stepladder.

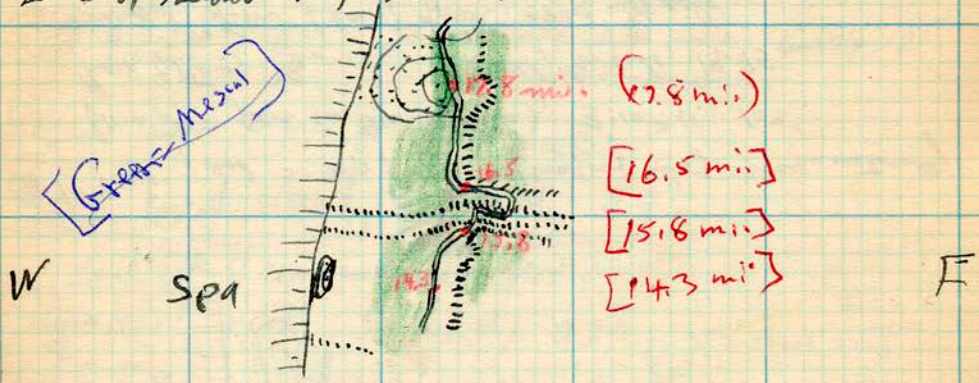
At 16.5 mi., climbout clam, some mussel, depiste) with clips.

At 17.8 mi., read 101', 2:30 P.M.

Beach, top of dune-like, reddened sandy rise, 119'; mantled.



~~230 yd.~~ 270 yd. W. of summit, cliff by sea, mostly fossil sand; 3-ft. line of fossil bivalves at clip; read, clip, 74'. E. slope, about 70; W., about 4°.



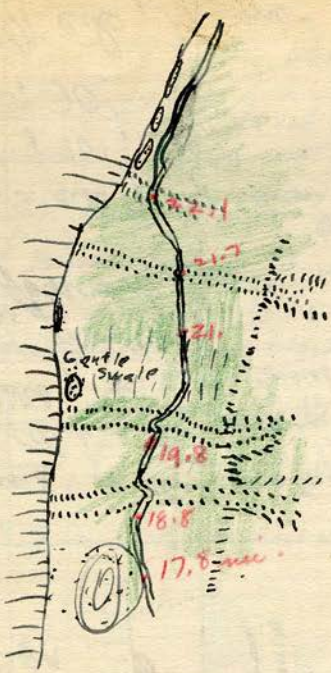
L.F. The sand on the upturned W. rise is fossil & yellow. That on the main mass is red-colored, unconsolidated, & well-covered with chamiso (Challa on W. slope, mescal on E.)

The "Ancient Dune" is some 4 mi. long, NS.

L.F. Beach, S. side of deep cañon with gravel & soft sed. sides, 3 P.M., 101', 18.8 mi.

Bottom, 70'.

Top, N. side, 19. mi.



Green = mesca

Sea.

At 19.8 mi., road, S. edge of canon (emerging very asymmetrically from its gash in the cliffs), 3:10 P.M., 103'.
Road, bottom, 78'. Road, N. side, 19.95 mi.
Gravel bottom. Like of gravel, some soft sands.
L.F. Small fossil mantled dune (some 25' high, est.), by mouth of canon, (some nodal as 2nd. dune N.)
At 21.00 mi. (after 1 mi. perfectly straight road),
Cult. Abundant cobbles + pebbles (grey-brown burned soil).
L.F. A narrow fringing dune-rim, some 10' high, half-mantled.
The cliffs inland, since the last canon, have been shrinking in size, and are now mesaal-covered, rather gentle low slopes: not the distinct SS & capping layer any more.

At 21.7 mi. bottom little gravel-bottomed & sided coriou, outlet of a considerable coriou back in the hills, read, 3:45 P.M., 58'. Up on N. side, 80'.

At 22.1 mi., at bottom of another coriou, by sea. Read, 3:50 P.M., 41'.

L.F. Narrow fringing dune, half-mantled, at coriou-mouth

L.F. At 22.2, 22.4, 22.6 mi. narrow, white, active, 10', fringing dunes, half-mantled. Total two, 1 mi. long each; third, .2 mile long.

At 23.4, first well. At it has evil water, 7" deep, 12' below the surface.

Pers. High time, for car needs

Sea-level read, 4:15 P.M., 29'.

Land side of sea-wall floor, silt floor, 29'.

Sea-level read, 5:40 P.M., 22'.

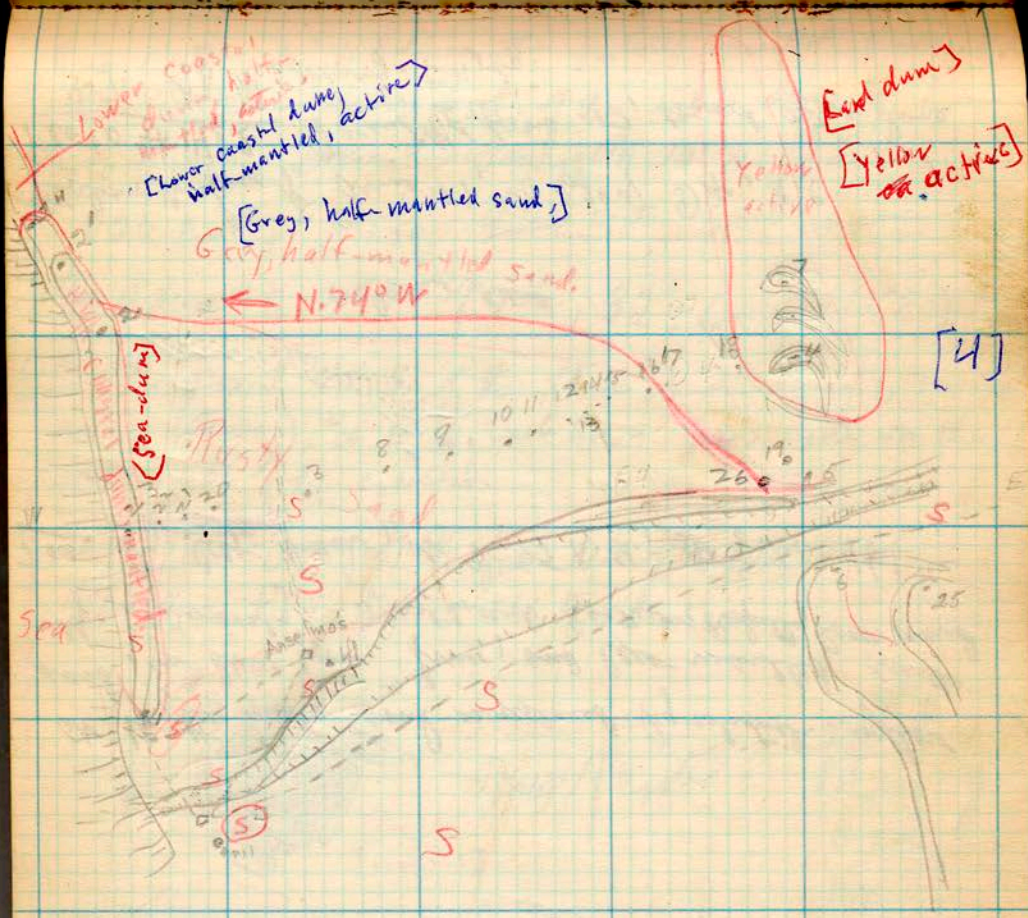
6:15 P.M., read, 45', arroyo edge, by Anselmo's house. [23' above s.l.]

July 8 — Eves

Read, sta. 41, 7 A.M., 38'.
41-1 (s. end, sea dune) S. 63° W. (830 yd.)
" -3 (low saddle), N. 28° W. 500 yd. (?)
" -2 (N. end, sea-dune), N. 39° W.
" -4 (top, land dune), N. 43½° E.
" -5 (top, dune edge by corr) N. 66° E.
" -6 (top, first terrace, opp. side) N. 76° E.

Read, 3, 7:40 A.M., 31'.
3-1, S. 33½° W.
3-2, N. 37° W.
3-4, N. 60° E.
3-7, (next dune peak N. of 4), N. 52° E.
3-Anselmo's house, S. 12° E. (accurate)
3-8, 225 yd. Read, 8, 7:50 A.M., 40'.
8-9, 285 yd. Read, 9, 8 A.M., 35'.
9-10, 240 yd. Read, 10, 8:10 A.M., 110'.
10-11, 175 yd. Read, 11, 8:15 A.M., 120'.
11-12, 220 yd. Read, 12, 8:20 A.M., 150'.
12-13, 125 yd., Read, 13, 8:25 A.M., 176'.
13-14, 75 yd., Read, 14, 8:30 A.M., 179'.
14-15 125 yd., Read, 15, 8:35 A.M., 215'.
15-16, 230 yd., Read, 16, 8:40 A.M., 249'.
16-17, 60 yd., Read, 17, 8:50 A.M., 290'.
17-18, 420 yd., Read, 18, 9:10 A.M., 354'.
18-4, up 6½°

4, read, 9:30 A.M., 410'. (Highest dune).
4-7, N. 50° W.
4-1, S. 51° W. Down 1½°
4-Cerro Orteg, N. 67° E. 4-Plughead, N. 33° E.
4-Triple Peak, N. 13° E. Up 2°
4, read 9:56 A.M., 416'
Crater, read, 9:57½ A.M. 312' (Crater 104' deep.)
Lowest rim of crater, 10 A.M. 342'. S. 20° W. of Crater center. Slope, 21°


[Lower coastal dune, half-mantled, active]
[Grey, half-mantled sand]
Grey, half-mantled sand
N.74° W
[Sea-dune]
Sea
Anselmo's
[Red dune]
[Yellow active]
Yellow active
[4]

At 3 (last map) old buff sand, with high chaparral: manzanita, conifers.
Description of 3 applies to 8. thorny chaparral, chaparral plant, shells (small), cojoba, small lizards.

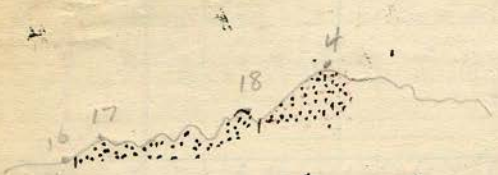
Cult: Indian clam-shells abundant S. of 3. Some between 3 + 8.

At 9, same soil + veg. as at 3, except pitahayas come in on w. facing slope. No mesa.

Below 10, pebbles + coarse, fairly hard, rusty SS (same color & texture as sand).

At 16, the rusty sand is replaced by whitish-yellow sand, in dune form, finer, and less mantled with veg.; Obviously a more recent feature. Perfectly loose sand.

200. A deer I saw, at 8:35 A.M., at & above 16!



↑active dune

Strike, N. face of dune 17, N. 62° W. Dip, 21°.
Photo #14, 2. Facing NE from 17, toward active dune
4-7. 9 A.M. Sunny. F 11, 1/50".

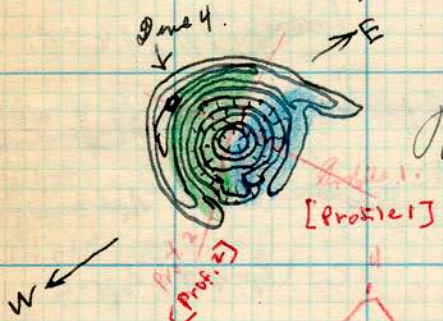
18 is at the limit between the partially mantled dune, and the initial - yellow sand of the active dune #7.

Photo #14,3. Dune 4. Facing N. 10° W. Faint Sun. 9:20 A.M., f 16, $\frac{1}{50}$". Great crater, most impressive.

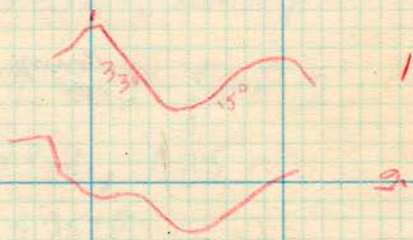
Top of dune 4 to bottom of crater, 32° (facing S. 10° E.)

L.F. The general trend of the three main dunes (4, 7, and one in between), is E-W. Each has a great crater on the south side of the crescent.

Photo # 14,4. Facing N.W. from tail of middle dune. Faint sun. f22, $\frac{1}{25}$", 25'. 9:50 A.M.



Map of crater.



sand blowing out.

sand depositing on N.

(60)

Foot of active dunes, S. end, reed 331', 10:20 A.M. Yellow active sand is encroaching on the grey, half-mantled sand.

14-1, S.63°W.

19 is #10 of S. of active dune. Reed 10:30 A.M., 320'.

Foot of grey end, Photo 19, reed 125'.

Dark grey sand - grey, like Arrylo; + Gilbert reed - better crater.

Foot of rusty Sand, by arroyo, 90'. Arroyo, 88'.

S. N

Sec-land rest, 12 noon, -1'.

Rest, 1, 12:10 (by cross), 79'.

1-41, N. 64° E.

1-Dune 4, N. 51½° E.

1-Adobe house, S. 48½° E.

1-N.-most active dune visible, N. 30° E.

1-S. edge of activity N. 54° E.

1-6, N. 75° E.

1-S. edge, arroyo mouth, S. 30° E.

Photo #14,5. Facing NE from 1, Socorro. f16, 1/50, 12:30 P.M., Sunny.

Rest, Sta. 41, 2:15 P.M., 55'.

Sta. 41 - Anselmo's House, N. 59° W., 135 yd.

" " - Adobe house, S. 21° W.

" " - Second terrace mesa, left side arroyo, N. 81° E.

Photo #14,6. Facing E. from near 2, on crest dune. Looking across dunes, hammed flats to distant dune. Sunny. 3 P.M. f11, 1/100.

2-Dune 4, S. 79° E. (Maybe not same 2 as dune noted.) Rad at this 2, 3 P.M., 180'.

2-1, S. 16° E.

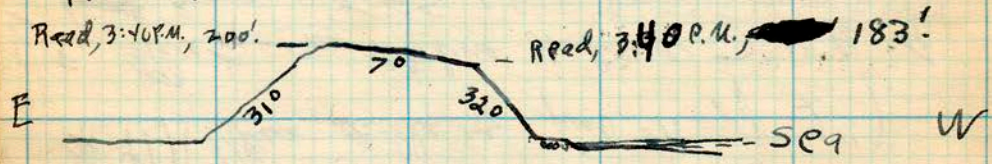
2-Plug Mt., N. 46° E.

2-Dune visible N.-most active land-dune, N. 83° E.

2-N. end land-dune activity, N. 75° E.

Photo # 14, 7. Coast dune. Facing S. 25° E. from near 2. Sunny. 3:45 P.M. f 11, $\frac{1}{50}$". (Photo shell-heaps)

Typical profile of coast dune:



2" is N. 33° W. from 2, 320 yd.
Read 2", 4 P.M., 175'.

Photo # 14, 8. Coast dune, active + ~~half~~ ¼ mottled, with white sand. Facing N. 35° W. from 2".
4:15 P.M. f 11, $\frac{1}{50}$". Sunny.

2" is 170 yd. N. 30° W. from 2'.
Read, 2", 4:10 P.M., 138'.
2" to Dune 4, S. 75° E.
2" " N. limit (red) of land dunes, N. 85° E.

The grey dune-land E. is in dunes ~~at~~ // to wind direction. They run in long streaks, N. 70° W. – S. 70° E. up to the active yellow dunes at the end.
Active, white coast ¼ mottled dunes are ~~also~~ shrubbed on W. part, "Dollar Vine" being the only vegetation.

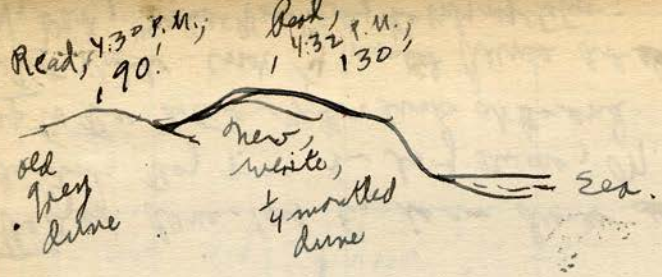


Photo #14,9. New, "Dollar Pine" dunes. Facing N. 37° W. 4:40 P.M. f 11, 1/50". Sunny.

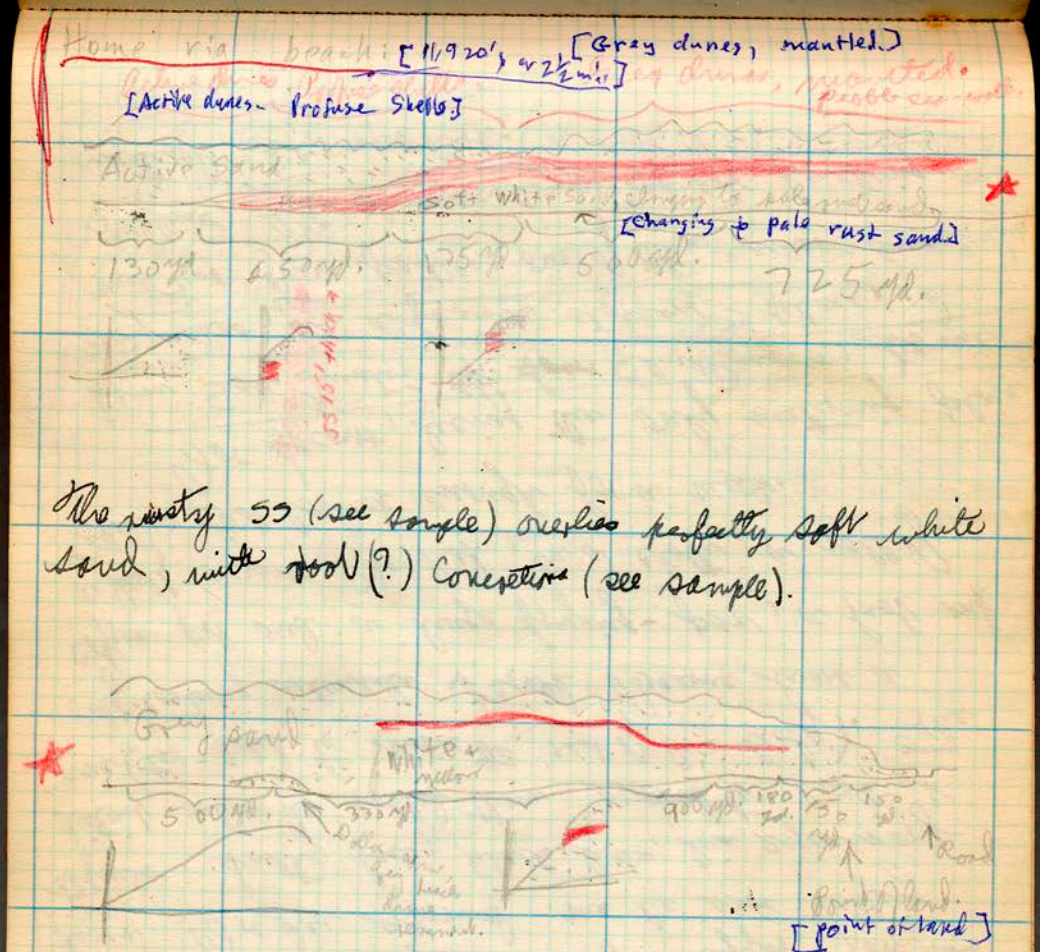
Photo #14,10. Tremendous shell accumulations, on seaward side of active, 1/4-covered dunes. 4:45 P.M., Bright sunny. Facing S. 35° E. f 16, 1/50, 20'

Cult. Still, they are Indian, I believe, judging by scattered chips, bones, etc., & charcoal. They have been scattered out like this from nests of shells back in the dunes as the dunes were eaten away. Many such nests of clamshells are present now. At any rate, a major accumulation. (See Outlook #41) (These shells are just N. of 2").

L.F. The 1/4-mantled dune overlies a 7' cliff of ~~[illegible]~~ rusty SS. (Same as noted in sec. 4 & Dune 4 & the Center Dating)

Sea-level read, 5 P.M., 60'.

Fahey dunes mantled?



Rest, sea level, 6:15 P.M., 62'.

Beach road north to Anadnu's house, N. 41° E.
" " " above house, S. 68° E.
" " " along bay to S., due SE.

Rest, Sta. 41, 6:40 P.M., 86'. [Camp, Sta 41, 23' above S.L.] (62)

Pers. Every one of the 10 ~~observers~~ of 14 was of dunes. Took 9 tides.

July 9. (see below)

Pers. The evening of June 8, [July] Loreto Espinosa, with a ten-year old boy arrived, in a little buggy stacked 6' high with straw drawn by two mules. Loreto must be 350 lb. in weight: a tremendous man. He had quite the knack of making himself comfortable, with great soft cushions and a canvas, and as he reclined on his side and ate, he seemed the Sultan (of bootleggers) on his divan. For he informed me he was selling tequila. Swarthy face, black hair, his eyes very distinct when he rolled them around to look at me (too solid to move the rest of his body). The only cooking utensils I could observe were a coffee pot and a huge frying-pan, a foot and a half across. He had, in a cloth, a roll of tortillas that looked enough for a week. He had a big hunting knife which he laid aside when he ate (I found out by gesture)

For Socorro, being the only watering place from San Quintin to ~~San~~ El Rosario, some 35 miles, is a favorite stopping-place. I met two other parties; one of them was Anselmo's nephew. All always surprised at finding me without a companero.

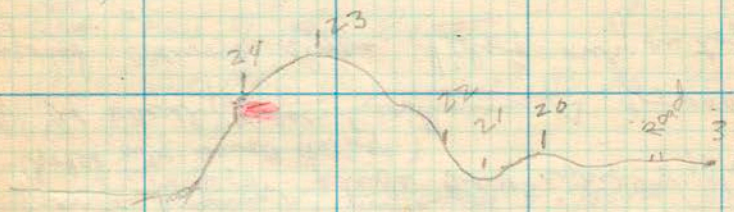
July 9.

Read, Sta. 41, 9 A.M., 70'.

Read, 3, 9.20 A.M., 80'. (I head 5.85° W., continuing the W. end of yesterday's cross-sec.)

I dug down 2½' in the pretty sand near here, found the same stuff all the way down: cross at top for 3', then slightly consolidated.

Read, 3, 9.45 A.M., 90'.



Road - 20, 300 yd. (all pretty sand.

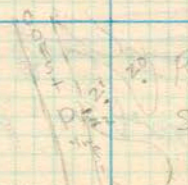
3 - road, 85 yd.

Read, 20, 96', 9.56 A.M.

20 - 21, 130 yd.

do. run NW-SE, slowly getting SE.

Read, 21, 10 A.M., 88'. (Now impaired focus.)



21-22, 100 yd. Read, 22, 10.05 A.M., 311.5'.

22: contact of gray clay line + pretty sand.

22-23, 125 yd. Read, 23, 10.10 A.M. 185'.

Veg. The vegetation that forms the mantle of this grey coastal dune, incidentally, is curly dock, beaked sage, calnett weed, yellow daisy, scabs amaranth, oat, in patches, nidrio + mesembryanthemum Δ. (Beach strawberries ripe now: I feast).

[mesembryanthemum]

23-1, S.15°E.

23- Anselmo's, S.70°E.

23- N. Corner, diamond field, N41° E.

23- S. " , " " , N.51° E.

23- W. " " " , N.45° E.

23-24, 70 yd. Rad, 24, 10:20 A.M., 120'.
(Hardened rusty sand bar. Easily breakable fragments. Harder on outside than inside. 10' cliff N.A. broken into small fluting.)

Veg. As usual, mesembryanthemum Δ grows on the exposed seaward slope. Nidrio only on top + east.

W. Top of sand dune, rad, 10:35 A.M., 41'.

N Sea-level rad, 10:35 A.M., 40'.

200. Cult. Finally, at 11:15 A.M., I found my first clam, ~~[illegible]~~ "Escavando debajo de las piedras", as Ortiz explained to me yesterday. I got about a dozen before the tide got too high. They are gotten at low tide, the farther out

the latter, in the rocky shallows areas, by lifting rocks + digging down 6" - 8" beneath the rock. One must expect to get wet well up towards the knees. These are the orange, purple - shelled variety. This is about the fifth time I have tried for them, but never knew the right way before. Limpets grow on the under sides of the rocks: a surface inspection would not reveal any. Many snails close to the beach.

But, most of the Indian shells are the smooth white type.

L.F. The mouth of the sand + gravel bar has an acre of marsh grass + equisita on both sides, but no ~~clear~~ water, except, on the right side, in a 3' open - pit which has been dug for the cattle, and which the cattle use.

[Automobiles]

Warning: Automobiles, take road by coast in crossing arroyo to Anselmo's! Else Danger from sand.

Adobe house to 6, N. 60°E.
" " " 15, N. 75°E.

Cult. The Socorro Shell-Mound.

Some 150 yd. in diameter, eroded away here + there into minor mounds. The pound is white with fine shell fragments, the fine soil having been washed away.

Deposit 1 ft., at least, thick, in the middle, + within 50 yd. of middle. Some 4" thick near edges.

Charcoal way down, + shells, + few chips; but most concentration on surface (quite a few bones, too.) (& searched for an hour for auto. # 20)

Note:

Not a single fragment of pottery.
One arrowhead(?) (see boys for others)
Very few scalloped clams: nearly all smooth, on the whole, smallest fragments on surface

Geog., Soil. Buff silt terrace. (a few hundred yd. E., a crude metate, slightly worn)
Veg. Mescal-chamiso.

1 mile, adobe house to 6.

Across valley from 6, the rusty coating layer can again be seen, similar to that along sea-cliffs, with soft white & grey sand underneath, and grey, mantled sand approaching above. The rusty layer is superficial: where cut into, in an embayment, it is high at the backs, and low near the fronts of the embayment; showing that it is just a crust on the ridge.

Rest, terrace below 6, 5 P.M., 183'.

Rest, 6, 248'.

6 – 26 (silver gray mottled dome fish, scales crazy), 11:48 E.

6 is on a gravel-surface, mesquite-channel terrace (pecan, hackberry & lofty bushes) 25, the same, but much higher (up 50 from 6). A gently-rolling surface terrace, going back to the high-peak, angular sedimentary range.

Veg: Wild-rose, hackberry, little foliage on gravel; Mesquite-fringe place below 6.

2.7 mi. from adobe house, end of side drive, & road turns left to ascend hill. Old road continues on E. for a ways.

2.8 mi. E. of adobe house, camp; in Socorro Cañon;

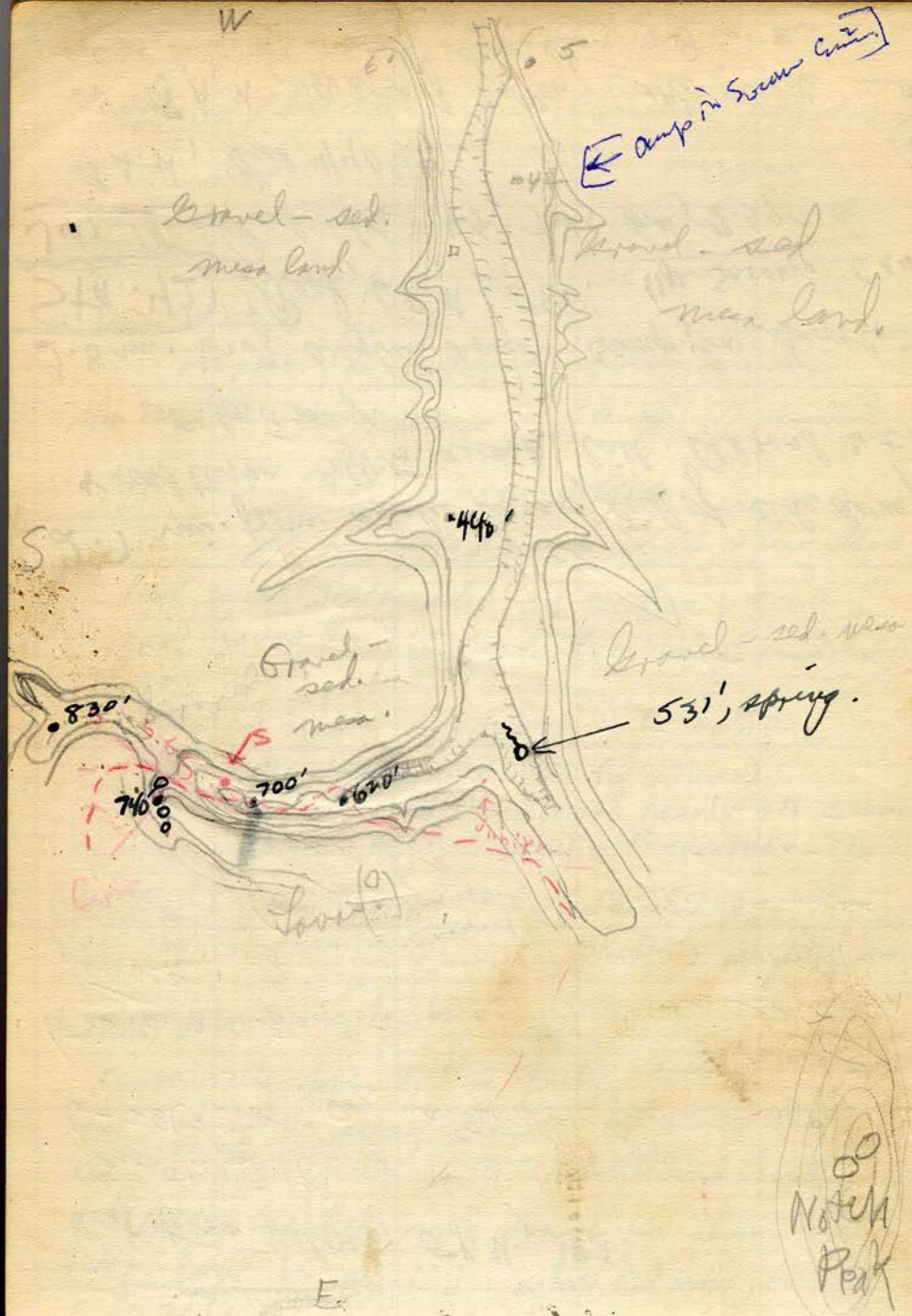
Sta. 42 Rest, 6 P.M., 280'. Up Socorro Cañon:

July 10. Rest, Sta. 42, 7:45 A.M., 239'.

9 A.M., Rest, 440'.

(68)

At 8 A.M., left house of valley, little shack, with unkept beehives: several swarms. (8 was there 5 min.)


W
5
Camp in Sycamore Canyon
Gravel - sed.
mesa land
Gravel - sed
mesa land.
440'
S
N
Gravel - sed.
mesa.
Gravel - sed. mesa
830'
531', spring.
700'
620'
740
Lava
Notch
Peak
E.

440' to 5, N.87°W. At 440', side-cañons enter; the first large side-cañons.

Soil. Buff, sandy-silt terrace all the way to 440', with
Veg. "wild lilac", mescal, Chamiso (black sage, characterless, Cholla, Cenizia., + others)

In gravelly arroyo, sycamores (all the way to Sta 41, in fact).

Valley sides, same as below 6, but S. facing side had no wild rose.

Stopped from 9 to 9:15 A.M. at 440' station,

531', read, 9:45 A.M., arroyo bottom. Good cattle trail all the way to here, and I saw three cattle. At 531', a very nice spring of water in the arroyo bottom, among large granite boulders. The upper part, where cattle have not trampled is nice, clear, sweet water, with polywogs! Sycamore trees around. Water barely running perceptibly. Marsh grass around ~~water spot~~ "arroyo tank".

531', ~~Up~~ major branch cañon, S. 27°E.
" up other major " " , N. 67°E.
" to Notch Peak, N.76°E.

Veg. On S. facing slope, mescal, pitahaya, abundant lupinus formation. On the top of this S. facing slope, a very sparse stand of cardon.

N. facing slope: wild-rose, desert buckeye, etc. No mescal.

Mesa tops: mescal - chamiso.

At 531' from 9:45 to 10:10 A.M.

620', 10:40 A.M. Here the cañon emerges from metamorphics (see sample, left side lower), in a 25 yd. cañon to the 150 yd. mesa valley.

At 620' 10:40 A.M. – 10:46 A.M.

700', at 11:10 A.M. Cañon turns S. 30° W. from 710'. Opuntias purple here. At 700' 11:10 – 11:15 A.M. Hot as Hades.

740', at 11:45 A.M., middle tinaja. At tinaja from 11:25 AM – 12:40 P.M. Read, 12:40 P.M., 745'.

Veg. Junipers, very few. I ate lunch under one.

L.F. In a side cañon among metamorphics (?). Jagged cliffs, stepped rock bottom, with a nice series of rock tinajas, with plenty of ill-tasting-but-drinkable-if-necessary water. Some tinajas bare, others with marsh grass, + two with tules. Tinaja Cañon runs about N. 75° E.

Zoo. Abundant doves, quail, + some cattle, drink the tinaja water. Polywogs + water bugs in tinaja.

Clim. Hot as Hades.

L.F. Numerous caves, with bones, sticks, etc.

Veg. On side of cañon, where there is soil, are chamiso (flower heather, "black sage"; dwarf leadwort, scant juniper, cardón (on S. exposure), pitahaya, cholla, biznaga, hedgehog cactus. 1 cirio just N. Yucca abundant.

L.F. The main valley along here seems to be following the contact between lava-metamorphics and soft mesa sediments, with some of the sediments lapping over the lower hard rocks on the E. side here + there, + some hard rock noses appearing at the W. edge of the valley: (cut thru by superimposed streams?)

Veg. The sediment-side of the valley has the usual mesa formation, with tinajas, (very open), with patches of wild-rose chamiso on N. slopes.

Cult. Indian smooth clamshells + chips on the W. side of the arroyo, None near the tinajas. Indicates dependence upon winter rainfall.

(For S. of 700', the valley widens somewhat, and the silt there, not present between 700' + 620', reappears.)

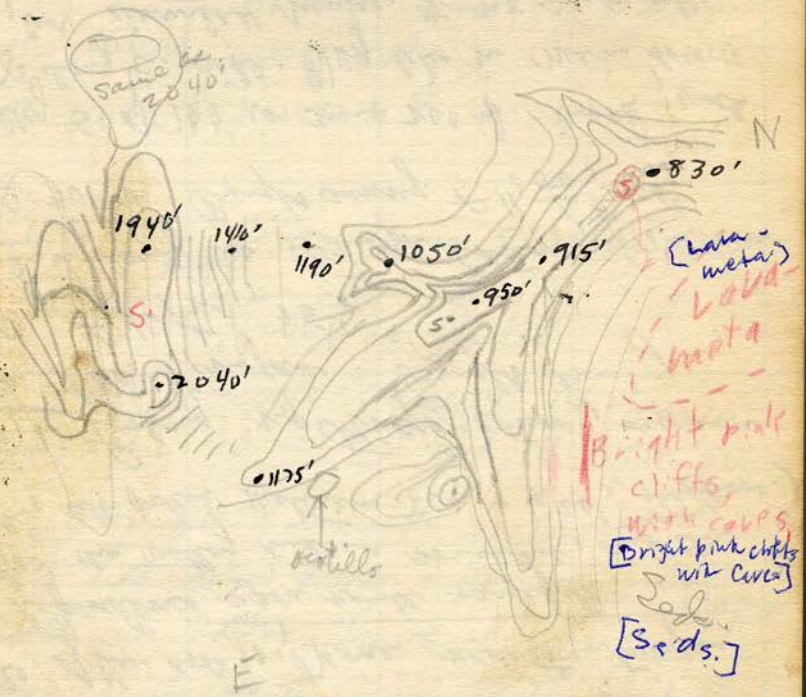
Photo # 15, 1. Looking up Tinaja cañon, across one of the little tinajas. Bright sunny, 11:30 A.M., f 16, 1"/25, 15'.

Photo # 15, 2. Looking up Tinaja Cañon, from near 740'. 12:30 P.M. Bright sunny. f 11, 1/50, 100'.

L.F. The valley S. of 700' is some 200 yd. broad, with arroyo along E. side. Veg. like in main Tecorri Valley, but abundant juniper + no sycamore.

1:10 P.M., Road, 830'. Side-Cañon on left bank. Above 830', cañon trends SE (due). 830' to E. end S. Peak, S. 25° E.

At 830' from 1:10 - 1:20 P.M.


W
S
N
E
same as 2040'
1940'
1410'
1190'
1050'
915'
950'
830'
2040'
1175'
S
[Lava-meta]
Lava meta
Bright pink cliffs, with caves
[Bright pink cliffs with caves]
Sed.
[Seds.]

Just S. of 8 30', shells, charcoal, chips + pottery.

Cult. (See anthro. 21) Many shells, 700'-here.
(1:25-1:30 P.M., at shells).

Veg. A desert palm, some 5' high. (1:35-1:40 P.M., at desert palm).

Photo # 15,3. Desert Palm, just S. of 8 30'.
Bright sunny, 1:40 P.M., 25', f11, 1/25".

1:45 P.M. Rest, 915'! Cañon forks into 2 equal forks:
915' up Right Fork, S.40°E.
" " Left Fork, S.72°E.
915' to light sedimentary peak, S.60°E.
at 915' from 1:45 to 1:50 P.M.

2 P.M. Rest 950'. 950' - Middle Peak, E., Mt., S.170W., up 10°, to pink cliffs, N.E.
at 950' 2 - 2:20 P.M.

The pink cliffs are horizontally stratified. Some ones look red. Some light-colored layers.

Photo # 15,4. Pink cliffs. Zoom near 950'.
2:15 P.M. Bright sunny. f 16, 1/50".

L.F. Everything sedimentary as far as the horizon E., some 2½ miles.

Veg. A little cactus in right fork. L.F. Left fork 125 yd. mile at 950'.

2:30 P.M.: 1050'. at 1050' from 2:30 to 2:40 P.M.

2:50 P.M.: 1190'. On dissected lobe of Mt. slope. Dry bogs + tree weed in spots. The general mesa level,

Veg. to N. & W.

68

3:05 P.M. 1410'. at 1410' 3:05 – 3:15 P.M.

L.F. From here, "Tinaja Hump" (the metamorphic - lava
Geog. mass) is quite isolated. (see limit on map).
From 1410' to top of ~~black - meta~~ Tinaja Hump,
Up 1½°. To Notch Peak, N. 23° E.
1410', and all the fluted gashes of E. Mt., are
gleaming white. It resembles the pink cliff strata
farther E. Gleaming gashes of it can be seen
4 or 5 miles E. Apparently, the white & other
sedimentaries are between Tinaja Hump &
Notch Peak.

3:25 – 3:30 P.M. – Resting.
3:35 P.M. Top of East Mt., one part. Peak, 1940'.
Gravel on top.
Veg. Monte (Big Sage - heather & juniper) on favored
slopes from 1400' up.
L.F. East Mt. like Round Mt., on one even larger
scale, is simply a dissected mass of a
2000' mesa area, with great valley running
west to the Pacific. Thus, it can hardly be
called a mountain at all: at least, it would
be hard to decide just where is the top.
N. from Trends S. 80° E.

Cut Red, 1930', 3:50 P.M. Mescal mound (or yucca mound, for no mescals & lots of yuccas). Heap of rocks, ashes, + a few shells (see author 22) or shell-heap, 3:50 - 3:55 P.M.

East Mt., Highest Pk., 4:05 P.M., 2040'.

Photo #15,5. Looking S. 65° E. from E. Mt. shows mesa continuing E. 4:10 P.M. f 11, 1/50", 100'.

East Mt. (2040') to Play Pk., N. 16° W
" " " to Notch Pk., N. 32° E.
" " " National, N. 64° E.

Flat Mesa - land to E. is Same height as E. Mt. Same
Mesa-land, same height, stretches away S, too; very little mesa-top left.

At 2040' 4:05 P.M. - 4:20 P.M.

(Wanted to cut back direct to Camp, but some transverse valleys or canyons interpose)

Photo #15,6. Facing NE from below 2040'. Highest Mounts dividing-line on nearby slope. Eroded sediments beyond. 4:30 P.M. Sunny. f 11, 1/50". (69)

Veg. Into a little grass (lunch) on the slopes of the Mts. 4:50 P.M. Down in Valley NE of 2040'. Red, 1175'!

Cut. 5:12 P.M. 960'. Also higher up I found shells in the valley.

6:50 P.M. Back at 531', spring. Real, 575'.
(From 1175' to here, take out 25 minutes from travelling time for rests, chalks, removal, etc.)

Pers. I eat supper of bacon & prunes saved from lunch, at this "arroyo table" with all the sweet granite water to drink that I want. There will be a bright moon to go back to camp by, and, as yet, no fog.

At 531' from 6:50 to 7:15 P.M.

Vly. There are cycamores all along the right fork of Socorro Cañon, but none along the left fork. Is it because the sycamores were first in the mts., & seed drifted down the fork which goes into the mts.?

Left camp 7:45 A.M.
Got back to camp 9:20 P.M. } Total Trip, 13 hr., 35 min.

3½ hr. resting, waiting, & eating.

10 hr. 5 min. actual walking time.

July 11. Pprs: Spent most of morning mending clothes + shoes, + drying my specimens.

Zoo. At low tide, about noon, I turned over some of the stones in the water, and got a couple of good-sized mussels. Here they grow on the under sides of rocks, and are much thicker-shelled, broader, and more massive than the ordinary rock-mussel.

Cult. Some 175 yd., above house to inner sea-wall. Abundant shells + chip the whole 175 yd.

L.F. Three sea walls, the eastern one (some 75 yd. from coast) mantled with veg.; the next one west, with green lichen on the rocks; and the western one vegetationless and active.

Read, 1:30 P.M. at lake house (some 15' above sea-level) 80'.

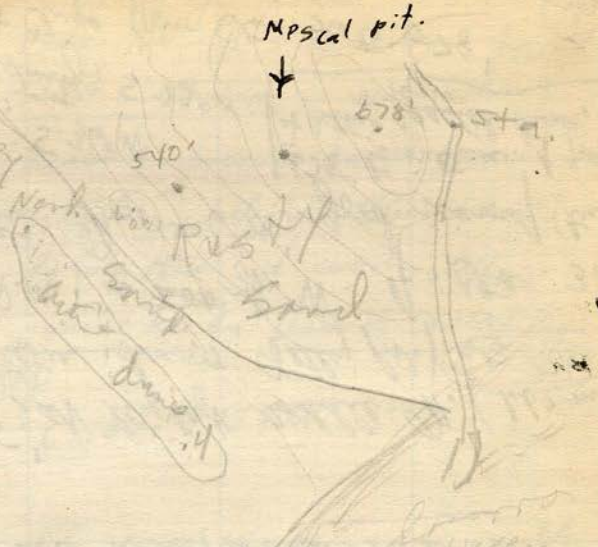
2 P.M., read, 645', at highest saddle N. (1.65 mi. from where road leaves Locust Valley fork) Sta. 36

L.F. 678' (read, 2:15 P.M.) is ~~300~~ 175 yd. W. of Sta. 36. Rusty sand in between. From 678', good view of the big dunes.

678' - Dune 4, S. 36° W.
678' - Next activity, S. 72° W.

678' to interior. 4 grey + active coastal dunes, S. 79° W.

Cult. Profuse clams + chips from Sta. 36 to 678'.



678' to apparent lone stick near coast, N., broad out, N. 7 3° W.

cont. Mescal pit, 140 yd. beyond 678'. Mound of ~~shell~~ stones (none nearby: all sandy) & grey ashes & charcoal 15' in diameter, with 2' wide depression in center. & few shells strewn nearby

5 40', 2:45 P.M. : some 475 yd. from mescal pits

5 40' to dune 4, S. 25° W.

Geog. Calcite here & there on ridges.

Grey & white sand here & there brought to surface by pits.

Rusty SS exposed here & there on ridges in various stages of hardening: simply a ferruginous, thin deposit, & strata.

Photo #15, 2. Mescal pit above referred to. 3:15 P.M.
a night swing (fairly sure) 15'. f 11, 1/25".

3:40 P.M. Sta. 36, 670'. (True height, 580')

1½ mi. N. of Sta. 36, road turns right over
Cult. on old mescal heap.

¼ mile farther, another.

2½ mi. from Sta. 36 is Cañon: Cañon
L.F. Pabellon Ortiz. Mescal pit begins on S. Bank. All to S.,
South.

Note: the road shown on the Marland map is the old road noted by me on my Cerro Ortiz section, & where I last camped in Socorro valley. Present road cuts across. (Old road circumnavigates the rusty sand.)

2.95 mi. from Sta. 36, road forks E.; I take fork.
Read, forks, 4:10 P.M., 270'.

Surv. At .3 mi., road forks; I take left fork: other
goes down into Cañon Pabellon.
Cult. At 3.7 mi., mescal heap near road.

(21)

cult. At 4 mi., shells. Read, 4:30 P.M., 790'
at 4.3 mi., 5. mi., and 5.4 mi. shells &
ashes + clips. Read, 5.4 miles, 4:55 P.M., 1130'
Also, at 5.5 mi., 5.7 mi., 5.8 mi., 5.9 mi., and
6.3 mi.: all large accumulations; mostly
clams, with a few mussels + limpets, + abundant
clips + ashes. Read, 6.3 mi., 5:05 P.M., 1240'
Also, at 6.8 mi.; read, 1325', 5.10 P.M.
Also, at 7.1 mi.; read, 5:15 P.M., 1295': 105 x 55 paces, is
this deposit (see Outline, ✱ 23). Pebbles are those of the mass top. One
mound ~~pit~~ heap.

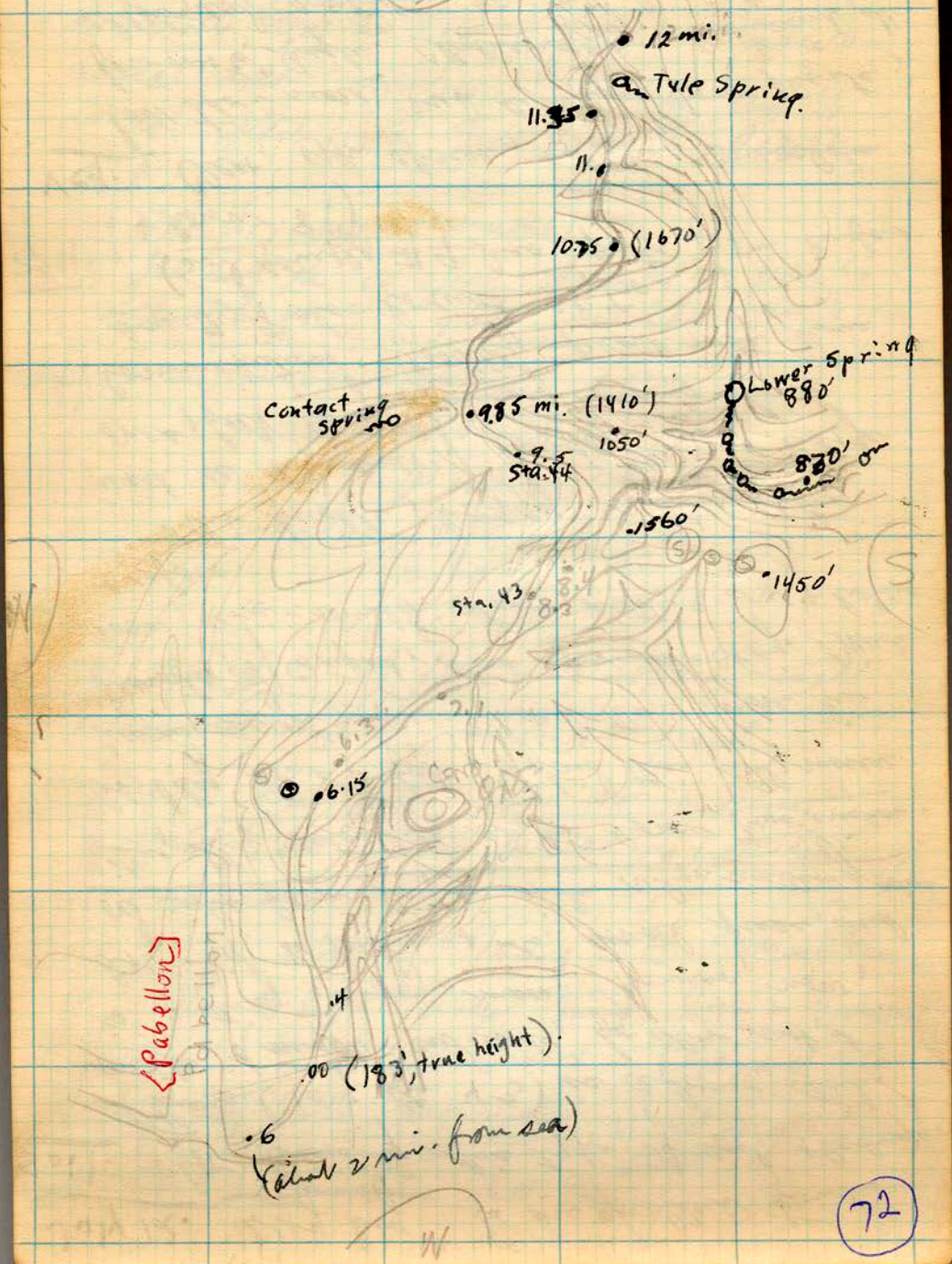
I dug down, in one place, 2 feet; results:

1'		shells, ashes
6"		stones, 3"–8" in diameter; some burned.
6"		soft, white + brown, slightly mixed lenny layer.

also, 7.2 mi. + 7.5 mi. have shell-heaps.

L.R. Veg. Dry-hog patches begin at 7.7 miles
Surv. At 8.3 mi., read, 1435', 6:25 P.M.

Camp, ~~Sta. 43~~ 43 Read, 6:30 P.M., 1385'



July 12. "Dry bog" is an excellent term

Soil. for describing this type of soil + landscape.

The soil (e.g. Sta. 43) is a brown soil, which I might call adobe, for when wet, it is a sticky, slippery mass. However, now, dry, it is broken up into small pieces, and one sinks down half an inch when walking over it; the automobile sinks down two inches. At I dig down a foot, I find the soil masses become larger, say 3" and show more in bunches, of compact, stone-packed clay. Much loose, semi-rounded stones, little on + below surface.

The friable, "boggy" nature of the soil is the result of cracks, some large ones, feet long, ranging down to fine comminution. Possibly plant-roots have something to do with it, too.

(Soil sample #9 has parts from surface + down 8".)

Veg. Clear, open spaces, with no vegetation but tar-weed and similar low plants, few over 6" high. Cholla very abundant at edges, and practically the only bush to invade the dry bog areas, besides "pinks, sprawling bush". Yucca very plentiful, too, on

margins. The nearby mescal-stony-mesa areas have harder soil, and no herbaceous low plants; yet the dry-bog soil invades the mescal area margins, indicating that it is not plant-roots that cause the friable soil.

(See dry-bog specimens)

Soil. All say it's a bog: I barely got back to the ~~S.B.~~ road, up a 5° grade: wheels spun; sinks in 3½" in some places.

Sta. 43 — C. Mtn. (Probable peak of map), S. 8° W.
" " — C. Mtn. (Probable peak I climbed), S. 12° E.
" " — Notch Peak, S. 80° E.
" " — Tinaja Hump, W. top, S. 16° E.
" " — " " E. horn, S. 32° E.
" " — " " E. end (?), S. 47° E.

Cult. 200 yd. S. of Sta. 43, Indian shell accumulation in the mescal-grove.

Pers. Spent ¾ hr. putting more air in tires.
Spent ¾ hr. putting patches on both knees of breeches.

Photo #15, 8. Dry bog. Facing SE. Mescal-chamiso on hill to left. Tinaja Hump horn in background. f11, 1/50", 11 A.M. Bright sunny. (General color of dry-bog hills, buff yellow; mescal grey-brown.)

Cult. At 9.1 mi, another shell-heap, abandoned, just within the mescal-chamiso fringe. Read, 11:15 A.M., 1420'. (OVPA)

Veg. On the whole, there is a tendency for the dry-bog to be most widespread on N. slopes; but any curving hill- or ridge- top seems suitable.

Cult. The 9.1 mi. heap is similar to the others, except that it has a few pottery fragments (see autho. 24). The first pottery I have seen on this section. Cañon nearby.

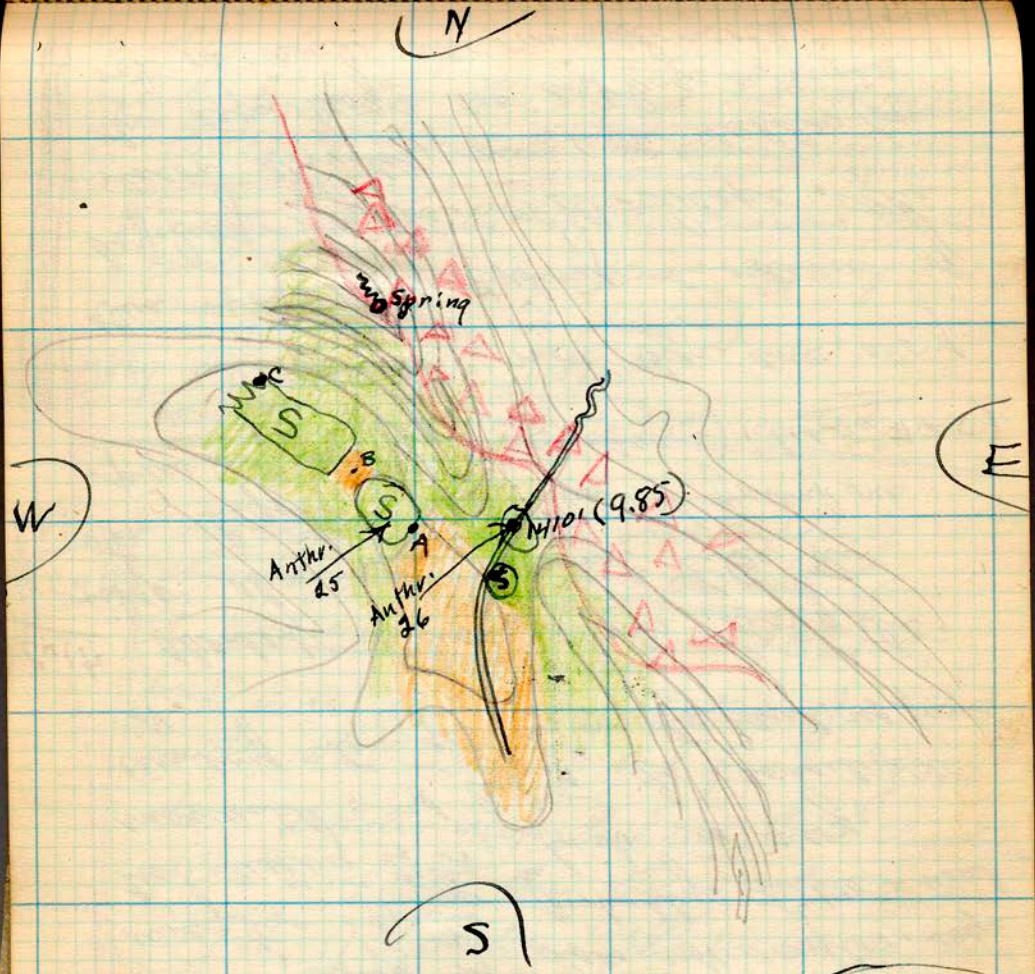
Veg. Dwarf buckeye still present.
A few cardones, at the rate of a couple of hogen per square mile.
Bignoz abundant, with the mesal, on steep, S.-facing slopes esp.

Photo #15, 9. Contact of gravel-mesa with the granite of Match Peak Mts. Drom near 9.5 mi.

L.F. The gravel there is somewhat lower than 9.5 mi.: old river level? The cañon below, flowing S. to Socorro Cañon, has an uncut floor.
11:45 A.M. Bright sunny. Facing SE.
f16, 1/50".

Veg. Cardon more plentiful on the granite slopes.

L.F. On saddle connecting mesa with granite, read 1410', 12:30 P.M., at lowest point of road. 9.85 mi.



1410' - A (end of Indian shells), 400 yd.
A - C (~~small~~ ~~yellow~~ below spring), 475 yd.

= Mescal - Chamiso

= Dry-log.

: Granite country (SW of this, Grand - mesa)
(Cardon - yucca - mescal - chamiso)

Contour line drawn in roughly in pencil.

1410' is lowest point of connecting saddle.
S = Indian shells.
B - shellless dry-log patch.

74

Summary:

L.F. About ½ mile North, down the cañon from the saddle (1410') is a beautiful rock-enclosed basin, filled a foot deep with yellow-looking but cool, sweet water, apparently spring-fed, for it seems to stay at about the same level, & the granite rocks around it are moist in some cracks; though it does not overflow: seeps away thru cracks, probably. Little-used trail leading to it, for it is very inaccessible: & had to do considerable climbing to get down to and up from it.

Cult. Abundant Indian shells along the ridge above the cañon. Like the other deposits, except that I found one piece of pottery (very scarce). (See butts #25)

I noticed, more than ever, along this ridge, a striking avoidance of dry-log by the shell-heaps. The reason struck me, with sudden force: the dry-logs are wet-logs in winter, and as such are miserable sticky places

to ~~stay in~~ camp in. Also, this is a very definite proof that the Indians did not go down to the coast for shells in summer even tho' a spring here.

(Even when not actually met, the Indians would avoid them as camping-places, knowing what would happen if it rained.)

Why are deposits on ridges?
Because the easiest route to the sea is by ridges.
(+ to the interior.)

Veg. + Cult. The "characteless plant" has suddenly assumed character. It is the indicator of Indian shell heaps. I tried to find some distinguishing feature of vegetation for the shell-heaps, and found, by 1410', that a shell-heap had very thick "characteless plant". I tested the theory: I saw a stand of characteless plant 100 yd. away, I went to it: it was a shell-heap!

Also, "Characteless plant" has a good smell: I will make tea of it this eve.

In fact, now I notice it, "characteless plant" doesn't grow hereabouts except on shell-heaps. I remember it was thick on other heaps, too: e.g. at 7.1 mi. ("Black-sage" too, is found here only if it is not on shell heaps, beyond.)

Cult. Deep by 1410': see Auto. #26. Bagum arrowhead also that of Jon Quintin. Crystal, Coarse pottery fragment.

Veg. Cont. Of course, ~~the~~ one conclusion is obvious, namely, that the Indians brought "characterless plant" and "black sage" with them from the coast, for tea, perhaps, and thus the seeds got here.

The "characterless plant" burrs are an annoyance to me when I have a hole in my breeches, for they get in and scratch annoyingly. [Came in on clothes & nets.] (Came in on clothes nets.)

3:15 P.M., 1670', 10.75 mi. Just been over the worst stretch of road of the summer. Granite blocks in road, though I only hit one with the bottom. I may turn back yet.

✓ Cont. Scattered clam deposit here, with characterless plant.

Veg. Mescal has been replaced by plain agave. (yucca?)

3:30 P.M., 1680', 11.35 mi., after many ups & downs. This road seems to have ~~been~~ had a lot of work done on it when it was first made, but it is badly washed out now.

At 12.00 mi., after trying to go on out of a little cañon, and finding my tires tearing themselves to pieces to no avail on the loose rocks, I turn back.

L.F. This cañon, at 12. mi. (read, 4:15 P.M., 1552'), has a fine spring of water seeping up there the sand some 100 yd. below the road.

Veg. Odicious, sweet, water. Tules 20' high growing in it. One, 15' dead palm nearby. Quite a few sycamore trees in the cañon. Monte however, the prevailing cañon-sides vegetation; of "wild holly" (very high), occasional juniper, "little elm," wild lilac. (Monte started at about L.F. 1350', here + there). Other pools below.

Photo # 15, 10. 4:10 P.M. Tule Spring.

F 7.7, 1/25", 25'. Bright sunny, but water somewhat in shade.

Cult. Quite a few shells scattered about, with clips, especially the crystal clips. Some "characteless plant", too.

Surv. Tule Spring Cañon runs about S. 80° W.

11.35 mi., red, 1690', 5:25 P.M.
11. mi., red, 1630', 5:30 P.M.
10.75 mi., red, 1700', 5:35 P.M.
10.75 to Cerro Ortiz, S. 85° W.
9.5 mi.: camp. Red, 6:05 P.M., 1450'

Reading backwards for simplicity's sake.

Sta. 44

July 13. Fog:

Clim. I was located tonight just a mile E. of last night's station. At 3:45 A.M., I got up & looked around and, though it was clear overhead, the fog had rolled up both North & South Contact Cañons until only 200 yards separated

the two advancing columns of fog, ~~[illegible]~~ at saddle 1410'. The black nts. loomed up behind. It was a pretty sight, these two columns getting there almost simultaneously. At 4 A.M., however, they had retreated somewhat, due to a faint land breeze, and at 6 A.M. they were far down the cañons.

Photo # 16,1. Facing SE. The fog in South Contact Cañon, 6 A.M.

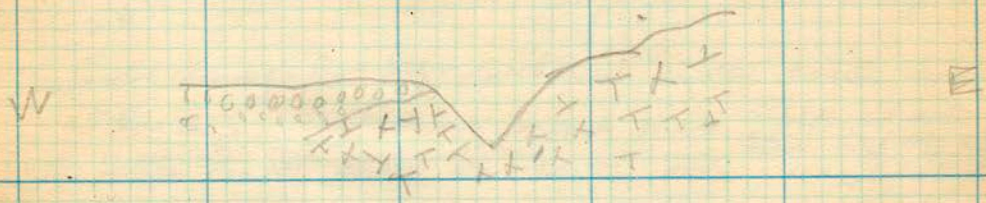
Photo # 16,2. Bright sunny, 6 A.M., f 7.7, $\frac{1}{50}$".

By 6 A.M., a faint sea-breeze had sprung up, so that the fog again advanced, this time up another canon just W. of Sta. 44, so that by 6:35 A.M. the station was ~~again~~ enveloped in fog, for the first time this night. Then the fog began to evaporate, and by 7:15 A.M. the sun was shining brightly again. (See climatic notes).

Read, Sta. 44, 8:15 A.M., 1442'.
I set out SE.

L.F. Bottom of S. Contact Cañon, 8:40 A.M., 1050'.
This cañon flatter + gentler than N. Contact Cañon.
Veg. Abundant good 2-ft. bunch grass here.

Veg. Monte (high brush - heather) down to 1100' some places.



The above profile is repeated in this cañon quite after S. The Cañon is ~~not~~ granite on one side and mesa - gravel - sediment on the other, except near its head. Apparently its first course etched out the contact, and since then it has been let down onto the granite beneath.

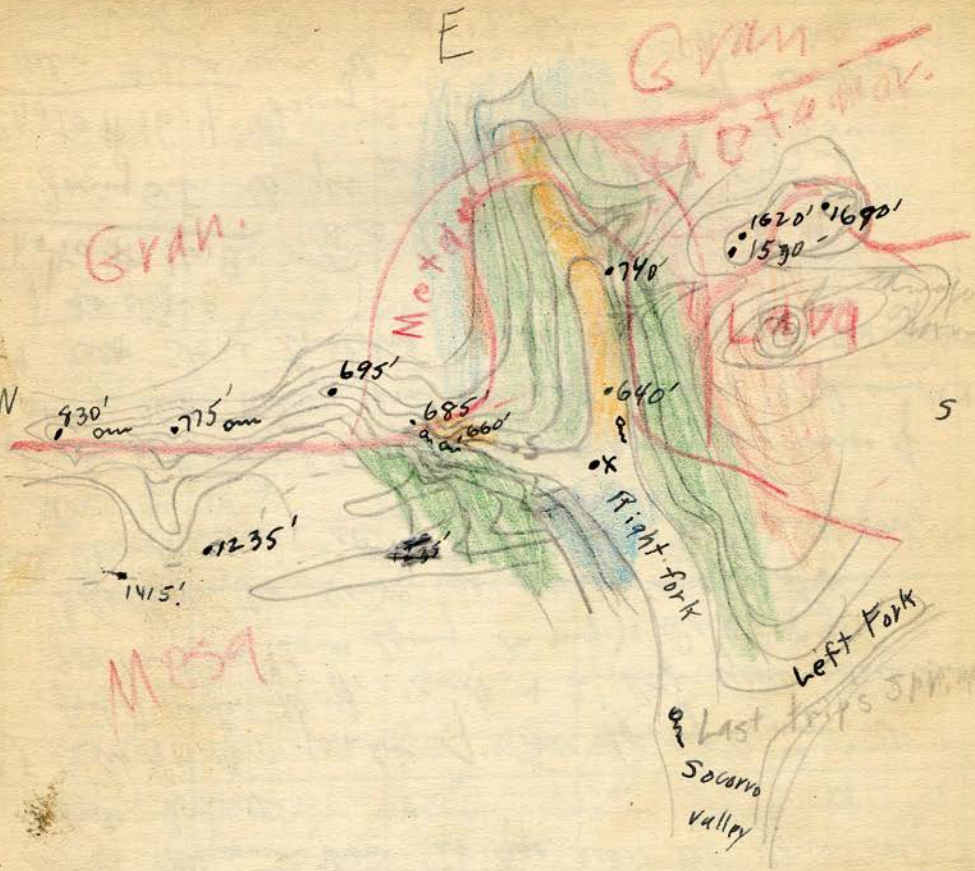
L.F. At 9 A.M., junction of Mule Spring Cañon. A pool of water 10 yd. wide + 2' deep just above the junction (see "Lower Spring" on map). Reed, 880'. Below here, the cañon is ~~open~~ narrow + steep.

Cattle. Much-used cattle-trail leading to this excellent water.

L.F. In fact, a whole series of such pools, in a series of rocky steps, below junction also. One 10 yd. wide + 4' deep. Some trickling quite briskly down the pools of the steps.

Photo # 16,3. Two such pools. 9:15 A.M. Facing S.E. Bright sunny (facing Sun) f 7.7 1/50".

Photo # 16,4. Facing S. from 830'. ~~Cancel~~ The third palm I have seen this summer. 9:50 A.M. Sunny. f 16, 1/25, 25'. 25' high.



— E. of this, Gr. ; W. mesa.

Cardonal

Mesca - Chamiso

Palm fairly abundant.

Monte

W

[illegible]	Red 775'	Indian shell + ash here, on small	

10:15 A.M. Rest 775'. Indian shells + ashes here, on small side-creek delta.

Cult.

10:30 A.M. Rest 695'. Below 695', cañon trends in general S.W.

Veg. Cacti amaranthus have been with us in the cañon bottom all this time. Also much marsh grass. Alfalfa silvestre common along valley sides.

Cult. Cattle trails along the cañon sides nearly all the way.

200. →

Humming-bird: unusual amt. of red.

Geog. (For sample of granite, with typically weathered face, see S. Contact Cañon sample.)

Rest, 685', 11 A.M.

Photo # 16,5. Room just above 685', facing S. 85° W., down cañon. Mesa in background, with typical cañon slope. Contact granite in foreground + sides. Stand of some dozen palms. Very spring "cardón."

Veg.

11 A.M., Sunny, f 16, 1/50". (5 old, 8 young palms)

11:15 A.M. 660'. At this point, cañon widens into valley.

Veg. Palms.

Cult. Shells.

12 noon: Rest, 640'.

(80)

Veg. Palm-trees are quite abundant in the left fork of Rojas fork of Socorro Valley, especially close to the springs, where many little ones are springing up. Cardón on S. facing slopes at some places. Mesquit, with thick wild-rose clumps on N. facing slope; with cactus, more grass, on S.-facing.

It looks to me as though the palms come down (in seed) from farther East (like sycamore, which are also abundant here along arroyos).

For the rest, the valley floor has the usual arroyo growth: eseoba amarga, etc. Also some "clematis".

L.F. The valley floor is all large granite boulders, with sand in between at some places. Terrace, or glacis, on S. side of valley.

Clim. 12:40. Temp., 80°. Fresh N.60°W. wind. Stratus clouds, delicately flecked.

Cult. Indian shells at numerous intervals.

Veg. Beautiful "Red Plume" mesquite (?) along arroyo.

Photo #16,6. Facing N.E., in left fork right fork (main valley). 1:10 P.M. f 22, 1/26", 25'. Typical arroyo floor, sycamore, + palm.

1:36 P.M. Read 740'.

740' up main cañon, N.70°E.
" " side cañon, S.55°E.
" down main cañon, W.

2:30 P.M. Read 1530'.

1530' to dune 4, Socorro land, dunes, N.86°W.
" to Cerro Ortiz, N.60°W.
" to S. land's end, S. Quintin, N.85°W.
" to twin Buttes, S.76½°W. Down ½°.
" to Cerro, Tinaja Grande, S.36W., up 6½°

1530' to X, N.62°W.
1536' to 740', N.30°W.
" to 1410' saddle, N.14°W.

[illegible] N.70°E.

1620' - 2:50 P.M. to Notch Peak, N.70°E.
" to Tinaja Hump Horn, S.46°W.

Veg. Looking S. & E. from 1620', Mescal-chamiso with plentiful juniper. Ridges, esp., thick mesc. sickly. Much cactus. (high brush cover). Mescal has yellowish tinge; looks

Cult. Shells on ridge just E. of 1620'.

3:15 P.M. 1690'.
1690' - Tinaja Hump Horn, S.78°W.
" - 1620', N.40°W.
" - Sego in sediments E (seen from E. Mt.), S.61°E.
" - N. end of E. sediments visible, S.71°E.

L.F. Slopes in this metamorphic country all 25°-35°, covered with angular talus + soil, even on top. Reddish & dark gray rocks, soil, + general aspect

Cult. 5:15 P.M. Reed 12'35'. Indian shells on ridge + chips. Desking up to mesa. Also, mescal heap cacti. Also characteless plant.

Veg. Characteless plant, found in the valley, seems to occur even without shells: then, my theory changes to pech, Indians brought ~~shells~~ here up from valley.

Cult. 201 yd. farther, large heap of rocks + ashes: 20' wide + 2' high. (Funeral pyre?) Characteless plant.
5:35 P.M. Reed 14'15'. Another "pyre". Shells between this + last pyre. Characteless plant.
The shell-heap just S. of 1560' is 150 yd. long. All shell heaps observed today have characteless plant in thickets.

(81)

5:40 P.M., 1450': up in dry bogs again. I have been following a dozen horses up a well-worn trail all the way from 660'. They have stopped a last to graze on the dry bog grass.

Photo #16, 7. Dry bog, beyond mesa. 5:55 P.M.

Aneroid: Facing S. E 11, 50".

Read, Sta. 44, 6:20 P.M., 1517'.

July 14.

Best, Sta. 44, to Cerro Ortiz, ~~10° E.~~ N. 89° W

" " " " Horn, (Viga Hump) S. 10° E

" " " " Pleu Peaks, N. 29° W.

" " " " Hill 1560', S. 48° W.

" " " " 1410' saddle, N. 24° E.

" " " " East Mt. (Pony peak), S. 2½ E.

" " " " East Mt., dwarfed peak, S. 16° W.

Read, Sta. 44, 11:15 A.M., 1470'.

Cut. (Shell-heaps, with "Ch. flint", not noted on incoming trip).

9.45 mi., 9.3 mi.,

Hill 1560' (¼ mi. from sta. 44), to Twin ~~Brothers~~ Peaks, S W.

" " to Cerro Ortiz, N. 85° W.

7.6 mi. farthest point S. the road goes; 7.6 - Cerro Ortiz, N. 74° W.
7.6 - Twin Peaks, S. 30° W.

7.6 - Twin Peaks, 5.30° W.

Photo # 16, 8. Shell-heap at 7.1 mi. 11:45 A.M.
Aiming. Facing W. Cerro Otero in background.
f 16, t 25", 15'. (Resting on car)

L.F. I merely meant the term "moated mountains" for mountains such as Cerro Otero & the Matute Peak Mts., where softer material around them has been etched away so as to form a cañon or cañons all around & parallel to the base of the mt.

At 6.15 mi., I stop for lunch. Rest { 12 noon 1240'; 1 P.M., 1260'.
6.15 mi. to Cerro Otero, 5.26° W.

Cult. On hill-top just N. of 6.15 mi., large shell-heap, with sta. 44 type of pottery, clows, & clips, & ashes. "Ch. plant": 70 yd. in dia.

3:15 P.M. Rest, 5.4 mi., 1120'.

Soil. Sample #11 I took from here, as it seems like typical Socorro Mesa soil.

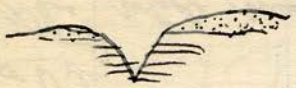
L.F. The next hill N. of Cerro Otero seems to be of metamorphosed granite: much lighter in color than Cerro Otero.

Veg. The whole mesa less abundant with trees, esp. on N. slopes: bearable stuff to go through. (82)

3.30 P.M. 4.5 mi., rest 860' (an indicated drop to a very lower level). Characteless plant now occurs even without shells; but even now it is thickest on the shell-heaps. Vista begins to appear on shell-heaps.

3:50 P.M., 2 mi., plant 540'.

L.F. The soft brown SS & the same colored sand
Geog. overlie the soft slightly-colored sediments (C.E. Mt. type), at least in the E. part of their extent, as visible in Cañon Otty exposures.



4:30 P.M. Back at 00 mi.: Road, 325' (Fork).

Fork — up main road (N.),	N. 55° W.
" — Dune 4,	S. 24° E.
" — Cerro Otty,	S. 80° E.
" — S. tip of land, S.Q. Bay.	S. 83° W.

4:40 P.M. (Going N.), Road 290' (.6 mi. from fork).
On S. edge of Cañon Palellón.

L.F. Cañon (or Valley) Palellón is broad
Geog. ($\frac{1}{4}$ mi. at mouth), with steep sides of the sediments. Its floor ~~sediments~~ silt terraces merge into the level of the S.Q. Plain.
4:50 P.M. Down on silt floor of Cañon (.8 mi.), Road 220; thus, Cañon Palellón is 70' deep.

Soil: Buff silt.

Veg. Characterless plant, cenizo, thorn, cholla, willow, lilac.

(Soil: While I think of it: on the mesas, the gravels ~~and~~ the mesas got smaller & smaller toward the lower, or western, edge: came from mts.?)

L.F. 1.05 mi. Road 209: down in another similar silt level, this time following the arroyo? Brushier.
1.15 – N. side of Cañon.

Profile of Cañon Pilullon, at mouth.

L.F. The N. side of Cañon is steeper, for arroyo is against it here.

Veg. The 42° S-facing slope has a dense growth of pitalayas.

Geol. Although some of the sand in the arroyo is fine coarse, there is no real gravel (above 1" in dia.), such as is found not far up.

The slope W. of the 70' mesa is 31°.

Sta. 45

5:15 P.M., road, camp, 1.3 mi., 200', 7 P.M., 200'.

Road, N.S.

140'

200' (x-ing 58')
Sta. 45

35'

Flour silt, Fine sand

Flour silt, Broad sand

Flour silt, Broad sand

1800 yd.

Good silt.

Open formation of cinnamon thorn + characteless plant.

Flour silt, Fine sand (some broad sage)

Very open. Farthing of sand.

110 yd.

450 yd.

225 yd.

[All in all, 3415 yd. from Sta. 45 (along) to the sea]
(slightly less than 2 miles)

142'

140'

50 yd.

1/4-mi. dunes

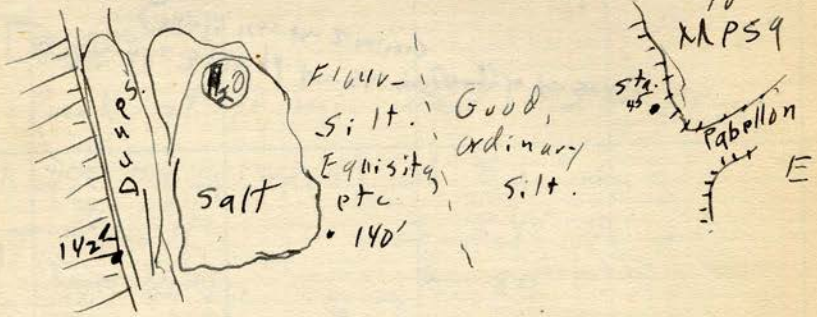
Dollar-vine

440 yd.

Salt, vegetation less, white flat.

Road 140' at 5:55 P.M.

140' - Sta. 45, N. 75° E.
140' - Dune 4, ~~66~~ S. 55° E.
140' - Plug, N. 66° E.
140' - Cero Otay, S. 82° E.



6:10 P.M. 142', read, Sea-Level (Note: tide nearly high.)

At 142', beach slants N. 55° W.

L.F. The dune at S.W. ~~end~~ end of Pabellon Arroyo is pretty surface with grey-white "stuffin".
Cut, cliff side of arroyo some 500 yd.
The "sand-swath" runs (so far as I can see) from E. end of this big dune to a point some 150 yd. N.E. of big yellow (active) dune.

July 15.

Cult. At 4.1 mi. (from 00 forks), the first S. house of Sta. Maria. Small (room) wooden house + adobe house. Some 6 acres gravel, formerly irrigated by water pumped from a windmill. Water in the

Hydr. captive well, 11 feet below the surface, and at least four feet deep (as far down as I could see). Big wooden dog tank nearby. A dozen fig-trees along irrig. ditches. Now simply a traveller's stopping place (uninhabited), because of its water. Cypress-pepper windbreaks along the N. edge.

Soil. Soil, a good buff silt.

Veg. On the land around, beaded sage, colnett weed, escoba amarga. Vidrio abundant on old cult. land.

Cult. At 4.6 mi., another (2nd) wooden homestead. Ordinary well. Wooden 5-room board-+-batten house, as usual. Cypress inclosure of some half-dozen acres.

Bearing to last house, S. 15° E.

Hydr. Water in well 12' below surface.

Rest, 2nd. house, 8 A.M., 120'. (Some ½ mi. from mesa)

Pasture Land mesa-ward + on all sides once cult. to wheat? Dor vidrio + Colnett-weed abound there.

Cult. 4.9 mi. to third house.

Cult. At 5.1 mi., faint road heads up valley. I take it.

Soil. Barnes sandy.

Veg. Open romerillo + Cercidium the + escoba amarga. Considerable vidrio.

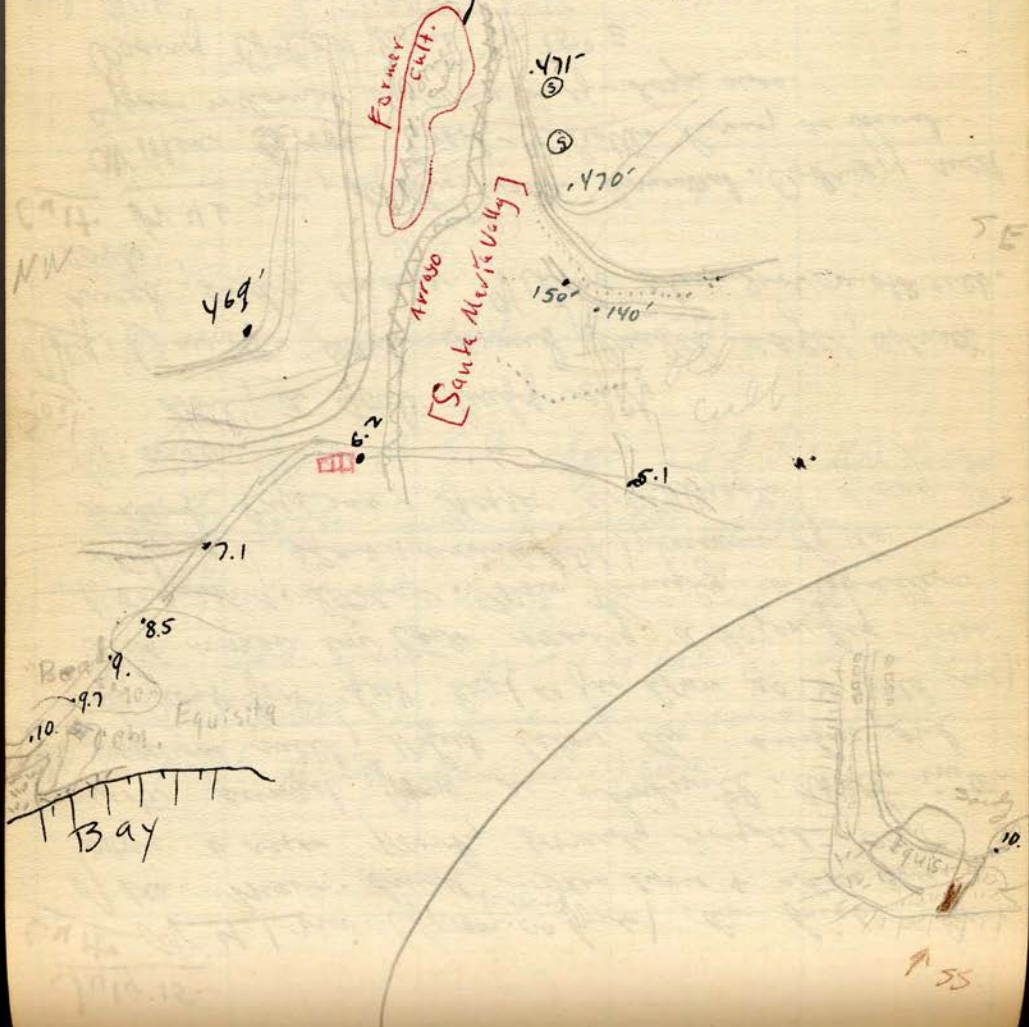
Cult. At 5.4 mi., big irrig. ditch crossed, heading N 12° W. 175 yd. N, it bends N. 32° E. Many side ditches leading off.

At 5.45 mi., well worn road crosses.

At 5.6 mi., 50 yd. from mesa edge. Road, 8:40 A.M.
140'

Pers. Just killed a hare, at 225 feet distance!

Stopped at 6.1 mi. Cy. impenetrable brush of tornillo, Guajix thorn, etc. Sandy soil. Abundant nitro.



Cont. Well-used road & irrigation ditch, along the foot of the mesa riser.

at 5.8 mi., road, 9:15 A.M. 150'

9:35 A.M., road, 470' (top of S. cliffs)

L.F. Geog. These valley cliffs, weathered blutingly, are of horizontal layers of soft sediments: red, yellow, grey, white, including several layers of gravel. The top has a layer of sandy silt, unconformable to strata (soil). (F. 11.)

470' - cliff nose, N. side, NW
" - N. cliffs, main Sta. Maria lagoon, S.58°W.
" - S. tip land, S. Q. Bay, S.57°W.
" - Flour mill, N.60°W.
" - Punta Nolasco, S.63½°W.

Clim. Strong N.12°W. wind. Sun just getting here from E. (9:30 A.M.)

L.F. Santo Domingo Valley is a very broad valley, with abundance of cultivable silt soil (small arroyo).

Cult. across from 471', considerable areas appear to have been ~~recently~~ cultivated at one time.

471' - NW brink mesa nose, N.63°W.
" - approx. E. limit old cult., (brown adobe), N.10°E.
" - " W. " " " , " , N.68°W.
" - Line 4, S.26°E.

Pers. While looking at landscape, I jammed my foot right into a cholla, and it took five minutes of agony to remove the 3" segment that detached itself.

L.F. Geog. The top layers of the mesa here is caliche, overlying gravel. Layers of silt & gravel soil.

At 6.2 mi., across the valley, + at more eucalyptus - cypress quadrangles. No houses left.
At 6.45 mi., 1:15 P.M., read 150'. 4 P.M., 170'.

1:45 P.M. Rest 469', N. mesa now.

L.F. Slope. Same as S. side, except that 470' mesa comes right to the S. Q. Plain, without the 70' terrace that is found S. Also, all grand-mesal top here.

Photo #16,9. S. Q. Volcanoes, N. Group. Facing N. 70° W. from 469'. 3 P.M. Sunny. + 7.7, 1/100" - strong wind. (N 65° W. wind)

Veg. No wild-rose on mesas N. at S. of Sta. Maria Valley.

L.F. Slopes, seaward + valleyward, 32°.

Photo #16,10. S. side Santa Maria Valley from N. side. Facing 555°E. Socorro Dome, in distance. 2:15 P.M. f 11, 1/100". Sunny. Slight haze.

469' - N. end Sta. Maria lagoon, S. 28° W.
" - N. end, S. Salt, S. 4° W.
" - S. " " " S. 11° E.
" - Little Salt flat, N. 70° W.
" - Volcano #2, W.
" - " #6, S. 5 10 W.
" - " #7, N. 55½° W.
" - " #8, N. 53° W.
" - " #9, N. 46½° W.

Veg. An offshoot of romerilla + other light-green veg., from Sta. Maria Valley, is used on map. Also, a strip of brown soil, open veg. (once cultivated?)

at 8.5 mi., in exquisite flats.
At 9, in leashed sage again.
at 9.7, in exquisite flats again.
9.8, by cemetery.
L.F. Exquisite bog between cemetery & road, bog not there two summers ago, if I remember correctly. Cem. on a slight knoll.

At 10. mi., short mock-grass swamp begins at left of road.
At 10.8 mi., Coastal dune begins.

S 24 - level, S.Q. Bay, 4:50 P.M., 140'.
L.F. This S.Q. Dune is 30' high, with a W. cliff, with several feet pale rusty, semi-consolidated sand over white sand. Mottled (Calvert-red, richer, cinnamon) but active in spots. Between the white & rusty layers there is in places a layer of shells unlike any I have seen. These same types of shell occur with charcoal, rock and clinks several feet below the surface in the rusty sand at one place.
Cult.
11.4 mi., San Quintin.
13.5 mi., flour mill.

July 16. Excellent supper & breakfast with Mr. & Mrs. Moore, & Mr. Deere, at flour-mill.
Place fixed up very nicely.
Salt. Great offense of hauling: about $1 per ton, could be much reduced by a small railroad; the sand is

Mud slows up the trucks: hard to keep up the road.
Gasoline ~~[illegible]~~ greatly, too. 6 mile haul by road,
2 1/4 by disused railroad. Tremendous power of the
Narrows could be used for hydroelectric power of R.R.
200 ton vessel can get right up to the
Narrows, Once the bar (of muck) is crossed, English
boaters claims across to let tide wash out muck.
Salt formerly lighted out in big boxes. [muck]

$1 hauling
$1.25 mining
transportation to San Pedro
refining
selling

} Cost per ton.
(bills from $10 per T. upwards)

Most demand for packers, canners, etc ice-cream
mfgrs, etc. Mex. market gets enough from Carmen.
? Steamer takes 200 T. per trip; mill runs every 2 weeks.
Amer. Salt Co., Lyle.
One Mex. member of firm; helps a great deal in
making payments. Duties, etc. less.
? Employs — men.
(Figure Mex. Govt. income, tax on men vs. duty.)

Pers. Discrimination against Americans in prices: e.g. beer.

LF. 5.30' W. of Cone 4, basalt beach, with abundant
Zo. tarbs, mussels, & abalones, & abundant Indian
cult. deposits just inland & on top of cliffs. On resting
Sand. Some sand in cliffs forms ~~hard~~ soft
rocky SS. Intense black basalt, at water's edge.

Got as far as S. 40° W. of Cone 4, 2.3 mi.,
when I decided it was not worthwhile to fight sand
any more.

Rest, Sea-level, 10:50 A.M., 70'.
" " " 11:15 A.M., 70'

[479' - 70' = 409' above sea level]

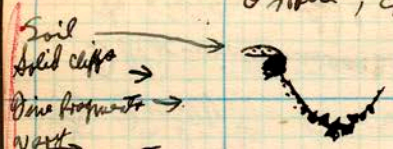
Cone 5, highest point reached by Sand, 11:30 A.M., 180'.

11:50 A.M., Rest, top 5, 479'. [35 mi. elevation) (⅓ of sea-level reading) 6', water is about 403')
12:10 P.M.
Breach in crater rim on S. 35° E. side; Lava poured
out on this side.

Cone, of cinders (dark red), soil size to 3' size.
Veg. Abundant orchilla. Where soil, fair plant, scrubby vine.

12:15 P.M., Lower edge, 349'.
12:25 P.M., Bottom of crater, 272'.

Profile, crater



Thus, the cone is at least solid (though highly vesicular). The fragments are really lava.

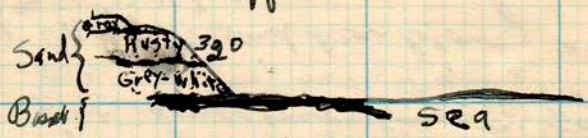
Photo #17,1. Orchids & Creeper vine, in crater of Cone 5. 12:35 P.M. 2'6"; f 7.7, 1/50". Portrait. Sunny

Photo #17,2. Cone 5. Facing NW. 1 P.M. Sunny. Resting camera on one of broken, jagged fragments. f/6, 1/25"

L.E. Exactly similar of ropy, jagged, fissured, chasmed lava: black, vesicular.

1:40 P.M. Sea-level reed, 100'

2:45 P.M. " " " , 101'. Been walking the last hr. at rate of 4½ mi. per hr. S., along broad beach backed by dollar-vine dunes. At this point A reach basalt marine shelf, overlain by rusty mantled sand. Cliff sec.:



The same sort of thing found N. of Sacramento: hardened rusty sand forming a coating layer over softer, grey-white sand. Some 20' of rusty sand in the cliff - opposite, but seems to be bedded. Grey mantle on top of that.

2:55 P.M., reed, Top of grey mantle, 210'

3:10 P.M., reed, Top Cone 6, 292'

3:40 P.M., " " " , 292'

The dollar vine dunes seem to be spreading over the grey mantled dunes of the Detumbas.

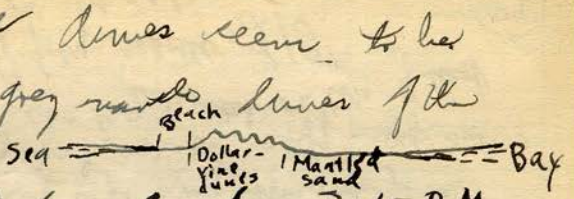


Photo #17, 3. Facing N. from Cone 6. 3:15 P.M.

Sunny. Hazy. f 11, $\frac{1}{50}$" (resting on cairn).
Note dollar-vine dunes encroaching on grey.

Clim. Strong N.W. wind been blowing all day. Low veiled here at 11 A.M.

Cone #6 differs from the others in having gentler slopes (20° E. side, 13° W. side), and no crater and, except for large rocks at top, a cover of soil (brown silty). Basalt forms stacks + shelves all round the edge.

Veg: Cone 6, with its soil, has beaded sage, fat bush, "dwarf-sienna-vine", crinkly thorn, and, on the rocks, the omnipresent orcillas.

Cone 6
191' above sea-level

Sandy spit.
Basalt.
Dollar-vine dunes: Broad beach
Triple, grey mantled dunes.
Grey mantled dunes sand sloping gently E. from dollar-vines.

Cone 6 to end of its basalt N., N 40° W.
" " to Cone 5, — N 16° W.
" " " Cone 2, — N 14° E.

M - most cone-6-basalt (coast) to Cone 5, N. 16° W. (apparently: but for inconsistency)

3:55 P.M., Sea-level, 101'. THUS, Cone 6 is exactly 191' above sea-level, top. (Its base is some 10' above sea-level.)

L.F. The dollar-dunes strike NW, in parallel series, obliquely to beach.

S. 25° W. from cone 2, dollar dune belt is 80' above sea-level (top), and 3½° down to the ocean beach, + 1¾° down to Bay beach. (Mantled sand some 100 yd. E.)

July 17. 1.2 mi. N. of 23.5 mi. cone 4.

Cone 4 is due E.

L.F. Big yellow mottled lava just N. of here, some 200 yd.

At 4.2 mi. from W. Coast, road fork to Cannery.

At 5.7 mi. from this road fork, by spalled road, is the "cannery" (abalone drying camp) The road turns to the above just before reaching the camp (5½ mi. from fork), and there leads: the former outlet for the salt.

Cannery (for it was a cannery as well as liquor) has sign "Catalina" over the door. A mound

7 abalone shells averaging 5' high and 90' in diameter. (Some 40,000 cu. ft. of shells).

Sea-level, dead, 9:40 A.M., 70'.

Labels on Boxes at Cannery:

Crescent Brand Lobster
Packed by the Pacific Fishing & Exploration ~~Exploring~~ Co.
San Quentin, L.C.
General Office: San Francisco

Abalone
Packed in Mexico
by
La Pescadora, S.A.
Ensenada, Baja Cal., Mexico

La Pescadora, S.A.
Successors to
San Pedro Canning Co.
Los Angeles.
Packed in Mex.
(Japanese)

San Quintin Bay Canneries
Ensenada Brand, Canned Abalone

Lower California Packing Plants
S.Q., B.C., Mex.
Calmex Brand, Canned Abalone

(Note: Calmex Brand is Japanese)

In 1920, 15 packers, mostly Japs, some Italians.
One mo., 1921, 34 employes got goods in advance.
Nov., 1920, "Planta Empacadora de la B.C."
received 12,5173 kilos Blue Abalones from the contractors

~~Jose Matiz, at $30 per ton~~ from Jose Matiz, at $30 per T.

33 employes in Oct. 1919.

Nov. 1921, received 47,000 kilo. of live abalone
(From three contractors.)

Nov., 1920, packing plant received from;

Campo Matiz, 7,175 lb.
" Castellon, 14,125 "
" Japones, 21,572 "

21,572 lb. live abalone.

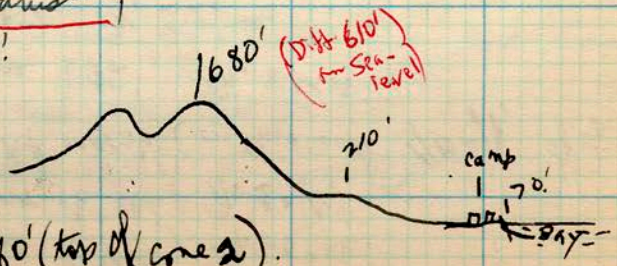
May 1922:

Matiz, 13,355 kilos ($427.14)
Jose Estrada, 10,387 kilos ($332.36)

Besides the hands actually employed, other Mexicans round about got money selling beef & firewood.

(All this data from papers in the office. All written in Spanish.)

10:50 A.M.: 210'



11:15 A.M., 680' (top of cone 2).
Bay in crater lip on N.E. side.
Red fine fragments (see sample) all the E. slope.

90

cone 1 to above carry, due E.; down (shore) 6 1/4°.

" 2 to 5. nearby point, down 5 1/2°.

" " " Cone 342', N. 68° W.

" " " Flow-hill, N. 2° W.

" " " E. end marsh (on this side 7 Bay), N. 1/2° E.

" " " Cone 1 32', N. 85° W.

" " " Cone 7, N. 22° W.

" " " Cone 8, N. 19° W.

" " " Cone 9, N. 13 1/2° W.

L.F. The green marsh fills in the little baylets especially.

Clim. ~~Day~~ Slow reached here about 11; land sea-fog began to blow in about 12 noon, but was soon dissipated.

L.F. San Quintin is on a slightly hardened sand platform.

Cone 2, ~~Read~~ Read. 12:45 P.M., 705'. (Diff - 607' from sea level)

Photo #17, 4. San Quintin Bay from Cone 2. Facing about N. f 11, 1/100". Slight haze 12:45 P.M.

Rest, sea-level, 1:20 P.M., 98'.

L.F. Sill is 35' above sea-level all the contour where cone vassals. (Beach 200' contour land is bare.)

By the carnery it becomes more pasty sand.

The little embayments along the coast have basalt

[illegible] basalt ~~mounts~~ knobs are scattered over the

hardpan. similar basalt ~~[illegible]~~ knobs are scattered over the silt plain.

Surv. 1.7 mi. N. of Cannery, Cy road, big swamp begins.

Veg. Silt has leached sage & crucifix thorn; "characteless" plant in zone; esp. where basalt fragments occur in each spaces.

Mouthed sand has "yellow daisy, small leach-leather, scrub-oak-like plant, crucifix thorn.

Cone 2 has crucifix thorn, leached sage, fall leach.

Soil. The soil in the lagoon-marsh by Bategue pond is sand.

Veg. Low reeds near water, spinster farther in. In most of the coastal marshes around the Bay.

Clim. 5 P.M. A row fog has blown in from the ocean. No volcanoes visible from Bategue.

July 18.

Cult. Salt. They (Amer. {Mex.} Salt Co.) expect to ship 200 T. a week. Present trucking capy., 20 T. a day. Market practically assured. They have shipped & sold 400 T. so far, and have many more orders than they can fill.

Cinders for road from Cone 7.

Rest, 8:15 A.M., 110' (In salt flat, a very few feet above sea-level).

Rest 8:40 A.M., foot Cone 7, 142'.

Rest, 9:10 A.M., top Cone 7, 506'

{30 minutes up}

Photo #17, 5. San Quintin Bay, from

Cone 7, Mill & Cones 1 & 2 visible. 9:15 A.M.
Dull cloudy. f 7.7, $\frac{1}{25}$".
Photo #17,6 same, faint sun; 10:30 A.M. f 7.7, $\frac{1}{100}$".
Cone 7 – cone 8, N.12°E.; down $1\frac{1}{2}°$
Cone 7 – cone 9, N.17°E.
Cone 7 – cone $7\frac{1}{2}$, N.61°E.; down 1°.
" " – Salt works (S. end), S.67°W.; Down $4\frac{1}{2}°$
" " – Mill, S.Q. (N end), S.83°W.
" " – Cone 3, S.38°E.
" " – Cone 4, S.$11\frac{1}{2}$°W.
" " – Bateguí Ranch, S.77°E.

150 yd. N.31°W. of peak, cone 7, is Sta. 7'
7' – N. end, next salt field N., N.41°W.
7' – N. end, 2nd " " N., N.25°W.
7' – S. end, ~~2nd~~ " " N., N.7°W.
7' – S. end, big field, N.5°W.
7' – S. end, pumping field, S.48°W.
7' – N. " " " , S.70°W.

Cult. Fires been burning on N. P. Mesa for several days: great columns of smoke.

Cult. S.Q. The British built a solid causeway, basalt at bottom, + sill surface, to the mill. N. Bay dried up. Mexicans later blew the present 80' gap in the causeway. If this gap were again filled in, route to mill would be shortened 60%.

Fork to cons is 3 miles.

Fork to cone 7 is .2 mi. long.

10:45 A.M., read, Cone 7, 501'. [10 minutes down]

10:55 A.M., read, foot of " " 139'

11:05 A.M., read, ~~equivalent~~ gives flat at foot of sand (.3 mi.), 97' (from foot of cone)

11:10 A.M., read, Salt works (~~sea~~ 6 below sea-level), 81'

(11:07 A.M., Top, road line, 130')

Thus, cone 7 is 413' high above sea-level. 414'

Temperatures of water in pumping pond, noon:

A spring, 104°

3' away, same pond, 86°

Main pond, (no spring), 82°

Air temp., on ground in sun, 81°

Air temp., shade,

Bulb shaded by to case.

Ground sun, but has been foggy all day.

Geologist says at S. end another spring with temp. of 40°-50°C (104-122°F)

1:15 P.M., Salt works, reading, 99'.

Cult. It takes 6-8 weeks to ripen a crop of salt in the state.

Some 75 men employed in harvest time; half-a-dozen the rest of the time.

Photo #18,1. 11:45 A.M. Men loosening the salt from the stiffened mound. f16, $\frac{1}{50}$", 25' (?). Sunny.

Photo #18,2. Salt works. 1:50 P.M. Sunny. Slow, f16, $\frac{1}{100}$". (Men wear colored glasses). Salt mound has 4,500 tons in it now.

2 P.M., read, Sand-hill S. of Salt works, ~~[illegible]~~ 212'.

Salt works to Cone 3, S. 17° E.

" " " Cone 4, S. 4° E.

(92)

L.F. Sand-hills around the salt-works & S. are gently-rolling, dusty hills of the Socorro stage. Also, they seem to have greater sand made at some places; winds sand in one out-hill

L.F. The coastal dunes rise higher than the rusty dunes: a very similar combination to the Lucero dunes. Coastal dunes mantled, but active in spots. (Also being common from lava 5.)

Veg. ~~Stor~~ Rusty sand-hills are covered completely with beaded sage, fat brush, & minute low plants.

Coastal sand-dunes have sub-oak-like plants (Quercus ?) thorn, ~~[illegible]~~, yellow daisy, mesembry. Δ

L.F. Coastal dune steep both sides, as usual, being cut by sea. Loose stuff on top, then semi-hard rusty fluted layer, then soft pt. white layer under: just like Lucero.

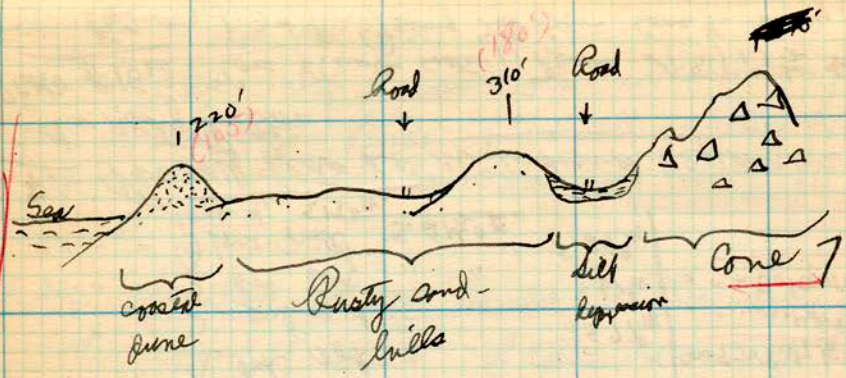
Basalt has one little sea-shelf, way S. of main mass: S. 55° W. from Cone 9, and N. 73° W. from cone 7; forms slight projection of the coast.

The big coastal dune has cut several ~~dales~~ [swales] in the rusty sand-hills, forming unbanked depressions, only some of which are broad, low, flat and salt-filled.

Cell. Some small heaps of clams & chips, on the top of rusty cliffs: mostly [washed] washed away or never there. (See Author. #28)

2:30 P.M. Read 220, top, coastal dune. (Coastal, 105')

3:20 P.M. Read 310, top, high rusty sand-hill (Cor. 180')



Veg. some scrub-oak - also plants on the very top of hill 310'.

3:35 P.M. Rest, Salt Flat #2 N., 140'. (No Water. Flat No. 1 has some water)

3:40 P.M., Rest, Flat #3, 129'. (No water. Some mud.)

L.F. Salt-deposits underlain by clay.

3:45 P.M., Rest, Equisite sill by flat, 125'.

L.F. Cone 1 spills to N. Cones 3 & 7, to NW. #8, to SE.

4 P.M., Rest, Top rusty hill toward Cone 9, 266'.

L.F. The rusty hills have slopes of 6°-12°.

4:10 P.M., Rest, Top rusty hill against cone 9, 310'.

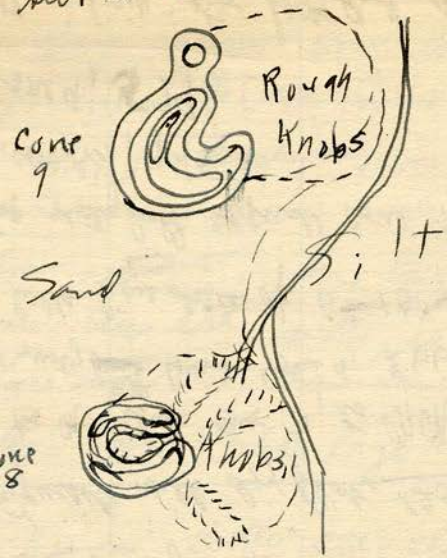
4:15 P.M., Rest, cone 9½, 445'. (345' above S.L.)

4:20 P.M., Rest, cone 9, 579'. (473' " ")

L.F. Of cone 9, the great crater faces East, ~~and~~ cut all the way down to the base. And opposite, is an open of curious little rough lava buds, some 10'-60' high, as though the

(93)

whole side of the mountain blew out & was scattered to the East. Fill in between the craters.



Cult. A (micro) patch opposite mouth of agua Clapinta, (at least, it looks red).

Another big patch, N. 66° E. from Cone 9 (S. end)
" " N. 51½° E. " " " (N. end)

Cone 9 to Cone 9½, N. 22° E.
" 9 " " 7½, S. 3° W.
" " " " 8, S. 19° W
" " " N. end 1st. half West N., S. 73° W.
" " " N. end 2nd. " " "
" " " S. end 3rd " " " S. 77° W.
" " " S. end big " " S. 67° W.
" " " Bone Drill N. 25° W.
" " " S. 21½° E.
" " " Cone 4, S. 13° W.

Cone 9 to Rusty Hill, N. 50° E.
" " another R.H., N. 42° E.
" " " Batequi Ruch., S. 33½° E.

L.F. The salt flats are in undrained depressions among the rusty "hills".

Photo #18, 3- Cone 8 (with crater), 7 (back of 8), 7½ +, in distance, 1 & 2, 3 & 4. Facing S. from Cone 9. Sunny. 5 P.M.

L.F. Cone 8 has ~~a~~ flow apron opposite its gap, similar to the one of 9, only pine not cut down quite so far. The ~~steeper~~ of the flow, all radiating from the gap in the pine, can be seen very clearly from Cone 9.

L.F., Seq. Abundant volcanic bombs on the pine of the crater-crescent of Cone 9. I take one along. [Gave it to Hattie, at her pleading.]

2:00. The ~~pallasites~~ I saw on Cone 9, + by Cone 5 (day before yesterday), were both bronzite lherzolite (with diamonds by inlite). So were the two I saw at Calvert plateau. But the 3 I saw south of Lorro were the red type (Amargo Mesas, S. Amargo Terrace, + E. Pmt.). So was the one in Sn. Miguel Valley last yr.

5:50 P.M. Back at 125'. Red, 140'.

Thus, Cone 9 is 450' above 125', or (as 125' was, I figure, exactly at sea-level) 4~~5~~45' above sea-level. [?]

6:10 P.M. At ~~[illegible]~~ .4 mi. E. of road-forks. Red, 140'

Sta 46

July 19 [19] Sta. 46, red, 79'. [sea-level, approx.] (Sea level, approx.)

Cult. at Sta. 46, abundant clam-shells and ashes to a depth of 6"-8". Very few stones. Almost no "mild holly" from some 10 yd. in dia. + 8' high. Some of the mild holly is 11" thick 2' above ground. These mild holly forks (very ~~little~~ penetrating ¼" been in red lava)

[94]

are scattered over the plain a couple of hundred yards apart. Often a silt depression in between. Some have shells, and others haven't, and it looks as though the Indians chose the holly sites rather than were caused them. The silt is dominantly beaded sage, and the sand (rusty), aside from holly-groves, is scrub-oak-like plant, with fat-bush on rolling dunes, + some beaded sage.

Veg.

Cult. Water for Indians perhaps in silt depressions. Some cojoba in holly-groves. Cenizita thorn scattered everywhere, sparsely.

Some rubble among holly, + many strong-nubbed spikes. This heap (Sta. 46) has been used ~~all~~ good deal recently, too, it seems, for wood firewood for S.Q., salt-works, etc.

1½ mi. NE. of Sta 46, main road reached: 60 mi.

Intersection, to Cone 9, S. 30° W.

" " " 10, S. 1° W.

" Mouth of Cañon (Escopeta), N. 50° E.

" ~~Sierra Blanca Peak~~ Sierra Blanca Peak (?), N. 80° E.

Sol #11: typical silt of S.Q. Plain: ~~from~~ near 60 mi. 1:30 P.M., Rest, 120'.

At 61.7 mi., I measured one of the rusty sand-hills (have mind a fairly hard surface): 50' above the silt plain. Olive buff silt plain is hard + level, with open cracks thru formation.

To Ranch, Sec° E. (Cannon's ranch) [Cannon's]

To N. Ranch, S80° E. (Cannon's ranch) [Cannon's]

62.45 mi., another main road

63.3 mi.: another main road.

63.55 mi.: another main road.

64.1 mi., another main road (old R.R trestle) Trends S.15°E. Perfectly straight.

65.4 mi., mesal begins.

65.9 " " ends (opp. cañon mouth)

66.5 mi.) T.T. heads + heads due S N (just N. of mill.)

Cannon: Been here 36 years; says:

Gold. Opp of which can be made in about 2 oz of every 10 yards.

Heaps of English Company:

Sent by Lemon to Mex. Govt. a couple of months ago.

New Apostle Pits.: (Nr Pts. Domingo Peak): so called because two prospectors up there, asked where they come from, said "New Apostle." Cañon has same name, too.

The Plain is called "San Quintin Valley"

(Not Llano de Pts. Morra) (Goldbaum: Llanos de S.Q.)

L.F. A spring 3 or 4 mi. up Arroyo Chiquito; not in other cañons until 15 or 20 miles up.

Opp. Arroyo Agua Chiquito, wood house, abandoned.

Cult. ⇒ Cannon says dam was not below up, but, rather, was never completed: for the pack of water did not appear until they had filled in the last 60 feet. So they bridged N. & S. foundations of bridge

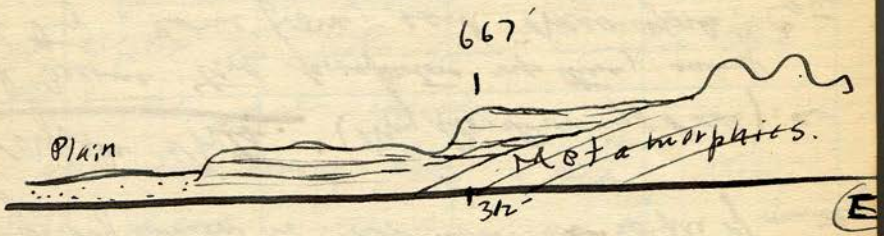
95

washed out, + gap has since been gradually widening.

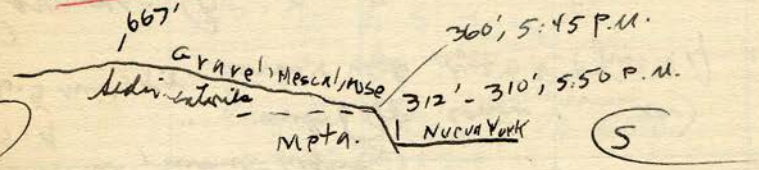
1.6 mi. from main road, little side road branches off the branch + heads up Cañon some distance.

4:30 P.M., 3.8 mi. from R.R. embankment, rest, 312'.

5:15 P.M. Reach, 2nd. ter. (not counting Plain), 667'



Just N. of 667', the metamorphics have stood, & the 667' mesa helps. 667' mesa expands more toward the S. This mesa is much more fissured than the lower group.



Pers. - Had stood waiting, right out in the open, 4 people walked right up to within 3½' of me.

Geog. At 312', the metamorphic strata are dipping W. 70° (only 1 component visible) thus, rising rapidly to E.

6:10 P.M. Rest, comp, 6 mi. west of 3.8, 280'.

Sta. 47

Pers. Cottontail + quail for supper + breakfast.

July 20, 1927.

L.F. Soil: Cañon Nueva Norte has a silt floor (say ½ mi. wide: est.) without arroyo in its lower part, except a rounded depression in the silt some 15' wide and 4' deep, like an old, smoothed gully (its head, with branches, is by Sta. 47). The silt is hard + of the same consistency as my S.Q. Plain sample, + the floor is a continuation of the S.Q. Plain: if one is estuarine silt, so is the other.

Veg. The floor, as in S.Q. Plain, is carpeted with a fine grey (cover) of plants 1"-2" high, with, in cover, an open formation of Cruciferae + wild lilac, with many stands of mescal. At 3.8 mi.,

L.F. Veg. the cañon, getting into metamorphics, narrows, and floor becomes sandier, and vegetation cover thicker, with much romerillo, etc. beside

Cult. big wild-lilac. The "wild lilac" is the cause for the road that goes up the cañon somewhat farther, for it is the source of much firewood (burns well + long).

L.F. The cañon sides, as usual, are steep, 30° slopes, with much pitahaya on S.-facing slope, + wild tree on N.-facing slope. Much of little on top of mesas, with mescale ("ch plant") travelling difficult there it.

96

L. F. The metamorphics next to the sedimentary mesas have a general level of summit ridges: evidently a ~~mesa~~ terrace form, (cut terrace), beads of the cover, ~~[illegible]~~ sedimentary terrace.

General Theory:

After the metamorphics were formed ~~[illegible]~~, there came a gradual depression of the land, in which layers after layers of shales, sandstones & conglomerates were laid down (~~the~~ terrace sediments). Then an ~~gradual~~ intermittent uplift began, ~~which is still taking place~~ (?), in which the sediments were planed off into a series of terraces, and the present cañons were cut through the terraces, and some of the metamorphics moated. During this (?) period of uplift ~~the~~ the (never submerged) San Luis Cones were formed. Then came a slight depression during which the present low terrace + valley silts were laid down (?), derived from the ~~terrace~~ sediments already formed. Again, an uplift, in slight stages (see Rosario terrace series).

Rusty sand-hills possibly formed before the depression, + sunk to such a depth that they were not disturbed, just flattened a little. Coastal dunes formed after the uplift, with material derived

from beaches; as the land remained at the same level (if it rose, the dunes would not be killed), the sea cut back into the dunes (in some cases, into the sediments & lavas: even into the S.Q. lavas), and they ceased to be very active. At some places, however, there are still broad sandy beaches & active dunes; where the wave-currents are striking the coast obliquely enough so as to deposit sand rather than cut it away (i.e. at present, the irregularities of the coast are ~~tending to be the~~ the result of the geographic factor, but are tending to be reduced by cutting away of the points and filling in of the bays. Socorro Dunes represent a filled embayment?)

Chief question: how did the silts get here? Marine or terrestrial origin? For they also occur at ~~high~~ great elevations.

L.F. The sedimentary-gravel coated terrace opp. Sta. 47 is 100'+ above valley floor.

Cult. A few shells + chips on valley floor near foothill side ~~NW~~ of Sta. 47. But none on either the higher or low mesa to the adjacent N. (Because not on route to interior?)

Photo #13, 14. Looking S.10W. from N. side Cañon N. of the S. side + S.Q. Cones. Both groups of cones included. 8:30 A.M. Sunny. F 16, 1/50", 100'.

L. F. (Note: The S. side Sta. Maria Valley
Geol. shows sedimentary strata going from high
to low terrace uninterrupted.)

Surv. 1.8 mi. by road from R. R. trestle to foot of
1st. terrace. (about $\frac{3}{4}$ mi. in straight line, est.)

Crossing fans:

.7 mi. N. of Cannon's, read, 170' (12:15 P.M.)

.9 mi. N. of Cannon's (edge of field), read, 152' (12:20)

1.5 " " " " , read, 154' (12:25 P.M.)

3. " " " " , read, 162' (12:35 P.M.)

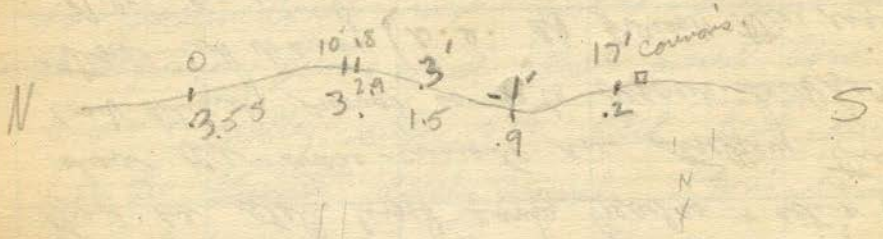
" " " " , 180' (2:45 P.M.)

(Stopped for lunch a 3 mi., opp. mouth of Cañon Escopeta)

(2.9 mi., read, 2:50 P.M., 188': about summit of Escopeta Cone)

3.55 mi., read, 170' (3 P.M.)

(At this point, branch road to Cañon Escopeta.
Also, main road leaves the ~~trestle~~ R. R. embankment.)



Exaggerated profile of fans opp. Nueva Ayuda & Escopeta Cañons. Heights are relative to 3.55 mi.

Escopeta

Diff. between top & bottom of fans this zone 20', along R. R. trestle.

Cannon says:

Clim. Cult. 6" of rain, well-distributed, bring a fair crop of wheat here. A fair crop can be obtained 2 out of 10 years. English (Internatl.) Co. had to bring flour down from Ensenada for their mill. One year, 22" of rain at S.P. (20 odd yr. ago).

Clim. Veg. Alfilerilla 3 ft. high after a good winter, in the plain. Every year a carpet of flowers: poppies, etc.

Clim. Hydr. L.F. Cañones Agua Chiquita, Nueva Ayala, & Escopeta have silt floors, without sandy arroyos. One year, water came down ~~Arroyo~~ Cañon N. Ay. & washed a gap in the R.R. embankment (gap still visible), and very seldom Rockwater got down ~~Cañon~~ N. Ay.

Some 10 yr. ago (same rain in which Otay dam broke), the 150', 2' deep silty sand "arroyo" of Rio Simon Valley (the real name of Sta. Maria Valley) was washed by a winter flood to its present size, with steep banks.

When they first started work in shipping ore ~~to~~ via Sta. Catarina, there was no arroyo. But ~~they~~ the water washed out the wagon ruts, forming the first arroyo, and this happened successively, and they moved their road nearer the ~~valley~~ side each time, as each road was added to the arroyo. Now Brown has a hard time finding room for a road. (Compare arroyo Buenos)

L.F. Hydr. Soil. The well at Cannon's Ranch is 68' to water, opp. Cañon Escopeta, 35' (approx.); opp. ~~Cañon~~ N. Ay., 130' (approx.) opp. Arroyo Agua Chiquita, 82' (approx.). Water occurs in gravel. Most gravel opp. Cañon mouths, as found by sad experience.

In his well, silt 9' deep, on top. Below the gravel, a soft black mud, said to be clean bottom deposits. The arroyo waters, low water, are heavily silt-laden.

Color: spreads out in fans: the source of the silt, the

He showed me a photo of the bridge across the S. L. Mill gap: the gap has trebled in size since then. He said the water in the upper bay shoaled considerably, and lost its channel, after the embankment was made. As the gap has been widening, however, the water in the upper bay gets more & more abundant. There was deep water opp. the end of the R. R., & they were going to make another town over there.

Calif. Two outfits failed at the canneries because they could not get the lobster to keep. Then he got a jap to can them, & they kept very well (also abalones: minced for American use, & chunks for Chinese use; also dried). But the Mex. who handled the selling for him kept all the cash, so again the plant closed down. The fourth concern (Bernstein) to get the plant, shut down & moved to Cedros Island.

The abalone was obtained from San Martin & Geronimo Islands especially.

Guano dos formerly obtained there, but fishermen have frightened away the birds.

San Ignacio copper mine (where Cannon moved his store from San Quintin) employed 125 men, not counting their families. They got their water from the mine, from condensers of the steam, and from a well about a mile below. Shipped ore to San Carlos. Had to haul coke back from the beach. Ore gave out, too, & they packed it in from all around, even as much as 25 miles away.

around, even as much as 25 miles away.

Onyx: another mine being stolen by his son, 10 miles from coast, farther south.

Personals (by Cannon).

Nelson, one-lunged, good man; Goldmon mine, too.

Stephens was the first surveyor of the English Co.: he made the best map of the country (died 5 yr. ago). He was an Encinada independent surveyor after that, surveying mines, etc.

Noette a four-flusher. His "Camp + Camino" a bunch of lies. At the dance in San Quintin there was no tequila, but good cognac, etc. The only man Cannon drinks very much was Noette himself. The picture he showed of a bad trail was one he never went over; it was taken by Cannon (I saw it in his album); it the trail going down to the miserable places.

Böse + Wittich, came by some 10 yr. ago, + took out several tons of rock specimens; they sampled every different type of rock.

Cult. The rancho Cannon is on is owned by himself, his brother, + the Globe Flour Company. 40,000 acres, he says. The only one (besides Hatties') of the old English Company's sales left.

Before the English (International) Co. came, an American company had the grant. They were a bunch of promoters, and sold free franchises to San Quintin and sold lots.

(100)

The English made many mistakes. A major with much experience in India was sent to report on it. He arrived in February, and reported the country a Paradise. So the grant was taken out

by the English company. They make many mistakes. Their contract compelled them to build so many miles of railroad, so they spent $1,000,000 making R. R. to San Ramon, instead of putting it in on a low, as they should have, in Santo Domingo Canon. Then, one winter a member of the company came down & saw ~~the~~ great lake of water in the San Simon Valley (it had overflowed into the levels); tens of thousands of dollars were then invested in concrete irrigating pipe; by the time it was laid, there was no more water. The flour-mill was another costly extravagance.

Then the stockholders, wealthy Englishmen, just sat low and did nothing, instead of pushing the enterprise, saying that maybe their children would benefit by it, anyway.

~~Personals~~:

Oil: Shell Oil Co. has done about most work down here. Van de Kraft was on the last part of the land-sea expedition. But all the big oil companies have sent men down: none have drilled.

Liafail outfit, says Cannon, opened with a big barbecue, with cattle' daughter present. They struck oil (about ½ bbl. per day), and are going farther. Selling no stock, but 5-acre leases.

Clim. Today & yesterday, says Cannon, have been unusually hot. He says these hot days seem to be ~~assumed~~ caused by thunderstorms in the mts. (the reverse, I guess). I noticed thunderstorms in the mts. this afternoon, yesterday afternoon, & night before last.

Salt Frestone:

How much, each crop?

Work in winter?

Goldbaum: Volc. Bomb.

Someone:

~~Wilson land cult.~~

How deep well?

~~Name of Mt.~~?

People to come now?

~~Any water in Arroyo?~~

~~Name of Plain~~?

Internatl. Co. in Ensenada. Where Else? Did Amer. Co. sell out to English? Why are English winding up now?

(I gave the bomb to Ha Hie Hamilton instead of to Goldbaum at her wheedling.)

Cult. In 1911, when Wilson seized Vera Cruz, the Mexicans ordered all Americans out of the country. They came to S.Q. & were there slipped to San Diego. Common had a store here there, with $40,000 worth of goods, so he stayed. The filibusters came & took what they wanted (12 of them). (3 got to El Rosario.)

Now another Chinaman has started up a store in S.Q.

Road up Cañon Escopeta to behind Mt. Nutt.

At 4.8 mi. N. Jeannin's another ranch; a little irrigated corn (from well), and a few acres of recent barley stubble, & cattle.

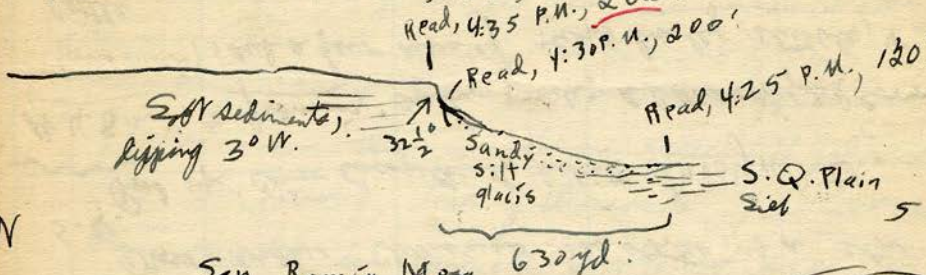
At 7 mi. from Jeannin's, junction with main road.

(Disregard Beal's Rancho Saco, & Cacha)

At 7.6 mi., .8 mi. of white sandy soil (nearly wide)

101

Photo #18,5. Looking E. from road along S. front of San Ramón Mesa, showing the sandy-silt glacis. 4 P.M. Faint Sun. f11, 1/50", 180'.



9.3 mi. from Cannon

262' to Cone 1, 5.1° W.
" " E. end, salt flat, S 14° W.
" " "Rancho Seco" (mine), S. 18° E.
" " Red Rock, N. 30' E.
" " Chuera agua Peak (Middle), S. 73° E.
Main Road runs S. 40 E.

L.F. Soil. Geog. The concave upward silt & sandy silt ~~[illegible]~~ glacis is deeply entrenched by gullies where there have been cut-outs, so that at one place I crossed (on foot) 10 parallel roads, tied together at top & bottom of the embankment up which they went. As one is worked deep, the road goes beside it.

The cliffs are of very soft sediments (shale & ss), with caliche on top. They dip about 30 W., as nearly as I could measure.

Photo #16,6. The braided road mounting the S. side of Sn. Ramón Mesa. 5 P.M., faint sun. f 7.7, 1/50". Facing S. 15° W.

Road lies top of mesa at 9.5 mi. from Comar's.

Sow Ramón Mesa, as I call this long peninsular mesa, is covered with chamisa of mild rose, characterless plant, dwarf huckaye, fat brush, cumiphf thrown out, here & there, little spots of "dry hog." (Pierta Gorda)

"Professor Sonley, of Colonia Guerrera, says:

Only one family here before the colony was founded. Now, some 12-15 families. Use Sto. Domingo arroyo water, & irrigate a total of some 50 hectares (150 A.) (his est.), corn, beans, & barley.

3 grades, 18 students (for at age of 14-16 they leave to work).

At 11 miles, the road, if continued, would reach the S. most house of the colony.

At 11.8 mi., schoolhouse.

Photo # 19, 1. Young's Corrals & Red Rock.

5:45 P.M., sunny. f 7.7, $\frac{1}{25}$". (Resting on fence-post).

13.4 mi.: Hamilton's. Road, 5:55 P.M., 245'.

J. B. Silva (the Mexicali water-supply man; has Sto. Domingo R. lands for 1926-27 winter.)

Leo Mindo, the Chinaman who runs San Ignacio.

Amer. Salt Co. (Outer Harbor San Pedro)
Mr. Deforr (Security Bldg., Mr. Rucker, Hollywood)

Outro.	Sta.	Rail.
17		6
	40	7
18		8
	41	
19	43	9
	44	10
20		
21	46	11
22		
23		
24		
25		
26		
27		
28		