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U.S. Dept. of Agriculture
Washington, D.C.
1902.
1902 Washington & Jefferson Lines


June 7. Reached St. Louis at 4:45 P.M. & left at 8:20.

June 8. Sunlight at Little Rock, Arkansas, reached Zedarskana about noon; Jefferson at 2:10, Sunday. Traveled many miles over the country but found little sign of travel. Made lists of birds & plants.

June 9. Met Holliday at 10 A.M. train & afternoon got a horse & drove 4 miles down the creek to the farm of Richard Crane & arranged to come down to camp in his cabin. Return to late to work camp tonight.

June 10. Engaged a team & take us down to Cranes' early but two funerals took all of the towns' people of the town until after noon so we could not get by till 1 P.M. Reached Cranes about 3 & located in cabin near The Creek in edge of corn field. Set traps.
June 11. Traveled many miles through cypress + pine + oak forests that have never been touched by fire or + contain much valuable timber. Crossed numerous bays & followed the shores of ponds + swamps. Found cattle + horses + hogs but no signs of road or human habitation. No signs of wild animals except cows + pasture trails, which are numerous. But lots of birds, water voceceus, turtles, lizards + lizards - Chameleons, scolops, + Enneas.

Mosquitoes are numerous but seem to be the usual kind - very small + not vicious. No Anopheles. We got covered with chiggers + both Holst & myself have a mass of spots + rubbers. The burning + itching is intense.

The weather is fairly hot - probably 90 - 100, + very humid. Our clothes are soaking wet all day + do not dry at night.

In P.M. took 8 photographs + set more traps + shot 2 lizards.
June 12. Found nothing in our traps.

Shot a pileated woodpecker & washed up our nets. Set a few more traps.

In P.M. while Hollister set traps in woods for Peromyscus etc. I returned to rail fields on the road back toward Towns to set traps.

Had a hard 10 mile tramp but found some good places.

June 13. Went to my traps & found 2
Mesites pinetorum & Hollister caught a Peromyscus paradoxus & Peromyscus graspingus. Mammals are very scarce here, probably owing to the flat country that at times is largely flooded or very wet.

June 14. Packed up & got an early start for Jefferson picking up my traps along the way, but missed the 11 o'clock train south, so waited till 2 P.M. for train to Marshall. Arrived at Marshall in time for Hollister to set out a line of traps but I felt too weak after a bad chill from last night to go out.
June 15 Marshall is an open, hilly country of red sand prairie, some clay + shale + iron rock + places. The rolling prairies + fields cover more than half of the country so it appears like rolling prairies, with their strips but there. The timber is small and mostly scrub but with some good sized old trees. The fire is moderately wild. Osages + gum + hickory form the bulk of timber.

Great numbers of abandoned farms give the country look of a prairie but then I would draw. Cotton + corn are the regular crops.

At a dammed pond a mile from town we found Red-winged blackbirds feeding in the cattails, + big Holliesters turning growing. Found a quail's nest nearly completed with the old birds at it. Hollyesters sat out a line of hopes but I felt too weak + miserable to go out, so went up stairs.
Marshall & Shreveport

June 16 - Felt better this morning & went out with Hollister to take up his horses. Got nothing, but took some photographs. At 4:20 took train for Logansport via Shreveport. Was surprised to find the country from Marshall to Shreveport an open, flat prairie region of scattered, low timber & grassy swells. Many of the open places seem to be old abandoned fields, but grown up to native grass & some trees & scrubby pines. Some marshes + rungs + cat-tail patches + one lake were features of the country. In several places patches of large ditches were seen. A few little towns + good farms were seen but most of the country has a neglected, abandoned look. Crops are rather poor + the soil is sandy + apparently needs fertilizing. Steel is scarce + poor. Left Shreveport at 11 PM & reached Logansport about 10 am.
1902. Logansport & Joaquin - Stinson

June 17. Woke up in Logansport on the east bank of the Sabine River. Got mail, humped in woods for an hour to conclude the place did not promise well to look the 2 AM trains for Joaquin just across in Texas. Left Hollister this to go on to Stinson to see what the country was like beyond. Found nothing promising so decided to return to Joaquin. Took a few photographs of woods at Kingwood, 500 miles until train time. The country is mainly timbered with many fairly good farm lots of cotton growing. It all seems good of course look better than farther north. The timber is essentially the same as at Jefferson. The Pines palustris has been seen yet. There are sawmills at most of the towns and a good deal of hunting done in pine woods. Some good pines of standing timber seen with good sized trunks of Pines united.

*Note:* The handwriting is slightly difficult to read due to the style and quality of the ink. The content appears to be a travel log from a trip through the southern United States, describing the experiences and observations of the traveler. The location mentioned, Logansport, is a city in Indiana, which suggests that the traveler may be on a journey through the midwestern United States, as well as into Texas. The text mentions exploring various small towns and observing different landscapes and activities, such as hunting and logging. The traveler was interested in the natural environment and noted the presence of various tree species, including Pines, which are native to the region. The entry is dated June 17, 1902.
June 18 & 19

Joaquim

Hunted & trapped at Joaquim but without much success.
There are no geese—very few
waterfowl except rabbits, squirrels
and a few foxes caught some Reithrodon
& a little Blanding. We got a few
birds, lizards, etc.

Chiggers are extremely numerous
& troublesome, also fleas. R.B. in
the house.

June 20—Went SW on the Houston
Shreveport R.R. to Debark without
getting much change of country
in the Nacogdoches region. It is
now hilly with red soil.
The whole way is forest, bearing
on the bottoms & hills, close
brushy on the hills. The red
soil is better than the sands &
loams. Better grass & some
wheat. It is stony in places
with a stony iron rock.

Saw some tobacco fields & took
on our car loads of tobacco.

A hot day, very dry & dusty.
June 21. Left Lufkin at 7:45 A.M. and had to wait at Huntington for Beaumont train till 10. Lufkin & these Huntington are in solid forest of good timber for which the best timber pine has been cut near the P.R.R. Some reserved patches are full of good trees yet. The new plains farming practically the same set of trees as at Joaquin & Jefferson. Flat country & good soil but not many farms.

Half way between Huntington & La Marque the first P. palustris was seen & it soon came in as a forest of magnificent trees, large & close together with trunks 2-4 ft in diameters & 80 to 100 ft high, branched only at the top. In places it stands with at least 20 such trees to the acre, forming a clean, open forest with only grass below. Again it is mixed with other timbers, but forms the dominant forest thus to the edge of coast prairies 15 miles north of Beaumont.
At about 15 miles north of Beaumont we strike the big prairie region with its patches of birch, long grass, palmettos. The motts are a conspicuous feature of the prairie, notably made up of big oak.

It has tried all day to rain but only succeeded when we were giving us a few sprinkles in the afternoon. A fairly good shower in the evening of Beaumont.

It is much needed. The corn is drying up and is already nearly ruined for want of rain. The cotton needs it badly all over eastern Texas. It has been very hot and dusty for weeks.

Beaumont is a big, booming town, smelling of oil and generally materialistic. It is on the west of the big coast prairies.
June 27  Beaumont to Sabine Ranch

Low prairie running into salt marsh near the coast. After passing the oil wells the rice fields extend for miles over flat land flooded by canals. Then the salt marshes begin. At Taylor Bayou we came close to the coast and of the lake—close to Port Arthur. It lies in good salt marsh country but not much good for trapping.

The little winds over prairie near Beaumont promises the best ground for seaducks. Flocks of blackbirds, redwing, and quails are numerous over the rice fields along the bayous. Meadowlarks, sora, and other waders are numerous—Ee lit birds. Found a comfortable hotel at Sabine. The Winstead & Detwail Great Western was in charge of the dinner. Work of a collector of customs—Mr. White & Mr. Washington. Took a fun photograph & returned on 3:45 train to Beaumont.

9 went back to the Clovis Hotel. Cool & delicious all day. Numerous birds on prairie.
June 23 - Left Beaumont on S.P. at 4:52 and reached Houston at 9:45. Had a delightful ride over cool, breezy prairies. The whole way is prairie except for strips of timber along the several streams and here or there groves of "bottle" or various kinds of trees. I should say that 3 fourths of the way was prairie. To the north and south the sky often united the grass, but nowhere were we entirely out of sight of timber. The prairies is flat & level with numerous little mounds scattering over the surface in the dry part. A great deal of it has been made into rice fields & the growing young rice stands 6 to 10 inches high. Most of the rice fields have been flooded from the big canals & the water is running in the ditches. They are especially attractive feeding ground for green & little blue herons, clapper rails, black bears, red-winged & big grackles, & the numerous doves are abundant about them. Rice is the principal crop of these prairies. A few other things are raised on the
higher ground near the settlements and in places beds of cattle were seen, but the greater part of the prairie is uninhabited, untraveled. A rich growth of various grasses exists and a few perennials or slightly shrubby plants flourish. At present they are few flowers, Rudbeckias are the commonest, the big corelflowers have mostly gone to seed. A large purple flower is conspicuous in places. A big white hollow root is common - see list of prairie species.

The timber is all in groves or bunches or else on the stream bottoms. The groves are often of oak or again of pines (tulip varieties) or sometimes hillock pines - oak and sweet gum and other trees, all loaded with Spanish moss. Along the streams are various oaks, pines, gum, cypress, magnolia, persimmon, apple-tree sycamore, & various pines of various palmetto. See list of trees - at one place just west of Souls Lake I thought the pines were palmetto but they were scrubby - may be India.
At Houlton I got horse and buggy
and drove out 5 or 6 miles onto big
prairies to NW & took some photos
of the prairies & surrounding strips
+ groves of pines + oak woods,
with just prairie grass + compass
+ wildflowers in foreground.
Also saw good views of oaks
+ pines mingled with Sppindel, grass.
Had a little visit with H. P. Atkinson
I was surprised to find a family
of old & young P. assemblage
in Groves along the fence on the prairies
and for the first time — think this the
Chlorides were common.
A single recently tran P. praeferens
was seen on the edge of town of
several P. pubescens, small trees that
I suspect had been planted, but as
they were doing well + bearing beans
they suggest a degree of climate
not found further east.
June 24 Left Houston at 10 ½

Rode all day over beautiful prairies with only here and there small patches of timber along the streams until we reached the Colorado R. when a scattered, scraggly growth of mainly live oak, post oak, blackjack & foster and mesquite forms a brush timber, covering the rougher or more elevated regions. Almost all the plainsmen we spoke with mentioned that the beautiful prairies often with a true in sight.

The country grows steadily drier from Houston west. The last pines (white & white) were seen a few miles west of Houston. Liquidamber trees were noted west of the Brazos. Acacias were abundant west of the Brazos & at occasion of mesquite seen. West of the Colorado the country became much drier, grass shorter, crops poor & entirely dried up. At Flatonia the aridity becomes more evident, mesquite becoming common & the grass rose in bunches & crops an almost total failure.
But not until we reached the Guadalupe R. did we start the full set of desert
plants. Cordobeta, Zizocephus, Lycopina, cactus, yuccas &c. The same as at
San Antonio.

I should draw the dividing line
between humid & arid - mesquite &
not mesquite regions - at Azleoria.
Others might decide on the Colorado R. or the Guadalupe but about
Azleoria seems to me the average
of extremes.

Much cotton on one large region
of sugar cane (east of Richmond) and
some rice fields were seen by
the way, also corn, but everywhere
they all suffer from the unusual drought
and west of the Colorado River most
of the crops are entirely ruined.

Even the grass is dry & in many
places it was burning. At Glidden
I saw the grass beside the train burst
into flames from the engine sparks &
before we were out of sight it had
spread over several rods grass.
June 25 to Center Point.

Left San Antonio at 9:15 AM.

Reached Centerpoint about noon.

The country is rough and hilly
and stony with ledges and cliffs along
the gulches and streams. The stone is
horizontal limestone that has been
cut out by erosion, leaving many
flat topped ridges and butts and long
terraces. Narrow valleys lie along
the streams and most of these are occupied by ranches. Where not closed
both valleys and ridges are usually
covered with short oak, junipers,
and low scattered timber. The little
walnuts, sycamores and cypress
grow along the streams.

There have been no rains for
weeks and the country is all dried up.

Mules are quiet and many silent
but they look better up toward
Centerpoint than in the San Antonio
region. Pasture has turned brown
and the country looks brown and dry.

The rain is very low. Again for a
month or two without rain.
June 24. Took photographs, wrote letters and worked on getting outfit together. Collected specimens of the Cypress along the river, as I suspect it is a good subspecies. It has no knees, the base of the trees spread low near the ground with gnarled old roots, the bark is whitish, gray instead of red. The trees have wide tops and very long branches which probably is the result of this inflation. The spirit is usually small, but varies greatly in size. Some of the trees are 6 to 8 feet near the ground 4-5 feet through above the bulge, 10 feet up, 150 or 80 feet high. Many small as well as large trees grow along the river. The flood last year threw down some of the largest trees as well as small ones & left logs lodged in the branches 40 feet from the ground. The photographs will show the general form and manner of growth of the trees.

A warm day, but fresh & breezy. Thermometer on cool sild 780. Started 110*, all the afternoon - 97 at 6 o'clock.
Cactus Point

June 27. Spent most of the day writing, took some photographs, and got part of our camp outfit.

June 28. Loaded up and started for Kerrville, followed up the valley on north side of Guadalupe R. among the famous Goodland blank areas, very dry. All kinds of crops growing, but what I notice here has been cut & were pretty good crops. The corn did not yield much of a crop & if rain comes there is still hope for the cotton.

Stopped at Kerrville & got our supply of grub & what came things we had not previously been able to get. Then followed up the Guadalupe River 3 miles & camped at the ranch of a Mr. Moore. The Guadalupe River is very low with sand bottoms & cypress trees scattered along its shores.

A heavy thunder-storm & heavy rain came just as we were finishing breakfast, but rain was heavy & it kept on thundering and lightning for a long time.
June 29 Sunday - Sent Scobie over to the Verde Valley to get Casey but met Casey coming over & so got back before noon. Want to paint office for mail, set a few traps & got Casey straight back out on his cataloguing & labeling.

A hot day, not much accomplished.

June 30 - Moved camp 3 miles up the river & a place a mile below the village of Jerome & 8 miles above Ferrillville. Camped near the river under walnut & oak trees with rows of big cypress just in front of us & big hills & cliffs across the river.

In afternoon made out my mutton coat - returned to Ferrillville to bind it & do some other business. Did not get back in time to do much other work.

Casey remained at camp, shot birds & washed skins & set traps.
July 1 -

Took my saddle horse out and started over to Layups. Went a mile up river to Domingo and then followed up Chicam Creek about 3 miles and then over the ridge some 3 miles further to his ranch. I finally had gone to town so I returned but saw some interesting country, got good shots & a few specimens. Am now finer than ever satisfied of the Upper Sonoran district of the top of the ridges, both for the absence of Vegetation lower Sonoran species & the prevalence of dwarf small oaks & other species not found below, see lists.

Forgot to carry an index but should guess the ridge to be 1,000 feet higher than the river at Domingo. The whole country is horizontal line rock, cut out & left in cliffs along the streams, stony & rough everywhere except spots in patches along the stream valleys which are all under cultivation. The ridges have good grass & good stock range when not too
brushy or timbered, but the grass does not support a great number of stock & troops make life miserable. To every thing in the woods & brush-

found it delightfully cool & breezy over the hills, but water is scarce. Indian Creek is dry except for pools here & there. A few springs are still running. At one point, when the smoke leaves Indian Creek, many springs come out of the bank & trickle down over the little rocks & lines encrust the bank, and on these wet, rounded banks masses of the most beautiful ferns & mosses grow & are reflected in the pools below. The vegetation is dense & the little canyon seems like an eastern glen, but its sides ring with the song of the canyon wren & black headed rock squirrels sit on its rocky walls. The wood phoebes however I suspect is C. virum but I failed to get it on the little empidovox.
July 3-3 Caught roses, brush goats & Mus. tietonum; in drift along river flat.
Birds are numerous along river bottoms.

July 4 Gordon Donald arriving but returned to Kerrville to take back his horse & we will go after his outfit in morning.

July 5 Bought 2 more saddle horses & took them to town to be shod. Got supplies for trip & brought Donald out to camp.

July 6 Sunday. Went up stream & picked up specimens to send in morning & got ready for a start up the river tomorrow. Barometer read 17.60 at Kerrville, 18.40 at Camp. 2060 on hills across river.
July 17 - Left our camp belowDegnan and followed up the north forkGuadalupe R. past Jopomita about 15 miles further west + camped where the big springs boil up in the riverbed. With Herman as a base at 1400 feet altitude and our camp at 1740 we reached the 2200 foot contour at a second fork of the river about 7 miles west of Jopomita - just where the last Cypress trees begin + where the mosquita, <i>Calosperma</i> triploidea + other native Sonoran plants end and alpine roses begin. The 2000 foot contour seems to be the same line.

Juncus + cacti are the dominant trees above, but a few scattered mosquita, <i>Calosperma</i>, <i>Opuntia</i>, <i>Queens</i> and other <i>Doraden</i> things occur along hot slopes.

The country becomes higher, very rocky + more uniformly tinctured with short, very scruffy growth. The rock cliffs + canyon walls become lower + the valley bottoms less extensive.

The river becomes clearer + purer + the weather noticeably cooler as we rise. At noon stopped for lunch just went of fishing + got 4 whole squids.
July 10 — Left our camp on N. Fork Guadalupe R. (15 miles West of junction) at 9 A.M. and followed
the ridge just north of the river until we came out on most open, smoother
plains country with less timber.
Keeping a generally westward course we passed several ranches with windmills
and finally made a dry camp on high rolling plains — about 20
miles. Barometer read 2150 ft.
In morning, 2300 on the first edge of the now open country; 24150 at our
night's camp — corrected readings from
Alisal as base.
After leaving the meadows rougher grades
the juniper becomes success, scrub
oaks take the predominance; with
lots of Prunus hirsuta scattered in.
Mesquites are common in protected
basins and open south slopes but
entirely absent from most of the country.
Juglans regia is common along the
watercourses which are all dry at present.
Struck Amphiopigo,面具 omitted, unusual
on open country — also pipilo insularis.
Saw Tomato hills where we stopped for lunch - about half our distance - now where we camped. Set traps & caught one. Saw Peregrine falcon all along.

The air is clean & fresh & delicious, though the sun shines hot during the day. The expanses of country, good grass & high sky were delightful & the sweet, tinkling song of Cassin sparrows & occasional trill of a meadowlark perfect the charm of the plains.

Rain is badly needed - the grass is abundant but dry. The water courses are all dry so we had to pay for water at headquarters for our stock. Water is raised from deep wells by windmills, horse or steam pumps & the supply is scarcely enough at present for the stock on the ranches. Fields of corn are raised at most of the ranches but it has dried up without rain & is being cut for fodder.
July 11.

Caught a Floowampa +

Donald got a young Olimpampa longipes.

Made up speed-was +ARD at 8:30

Got the same kind of country -

Open ridges + basins, with scrub

Brush & small trees + shrubs.

Rhus tilifolata - alata! + on flat plates

or basins a few mesquite, Febrary tilifolata,

Zygophylla + one or two Sporadisocarpus

pushes.

Steering with the compass I +2000 foot

it read 2400 on Ty west high

ridge and 2450 at lunch camp

at Robinson Ranch, 16 miles east

of Rock Springs, 2670 at camp 11 mi. E. of R.S.

Cactus mainly a small plains form

chihuahua, Yucca susitana + a touch of

john 1 streets are abundant. Grass is

good + but dry.

Floowampa hills are common on the

milliest soil. One Jack rabbit (L. graege)

was seen + numbers cotton tails

A few fox + coyote

Shot a bull elk beside

his herd + a Stenella hoopa +

brown dipilo. Lots of Canines appear

Camped at rain pools 11 mi. E. of Rock Springs.
July 12 - Caught only Presumpus - a little rain & a little Presumpus. Came on to Rock Springs - 11 miles over good road on top of ridge & some kind of country. The town is on the highest part of the highest ridge and is 2493 feet by Prof. Survey. Aneriod was reading 200 feet too high.

After getting mail & supplies we went on to the ranch of Mr. Modl, 7 miles south of town & 100 feet lower & camped.
The country around Rock Springs is the same high - half open plains that we have found all about on top of the plateau a little more breezy & green up in the region about town but a few miles, the country is said to be getting very breezy & taking settle.
The three species of grassy oats are by far the dominant shrubs. but there is considerably Rhizus tribulata, Rata, some junipers where rocks appear, little mosquito in low basins - on open south slopes, also a little Barkeria tribulata, Adenostoma, Eiseniastra prostrate, Amorpha fruticosa, Despia fruticans,
out to Wades Ranch

Oenotheca cupreaeformis (the swallow), Circeus panicipes, Quercus atlantica, Y. repanda.

At Wades Ranch there is lots of Pines cembroides, among the junipers. It is on the edge of the brushland and very rough and rocky. Brushy with scrub oaks and lots of juniper. To the south the country becomes still rougher toward the Neches. Rock springs is in almost pure Upper Sonoran zone - the trail of lower Sonoran is mainly on hot slopes, rocky exposures, or protected basins.

Mr. Wade tells me that in winter very little snow falls and usually there is little freezing weather. He comes from Abadillo where he says it is much colder, snowing lying on the ground for part of the winter.
July 13 - Sunday. The boys stayed at camp working getting a few logs and cutting brush. I went with Mr. Walkover on the Hackberry Creek about 7 miles east of the ranch. Saw some rough country but did not get anything.

July 14 - Left Camp to get hay and took Donald on a trip down the Hackberry forkhead. Got 3 Spermophilus buds. I saw 3 more, perfectly typified, not a serious limit. Came back to camp about 2 P.M. Made up skins for stuff. The Hackberry is apparently about 700 or 800 ft below camp, a big creek from a spring a mile above where we started it. The valley widens out a little below with patches of rich soil & beautiful woods of chestnut oak, pecan, & elm hung with big old grapevines. Some of the patches have been cleared & raise good corn & vegetables. Poor little ranchers are scattered along the valley & the hills & rocky slopes are eaten bare by goats & loose stock.
July 15 - Returned to Rock Springs where we remained most of the P.M. to get some repairs on the wagon & get supplies. Then moved out about 7 miles on the fry road & camped. While in town photographed part of the horns in the Buckboard Saloon where they have about 350 set on the wall, all of white tail & apparently all tierrez. Many of them large & heavy but not very long. There are also many small sets that suggest cross-bred but they are all slender & seem to come from young or dwarfed deer. I think went over to Dr. Robinson's place where he has 6 tame deer, a 3 year old buck & a 2 year old doe & 4 yearlings & photographed them. The bucks is small with rather small horns half grown in the velvet. All are in the red coat & all have very long tails, black on top. They are fat & not doing well because they do not get proper food.

We then went to a store & saw a pair of mounted Missouri quail & Mr. Guthrie told us they are fairly common here. Set parsons at 2500 feet at Rock Springs - camped only 25 feet lower.
July 14—Came about 12 miles on the Sonoara road over high, flat, open, brushy plains; the same as around Rock Springs, and ranging from 2400 to 2600 feet in altitude. At lunch camp the previous day we read 2500. The name is at Rock Springs. At night camp 2400. About 10 miles west of Rock Springs we crossed a wide basin probably 100 feet lower than town a full of lower Sonoara plants—lots of mesquite with nearly ripe beans, Aspera 3 species, Berberis Tuber data, Crotalaria, Elymus obtusifolia, ironwood, ground squirrel, Rhus microphylla, Ephedra neomexicana, Opuntia lentiscus. Many ripe Sonoara beans were scattered with them, but the basin was mainly love Sonoara. As we came upon the high ridge again most of the plants disappeared and scrub oaks, Rhus Tuber data, Rhus Virgin, Rhus copalleniana, Nolana texana, yucca whipplei, yucca striata. There were scattered cholla and Sophora species, Disperis texana, and occasional Mesquite. As we got farther back into the plains mesquite and other lower Sonoara...
species become very common on account of broader base level, at one
night camp the mixture is complete. Mesquite, most of the previously hunted
hedge worm, jillo being common, also dippia. A big yucca.
The country becomes notably more rigid with more cactus + yuccas + melic.

A few Sonoran kinds that are Sturdea amiophila cassinei, Aptalamia cernostis,
Chard🇨่าre v. rurungi,

Of lower Sonoran species - Anaphalis linariata,
Wiltulus, Cataphyla aquarea.

Saw a few Serenoa riparia in parodies + numerous thorn bushes got a young
piece that a bull under bad caught + killed + just begun to swallow. Saw a few hills
of haying - plenty of buffalo ticks, some cottonanle - aesjae.

A few ranches near the road + others seem at a distance, all with windmills. Had to pay 2½ a head for
watering the hosses at any ranch.
Cool + pleasant.
July 17 - Got only Porcupine & Pecos in traps. Had no skins - started at 8:30.

Continued on the Sorora road N.W. about 4 miles & within 2 miles of White Ranch, then turned S. the south down a draw for about 9 miles to another ranch about 300 feet lower, then turned west up a side draw & camped for lunch at 2:40 PM.

The bottom of these draws & hot side slopes are mainly Lower Sorora, with abundance of mesquite, Cordelia, Ziziphus, Grs. melocarpa, & Baccharis, the first of this known to me in abundance.

Continuing after noon to the S.W. we climbed to the top of the plain again at 2400 feet, where all is Upper Sorora, thus descended another draw to a ranch in the bottom pasture where we got water for the night. Then after turning up another draw we camped 2 miles beyond the ranch at 2400 feet. We are 20 miles from June. Came about 27 miles today.

At camp we are in mainly lower Sorora with abundance of mesquite & other shrubbery, but on the ridges above us is mainly cacti & juniper.
To Bear Hat & June.

The country gradually becomes more arid and we keep finding more plants of its kind region. The big queen's tassel, Echinocereus habe fus is common & one slope was covered with Agave foeniculacea.

July 18: Arrived had 2400 at camp, at 8am. Crossed a ridge at 2500 and then descended a long series of "draws" to Beaver lake. Its head is Devils River 3 miles above June. Down to 2100 at June & the lake. The top of the ridge is upper Sonora but down in the draw we are in pure lower Sonora with its full set of plants & with such new species as: Astereae, Fouquieria, Pteridium, Quercus, angustifolia, Boschia, angustifolia. At Beaver Lake are still five large green & live oak trees. One camp is under a live oak that spreads 100 feet & measures 18 feet in diameter at 4 feet from the ground. It is not over 40 feet high & forks 8 feet up but has huge horizontal branches. A family of Monarch's flies in it & a Melanaphus abdomen is feeding young in it. bees.
Bearse Lake is nearly an old ploughed
in the river bed - probably fed & kept
up by a spring, but now it is low
with no water flowing out. It is full
of fish & I shot a gander for supper
&lothet for breakfast. Some lots of
grass greenfish &abear.
Lots of birds were around the water.
Shot a Siurus notabilis & an Empedes
virens & one Actias, & Sulphurax.
The sides of the valley rise in steep
terraces of lime stone, half barren,
but a height of 200 or 300 feet above
the valley, flat topped ridges, full
of side cuts & gulleys &loops
draws. Stood in too abundant
for the grass & both valley & hillsides
an eaten base. The country
bends being arid is suffering pro-
duction. A few showers would &
bare struck this locality not long
ago, as the recquisite box came
out in flowers again while the
old pods are ripe & falling.
July 19

To Devil's River

Loaded up a wood canoe, stopping at pubs to get a boat oar, then down the valley 13 miles to where the Devil's River rises from a hundred big springs to camp on its bank in big pecan trees.

The river is fed by springs or creeks that come out of the land from under the layers of limestone, and in the first half mile becomes a rapid stream some 50 feet wide in one to 3 feet deep, according to slope. The water is cool and transparent but contains considerably those mineral carbonates of lime probably but in more than do the wells of the country.

It is a beautiful stream, full of fish, bass, sunfish, suckers, catfish, etc. A forest of magnificent old pecan trees shades the river and the narrow flats on each side, making a royal camping place - a cool, shady oasis in the mosquito desert of the valley, as rare as the bubbling and gurgling of cool spring water.

Adequate at June 1909 at camp 17, outlet of 9
\[ \text{wide weed 2100} \]
To Comstock

July 24: - Started for Comstock, following down the river 7 miles & crossing it 10 or 11 times. The valley grows narrower when we left river & has wonderfully beautiful spots all along, under groves of big pines or "Kivas" loaded with lichen. Passed 2 canyons - the river grows larger & always keeps coming out. Rocky cliffs appear in places & some are full of cavities & caves. At Comstock Mr. McDonald showed me a piece of salt pete from one of the caves.

Leaving Devils River we followed up a long draw to top of mesa at 1850 ft., then up & down over open country to Comstock at 1800 ft. & camped on mesa at 1850 a mile east of town.

The soil is good & that of the way perfect - hard & smooth as a floor.

The top of the mesa is largely covered with Juniper, notably as its dominant plant. No mesquite except in gulches.

Here we strike Cassia ferox again which was not found in the dried river valley. The top of the mesa is cool & breezy & not very stormy. Good grass when the sheep have not been.
To Rio Grande

July 25. - Packed specimens & sent 11 packages by mail - Got Holliday & started south to the Rio Grande & camped near the river 8 miles south of Constadt.

Sat. at Constadt & station bird 171.530 & camped near 1470 about 50 ft. above the river - probably meaning top.

The country drifts away gradually without cliffs or gullies until near the river when they are interrupted by cliffs of various sizes & follows. The sand has basaltic & noticably near the river valley strike again.

Acacia constraita and in the rocky gullies near the river lots of Pistacia vera & Nicotiana glances along the road above.

The sandy plains along the river are covered with big mesquite, palo-verde and brush, in places open, shady woods & again a jungle of thorns. The soil is rich & fertile. A strip of Nile mesquites seems lies on the ground under the trees & its frames are again loaded with nearly full ground pods.

The river is high & forks into all of the valley where we can get fairly good water that doesn't stick.
July 24-27 - Hunted & trapped along the river & at one spot got 5.graminus conchoides on rocky cliff below camp & for the first time in my life heard the little ground dove.

Found large caves near camp that used to be Indian strong halls apparently - as there are abundant signs of camp in & around them. Numerous old grubbing holes are worn deep into the rocks along the edge of the cliff or points chips - broken rocks and fragments on the ground. Most of the areas held all of the crude Cormakta tips but Siski found one of the other little points of it. "Pinebla" type. suggesting that both tribes have been here & may have had trouble over possession of the caves. The hunter boys use probably for grinding mesquite bals & have them in families or sets.
July 25 — Returned to Comstock & divided our party, sending Donald to Devils River, putting Camp & Mail with the outfit while I told to the R.R.

July 28, Worked on clearing up various odds & ends that had been neglected. Wrote most of the day.

July 20 — Finished packing specimens & getting outfit in shape for my trip. Took 5:20 AM Train to Pikes High Bridge & stopped at section house.

July 31, Went down in the Canyon above the High Bridge & found an old beaver trap & fish, John Scott. Seawell, who has been a keen observer & is unusually intelligent. He is now catching big catfish of several species for the market & has the picketed out all along the river for other people the fish will not bite but he seems to have a knowledge of their habits that gives him a corner on the market. He told me many interesting things of their habits.
He is also apparently a good trapper + hunter + especially a beaver trapper. Will get skulls + things for us next winter. Moreover he is a good cook + knows how to pick out a choice fish for a steak + to make delicious coffee. I enjoyed dinner + supper with him as well as a long interesting talk about the country, fish & animals.

Went up the river a couple of miles to the beaver lake in a side canyon + got some photos of it + of the beaver cuttings but the water is so high the dam is out of sight. The lake is a natural reservoir filled from the river at high water. It runs back 2/3 mile up the deep canyon + is overhung by willows, a very pretty place. While there I proposed a scheme for starting a beaver ranch + asked Howard why it would not be a great thing. He says the beavers are too political + ferocious in disposition, that only one family will usually live in a pond.
Painted Caves

Aug. — Went down to the Painted Caves, one of the biggest caves of the many Painted Caves along the Rio Grande. It is half a mile below the mouth of the Pecos, and we reached it by a half mile tramp from the High Bridge. Found it an interesting place full of Indian signs and relics of Pecos civilization. It is in a cliff some 300 feet high overlooking the Rio Grande. It's about 100 feet wide and half as high. After our hard tramp in the searching for its coolness was grateful as well as the little spring of good water in its back canyon. Its floor is covered 10 or 15 feet deep with silt and mud.
from the big fires where the dried bones
were burnt. This site was also full of
fish bones, mesquite beans that
helped support the Indians who were
scattered throughout the city. Deer,
peccaries, and pronghorns were
regularly hunted and painted in back
walls of the caves in crude photographs.
Everything points to the Comanches as the inhabitant
rather than any higher grade of Indian,
both photographs and arrow heads are
 crude and would find no trace in pottery.
A thorough examination of the dehis
would probably throw much light
on the history of its earlier and lower
inhabitants.

The little valley flats along both
riposo Rio Grande are interesting in
this position, well suited for possibilities
for agriculture. There is rarely any
treat in these canyons with
plenty of water on the rich bottom
and soil. Most of the orange
fruits could be raised. Water
could easily be pumped out of it in plains
well drained with ditches.
To Langtry

Returned from Painted Coves in time to catch the evening train for Langtry. Found Gordon Arnold on the train on his way to Passmore. Stopped at Langtry with W. H. Dodd.

Aug 2 - A still, searching hot day. Was tired, foot sore and half sick from the last day's travel. Did not get used to the wind.

Aug 3 - Sunday. Another hot day but not unpleasant or a good breeze blowing. Wrote, read, sketched and tonight told train for Valentin.

Aug 4 - Reached Valentine before daylight and was fortunate in meeting one of my last year's friends, Jo Sutton, who helped me get located in a pleasant place in the edge of town. There has been lots of rains in the valley to grass is green and flowers numerous. Even the deserts and plants are full of wild flowers. Saw Old Timmy and arranged to go out to his ranch later. Spent most of the day writing. Cozy and pleasant weather.
Aug 5-9 - Gordon Gerald arrived from Pinedale Aug 8. Started him to trapping in the valley about Valentine for //enses, Peromyscus, Dipodomys etc.

They had been good rains since July 2. The valley is unusually green with abundant grass & bright with spring flowers. The tanks are full of water & most shallow, things are growing as in summer. The weather is cool & lovely.

Valentine is near the middle of a long open valley about 30 miles wide, apparently surrounded by mountains. The Bovie Hills run the east & north, and low escarpments ridges of bare rock or the west & S.W. There are gaps in the hills to the south & west & the prairie meets the slope to the S.E. along the R.R. The valley seems like a big grassy prairie with tall grasses but they & low bushes scattered in places. The drainage is north toward Van Horn. Altitude 4424.

The whole valley seems to be mixed upper, lower Sonoran zones. Most of the ground is given up to grass but
There are scattered much dwarfed Prosopis juliflora, Aescia orientalis, Zizyphus, Cordalea, Rhus microphylla, Oenothera engelmannii, and even arcs two dwarfed Sesua bushes. Mirarcha annus phreatia canescens are the commonest shrubs, the former forming thickets here there. Zizyphus orientalis grows in thick patches or scattered plants & often 10 to 15 ft high. A few G. macrocarpa are seen.

The feeding birds are Strenella longicauda, Puea tamarina, Cichlithus, Caracou cristellina, and in town barn swallow & English sparrows. The first Bartramia arrived Aug. 8-9, & Calothamnus Aug. 9.

We can find 20 Flonours or Ochotageants in the valley, but Dipodurus schreibtz is fairly common. Extensive prairie dog towns cover much of the valley. Spermophilus oedipus & badgers have dog holes all over the prairie. Supellicus all common & also Nepotes equatorialis.

I saw a Rattlesnake near this town & found several longfaced horned toads.
Valentine to Finley's Ranch.

Aug. 9. Mr. C. O. Finley came in to town, and I went out to his ranch 15 miles east of Valentine, in the foot hills of the Delit's Mts. at west base of Lockwood. Arrived here at 4:25 in Valentine and 5:25 at the ranch. The ranch is in a picturesque place among rocks, with the valley opening out below the Mts. standing up high - rugged to the west. The ridges run to the west & have long slopes of the S.W. or N.E., giving a great mixture of zones. In places a stony S.W. slope is covered with Fravalla, bristle, Junipers, etc. wide streets of mesquite & Joshua, Engelmann, while the east slope is covered with live oaks, Junipers, and others. In other words, a true Spanish ranch is carrying up by slope apparent well or 1500 feet above Valentine, past through the upper tree zona, which the upper tree zona seems to go to near the top of the Mts. on this side.
Aug. 10 - Went with Mr. Finley & his men to a pack of 1500 hounds up into several of the canyons & caught 300. Set traps in the peach orchard prep. Mr. Finley has about a dozen peach trees near the water tanks & they are very loaded with fruit that are breaking down with delicious ripe peaches. They bear almost as much as 3 years. Mr. Finley says the frost killing the flowers in intervening year. I can not learn of apples being raised here, but see no reason why they would not do splendidly, especially higher up in the canyons where the others flourish. Probably frost would kill the flowers in the bottom if quakes hit the side benches 50 to 100 feet above the main floor of the canyon. They ought to do well, especially in the cool slopes. It may be too late for them to bear every year but probably apprises to supply bottling. Texas could be raised in these pits in favorable seasons, & supplies of the best quality.
Aug. 11 - Rained all night & half the day.
Cold & raw - Staid in house most of day writing & working out some plants.
 Took a tram up a canyon in P.M.

Aug. 12 - Got up before daylight & went with 3 men & about 15 horses for a hunt.
Caught one moose & nearly caught another. This lost half the dogs on a coyote trail - did some good running over rough country & got back at 10:30 for breakfast.

Eat lots of jack rabbits & antelopes.

+ killed a blue quail.

Aug. 13 - Took a horse & started for Mt. Livermore. Went 3 miles east to the canyon headland back to base of Mt.
Followed up canyon to base of steep slopes & left horse at 7,000 ft.
Climbed the canyon sides to north of peak & came out on top of main ridge at 8,000 ft. unmarked, but probably 8,500, then climbed over a rocky crest & followed up an easy pitch to true main peak. A horse could be ridden to 100 ft below peak over easy slopes.
The last 10 ft. is a steep rocky place. The peak is a narrow ridge of rock 150 yards long and 1 to 10 yards wide on top, with sheer walls all around except on the north side. At the highest point the old Indian mound was only a heap of stones over a grave that had been disturbed and unearthed. I found a few broken pieces that show something of the skillful work in stone chipping.

The view from the peak is great though the air was a little hazy. The Guadalupe Mountains, Sierra Blanca, Santiago Peak, and a dim outline of the Blanca or Potrillo beyond. Practically all the Johns of Texas and some in Mexico would show from this peak in a clear day. A long line of the plains beyond the Peaks below.

The Indians reach only to the foothills, which is lowest in the high part of the lake - in the gulches, not in the mountains. It is mainly oak and juniper, but yellow pine grows in all the upper canyons. A white pine on the high north slopes.

A bit of Pinyon and Juniper grows at the south base of the big domes near the peak.
The zones are greatly mixed. Upper snows covering a great part of the Mt. to the top. The main ridges on warm slopes.

Transitional ridges from bottom, almost on cold slopes to the top which is mixed with a trace of Canadian snow. Some good growth of Pines. The firs stand near the head of the high gulches on the coldest slopes, the heat good for it seeming to be in the canyon just east of the peak.

Bear are still common. Throning goes to top of highest peak, 5 seems to fill transition zone. Thus hot ground also goes to the summit and comes to lower edge of Pines growing. Seen few dear signs.

Returned to ranch and went with John Finley to his ranch about 4 miles down the valley in the open country. Crossed about 2 miles of prairie dog town where nearly all of the prairie dogs have been poisoned. The grass is coming back.

And nothing to eat for a while.

Breakfast & 7 o'clock supper but enjoyed the days trip immensely.
Valentin to El Paso

Aug. 14 - Returned to Valentin with John Finley, crossing the prairie by a new road. The prairie is so green and covered with flowers that it is a veritable prairie instead of a sand plain. Found beautiful cacti in bloom and saw a few more full birds.

Aug. 15 - Work on reports all day.

Aug. 16-17 - Remained at Valentin, writing and sending a few specimens.

Aug. 18 - The train for El Paso was late and did not come till 5 A.M., so I was able to see the country all the way. For about 20 miles we followed down the wide valley to the north, then up a long, gradual rise past the base of the Eagle Mts. Up to Sierra Blanca, then down to the Rio Grande valley at Ft. Hancock. This whole trip is in Lower Sonoran zone with only a mixture of Upper Sonoran at Sierra Blanca plus the 96 slopes of hills. Larrea to meagre and spindly, all they way except
for patches where grass holds the ground or a cold slope excludes them.

Since the rains the grass has grown thick or high. The Fouquieria and other plants have put on full leaves and most plants have come out in flowers so the desert looks like a spring prairie. A little Chrysothamnus like 'fush covers the slopes near the Rio Grande, from Sierra Blanca to El Paso, with a golden robe and numerous kinds of brilliant desert flowers dotted in gold with color. The Larrea has gone to seed. Many species of cactus are in bloom. I never saw the desert vegetation at such a stage of perfection, each plant rounded out, full, symmetrical, and perfect, standing alone and unmeasured.

The ranches along the Rio Grande Valley look unusually flourishing. The boys bring baskets of peaches, plums, grapes, and apples to the homes. The sweet broom bush (Pseudolobelia) is the common bush of the Valley and every bush is coated with bees.
Aug. 19 - Got my camera repaired, check washed, & did some writing.

Aug. 22 - Returned to Van Horn, & located at the cactus house with Mr. King.

Aug. 20-25 - Hunted chup + panthers in the hills north of Van Horn + trapped ezo on the open valley.

The whole big valley is pure lower Sonoran, while the low, sandless little to the north are upper Sonoran on their north slopes + over the tops, with Agave lindheimeri + Fouquieria on rocky south slopes near the tops. They are cut off from the south by the Diablo Hills. The eastern ridge of this group is known as Baker Hills.

The Eagle with me 20 or 30 miles to the west with the Basco Hills as a little range between here + the S.R.L.

Aug. 25 - Went to Coyah - but Camp called + put out with outfit. Camped near Coyah to pack specimens, wrote reports & reported.
Aug. 27 - Started Camp & Donald for Preco to Montanas to work about 3 weeks, mainly in the sand hill region about Montanas.

Aug. 28 - Left Toyah at 9:30 A.M. and headed for the high peaks at the South end of the Guadalupe Mts. 80 mi. to the N.W. Traveled all day over open latea plains, slightly up grade. Anemoid reading 3,000 at Toyah had 1800 at our camp at the Cottonwoods at night, 3 1/2 miles from Toyah.

The country is arid desert basin with a great deal of gypsum in the soil. Tracks of water. At present there is a splendid growth of grass & vegetation over the country. Lots of flowers that should have bloomed in the spring but waited for rain. There is lots of good rain water in the tanks & pools all along except in the gypsum hills where we camped. Here we found only a spring creek standing on beds of gypsum & saturated with it to such an extent it's almost undrinkable.

While most of the country passed over is pure desert basin we strike a strong upper mountain element at our nights' camps on the east slope of the low range of hills, with
Junipers forming quite an extensive forest, but with Larrea covering the hot slopes of the ridges. This is really an arm of the Prayon Hills lying some 15 miles to the west of us and running from the Guadalupe nearly to the Davis Mts. as a low range of rough, rounded hills, scattered over with junipers and just plain part of the way 4 apparently carrying Upper Sonoran zone south to the low grade where the R.R. goes through at San Martin & Kent.

We passed on ranch 9 miles from Loyall & another 18 miles but least no other places of human habitation. There are lots of cattle all along but on the gypsum & brack water this would be an excellent stock country.
Aug. 29. Started early and traveled toward Guadalupe Peak all day and camped at 4 P.M. at a peak a part of the Hall ranch, some 15 miles east of the peak. Came 30 miles, passed but one ranch, the Smith ranch, 5 miles back from where we camped at the edge of the gypsum country. Here we struck sandstone, clean, solid, and good rain water in rock tanks. We passed several windmills on the way but the water was saturated with gypsum and scarcely drinkable. Saw dozens of big caves that go back into the gypsum rock from deep sink holes in the ground. Went into several of them for long distances but found only wet walls and muddy bottoms with water standing in pot holes. shops rains flood them and prevent any trees from living in them.

The sandstone country gives many grassy valleys with flat topped buttes and ridges between. Grasses and other fine grasses are knee high and head is out.
Ameroid read 3,500 at Cottonwoods last night, 4,400 on one of the ridges we crossed + 4,000 at our night camp. We followed along the east slope of the Panamint Hills + were crossing ridges + valleys all the way, sometimes down into a purer lower Sonoran + again up on the ridges or on cold slopes in pure upper Sonoran in front of Junipers, Big Sagebrush, arrowweeds, Mirabilis, & Helianthus. In the valleys + on south slopes were Red, White, & Yellow Sonoran species predominating.

Birds are numerous + mainly migrants, such as Calamospiza, Passerina, numerous sparrows + warblers + such breeding species + others, Hesperid, rubicola, C. Cassini, Amblyospiza dumetoria.

Prairie dogs are numerous in some of the valleys, Coyote + Badger + Lynx track are common. Crassulaceous hills are seen all along in yellow soil but no Mormon. Notera
To Pinac Canyon in Guadalupe Mts.

Horses are common under the junipers + among rocks. A 2 that we killed caught prove to be albiquila.

Lieus agonumi + titauna were.

We strained our eyes all day for antelopes without seeing any. It is a beautiful country for them.

Aug. 30 - Started early due west all day + camped at 6 P.M. in a canyon at south end of Guadalupe Mts. A ranchman called it Pinac Canyon. Came about 25 miles all up hill. Averaged in motion 12 miles at night. Camp 5,850. In middle of P.M. about 12 miles before camp. We climbed a high bench to a level of 5,000 feet. Left every trace of lower Sonoran, struck oak, juniper, Agave, diplora, Arcturus, a big Rabbit, & full out of upper Sonoran things. Camped at edge of yellow pines by fine spring.

Sat one Antilopa, 2 black-tailed deer, & after campfire located 3 mountain sheep on sides of canyon.
Aug. 31 - Started about 7 a.m., where I saw the sheep last night + in an hour I had killed a sheep + some out of a bunch / 5.
I followed up the canyon to where it turns to the east + climbed the ridge to the west onto two peaks higher than the first, but found there was another gulf to cross between my highest peak + the one to the west that I supposed to be Quadalupe Peak. The second read 8500 on the peak I climbed. The next peak was apparently 1000 feet higher, but another peak to the north + one to the east appeared quite as high. The big point of rock at the corner of the ridge, is not quite so high as when I was.
The past one all biston except a few streaks of sandstone + granite. The base, they lay steep + rough but easily climbed. The north slopes are covered with yellow-white pine, some set of true + pochons occur here as in the Dog Canyon.
birds - oaks, maple, ironwood, Piones<br>ponderosa, strobiliorms, edelsis, Podocarpus<br>pseudophyloca & sequoiae, Ancestra, Chamaecyparis
integipoly, & "microphylla", Carothus, Philadelphiace<br>Apostolobatae to tips, farcea - etc.

Birds were the same as last year with no additional species.

Ent aimed camps are common too, but I didn't shoot and for fear of scaring game. Saw a small 15 granaries & saw flowering hills to top of peak.

Hoist caught an Amos phosphorus inferior near camp. Uriel caught a small

saw a few deer Sierra - Saw an large

blockhead body near crest of range at 8000 ft.

The stomachs of the two mountain sheep were full of leaves & seeds mainly of the little leafed Ageratunus, also lots of seeds & leaves of willow, Philadelphia leaves & seeds, & a few types of grass stems & leaves.
Sept 1. A cold, rainy morning. We tried to keep warm & dry for awhile & then packed up & started in the rain. We crossed the divide of the ridge & got down into the canyon leading out to the big Salt Valley below. The divide was somewhat lower than our camp in the Pine Canyon, probably about 5000 feet. Found a fairly good road down the slope to base of escarpment, probably 500 feet down, struck the full set of lower succulent plants at the base. Continued west down a gentle slope of the valley about 10 miles from the divide, camped a few miles back from the salt flat opposite the north end of the Diablo Mts. L to west & not quite so far north as Guadalupe Peak. Came about 20 miles. Averaged 4000 ft camp in valley.

At base of the escarpment of the ridge, running south of the Guadalupe, is alternated with sandstones & shales or black strata that appear to be coal or carboniferous shale.
Salt Valley

Sept 2nd. Followed the bottom of valley about 38 miles north between the Guadalupe + Carrizales Wd. about 10 miles south of the lower end of Dog Canyon out in middle of valley. The valley is 10 to 30 miles wide flat bottomed with gently sloping sides. The lowest part is Guadalupe Peak + is occupied by thousands large, shallow lakes of salt + alkaline water. At present since the unusually heavy rains these lakes nearly fill the playas + water has been running in the connecting channels between. The whole bottom part of the valley is approximately level + that soil is usually full of alkali, lime, or gypsum or salt. Only the south + north ends of Guadalupe range have been visible, as the front range of rough limestone ridges cuts out the middle part.

In passing the Carrizales we took a good view of them as they appear a stack little group of craters + peaks of lava. The overcast appears as a blue ridge far to the north. A low range of rocky hills, apparently limestone, lies just west of range.
At the north end of the playas are miles of large sand dunes, often so high, clean white, as snow in beautifully curved drifts.

We passed 3 or 4 old abandoned ranch cabins when stock water + inhabited remains of a poor kind. There is lots of stock in the valley but its water is so bad that few people can live here. There is abundance of grass but mostly of poor quality. The valley is not a good stock or ranch country.

Barometric read 38.75 at morning camp about 100 feet above the bottom of valley. 38.00 at noon camp at sand dunes + the same at night camp.

The whole valley is low desert with the usual salt plants along the dry slopes - Larrea, Distichlis, Azara, Constricta, Fouquieria, & Zygophyllum. Uphill Lycium, Bocconia, Green mesquite, Y. stricta.

The alkaline salt flats here are distinct set of plants of which Atriplex canescens, Halothamnus, Suada, Torreyana e other salt grasses are conspicuous. Also a new bush that seems like a large Forsythia angularifolia only it is not. Crooked tilled round our camp last night & tracks were common along the road. I got 2 skunks at a ranch. Pinto are said to come down out of the hills to kill colts. A few horses are said to trouble the stock. Diplocaulon spectabile hills are common all along our upland. + Tracks lots of small Diplocaulon + Prodistachys are common. Cistus in camp are all over the valley except in the playas. One cottontail + a jack rabbit.
Valley west of Guadalajara

Expt. 3. Started early & followed the valley north about 30 miles & camped where the valley narrows up to 2 miles wide. Most of the way it is 10 or 15 miles wide between the wooded hills. Found one small 10 miles after starting & one at 20 miles farther north where we camped.

Good grass all the way but no water. At times crossed the valley ahead of us at noon & were soon met streams of water coming down the roads.

The valley is low & broken with the same sort of plants, but a few junipers & whitebark pines appear near our right. East of where we crossed had 4700 against 2800 in morning. We are near the edge.

Some anthelope sign was seen at intervals along 20 mile strip of moisture valley & one anthelope was seen. A hermit thrush was seen & the usual Dipolemys sound, Castor longus hills, & her & their colonies of Cyprians.
Woods Vault

Sept. 4th. Halsted caught a jackelope & Earles shot a coyote that came almost into camp. After a cold, rainy night we did not try to get an early start, but gave the ponies & our beds a chance to dry off.

Started at 9, & in about 3 miles up the valley left the bulk of lower sorran plants at about 4800. A trace went up south slopes to 5200. We met juncup cows accidentally.

And Agave oleaceae at 4750 ft. with abundance of重要な, Encycliria, & the low queen over the upper grassy slopes.

At Woods Vault, the first ranch thickens up, scarce a trace of lower sorran remains.

We follow an easy grade up over grassy slopes between long ridges to the N.E. all day in plain view of the whole length of the Sanborn hills.

The south end of the timber covered slope of the south end of the Sanborns Mt. to the south. The line of mts. is broken by the low part of the range. A few scattered timber of juniper, mule-ears, oak, mesquite, rushes, & patches across the gap.
Sacramento Wash - 5 West.

Sept. 5. - Got a late start but rode about 25 miles with all up hill to Weed. Rounded up and along grassy valleys and woods and then over ridge and up another range. At one place we went down 300 feet and then up again till we crossed the highest ridge near Weed at 7500 feet. Weed is 7200.

Started at 6000 feet. Struck pines and pines at 4500 feet and it became the dominant tree. Pseudotsuga or a blue beared pine began at 7000, the forests on cold slopes only.

Beautiful country, with a good mixture of timber - grassy peaks like intervals.

Siberian larch covers some of the slopes.

Road nearly free from yesterday's depression.

Heard the first Thrushes to echo serious cuttings a few miles south of Weed.

We are now fairly into the timber of the Sacramento Wash - have covered the forested part of the range between them and the Guadalupe Rift. The lowest gap when we crossed the ranges was 6625, so it is safe to say that there is a practically continuous level of 7000 feet between the two ranges with canyon junipers - nut pines - trines - almost continuous yellow pine.
Sept. 6. From our camp a mile below Weed we followed down the valley 50 miles then over the ridges and down Hunt’s Hill to the Penascos which we retraced 20 miles below Cloudcroft. Then followed up Jameson Canyon to within 12 miles of Cloudcroft and camped. Came about 20 miles.

Averaged read 7:00 at our morning camp, about 7:30 at top of Hunt’s Hill & 6:00 at Penasco Creek, 7:50 at camp again. Down the valley of the Alseahe Creek & in the Penasco Valley we were in mainly Jeffrey-Sierra pine with pines & nut pines but the rest of the time in yellow pine forest with Douglas fir trees on cold ridges. A few oak trees grow along the edge of the pines & scrub oak covers some of the hills. The valleys have rounded bottoms of blue willow willow & are extensively cultivated. Good crops of corn, wheat, oats, cane, & vegetables are raised. Grapes fruit. Apple, peach, pear & apricot raised in abundance & of excellent quality. Sunflowers & other weeds grow in great luxuriance, & the form beautiful fields of golden yellow.
Flowers are in their full spring time but mixed with all the fall species, such as goldencrocks, asters, sunflowers, roses are still in flower.

A Mr. Nation, who gets his mail at Wald, tells me that the last elk he knows of was killed here west of the Guadalupe but an old hunter told him of killing one there that he thought had run out of the Sacramento with coyotes.

Prairie dogs are abundant in the park up to 7000 feet. Entomies campes are common in the timber, a small yellow-billed species is abundant along the shores below the falls. Pine Squirrels are numerous and cutting across cattle. Coyotes hills are common along the valley bottoms up to about 7000 feet. Humboltans are numerous in the timber.

Birds are numerous, both resident and migrating species. Hummers are still here through the nights are almost every
Sept. 7. Followed up an easy grade with good road, camped about a mile and half east of Cloudcroft.

Arrived at camp 7:30, at night camped.

At about 5 miles east of Cloudcroft, we strike the edge of Canadian zone on N.E. slopes at 8000 feet. Here we left ponderosa + strobile abies, Picea Pseudos rugulosa, Acer, & a new set of smaller plants. No worm lewiston appears except in hot slopes.

Picea is the most abundant Canadian zone tree. The Canadian forest is dense, beautiful, untrodden & perfect. The yellow pine is being cut below + a spur of the railroad runs out 2 miles east of the pumping station.

We did not find the little cutters above about 8000 feet not in Canadian zone. At a ranch I found a pair of deer and will horns & photographed them as I could not buy them. Bought a head of a white tail + black tail + saw another head of a larger white tail with horns in the velvet.
Sept. 8 - Remained at camp till noon, writing & packing specimens & making up skins. Hollister caught a lot of Pteromyscus; besides Pteromyscus we kept 3 Micrurus minokan = - spider & a Sorex. The night was almost cold enough for frost; the bright sunshine hardly dried the dew & warmed the air in all the day.

Went up to Cloudcroft & got supplies & started for F. Stanton. Crossed a high ridge to the north & down into Silver Springs Canyon & camped about 4 miles from Cloudcroft at 8700 feet. Ascended read 8700 at 10th camps 9150 at Cloudcroft & 9300 on top of ridge. A hard shower & hail caught us just as we found a good place to camp in an old cabin.

Every gully, valley, & every turn of the road seemed to show a fine healthy view of the forest which is one of the finest mountain forests east of the Sierra. On the ridge we had a grand view of the white cliffs to the north.
Silver Springs Canyon

Sept 9. Quite a cold, damp night. Outside we were comfortably in our old log cabin. The trees sported a good deal from the side hill broke of us & in the morning a big fresh panther track showed in the mud along the gulch in front of the cabin.

Remained at camp till noon, as we had much work to do. The area was not far away. Then followed down Silver Spr. Canyon 3 miles & turned back to the N.W. of a little side canyon & camped below the mouth in beautiful, untouched fir forest on edge of Indian reservation at 8550 ft. The country grows even more beautiful.

The reservation is ideal for wild, prehistoric, beautiful grassy praires & deep forest. The grass is knee high & untouched & lots of springs & little streams run along the valleys. We parked our fine range at Silver Springs Co. just at edge of reservation but saw no other inhabitants.

Sat over 100 traps near camp in canyon & just at dusk heard turkeys fly up on ridge 40 rods back of camp. I turned over & found about a dozen,
apparently all old ones, going to nest in top of yellow pines 75 or so feet from the ground. It was too dark to see my sight right against the sky, but picking out the largest turkey I could see I located the sight right against the sky and then swiveling sideways till hidden by the big black bird, I brought it down to the ground with heavy head. He was a fine old gobbler & told his crop full of mainly wild oats, red deer, and beside the oats a lot of snails, a few insects, seeds & kinds of various plants. Mrs. Carroll tells me that later in the season he has killed them with crop full of acorns. The turkey was not fat but the meat fried in steaks was the most delicious I ever tasted. The others flew to neighboring trees or remained where they were in the morning woke us before sunrise calling to other gobbler before they flew down.
Sept. 10. Crossed the summit a mile above camp & rode down to the agency & back - reaching camp again at 4 P.M. Broke camp at once & started on road for Elk Springs but found it was too far for the team & so before dark to let the boys camp about 4 miles down Silver Springs Ch. I went on to look at Elk & back up Elk valley to Spur wild of Elk Springs, 11 miles beyond where they camped, & stayed over night with Carter (the agent) & Capt. Emmett, the ship wim.

From our camp to agency is about 12 miles, measured at camp 8500, on summit 8700. At agency 7000, at fork of Elk & Silver Springs about 7000, at the sawmill 7000.

Canadian zones on both sides of range reaches down to about 8500 on N.E. slopes, 7000 on S.W. slopes, but Hamilton reaches over top of summit at 8700 on S.W. slopes & down to 7000 nearly 7000 ft. to below 7000 on N.E. at Valley, Upper Sonoran with full set of
plants - junipers, nut pines, liriope, sunflowers, atriply, etc. - comes up to agency in bottom of valley to 200 or 300 ft. above on steep, rocky, hot slopes.

We saw no trace of horses on east slope of range. Sheep were down to 2000 ft. at N.E. slope but the valley is full of yellow pines. Lots of fields of wheat and small corn. Still it is pretty dry sometimes in June and July.

As near as I can tell over half of the reservation lies in Hamilton zone, about one third in Canadian, and only a little in Upper Missouri. Mr. Carroll tells me that most of the Indians are in the valleys of the Elk & Folsom, the greater number in the Folsom about 10 miles from agency. This is the warmest part of the reservation with a big, well watered valley and much of nut pines.

The best grazing country is on the east slope of its hills.

In going from the summit down to the agency I observed a gently sloping sand bottomed valley between pink colored
ridges most of the way. Fine springs come out at intervals all along it nearer to the agency larger and that join to make a large creek. Most of the way the bottom of the valley is quite level and beautifully spread between the trees, but nearer the agency it becomes sandy in places or is covered with fields of grain or weeds. But fields are scattered along nearly to the head of the valley and lower down are fields of wheat or corn. The Indian houses in the upper part of the valley are not occupied at present. Several of these empty little log houses with windows only in the gables were seen & usually some empty tepees near by. Lower down the Indians live living mainly in the tepees outside of the houses.

The agency is quite a town with stores, ranches, large buildings for schools, barns & various purposes.
To Lead Canyon Sawmill up Elk Valley.

September 21. After spending the night with the agent & shepherd man Brunet I returned a few miles along the road till I met the boys with the outfit. We stopped at several Indian camps & got a few photographs skins & baskets. Then followed up the valley & saw the divide & camped at 7,500 feet about 5 miles east of the summit. At the summit the wind was 3400.

Rept in yellowing transition zone all the way except on the E. slopes going down the gulch on west slopes of hill. The same beautiful clear gravelly forest with park-like valleys that holds never lost the sound from of bottom left by the glaciers.

Short & speckled foliages of a little dark, undeclared plant that is common in the park from the willows to about 8700 feet. Saw a colony of Cympyllum luteicans at about 8100 feet.

Carried a bag of water & made a dry camp as there is no water on the way between the saw mill & Agency.
Sept. 12 - Followed from the road about 5 miles & came to Agney instead of Ruidoso & found we had taken the wrong road. Turned back over another summit of 7900 & down a long valley to the east to the store at Ruidoso at 7000 ft. - 16 miles from agency at north edge of reservation. Then turned up Ruidoso Creek about 6 miles & camped at 7300 ft. Having been in yellow pine timber zone all day except at the agency & Ruidoso when huffing & jujugets cover the warm slopes. The country is all open wood 6 big grassy meadows but without water till we struck Ruidoso Creek half a mile beyond the store. This is a large creek coming out of the Whitehill & watering the valley below. It has clear water & constantly contains fish as a kingfisher flies from its bank.
Sept. 13. From our camp at 7200 ft. on Ruidoso Creek we rode up the creek about 4 miles & left it at 9250 ft., turning up the ridge to our right & riding mostly in the way up to timberline on the S.E. side of the mountain, where we left our horses at 9900 ft. From this point we followed the east ridge of the mountain to the peak over grassy slopes, the average walking 12,000 at the summit. Another trail turns from the high up the creek over the ridge to the left & goes up an easier grade along the south ridge of the mountain where they usually ride to the peak. The only true timberline on the mountain is on the W.E. slopes where the coniferous trees reach to 12,200 ft. & in one place to 13,000. The other slopes are too dry for spruce timber & most of the area above 10,000 ft. is covered with fine bunchgrass & Canadian juniper. Timberline at 10,000 ft. where Pinus edulis, P. flexilis, & P. jeffreyi, & Picea engelmanni, reach this limit forms the limit of the main forest. In places these trees reach up to 11,000 ft. but most of the slopes are timberless above 10,000 ft.
On some slopes the open grass country runs down to the bottoms of gullies at 9000 ft where the creeks begin. On the south and east sides of the mountain these grassy slopes form a large & important area of fine grazing land with the best of grass. Both sides lower down and along the gullies faces much tall grass. But fairly well grass with quality of wild oats, or a kind of wild clover, that is an annual or biennial & would not be grazing to any extent.

The N.E. side of the peak is cut out in a deep old Glacial cirque that has changed but little since the ice left it. The bottoms of the valleys are still windswept rocks where streams run or have cut in sharp gullies between the side lines of the old ice trough. These lines are distinct down to 7000 ft at Pikes at least. Several large creeks flow, or rather tumble, down the canyons from the mountain to make fertile farming valleys on all sides.

The Piedras Canyon up which we climbed, is steep narrow with high slopes of the
of the hottest and coldest exposures. Consequently zones are boldly rished in the
bottom and strongly marked on the sides, but taking the more even slopes as an
average for this flora in mountain the zones are about as follows:

Upper: - At Khidoro in bottom of valleys up to 7000 feet or steep hot
slopes up to about 7200 feet marked by Pimeleca flexuosa, Juniperus monosperma, Juniperus
pachyphloea, Quercus v. (bread bitter),
Alpilus canescens, Rigulovia, Sibbaldus
annua, etc.

Transition: Covers the greater part of the hill, reaching over the summit from near
Weedoro to near Khidoro, and from about 7000 feet up to about 8000
and S.W. slopes up to 10000 feet, and is marked by Plume pendulea, Populus
angustifolia, Bartsnesia, Sibirica,
Rhus neerklamena, Rhus globosa, Corus
asperifolia, Gilletia monxanica, + in part
by Psudostega Gloriosa (white leaf),
then grandifolia, pappea, etc.
See note book for others.
Canadien zone: covers the cold slopes from about 8000 ft to 11,000, but only the upper part of the peak on the warmer slopes from about 10,000 ft to the top. It is marked by Abies, Pinus, Populus trichocarpa, Picea, and in part by Pseudotsuga, Acer grandidentata, Quercus (bark leaf), Aspens (bark leaf).

Tundra zone: covers the N.E. slope of the peak from about 11,000 to 12,000 ft to the summit, is characterized by dwarf Picea, numerous small plants, and a rock bed.

Also by Thuja plicata, Picea engelmanni, Abies concolor, and Pseudotsuga menziesii.

Mammals: of the White Wolf.

Mr. Wingfield says the last elk were killed in about 10 years ago, but some were driven over fences in only 2 years ago. Other elk reports are also on tracks of elk he does not credit. Blacktail and whitetail deer are both common. There are no sheep but Mr. Wingfield says they are sheep in the San Andres when 100 miles west of here.
Seisms with 1200 foot common, also Etnaian crushed. Motley fellow was caught at our camp at 7500 feet & winter seen in rocks about 10,000 feet. Mice was seen over the sides of the mountain & the very top, probably 2 or 3 species. We heard of them hunting them over the high slopes. Poisonous sass numerous in the timber & apparently up near the peak. Howowns are numerous all over the hill to the very top of Sierra Blanca. 2 or 3 species of bats were collected at our camp. Black bear hair are common - we saw fresh tracks & a skin of one killed a few days ago by Mr. Wingfield, who says a few silver-tops also live around this mountain. Ticks are common. Mr. Moors at Ruidoso says the Indians catch a few beavers in the creek every winter.
Sierra Planes

Sept. 14 - Sunday. Problem of camp doing neglected writing & have time for much needed baths.

Sept. 15 - Started early & came down to Ruidoso for supplies. The horse we had left there, then continued down the valley of the Ruidoso Creek all day, camping in edge of down Sonoran at 6,000 ft. Came about 30 miles - about 25 below Ruidoso. Transition zone comes down an old slope with pinus ponderosa to 6,700 ft, some 10 miles below the town. Jumpsers (both kinds) & nut pine come down on old slope 6,000, on warm slopes to about 6,500. Mesquite, Rhiz merophylla & a few down Sonoran plants came up to 6,000 on sheltered but slopes. But the bottom of the valley can hardly be called down Sonoran yet.

The valley is settled all along with little Mexican rancherias, with little patches of cultivation ground - good crops & lots of fruit. The houses are primitive, little adobe, but the attitudes aren't.

There is lots of water in the creek & much irrigation.
Sept. 16 - Passed the place called Hondo, at junction of Aldacho Creek and Hondo R. about a mile below camp, then followed down the valley past Picacho, about 5 miles below, where we turned out of the river valley over the hills and struck across plains toward Roswell. Camped about 22 miles west of Roswell at old rain pool on open plains.

Averaid at Camp: 6000 ft the same at Hondo, at Picacho 5600, where we left river 5400, top of mesa 5900, camp on plains 5200.

The Hondo valley is mainly lower than the plains. The plains are grassy. Upper Sorcman with Rolins and Milwood branches in place but covered mainly with short grass. We found 2 water pools toward night but for long distances there is no water and the grass is untouched.
To Roswell

Sept 17. - Got an early start & reached Roswell at 1 P.M. 23mi. down hill nearly all the way. Good road over grassy plains. Arrived at camp 1500, at Roswell 4000. No game plants on open country, but mesquite in gulches & rough slopes. Apparently mainly livestock as all of the upper Sonora species have vanished.

For 6 or 8 miles out from Roswell the ground is covered with weeds & Gutierrezia, all of the grass having been killed out by overgrazing. A flock of about 2000 sheep & 100 cattle 4 miles out from town have made a dusty desert of the region. About 15 miles out we saw 3 big wolves some 150 yards off on the prairie. They looked like antelope as they stood looking at us, but as we walked on they ran with great speed over the prairie.

In P.M. Packed & whipped specimens at Roswell & camped 3 miles north of town at Mr. Utton's

Roswell

Sept 18. Camped over the day at Mr. Utton's ranch to get our outfit separated & reports & letters written.

Sept 21. Left Roswell at 9:15 A.M.

Lizards & Mosquitos are abundant on the rough slopes - valley sides near the Pecos River but no Lizards seen after getting well out of the narrow valley into open plains. Mosquitos become scarce & swelled - mainly confined to gulch slopes, beyond Campbell's station return home at edge of open plains. Little mosquitos was seen or seen but is abundant as far as the sand dunes reach - about 15 miles.

The country is mainly broken with tall Andropogon - which is the conspicuous grass as forms the sandhills reach, or to about Portalis & in some with alders beyond. As we come higher up on the plain, the characteristic short grass cover is almost the only vegetation. It is hard to say where these plains begin or end as they are wbigin from Portalis to Roswell, but towardSanman is mainly on wbein slopes.
To Amarillo to Goodnight

The Staked plains are dry & brown & in many places closely grazed. Apparently this book has considered pastures & agriculture are almost the only flavors. Fire ant hills were seen between Hereford & Brown & a bunch of 9 between Canyon & Amarillo. A Coyote was watching the herd.

Around Post & at other places across the plains good crops of sorghum & cotton are raised for feed. The quail, hawks especially are feared near Hereford & Canyon & yield good crops. Reached Amarillo at sundown.

Sept 22. The rain was late so I started for Goodnight at 8 AM, instead of 5:25. Found smooth, shortgrass plains with ponds of water here & there till east of Cloud where the country breaks down rapidly with gulleys, & levels of canyons near Goodnight & mesquits in the gulleys. Androphagan also becomes the accompanied grass on south slopes & scissortailed flycatchers are common in Mr. Goodnight's yard. A sharp encampment appears to the S.W. with the brush
Goodnight

Mr. Goodnight drove out with me among his elk & buffalos. I talked about them & took a few photographs.

He had 9 elk of which I saw 5 in the yard near the barn where they have lately been brought to be gentled. The one buck has lost his horns, one being broken off in rooking him & the others saved off his balance, & with his horns seems to have lost his masculinity energy. They are quiet gentle & some will allow the men to catch them, but the bred is rather shy. They are fine condition & spirits. Scampy & with full tawny coats. Have been running in a big pasture until a few days ago.

The buffalos, of which Mr. Goodnight has about 50 full bloods & 70 crosses are enclosed in several large pastures by a 7 ft. 8 inch fence. They have abundance of good grass and an fat and healthy. The herd of full bloods were mostly lying down enjoying the morning sun after a cold night, but as we drove among them they got up & paced at any distance
...
+ in much larger size than the cattle of the same age. They were black, mainly hornless, but the yearlings were as large as two-year-olds of the cattle. Mr. Goodnight says they full grown steer weigh 1500 lbs. Photographed 3 of them at a distance of 15 feet. They are perfectly gentle and keep out by themselves away from the cattle.

Mr. Goodnight tends only buffalo bulls to domestic cows to increase his herds and as fast as possible. Has just sold 15 of the Yellowstone Park buffalo bulls in Kansas. He says the field hands are very fond of them. They were more killed by injury in handling. Says the crossed buffalo breed freely but the bulls are not as good a breed as those from the plains.

Sage three quarters of the cattle are bulls. Returned in time to catch the 11:20 train to Dallas and then got a 5:20 P.M. train for Logan, U. S. A., when I arrived after dark.

Photographs taken 1902.


At Marshall 4 - 1 of pines mottes, 20 general sides woods, oaks, black, pines.

At Zinkman - Jan. 17, 4 of woods. Pines mottes of 2 of vient quils, oak, and rosecwood and hickory woods.

At Joaquin 4, 2 of and of foot of pines 13 inches across inside of bark. 24 years old, grown in old field. 2 of forest of big trees on old cotton woods. Jan. 18.


22. Same of other side of town.


24-25 - Same 23, and black live oaks.


46-49 - Live oaks and willow oak near east of Chouteau in the woods. Jan. 27.

48-49 - Distinct hills over Cottonfields, etc.
July 27th.

Sept. 23. Logan is half a mile north of the Canadian river. I have taken a long look down the river and got a good idea of the country. The river runs through a narrow gulas or gullies, and places almost a canyon. The river bed is cut into high, rocky (sandstone) walls in places. The country is rough and full of gullies and side canyons for some distance, but in both sides abrupt escarpments show in the distance to the south.

The N.E. slopes of the valley are covered with junipers. The S.W. slopes are with mesquite, Mimosa, Alth, and cacti. The E. slopes are with mesquite, Mimosa, Alth, Osmdita, and aboscamas of leptanthus. Tucked gullies and gullies cover the whole country. In other words the sheltered N.E. slopes are strongly lower than the E. slopes which are purely higher slopes. Thus a mixture of zonally species are carried up the river valley with apparently no much lower slopes as at Laseros.
In a mile's walk I counted 47 Calligula, saw one Piping meadows & an Aecostiga obtusa, 2700 meeream. Golphines & 1500fined young near nest, Zunaidura Ostrans & Longparus. Mr. Jesse tells me no pipe Greccey & neck.

On the way across to Santa Rosa we follow up a creek valley, across meadows from one valley to another and through rocky rough gulches. Crossing the highest divide a little east of Santa Rosa. The country in all meadows flat topped ridges, the gulley cut distinct lines through horizontal layers of sandstone.

But some of the valleys are extensive or some of the meadows are wild prairie. What surprised me most was to find considerable low mesquite scattered on south slopes in gulches & valleys, all the way across from the Canadian to the Pecos. In many places the mesquite covers a south slope facing a gulley & within covered mound slope just across the gulley. Almost perfect continuity of different types so numerous could be traced across. The country is picturesque very interesting.

Santa Rosa

Sept 24. The country around Santa Rosa is even rougher than any on the way across from Bogan. The sandstone ridges at the sides of the Pecos valley being cut through by numerous narrow canyons, the open valley spreads out just below Santa Rosa but the ridges on both sides are covered with juniper & salt pine, low mesquite bushes & several other lower Sonoran plants grow in the valley or all the warm edges.

Big alkaline meadows occupy the bottom of the valley and numerous chokes of alkaline water flow from fine looking springs, several of which are of sufficient size & depth & beauty. The finest of these great springs in the earth is said to be 150 feet deep of the most transparent water. Another is called the bottomless pool as no bottom has ever been found. All of the pools & springs are amazing with small fish. As a little boy explained the water is so full of alkaline they can't run away large.

Dr. Wilkes took for plants, birds & mammals.