Journal of Vernon Bailey

U.S. Department of Agriculture

Washington D.C.

1908.
July 25 - Left Washington on B & O for Chicago and New York at 15:30 P.M.

July 24 - Reached Chicago at 5 P.M. and left on Santa Fe Limited at 8 P.M. for Albuquerque.

July 27 - Reached Kansas City at 7 A.M. of Dodge City about 10 A.M. The real short grass and plains began just west of Dodge City.
July 28 - Reached Las Vegas at 12:20 P.M.

Got a horse and drove across Rio Grande onto mesa west of river and then back and onto mesa east of town, and around the farms about river valley on both sides. Found no plant or bird or animal to indicate a trace of Feverfew. Found no good fruit, only recently absorbed pears and cucumbers and little red plums. Hunted in fruit trees and found no good fruit except inpears. There said to be some good ranches further down the valley but none seen.

Trees in town are mainly cottonwood, willows, tamarisk, and peach and fig. Tamarisk grows in great profusion. A few Butterfly peas (Vicia faba) and wild cotton in yards.

The native plants are:

- **Populus fremontii** (green willow)
- **Salix** (yellow willow)
Albuquerque

Zareclus zonatus, abundant on flats.

Atriplex canescens.

Euphorbia, big.

Lychnis pallida, seen before striking Rio Grande on south flat.

Lychnis, green, on north bank, before striking Rio Grande.

Leguminae - Common along creek before we struck Rio Grande.

Biglobus arbuscens (big) - Common, only seen down Apache Canyon.

Chrysothamnus (green topes) - Abundant over mesa and edge of valley flats.

Chrysothamnus? - [Big coarse shrub - abundant on flats or salt granders.]

Purpurea - The most abundant plant over mesa on east side of valley.

Baccharis - Abundant at flats on salt grander.

Eriogonum douglasii, seen here and there.

Chrysena grandiflora - A little seen here and there.

Helianthus annuus, abundant, big.

Dalia canescens? - The dominant plant on middle mesa section of both sides of valley.
Albuquerque

Arum album? (bog) along ditches
in edge of town, looks like mosquito.
Oglaperlina hirients? Common on flat
Centaurea tomentosa abundant on dry sandy places
Cnove intignis?

Yucca glauca common on mesa
Opuntia echinata?
Thuthumber curvus on flat
Arceo picea (viginti) common
Setaria radicata common

Fires in Albuquerque

Cottonwood common
Buckeye common
Algarbía
Catalpa
Mulberry
Farrarish abn. & very thirsty.
July 29. Left Albuquerque at 7 A.M., for Salinas and Mountainair on the Santa Fe Cut-off. About 10 miles below Albuquerque and 2 miles after reaching Salina on east side of river, 5 small bushes of _Atriplex glandulosa_ were seen and dry edge of mesa, just below Salina on east side of river, valley 2 was small, bushes were seen out in the foothills of the Manzanos. 2nd dwarf _merguez_ was seen on hot slopes in gullies. Just above and just below Salina a few small bushy areas of _Atriplex fastigiata_ were seen on wet bottom land, but only a few in these two spots. No other change in the valley flora was noted except a long strip of half the greens to 4 ft. high that had just started near Broken Stations about the middle of the mesa east of the river. This strip is narrow, half a mile or so wide, but extends out of sight to the south. As yet there is nothing on which to map Lower Cowan.
After crossing a wide grassy plain, we entered the west foothills of the Wasatch Mts. at 5,500 ft and first struck Juniperus communis, Quercus vaccina, Malus, Abies lasiocarpa, Celtis and a little farther up at 5,700 ft Pinus edulis subsp. Tumosa. On to Mountaire, the whole country is covered with junipers and nut pines as far as you can see all around.

A few little Mexican ranchees are scattered along. Mountainair is at the summit and is said to be 6,600 ft. It is about 15 miles east of the Wasatch Mts.

Got a horse & baggage & started after dinner for a saw mill in the Wasatch Mts. to stay all night and climb the peaks and come back tomorrow. Drops through beautiful Juniper & nut pine country about 70 miles to where the yellow pines and oaks & Chiricahua pines begin at 7,000 ft. Thence to Skidmore Saw Mill (Easteloo) at 7,400 ft then a mile & a half to a not wet in Fruita Mill at 7,600 ft & stayed all night.
Canadian zone plants Manzano Mt.

Picea concinera. ab. 8000 - 9000 N.E.

Tsuga heterophyllus " 8400 - 10400

Pinus lambertiana " 9000 -

Populus tremuloides abn. 8200 -

Cryptomeria japonica " 7500 - 9700

Salix " 9000 - 1000

Santylle glauca " 9000 -

Holodiscus "

Pyrocoma " 8000 -

Delphinium " 9000 -

Pseudotsuga "

Transition Zone plants

Pinus ponderosa abn. 7000 - 8000 N.E. & 9000 SW.

Quercus gambelli " 7600 - 9600

Sotolophus phyllelpha " 8000

Bassia scoparia 7800 - 8000

Eucalyptus "

Pentatium torre " 7000 -

Catalpa "

Manzano Mt.

July 30. Got up early & started up

the hill. Off 5 leaving Sums hill

I followed a lunker road NW up the

 gulch through pure yellow leaf timber

about 2 miles to narrow part of gulch

where Picea concinera, Populus tremuloides

and Acer glabrum begins on the cold

slope at 8000 ft. On hot slopes

they begin at about 9000. The first

douglas fir trees were seen at 8400

ft and they reached the top of the

peak at 10000 while ashes concinera

does some 400 ft short of the top.

It rained all the time I was on the Mt. So

I could not see far, but went up a

peak, said to be as high or almost

as high as any. At 10000 ft on top, 9600 ft on top of

main ridge. The east slope is

slopes sheltered with ash, douglas

spirea, tolyosa, Pinus lambertiana

keep a high line for quite some

to thickly of oak love came up.

There are many springs and a

small creek at the gulch mouth up.

Grass & weeds are luxuriant.
Mangaro Mills

Mr. John Lee, who is working for the mill, says he has seen forest surveys that list timber on the Mangaro Nat. Forest, that all the good timber is owned by lumber co.

Settlers are coming into the juniper country and planting jumars to own some good cedars.

The old apple trees at Mangaro are said to be over a 100 years old and very large, but the apples are little and poor; evidently ungrafted seedlings.

Few woolsheds seen.

Cypress hedges were common near East View.

Histaria altigera? Woodcat numerous numerous in the juniper country.

Odontosaurus harrisi - Mule deer are said to be common in the East.

Albatross - There are said to be still lots of albatross on the plains west of the Mangaroos. A man was visited with 3 that he had killed recently.

Iguana Black-tailed Iguana still common in the Mangaroos.
San Marcial Plants

October wildfig, abundant on river flats.
Salix
Prosopeia pubescens. Seenbeans are common over bottom lands, often in thickets.
Prosopeia glandulosa. Common along edge of river valley and up the washes as far as I went - to 17 miles west. Usually low and in wide bunches.

Phlomis horrida. Common in places on the flats.

Films microphylla. "in washes and along edges of valley. Enters back to 17 miles.

Chiliopsis linearis. A few in lower washes.

Covillea tridentata. Abundant on lower washes and hot slopes back 4 to 10 miles. After the dominant plant. Provides some willow but slopes at 17 miles west.

Pyrenium herbaceum. Common in washes.


San Marcial

July 21. Came from Mountainair in the night. Woke up at San Marcial. Got a horse buggy and started west to get into the San Marcial range but could not make it in one day.
Went near enough to see the timber on this - a saddle to the north of it - on the southwestern. Went about 19 miles on the Rosedale road. Then turned back. The hills are not high enough for Canadian but the tall golden pines begin about half way up and go to the tops of all the ranges. Willows and junipers cover the lower slopes and foothills.

Lower Soarean gey. is strongly marked about the Rio Grande valley. Took on the lower mesas about 8 or 10 miles west of the river. It follows up large washes on the hot slopes to 17 miles west on the Rosedale Road.

On the river flats the dominant plants are Cottonwood, Serabean,矢木, Phlox microphylla, and Phlox microphylla.
Queen radica? (low) Cow on mesa 1 miles. Ocotillo (large) cow on mesa back 10 miles mostly beyond Cressote bush.

Ocotillo cactus: a few small plants seem to be this plant.

Ocotillo (major long thorn spines) cow on mesa 1 miles. Cressote cow on mesa mainly in cold slopes or further back.

Chenopodium abundant on hot mesas.

(white stripped) cow on mesa 1 miles.

Queen's green A few on mesa 19 miles west.

Mammals

Achilles giganteus many heard

Notioa micropus horses numerous

Perotipus burro a

Bupus leucurus cow on mesa

Hesperus cow

Hesperomys big hilly cow in valley little hills scattered on mesa.

On the lower mesa Cressote, Aegium, Pococronis glutinosus, green and blue Ephedra, a Quean between radica and cow, Cressote and the abundant shrubs. There are several species of cattle. The Cressote keeps on hot slopes and avoids the land cold slopes, down to the valley. It also thick out on the mesa 0 10 miles both and follows only tongues of south slopes, but follows some of these back 17 miles.

The Rogers Ranch in a big wash 17 miles NW. of San Marcial is the only inhabited place seen out of the river valley, but back in the foothills are lots of ranches & towns. There is a little grass over the mesa & a few houses. Faring along the red river's valley is of the Mexican type, little grade paths & community profit apple & peach trees. The only fruit I could find was little black dates applied.
San Mecaeli Birds

Zoraida nucifera - coro. 316
Callippe quasga, coro and occas. 293
Buteo buteo, occas. seen once 337f
Todea phaenea, seen once 360a
Cathartia aura

Buteo sp, heard in wash near Tumamor temuco, seen once 396
Tricolor sp, heard seen, passing yongtamon
Geococcyx, occas. seen once 449v
Vieira

Otoxus

Milvus-volans, breeding 2 seen 665
Anhinga rufescente, seen in pools 442v

Passer domesticus, abundant in ten
Minos p. lenepitha, coro. 703v
Helodryas

Reptiles

Chrysosoma lewisi, coro. found once near out swallow seen once 573v
Euclopus
Chamaeleon
Holbrookia testa

Aug. 1. Found the same type of Senecio plant along the river valley a few miles below town. They turned up the wash and up the north slope west of the town. Senecio species disappeared and were replaced by Dalia catharina, gathering its seeds of the low radiova type. Across the lava beds, and indeed all the way to English, it is by algae to green limit that the least slope makes a difference. Cleared the mesquite, Bebei, gatunova covering the western end. Arceus, species of grasses covering the rest. After passing the slope in generally the sandy & Crassula, mesquite & low radiova radicae predominating, Rehmann legumes more abundant than toward Rincon. The Valley Jardina de la Muesta is unusually green and grassy, just now with rainwater standing in many bosque tanks & ruis. Lots of horses & cattle seen.
Missilla Park

Saw out over the valley and around the experimental station of the college at Las Cruces. Then went back to the college and talked with Prof. Whidden till dark. Saw the collection of birds and mammals and plants and got some good plant names and a few important records for birds and mammals. There were several skins of Canis lupus faucibus from Missilla and a skin of Sigmodon hispidus and a Nyctinomus. The odor of Nyctinomus was very strong in my room. I saw the abode begin and as I passed some of the old adobe houses in Las Cruces. Bats were numerous in the evening, probably of this species.
Musilla to El Paso

Aug 2. Plants are the same all the way down to El Paso, until we reach the far bluffs where Dougleuria and ceiba constants begin. These go farther north along the river, but we have seen only patches up to now. Great forests of Parthenium pseudococcus cover the flats in places, on land occasionally flooded. Sesbania glaucescens holds the regular flood land. There is much good agricultural land on the flats but little of it is cultivated. At Musilla good drinking water is pumped up from 75-80 feet down and salt dome. There are pumping plants for irrigation.
Close to Denver

Aug 2, 1928.

West to Lemon Park, Colorado, very quiet and abundant. Never saw a horse, but then got scarce. Escalante is the same old tangle of sage and greasewood. Vegetation, this is on tops of the plains. Great plains in the west.

Dip through a very wide valley, begin at Washoe and all through Eisenhower. A bunch of antelope was seen at the point of horse creek.

The highest point on the road is near Cedar City. The road continues up to the tangle of sage and greasewood. But where the sage stops, the north edge of these disappear.

These high plains, while largely down soother, are not flat and are so close to uplifted ranges that a slight incline to north or south throws them in a completely other tone.
Corvus cryptoleucus, several flocks seen near Harwich and Alder & Cambrey.
Callipepla squamata, seen near Cambrey.
Grossbeaks, several seen, near Alder & Cambrey.
碱鸟，今晨见于哈威奇和奥德及坎布雷。
Callipepla squamata，今日见于坎布雷。
燕雀，今日见于奥德及坎布雷。
Cainagra

Cainagra is the Mex. name of Rumex alata, which grows abundantly in the sandy soil around Deming. It has big, firm roots like grasses, dark green, argyrenous like chamomile.

Hotchkiss tells me this is extensively used in tanning leather, that a tannery was put up at Deming to utilize it. He says it thrives very well but colors the leather very dark red. He has used it on bricklinen. He says the root sells for about $0.75 a ton, and on wild sand a ton can be picked up as a few roots.

This might be a valuable crop for sand that will raise nothing else. It grows native in the North, and has 4 sandhill regions where nothing else will grow. The roots are stout and dense for varieties

Aug. 3. From Deming to Raymond, or beyond the Point consisting of the Miners, four Seminole Indians are abundant. They are quiet, big, green, Spaniards, Mexicans, Yucatecans, and tall. Yucca rostrata. From the lower Miners to about 6 miles south of Silver City, it is grassy plains with very little else, except a few Yucca rostrata or sand dunes. How real Upper Sonoran species begin on the foothills? Yucca, Sotol, enough,幽魂, succulent, cacti, Datura, Mimosa. Yucca rostrata stop abruptly while these plants begin. The question is whether to mark the neutral grassy strip as Upper or both? The question applies to which strips east or west of Deming. Is it not pure (or strongly marked) lower Sonoran, but acid for grass they is not an Upper Sonoran plant.
Sowing to Watkins Ranch (30 mi SW)

Lavatera glandulosa — common & big on all roads.
Corydalis tenuifolia, abundant & big on highly gravelly soil along south slope of Red Mtn. 7 mi south of Mesa Zygia.—, Abundant & big on sandy soil.

most of the way.
Koeberlinga spinosa, abundant & big about 10 miles across
miles north of Gage.
Flourensia cernua, abundant on gravelly soil
with Corydalis in spots between.

Oenothera odorata, abundant by hills all day.

Yucca schidigera, tall tree common all day,

mesquite, a low form 3 or 4 ft high
"least 7 miles.

Euphorbia trigona, Abundant first 20 miles,
some all along.

Atriplex canescens, common on alkali land.

Opuntia longicuspis, a little seen in washes.
(you sp?)

Quercus arizonica, Common on flats where
nothing else grows but a few of the mesas.

Atriplex instructa, common on some of the roads.

Fouquieriasplendens, abundant on sandy
soil, in washes, or on slopes.

Aug. 4. Left Sowing at 10 A.M. To
made about 30 miles. 5:15, to
a cattle ranch belonging to Mr. Watkins
(The Cloud's ranch). Arrived at 7:30
at Sowing, read 4400 ft. At the windmills north of Gage and 4600 ft
the ranch off kump. The country
seems perfectly flat except a
slight rise in the least 10 miles.
There are many flats, almost plain.
but mostly covered with "grapevine" grass
or "mesquite". There are also wide
strips of sandy soil, blown into
dunes around the mesquites and
Zygia bushes where little else grows.
Then on the foot slopes of the hills and
ranges there is generally mesa
covered with a good growth of
Crassafia and Phacelia condens,
and Lysimachia andersonii. For 8 or 10
miles across the barren wash
where the windmills are (north of Gage)
there is abundance of Koeberlinga
big bushes and common shrub. The whole distance is pure lower
Sonoran as shaped by the abundance
of big mesquites where it grows, the
Deming to Watkins Ranch, 30 M. S.W.

Birds

Hawks
Numerous in Deming, a few still hanging around nests under flipper pars donations, abundant in camp.

Manually:

Abundance of Quercus bush on the highest land and the predominance of Tower oregon, and abundance of Upper Oregon species.

Antilocapra, my driver says he saw 3 about 7 miles west of Deming a month ago.

Cites spilosa: Common, often heard last. Mustard houses numerous Dipsomys sp. protests, used cor on the plates highest slopes, especially on the side of Red Hill, I near the Watkins ranch, not cor across bottom of plain.

Deles arizonae, Cor

(white?) 2 other good and red dozen more seen, about half do manyas of the gray.

Cynomys bobriamus, a red near Watkins. Running hill cor in places all along.

Cants: Coyote tracks and howls cor.

Inclined, numerous old barrows.
Aug. 5, Left Whitney Watkins ranch (at 4,600)
and followed up easy grade to pass in
first ridge about 6 miles west (at 5,000)
Then down across a wide valley about 10 mi.
(at 4,700 ft. bottom) Then over another low ridge
at 4,800, and down about 5 miles to Hot Creek
(at 4,575) averaged reading 70 feet high.
Got extra supplies and struck west
for Asendor Spring, crossed valley bottom
(at 4,450) then up long wash to deserted
ranch at 5 miles, (good water sources) then
about 5 miles farther up to summit ridge
near Goldfield (5,700) Then down the
west slope about 5 miles to Whitney
ranch at bottom of Valley de los Playas,
and camped on east side of flooded playa.
Except for north slopes and higher
parts of the 3 ranges crossed we
were in pure and strongly marked
lower Sonoran zone all day.
West of the lower Sonoran species,
such as mesquite, creosote, redlining,
Alnus microphylla, and others go
through each of the passes on south
slopes, while forgrities and other grasses
are abundant only along the mountains.
Along the crests and north slopes of
the ranges Upper Sonoran species such
as Junipers, Rhamnus, Salicina, Nolina,
Scrophularia, Caesia, Mirrora juniperus
perhaps take the place of the valley species.
None of the ranges boast any timber except
an occasional juniper. The big agaves
are to the top of peaks at least 500 or 1000
feet above the passes. The little agaves just
out of the desert have no juniper or agaves
near the pass and it is all low desert
mixed with Upper Sonoran species.

We reached the Valley of Las Playas,
later and found the big central plaza
flooded while other sheets of water could
be seen to the north and south. We started
to cross the big plaza near the middle
but found the grass muddy so we it
was getting dark we were afraid to risk
it as we could not tell how deep
the water and mud might be.

We camped on the east side in plain
ight of rancher's good water on
the west above. The horses drank
some of the alkaline water for washing but had enough in our canteens
for the night. We had a beautiful camp place among mosquitoes with abundance of grass and enjoyed the glorious sight under the more glorious stars. The valley is overstocked and the grass killed out over most of it, but a broad zone of grassy, but occasionally exposed, the plateau and supports a large number of horses, cattle, and cattle. Jack rabbits. The rabbits had gathered in the grassy level and a dozen at a time could be seen feeding. Other rodents were also abundant and the sandy soil was tracked up with rats' snouts. Diploperomictes roundus and Notomys were conspicuous features of the landscape.
Aug. 16. Crossed the playa without any trouble & found the water only about 4 inches deep & the bottom solid.

The water is thick & creamy & alkaline. It forms a lake 3 or 4 miles long & half a mile wide.

On the west side are some cattle ranches & springs of the best water we have found being clear & limpid. Cottonwoods & willows grow on the wet ground. Here we struck west to a low pass in northern part of the Animas Range. Descending 5000 feet & turning south about the east side of Animas Valley we kept at about 5500 feet & 12 or 15 miles south of the pass to "The Adobe", a cattle camp on double Adobe C. at 5100. Here we learned that C. P. Goldman & Bridgey were in a canyon about 4 miles further south, so we hastened on & went into camp about 5 P.M. at 5800 feet in Apache Canyon at north base of Animas Peak.

The camp is in an open field of oak & willow with only ponds of water.
Aug. 7. Followed up Indian Canyon from camp almost east and south of Aniak Peak to top of the first peak south of Aniak. This peak is 5000 feet lower than Aniak Peak (both are annuelis reach 8000 on top) but has much more timber on it. Deer Creek heads on its S.E. slope and Indian Creek on its N.E. From this peak we were able to map the country pretty fully as we had a clear view of the Pueblo in and San Gualdo peaks with on the west, the San Luis Ranch to the south, the Ranch, Dog Mts., Baca Grandes, Hermans on the east. Even the surely lower Serrano valleys, covered with quaveite and croquette, could be distinguished from the smooth, grassy upper Serrano valleys and slopes.

The Aniak range is all Upland, and the group of high peaks very well reseemins of old water rinnies.

The high peak does not extend more than 15 miles along the width of the range, but the low ridges run north and south.

Upper Serrano zone covers most of the range, the valley slopes
east and west, as well as the big valleys. S.E. to S.W. and goes up an south slopes to the top of Herman Peak at 8,600 feet. Trencher zone consists of the old slopes from about 7,000 feet to the peaks. At a house comes down the canyon to about 6,200 feet.

It is marked by Pimus ponderosa, P. virginiana, P.種種pumila, Quercus hypoleuca, Q. gambeli, Q. reticulata, Pseudotsuga and many shrubs and plants.

A trace of Canadian Zone is found in many small patches of Populus tremuloides and U.S. aspens and by a clear stand of Pseudotsuga and Pimus flexilis on the upper slopes above 7,500 feet.

One lot of bear signs and one fresh old trails. The sign was mostly composed of woodpigeon remains, some old dunged marmot shells and one lot was entirely filled balls of big hair. Some of the deposits were very large (0.10 inches in diameter) and some of the old trails were large. One fresh trail of a yearling was seen. Great numbers of stashes had been turned over at good
bear trails follow the gulches where no stock goes. There is water along the upper part of the canyons, good pastured running streams, and the bear trails follow the canyon streams.

There are a few blacktail deer in the foothills and lower slopes of the valley, and the little white tail is abundant on top of the range. Their tracks are numerous all over the ridges in beautiful park-like country where no stock goes and few people ever go. Three old bucks were seen at 8000 feet, lying in an open slope of the extreme end of Deer Creek. One shot was in the gray coat and with long green velvet horns. Its stomach was full of mainly leaves, twigs, and seeds of Arceausper p. pacificus and a few grasses and other plants. The deer would have weighed about 100 lbs.

We saw a fresh mountain lion track, saw Entomosoria berries. Thorny fivesails and elk were seen up to 7000 ft. The snow is as deep as deer tracks.
Fireflies

In the evening at our camp along the St. Peter, pale light went weaving by 9 or 10 different fire flies that I got my gun and rushed around with the muskets. They proved to be Elateridae Pyrophorus physodeirus, with a flashlight on each shoulder. They were an inch or so in length. Their rapid flight and long sustained light close starting in rapid. I brought some back and Walker identified them for me as firefly collectors.

There are 7 species of oaks and 5 species of pines and Pseudotsuga, Abies, and Mostoniita + Ash + box elder + Aspen + Ash + walnut + spruce = tugs above in the hills. But no extensive bodies of timber. There is much dabbed too dense and large to get through conveniently and a great protection to the water supply and to game. Stocks does not get into the hills. 7 or 8 of all there are no trails and no one goes up them on track so they are nearly cutting.

At the Gray Ranch I saw told that black bear and silver tip beavers and in there that the bearkill is good and many pigs were canned east of the hill.
Aug. 9. Followed down Indian Creek to the dry wash to the dry bed of Anicas Creek at 8000 feet. Then followed up the valley about 12 miles to the Gray Ranch at 7000 feet. This is a broad grassy valley some 10 miles wide between the Anicas & Cloverdale Hills. At the mouth of Indian Creek, there is a strong trickle of water running with much vegetation, Willows & grasses and Heliotrope waste, lots of rabbit tracks, etc., but south of here there is scarce a trace of good vegetation. There are almost no bushes and the heavily wooded slopes are grassy or barren. A few shrubs of the\n
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There is no water in Indian Creek or in Anicas Creek except in the narrow places on the Gray Ranch.
The Gray Ranch is an old place now owned by the A. Diamond A. Cattle Co. who control Arivaca & Playa Valley Ranges. It is the Sandhills where précédens was brought when captured and is now nearly a headquarters for cattle men. It lies on the opposite side of the valley from and just south of the hilly side of the Anna's Hill. Some big meadows and cottons furnish in winter excellent horse pastures.

We reached the ranch at 2 P.M. We were invited in to a good dinner. I then saddled up & started for a hot camp in the Avondale Hills 7 miles west. Found it in the bend of the west north of Clinton Creek, up in the foothills. The camp is a washed out place in a cliff of volcanic sandstone & ash & baked rock, full of queer plants of Obsidian. It is 20 feet wide & 10 feet high at first but soon narrows down about 50 feet & then ends in a low tunnel 20 much greater.
but not high enough to stand up. In REVIEWsession about 40 put back. I found a mass of bats hanging to the roof like a swarm of bees. They were packed in a body 3 or 4 feet long and a foot or 18 inches wide, hanging head down. As I opened many flew out and circled about in the cave, so far from seeing them I looked part ways out & shot into the mass with the scope three times. One shot a mass of bats dropped but a few still clinging to the roof when I went up & picked them off. I gathered up my very pockets full of bats & outside counted 9 1/2 of them. 4 Myrtillumps & the rest a little yellow bat.

Outside I saw 5 Ed Cornish or manseflying about in the sunlight, probably driven out of the cave by my shots. Some of these went back into crevices high up in the cliff & came into an old hollow tree. I shot one at the tree but the rest escaped.
The cave has been located as coming clove and is supposed to form valuable quarries. There is probably 20 bushels of dry earth and dust in the cave and below this dry loose earth. There are a few small bowls in the dirt but not enough in sight to be of importance. The floor of the caves is dry and slopes down so as to be perfectly drained & digging would probably disclose some good bone deposits.

The crude valley at the top of the crude valley is a beautiful place to camp. Good running water, a flat valley bottom with open prairie & groves of live oaks & big scrubby single trees, between the clumpy ditches, are large Chinese pine groves by the crude and lots of colors along the crude banks. The large Chinese pine groves by the crude and lots of colors along the crude banks indicate some pines above. There is said to be a patchy yellow pine southerly up in the hills but most of these hills are upper Sonora sage & junipers together.
Aug. 10, left Graya Ranch at 5:00 a.m.

Aug. 10, left Graya Ranch at 5000 and
drove 17 miles south to Graya Ranch at
We rose San Luis Mts. at 7 a.m. at Monument
Mile surveying camp for the night.

Aug. 10, left Graya Ranch at 5:00 a.m.

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valley where it has not been killed out by overgrazing. Thousands of cattle are grazing over the valley. The great playa of lake bed is green with weeds but very grass in only a few spots.

We saw 4 antelope, all kingsly and the cowboys at the ranch say they are there every day in bunches of 3 to 17. Banding of 27 + 35 are reported seen last winter.

A hish sided puffer rabbit is said to be frequently seen along this valley but we did not see any.

Prairie dogs are numerous all the way and must do great damage to the already overtaxed land.

Spadens, quail, bobwhites, and so on are all doing well in the wet area, but not on the playa.

Prairie dogs and hares are abundant over the wetland playa.

A Cattley spilostoma was seen on only 1 playa. Badger holes are common all along. Squirrels are said to be numerous around the water places at the Long Ranch. In every Bighorn shot & bountiful Goldwater caught.
an adobe parlour in the house.
Some large springs come out at
the ranch, and water for every wash
around the tanks of good water.
The ranch is dry, the most called
campus of the A. Victoria land and cattle C.
There are 5 cowboys, breaking horses
raising hell — a good hearty rough
lot.
The house ranch in a historic old
place for Indian fighting & survey
work. The house is old of adobe
on an open moor.
Aug. 11. Left the Lang Ranch and followed north along side of playa about 4 miles, then turned east over San Luis Pass and down to Culberson Ranch on Deer Creek. Then cut onto the south end of Playas Valley and about 4 miles north to High Lonesome on the middle of the valley, another ranch of the A cattle Co. Knew old at daily ranch and 5,000, on top of pass 5,500, at Culberson Ranch on Deer Creek 5,000, and at High Lonesome 4,750.

The pass is all Upper Sonoran, mostly open country with short grass, Nolina, Agave palmeri, Quercus emoryi, Tarazonia along grades, a few junipers, pinyon pines, the big three leaved yucca, and Catclaws. Down along Deer Creek we found Platanus whipplei, Fraxinus velutina, Morris, and live oaks and on west slopes Michigan and along hot bottoms Chihuahua. The lower part of Deer Creek, where it opens out onto the valley bed the big valley of Lower Sonoran.
rather open and grassy in places and again densely covered with Yucca and Yucca radiata. There have been recent rains and the grass is good and stock is running well. Water is pumped by windmills at the ranch and cattle ranges are several miles on all sides. There are miles of good grassy land and lots of better quality of grass on higher ground. The soil of the valley is excellent for farming by worth irrigating by pumping the water is good at all the wells we have struck in both the Playas and Animes Valleys.
Antelope antelope, seen near the Ciénega de Limón 13 reported a brush with an enemy near High Lonesome.

Cows & Mexicanos, said to be a few in the High lakes.

Capt. Spileon, came all along in playas valley & in Occidental valley.

Squirrels & birds, seen in both Playas, & high lakes, often go unseen & kill at will.

Peaks & hills, seen in both Playas, & high lakes.

High lakes, seen in both Playas, & high lakes.

Bears, seen in both Playas, & high lakes.

Antelope seen in both Playas, & high lakes.

High lakes to Achita - 40 miles.

Aug. 12, from High lakes east, north to Playas valley (40 m. N. of Achita). We came north through gaps between Achita & Playas valley. We entered the valley & Achita, said to be 30 miles. Arrived at camp 7:00, at Cienega ranch 44. At Achita ranch 43:30. At Achita ranch 4:00.

The road is excellent most of the way all down grades to the gap between the Achita & Playas valley. The drainage of the Playas valley is east through this gap into the south end of Achita valley & then eventually to the sea.

Achita valley rises to the north, while Playas & Arivio valley are higher to the south.

The whole trip today was in lower Sonoran, with extensive flat areas, but the upland in dry soil covered with Queen calico, Musquito, Eyed Daisies, Big-leaf Lupine, Chocolate daisies, Flowering daisies, Arroyo daisy, Cypress, & many more. Also high up in the gap, the higher side slopes in the gap were Achita valley.
Aug. 13. Packed specimens all of persons, sent the train back to Denver & took train around to Leadville, but regret to say you might not get a growing train to Denver.

The valley is lower Sonoran all the way from Leadville to Denver with abundance of Mesquite, Creosote, Fouquieria cunea, Ephedra, Zygophyllum, \& Yucca californica. These are extensive grassy flats or flats bare of even grass, but evidently these as well as the brushy parts of the valley are lower Sonoran. Grass is short & poor except on some of the flats. The rains seem to have missed this section as the first month of fording the grass is said to be green and abundant rains have been frequent.

A heavy cloud can be seen to the south, about the Almas Range and others in more distant sections. The rains are mainly narrow and but frequent and often violent. The snowed gathers around the peaks and then crosses valleys from one range to another.
They gather around the high peaks of the Hatchetos, Animas, Brand, Pubs and Chiricahua Mts., and escape back and forth over the valleys between, consequently keeping the valleys much greener and more grassy than in the more open country from Hobita to Lordsburg or Deming.

Aug. 14. Lordsburg to Deming and up to Silver City. Found Hatchets is still off on a camp trip, so began our reports and votes.

Aug. 15. Got saddles horses and rode up the creek valley about 5 miles north of Silver to where the grey agaves and yellow pines are common on the cold slopes and the pines on the creek plates. They begin at edge of forest pines, and extend around about up the slocks of Pinos Altos. Walnut trees are abundant along the creek valley from slocks of Pinos Altos place to the yellow pines, some trees are 2 feet thick and 40 feet high with a spread of 50 or 60 feet.
They are loaded with good sized
mites which are ripe and falling off.
I collected a good species of Mites to see if
I could get to endworth in the hope that he
will recognize the well recognized species
of Eremobius, instead of calling it unparallal.

Aug.14 to 18 - Remained at Silver City
writing reports and making preparations
for the trip.

Aug.19 Started with team and camp
supplies to the 905 ranch. Left
Hitchiking out by accident
A good mule he had just came in
to the 905 ranch. From his camp on
Brig Ricks Co. about 15 miles N.
Made arrangements to go to his
Camp and start with packs for
their.

On the trip one of good edges
and abundance of fruit along the
this Wyoming. Apples, peaches & prunes
are loaded with excellent tasting
fruit. Peach & cherry trees are
just fruiting but in good condition.
G.O.S. Ranch to Terry place.

Aug. 20. Got our team to haul our stuff over the North Star Pass and doubled into the Terry Canyon as far as he could go with the team. Here we camped in beautiful yellow pine woods to wait for the pack outfit to sent our team 2 days back to Silver City.

Aug. 21. Hoteliers his nephew came over in wagon with 8 horses & a mile or more camp over into Big Rocky Creek, about 5 miles further north. This is a yellow pine & Douglas spruce gulch 8000 feet with a good stream & clear cold water, steep rocky sides covered with thickly a mixture of nut pines, juniper oaks and yellow pines on south slopes, yellow pines, Douglas spruce & pinus flexilis in cold slopes. A few ashes begin a mile above in cold gulch & Populus angustifolia follow up the creek a mile or two above camp. These in abundance of good greas over the ridges on both sides & lots of wild cottonwoods in places.

Orp. angustifolia
Mammals, Rocky Co.

- Odocoileus hemionus, Can. low down
- Can. high up to peaks; mainly Transition.
- Ursus arctos, Can. in Yellow Pines
- Ursus occidentalis, Can. Transition.
- Can. in Transition.
- Can. in Transition.
- Ursus arctos, Can. in Transition.
- Can. in Transition.
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Aug. 22 - Caught but little in our traps, but shot Chipmunks, Cottontails, and birds about squaw & leads.
- Shot a painted redstart in red creosol warsle, both in Kimathay condition:
- evidently breedless. Found house of Neotoma ophirhithus in Canadian zone high in cold slopes at 9000 feet.

Aug. 23 - Went up to Quaking Aspen Peak above the spring of same, tracks about 6 miles east of camp. The climb of camp lead 8100, at Spring 9000 and peak 9750. Found almost Canadian Zone: tiny of Aspen, fir, Douglas spruce & Pinks flowers (Antitrichion) on cold slopes above 8500 ft.
- One top bridge over 9000 ft. but transition yellow pine runs to top of peak on SW slope.
- Found plenty of Sedum, rosin and moss of Neotoma ophirhithus.
- The aspen are all tracked up with deer, near the spring. Rained most of the time so we could not shoot.
Aug 24. Packed up and started north on the North Star Road. Arrived near 8,000 at camp, 7,700 at fork of Rocky Cr. 8,200 on highest ridge of Mesa, 8,000 at rim of both sides of Black Canyon, 7,200 at bottom of canyon at Diamond Bar Ranch. 8,000 at Diamond Creek.

It is pretty bare transition, all the way except the hot slopes going out of Rocky Cr. and along the hot slope of Black Canyon. The bottom of both Black Canyon and Diamond Cr. are mainly transition, full of yellow pines & Populus angustifolia. The mesa tops are mainly open yellow pine forest with scattered nut pines & clusters of Juniper & oaks. Some slopes have some artemisia.

Grass is generally good but especially so between Black K & Diamond Cr. The bottom of Black Canyon is narrow, but flat & rich & gives long meadows of good hay land. Beautiful growth of Populus angustifolia grow along the river and some...
Boyledos and Walnut trees are scattered along. There are lots of rock squirrels + I saw freshcoon tracks.

The steep canyon slope facing SW is mainly Utes Bonneville, covered with five oaks (Arctostaphylos) and nut pines + Junipers + Cuscuta crispa. The mesa tops are largely open grazed grass country with Pinyon Pines but yellow pines are the principal edge & gulch timber.

Diamond Cr. valley is very open but both slopes are mainly yellow pines. The flat bottoms are beautiful open groves of Populus euphrasii + a few yellow pines. No Cody knees were found, but they are old log trunks & fused fields of weeds + grass. The bottoms are 40 to 60 feet wide of good yellow sand.

Along the sides are low cliffs of conglomerate shelf rocks that show shallow caves, so in these old cliff storage places like the cliff offices but not taller.
Aug. 25. Caught Nictara (?) and
with preparations to make up skins, so did not get off
till noon. Crossed over a 400 foot
ridge and down to the east fork of the
Gila at 6700 feet, then up it about
13 miles to mouth of Reden creek at
1400 feet and camped on the site of
old Fort Vincent.

The narrow flat bottoms and cold
slopes of the East fork are transition
with Populus angustifolia and Elaeagnus
but the warm slopes are intersected
with both junipers, Nut pines, Blue
oaks (California) and Quercus Lagoana. There
are lots of walnuts along the bottoms and
a few Badgers, Ceilis, and all those
worn or meteorological rocks walls makes
the narrow river flat most of the way
usually 40 rods or more apart but
in places narrowed up to a low canyon.
Above this river the valley slopes
are gradual, with good grass and
open or scattered timber.
North lives along the course as it is
all VXT range.
Aug. 26 Rained hard most all night. We caught only a few mosquitoes and moths along the cliffs. A large bear came part way to camp in morning. I shot a big bear and drilled on the back. Heed came squirrels.

Broke camp about 9 and climbed onto high mesa (7,400 ft), then down to Beaver Creek at junction of Redwood Trail. Break to V+T ranch and about 2 miles above to Beaver Lake and camped on west shore about 100 feet above lake at 7,500 feet by air.

After reaching the top of the first long slope of Upper Sandwich pines, blue oaks, and truck into great yellow pines. This continues all the way east on local hot slopes. Here is much thin gray granite top and valley bottoms t to the N.E. They are great green meadows and prairie fields, a green range of smooth high hills.

Beaver Lake is about a mile long and rocky ends between high cliffs of the old creek valley. It is not very deep but seems to be 8,000 ft high.
Odocoileus hemionus. A good many fresh tracks and deer bones seen along the road.

Antilocapra. Hotchkiss says there are more antelopes in his near Beaver Lake than any place he knows. When camping here last January hunting wolves he saw antelope every day & thinks there were 600 to 700 in this vicinity.

He counted as high as 80 in a bunch. Says they are common on the Condon prairies between the Black Range (good west of here) & the Elk Range. That same spot was the home of these little "Black Range." Also a few on the mesas on head of Indian Creek south of Condon symmetry. Last winter, about 20.

He says a herd of some 250 Bovids were in his last winter hunting. Deer & antelope - he thinks they got a big lot of both. He saw an Indian trying to rob one of them, a herd of cloth painted to represent an antelope, but one of the cowboys saw it & began shooting and scared them off. The Indian followed after the bunch and probably got another chance.

It is formed by two opposite sides gullies that have washed heavy fans across Beaver Creek channel & dammed it up. The water is fresh & good & there are weeds around the shores. A wash a mile below furnishes good breeding ground for eelgrass, but duckless say it's easier on the lake at all seasons, especially in winter. It is a tough place to hunt.

Yellow jackets, bumble bees, and honey. Moths, hops, and shrubs. Yellow headed blackbirds, Redwings & Brownies are common in the wash below & rails were heard they also. The gullies are full of torrs, yellow pines, grass, and brush along the base of cliffs. Good cover for birds & game.

Redwings was curious & set well to be gone & as Hotchkiss went out & set by Back Deck Hotchkiss says there are a lot of wolves these last winter.
Cervus canadensis, Hotchkiss's name for a fine bull elk in the N.E. corner of the Mogollons (or Lilyville) in 1894. Traces of this elk were reported by a rancher near the same year. These are the last elk Hotchkiss knew of being seen in this region.

Two were killed (a bull & cow) by Spencer Hill in The Mogollons about 1890. Hotchkiss says Hill owned the Gila Hot Springs then.

The bears were in Silver for a long time, but were sent by Hill to his father at Copperhill, Kansas. It was said to be an unusually fine bear.

Aug. 27. Hunted ducks & water birds, mainly with field glasses and got a good bird list. Found here a Porcupine lives in a rock den. There live lots of prairie dogs, Cynomys. Saw antelope tracks close to camp.

Aug. 28 — Broke camp and followed up Houghton Canyon west of lake, about about 6 miles, then cut into open meadow and a few miles over it but about 6000 feet. Then up a long, dry gulch and over an arm of the Elk Flat at 9000 feet. Down the west slope about 4 miles and camped in gulch at 8400 feet. Have climbed nearly straight west all day probably 15 miles.

The country is all transition zone except the steep south slope of Houghton Canyon which is covered with rim juncus, fynbos, & hay fields. The east is yellow pines & Gambel oak along ridges of old mountain ledges and the meadows are fern, grassy plains but undutifully transition.
Carnis Musciums, saw lots of wolf tracks
made last night. Night before
on the high mesa at head of
Houghton Cr. Canyon. Three of four
that had been along the road together
or some were very large.
This is ideal country for them.

Canadian Bighorn. Large bighorn
buck with big horns on the mesa
at head of Houghton Cr. Canyon is
a flock of deer at the salt licks
when we camped on at night.
All were the red coat and
the bucks horns were nearly full
grown.

There is no water in this part of the
Engulus. They are covered with open
and rather recently thinning of yellow
pines. Gambel's Oak start in the draws
where there is a fine stand of big
yellow pines. One little bighorn
buck in a cold gulch was the
only tree of Canadian. There were
few signs of rabbits or birds.
As into the whole country, are
of lava rock and very stony but
is good soil and yield good grass.
The peaks to the north of our camp
which seem to be the real elk beds.
are much higher to seem to have
Canadian corn timber on the cold slope.
A great stretch of high mesa
country lies to the west of us and
ranches across to the timber of
the Mogollons. It must be all
more of old put up mainly transition.
Aug. 29. With barometer reading 8400 ft. of camp we followed a mile down the gulch to Canyon Creek (about 8500) then up past an old lava lake and the stone wall, then west over a high mesa and onto a branch of the W. Fork of Gila. The north high mesa again north of it and along north base of the eastern Elk Mtn. to edge of timber on mesa across first creek out of Elk Mtn. camped at 8600. Rained from 8500 to 8600 all day.

Our magnificent grassy mesa is usually bare and thin tufted/wallow/ing but with rich soil of fine grass. There has been much rain and streams are mostly running. Grass is sufficient and flowers are abundant and brilliant. A few firing ponderosa and Cercus gambeli came down the gulches with these plants are all transition or transitional. Artemisia pycnoides is one of the characteristic species. There are many cattle on the range but not enough to keep the grass down. This is still NT range.
Stone wall

Meanwhile we struck Canyon Creek. An old stone wall crosses the valley and follows the eastern ridge a mile or two where we could see it, but we did not see the other two sides of an enclosure. It is in a rectangle, crossing the valley east and west, and following the ridge north and south in straight lines. It has been a good sized wall, 5 to 6 feet high, and it seems to have been in use for 100 years or just as well as 60. No one knows its origin or history. Hatfield says he thinks it extends for many miles.

It could have been used as an antelope or elk enclosure or pasture, but seems unnecessary and would not serve as a trap or pound. More likely it was a sheep pasture built by one of the early settlers. It is on woods which broken down covers the ground. The stones used are such as cover the country.
Camped on war in edge of yellow pines at S.W. base of the Ideal Elk Mts. at about noon. I walked 2 miles to the base & then climbed to the highest peak of the rim of the caldera 10,200 ft. and followed all way around the rim of single layer rock. The crater opens out into 2 gullies to the S.W. with great streama flowing down them. The slopes are steep & rocky with aspens & fine down to 9,000 ft. in cold gullies & on south slopes above 10,000 ft. Pines picea & balsam are abundant on cold slopes from 9,000 ft. to the top & above globulus & incana are prominent on cotton on cold slopes. Transition zone runs up to 10,000 on the S.W. slopes with picea & balsam & picea & incana & globulus above. All around the base of the caldera is good forest of yellow pines & in the brants it is unusually tall & large. I measured one fallen tree 4 ft. through at base & 100 ft. long & there were lots more like it standing.
To Negrita Ck. at Kuneup.

Aug. 30. Broke camp at 7:30 a.m. in about a mile south of Snow Creek, followed up 7 a.m. then west across open mesa to the divide & down Beardam Creek to Negrita Ck. camped in canyon near Kuneup Ranch. Camped at camp. 5600, on Snow Ck. 830; on Summit 8000, on Negrita 8000, on mesa south of Canyon 8000, at camp in canyon 5200. Stood in yellow pine woods at head of Beardam Ck. & kept in at all the way except on big open mesa crossed before last descent into canyon.

The Mogollon Upl. Ties stretch from the Mogollon up to top every NE slopes. Riesa pines, Abies concolor & Aspens come down to the creek. One more gradual slopes Canadian grouse begins higher up.

Prima ponderosa & P. fulva anblish this followed the creek bottom all the way down but the hot slopes above the bottom are warmed over with Nutmeg, Juniper & brush (P. virg.)
The Tulelake Wts. came down close to the Nipgata in the North but a strip of Upper Salmon covers the lower 3.6 miles, the Tulelake gay timber comes down the gulches and makes perfect communication across the camano to the Mosquitos, as it does also across in a solid body to the Elk Wts.

The upper Nipgata canyon is a beautiful narrow valley with open pine woods, a beautiful stream, and ideal campgrounds all along. There are a few old cabins but no occupied ranches. The trail is good most of the way except for a few rough narrows and steep stand hills up into the neck or back the below.

At a salt trough we saw a little white tail buck rest at the bottom, a two year old in the gray coat and 7 point velvet horns. We carried it along on the pack and skinned it at night. Would weigh about 75 lbs.
To Frieso & Resover

Aug. 31, followed down Negrito C. to Tulugosa & Tulugosa to the San Francisco R. & up to Frieso & Resover & camped in Mr. King's pasture a mile north of Resover.

Averaged at Camp 7,250, at Tulugosa River 6,200, at Frieso about 6,200 & camp 6,200.

The Negrito canyon is a beautiful wild gulf with high grass walls in places narrating up to a very rocky gorge, & again widening out with beautiful wooded bottoms, tangled up with grape vines.

Down to near the lower end of the canyon the soil slope of most of the bottom are transition with yellow pines, stumps & other forest pole wood predominating. The soil slope & more thin layer end of canyon are著作.com covered with Juniperus polycyclophora & nosococina, pines, eldus, Queen's alpine, Dirosa eugenia, Enchapote, etc.

No one lives in the canyon below the Promise Ranch.
A fine stream of good clear water half the way is said to be permanent. There are beautiful spots for camps all along. Under groves of cottonwoods or pines or junipers or walnuts with flat bank-like clearings and wooded cliffs to be explored.

After Deer tracks were seen at salt licks and Albert a squirrel, roe deer, a squirrel and chipmunks were seen all along. Nut tree houses were seen on tables and brush piles old and beaver stumps were numerous.

One Cottonwood tree too cut half down by beavers measured 24 by 26 inches at the cut. See photo. But the beaverwork was all old 10 or 20 years at least.

At times the clear fruit does not do well on the lower bottoms. Our apple orchard has yielded one year in 7 an account of fruit. Breakfast apples.
Reserve

Sept 14th. Camped in Mr. William Handy’s pasture a mile north of Reserve, under live oaks, junipers, and yellow pines by a good spring. Packed specimens and wrote letters and got supplies for the next trip. Dug a little collecting but left most of it for Goldman to take.

There are ruins of old pueblos at least two points in the pasture to others on nearly every point along the valley. Some were only single stone houses, others large groups of houses that have fallen down to leave only outlines of the walls. A few holes have been dug in some but they are mainly undisturbed. The town of Pithub stands on one of the large ruins, but a smaller one like flattened grass stands on a point a quarter of a mile.
Sept. 3. Left Reserve and followed up Campan.
Bonito due west to the foot of the ridge. Then out over a meadow and up a steep slope to the top of a ridge on top of main ridge about a mile east of
Hum. Arrived at Reserve and had 6200
from that point about 1 mile west 7300,
top of timber was about 7500 to 8000. Top
of ridge at camp 8400. From camp
I climbed the highest ridge in the vicinity
about 500 feet above, but forgot to take notes.
Practically the same sort of plants
finds and animals occupy this area as
the Woodlands, and the zone limits are
essentially the same.
Upper coniferous zone covers the
upperhills up to about 7000 ft on open places
but extends up to 8200 on SW slopes
and even to 8500 on steep rocky SW
slopes. It is characterized by Picea
edulis, Juniperus paskapooe, and

a variety of the large bear
pine—the
by Abies arizonica, Pseudotsuga
Aronia pumila, Picea abies, Abies
needles. Metasequoia, Ophiusa
in a flat area.
San Francisco MT.

Transition Zone begins on the uplands at about 7000 feet on N.E. slopes, but extends down along stream bottoms mixed with upper Sonoran. Pines pungens. Pseudotsuga are present from stream down to Reservoir and down the Finger Canyon for miles. On S.W. slopes Pines ponderosa begins at about 8500 feet (except on very steep slopes) and extends to the highest peaks, a little above 9000 feet. On the N.E. slopes it is replaced by other Canadian zone species above 8000 feet when the slopes are very steep. Western mountain mahogany and gambel oak of the same zone as ponderosa. While Pseudotsuga + Pines strobilus overlapped the upper part of Transition. The little Cushion and Berberis are abundant in Transition.

Canadian zone covers the steep N.E. slopes of the Mt from about 8500 to the tops, running level in steep gullies and disappearing from slopes that are graded. It is marked by Abies concolor, Pseudotsuga, Vaccinium, and a mixture of Pines, Strobilus + Pseudotsuga.
To Luca Valley.

Sept 4. Hunted over the Mts. all of Sunday and climbed the highest peak to the north of the trail, only about 8800 ft. The lowest mts. in the Mts. south of the San Francisco Ring Canyon is about 8500 ft until beyond the long ridge lying south of where the trail crosses. Canarian gavae is not very strongly worked or pure even on cold slopes, but it follows down gulches to below 5000 ft steep rocky places.

The trail continues west along the tops of long ridges and then descends down a long steep cliff to near the valley bluff. It has been built by forest rangers and most of the work has been in blazing trees. Almost every try near the trail and often 5 to 6 in a group as placed on both sides deep into the wood and for a space 2 to 6 inches wide. Lot over 500 ft long with a deep notch cut in above. On a small hte half the circumference is backed + thousands of thirsty young pines are removed.
Luna Valley.

At Camp the average was 8600
at Luna Valley 7500. At camp of
upper end of valley a mile north of 90.
Here Luna Valley is over 2
miles wide and 4 miles long, probably
an old lake bed, with high
rimrocks on the north, and forested
slopes on south and mountains on
east & west. The hills often contain
half a dozen chimneys when grain had a few vegetables are
raised, but many old fields are
abandoned.

Except a narrow rim of typical
seroirone, blue oaks, pinonpines & buttes
along the northern rim high above
the valley. The whole valley is
transition. Groves of big yellow
pines grow scattered over the
valley. Narrow band of cottonwoods
extend along the river bottoms.
Anceous gambelii grow along the edges
of the valley and a few foryeds on the
flats. A yellow Sesuvius weed covers
the valley with a coat of this light
yellow. Allamblia frigida is abundant
Spt. 24. Remained at camp trapping up the canyon but without much success. Found some brass pigeons plenty of corn for 1 cat & coyote tracks & a mink track, but could not stay long enough to begin catching them. Got plenty small stuff. Weasels. Voles, Ground squirrels, 2 species of Peromyscus, Chipmunks, ground squirrels etc. 12 species of bats.

Spt. 1. Broke camp and struck west of the Springsville road up over high ridges to 8,400 feet then on the same level to Rush Valley where we came close to the south side of the Escondilla Mtn. and decided to go up it, so turned north. Camped in a gulch on its south side at 7,000 feet at a little spring. Came through transition zone just all the way with yellow pines and a few Douglas's spruce & Gambel oak. On the level hot stuff slopes there were still blue oaks & quipers up to about 8,000 feet.
Camped about noon and started up the mountains at once. Riding up the trail to the great open grassy park on the first peak at 10,100 feet. There I parted the trees swinging around in the spruce and fir woods and climbed over Bridalveil strike across north to the highest peak and reach the main part at 10,800 feet. There is still a higher peak to the north that must be fully 200 feet higher, but we had no time to reach it. Spent all the time we could heeding bluegrass through the spruce but did not find any. There were two old craters with circular signs, and are formed of lava, as are all the rocks of this country. They are steep and tough but a good trail goes up. The stream of the first mountain is thin across about 2 miles of beautiful grassy parks to the peak. This flat part has several small lakes and numerous streams with flowing water, probably with nutrients. Dense Canadian spruce forest covers all the upper part above 9,500 feet.
on southwest slopes at about 9000 feet, NE. slopes or in gulches (or lower, as one did not go below 9000 ft). The zone is marked by *Picea engelmanni*. *Abies concolor* + *arizonica*. *Populus tremuloides*, on in part by *Pseudotsuga + Pinus strobiformis*. Also by *Juniperus communis*, *Salix cordata* (?), *Ribes hookerianum*, and numerous small plants.

Transition zone runs up to 9500 feet on SW slopes but stops below 9000 on NE. slopes. It is mostly *Pun- pous ponderosa + Picea engelmanni* with a mixture of *Pseudotsuga* + white *Pine* at the upper part.
Sept. 8. Rested camp. Came back into Rush Valley, went up the Alpine and over the pass to the Nutrioso and down to Nutrioso, about 3 miles west and camped on mesa.

Arrived at morning camp 9,000, at Alpine 8,800, at Summit 9,400, at Nutrioso 8,400, at camp on mesa 8,500.

The southern part of Rush Valley is largely settled and cultivated in a careless way, in such crops as wheat, hay, oats, potatoes, vegetables. Some of the fields are irrigated and others are not. Many old fields are abandoned to the weeds.

The houses and people seem poor and slovenly. Stock raising is the principal industry, grass is plentiful and good. There is not much tree growth and the valley soil is rich and heavy, but the climate is too cold for successful farming. The valley is all transition zone and the west end close to the edge of Canadian. Heavy yellow pine timber surrounds the valley and makes beautiful hemlock forests. Much has been cut for flood control and for building. But more remains.
A high, steep, rocky ridge runs all along the south side of the valley & continues west into the Whiterocks. Its steep, north slope is pure Canadian, gone to the base, covered with dense growth of aspens, firs & spruces.

At the west end of Bush Valley we turn north & follow up a small creek between the Esquimalt & White Buttes to the pass at 9100 ft., then down a long glen to the Nutrioso Creek. Both Canadian or cold slopes & glen creeks & swamps. At the pass below go through this pass.

Both Canadian & transition species occur free access through the pass.

Down the long glen from the Summit to Nutrioso Creek, it is transition zone: yellow pine & gambel oak plant on the warm slope & Canadian species on the north slope.

On Nutrioso Creek, the valley is transition to but a tongue of Upper Sonoran runs up the steep, south slope of the valley wall about 2 miles above the town of Nutrioso. This is marked by nut pines, junipers, pinyon & cressulas.
At Nuticus the valley is widen

traversed with upper savannu plains

or warm slopes. Besides nutplas &

junipers on the slopes the bottoms are
covered - places by Helianthus annus

"Helianthrea", Clover etc., but more

planted by Bigelowia & Artemisia frigida

& other xerophytic grass species.

A mile below Nuticus we turned

west across the valley & climbed

out into a widen 100 feet above & thereby

under junipers trees.

The farming along the Nuticus

Valley is mainly grains, wheat,

oats, rye etc. Crops are good

but quickly neglected generally.

Most of the fields are irrigated.

The soil is rich, heavy lava

adobe with enough moisture & sand

to make it workable.

The whole country is bare

overlying sandstone which hither

crops out here & there along the

sides of the valley.
Sept 7. Continued across mesa west to a creek that runs down to near Springerville & followed down this to the town. Got supplies & visited the first Supervisor's residence. Capt. photographing + trapping, Clay butcher. Then crossed to west side of the little Colorado & followed up its valley on a bear about 12 miles to edge of mountain timber & led to the bank, & continued north 7500 ft. Springerville—500 ft too high.

The valley is high & south slopes about Springerville are upper desert zone, but cold slopes down to near the town & the wet bottoms seem to be transition. Nut pines & both junipers cover the foothills & the valleys are a golden glow of Helianthus annuus, "Helianthella," Cassina grandiflora, Gutierrezia Rigoloides campestris & small green Seneio "rugosa," etc.

Along the wet bottoms are willows, narrow-leaf cottonwoods, etc. There are extensive wet marshes & flat fields of grass or grain.
The whole valley bottoms are in fields of grain as long. Little else is raised except vegetables. There are a lot of peach, apple, plum & cherry trees in town, but the people say they get fruit once in about 7 years. Late frost kills the young fruit. Frost spring a hard frost about June 3 killed all the fruit. They say the spring is early or warm even in February, trees start too soon. If they could be kept back as one woman said they did one year by keeping snow around each tree, a good crop could be raised.

Sheep are the principal stock & industry of the country. They are wintered all around here in the valley. Snow rarely gets deep or lays very long so the sheep can roam the slopes & climb. I went before snow much grass & weeds high and over much of the country a ton to the acre could be moved. The sheep have not come down into the valley yet, except west of the river.
when we passed 40 bigh rocks of about 2000 each. Ever here they had not eaten the heads of the grass
The whole valley & surrounding country is lava, old craters, big & little are seen on all sides.
On going up the river valley we passed 50 b. beautiful craters, some of low lava craters, others
of stuf cèmes of lava cinder.
On the mesa it is all lava another goa again to the little canyon where we camped its full of pines.
This is a good code box canyon about fifty foot deep.
Sept. 10. Continued over open yellow pine
most about 5 miles to where it
sticks the Little Colorado River at a mile
or two below Green, then up about 2
miles above Green & camped in the
canyon at about 8,500 feet on the
yellow pine slope. The opposite slope
(N.W.) is Aspen, spruces & pine from
top to bottom. The canyon here is
about 200 feet deep with steep sides &
narrow bottom. The Creek is a
screeing stream just too big to
jump across & heavily fringed with
Willows. A little open
slope gives up a beautiful camping
place with good Evaporation &
plashing ground along the stream at the edge slope.

Reached camp after noon & worked
on reports till time to cut out trips.
Sept. 11. Left Redaway to go to traps & finished wild west & started early in morning for the peaks. Climbed out of canyon on east side & followed thru about 10 miles, then up ridge about 5 miles west to top of Monos Peak at 11,280 feet. Did not lose time to go over to Red peak, still 3 miles further west & about 200 feet higher, but Monos peak is sharper & sharper with some timber in middle of slope. Found it an easy climb & I could have ridden a horse to the top if I could have gotten him out of the canyon at camp. Found the distance greater than I expected & did not start down from the peak until 4:30 P.M., so did not try to get back to camp. Spent the night in an old burning on the lower slopes of the mountain at about 9,500 feet. Made a rough bed against a log & kept a fire burning all night. Found little sign of game & the forest at mountain top are extremely lifelike for such ideal conditions. Grass is abundant in
Found a little Chipmunk like
European species on the very top
of Morse peak & got 2 specimens.
Few as now. Also got 2 Piesides
& a fEMALE bluegrouse, all good
records.

the peaks & open & on peaks but th
woods are covered in great part by
the little blueberry (Vaccinium vacillans). Generally this has little plant, but at about
10,000 feet there are a few vines berries
as well as a few blue strawberries.

Some down in the burns there were abundance
of red raspberries & stringy gooseberries,
and the inclined blue currants & the little red
gooseberries (Romneya) run to the peaks.

Shells are the principal stool in
the hills but they are not enough to eat
half the grass this year. The big western
pears from 9,000 to 7,500 feet cover miles
of country & are still fruiting deep in grass.
They are full of musty odor & spongy
and every body is now full of worries.
There are lots of trout in the streams
& the ducks are coming into the
ponds. I counted 35 mallards
& 3 greymaking that in one small section.

This year no canoes on the
moss except forst east when
some could be seen in the distance.
The grassy peaks are all in Canadian
Gone & sustained by aspen, spruce
for timber.
Sept. 12 - Hunted all the way back to camp, but found little save a flock of Bluegrouse. 2 old males which wilted so hot yesterday for lack of water, make good sport for a series. At Camp, found Hokettick had killed 3 turkeys & brought in 35 fine teal while Birdseye had a fine lot of Mistletoes, embroidered, Ecotangs, Pictorial and Ferns, yarns resembling 2 Sorex & half a dozen pine squirrels & 2 chukars. We are very hungry & dry, having camped about 30 miles with only a small lunch & dinner for 3 weeks.

Sept. 13-15 - Remain at camp, trapping, waking up & preparing ad writing letters. Hocottick kept us supplied with teal and our turkeys & quails collected for specimens furnished plenty of delicious meat. The horses feed equally well on the warm slopes of the canyon as covered with a large Vettili bunches of fruit that they are very fond of.
To Springville

Sept. 16. Left traps to bring in a lot of plums to make up before
treading, did not get off till 9:30. Got a skillet with woods
coleton. oval two Motons of the pine town group.
Came back over the same old road to Springville, at careful
in town to ship specimen.

Sept. 17. Got a late start (10:30) and came
down the St. Johns road as far as
East, (23 miles) and camped by
the Little Colorado at about noon next.
Came all the way over lava fields
and among old craters. Good
grampa gray adult lots of big feds.
I sleep? You are many folds
of basins and reservoirs full of water
but no small streams. The little
Colorado runs in a deep lava canyon
until it flows out at Walnut Grove
and still more at East Kansas when
the road goes down into the river
valley of the sandstone levels
below the lava cap.
To St. Johns


Got off at 9:30 + reached St. Johns at 11. Settled supplies out camp and slept. Below town on east side of river I got out all the traps we could find. Caught in typical broken beds or a part of the painted desert. Clay of fossil beds among bones of sauilas.

The river valley grows wider below St. Johns and at St. Johns it is a broad farming valley with extensive fields of grain oat alfalfa + corn and sugar cane (agave). The soil is rich guano but poorly cultivated crops are not very good. Fruit trees grow in town lots of peach + apple + pear trees but little fruit. Apples and pears are shipped in from others where there is more fruit this year.
To Zuni River

Sept. 19. Caught 3 Rutilus tancatz. F red
2 Neotoma tosachs. For last night we
did not quit till 9:15. Followed the
main road N E, one ridge and down to
Carrizo Creek, across the valley and
over another ridge to down to Zuni's
river valley, and camped on very nice
two of the ridges below the Windmill.
Came about 15 miles from St. Johns.
Camped early and set out at a lot of help.
The hard part of both Carrizos and
Zuni valleys are typical Painted Desert
with brood land colors or fullo in
elation of rainbow colors. Forest looses
are abundant over the slopes in
places and fossil logs are mummies in
others. Cut about 6 miles out
from St. Johns the road crosses
a jetified log 30 ft. put in diameter
5 extending along the surface in broken
sections for 40 ft. present. These
are scattered over the same slope
which leads down into the Carrizo
valley. The Zunis river where we
Camped had great hundreds of jetified
wood in the channel & small pieces
are scattered over the river.
The whole country is Upper Severance gone
with junipers on the ridges and Chilean
sabals and "coppertop" on the flats of
hot slopes, a few Sequoia trees along the
Zuni R., Escobia beans, big wine silky.
Blue Ephedra, Cretus texana, Chasea integrif.
Huntia uncinus, "Huntia" Bigelow's
canescens and green leafless, a low cylinder with
and a small flat oblique, and on hot
slopes a very rank odored Salvia are
common plants.

The deep channel of the Zuni River is
usually dry but at least pools of good
water in the pot holes at deep bends.
Grass is good on the ridges and
abundant over the valley, but mostly
grasses to poor kinds. There is
little stock in the country & it would
amount of rain this season has
given the grass a great boom.
Up Zuni River

Sept. 20. Caught 2 species of Yellow, a Rhytidostroma (or stenostoma) 2 greenish pollenous, T. M. above slightly winnowy, failed to get a specimen or recognition in both refused to touch it.

Stopped to make up & warmed daubers and did not get off till 9:15.

Followed up the Zuni valley past the Windmill & Deer Springs 2nd abandoned ranches, and at 6 o'clock the New Mexico line, 2nd camped on the big open valley above the canyon. For 6.10 miles the river valley continues up with high sandstone walls on the north and a lava-capped mesa on the south, both covered with junipers & willows. The valley bottom is flat and the river channel deep with out banks and most of the very dry except a small stream through the rocky part above Deer Springs. This is springy in places & the soil is alkaline, the pools when we camped are also very alkaline, the remnants of floods. The valley up here surrounds the canyon and above the naked tops. At Deer Springs 4 or 5 yellow pines grow on south edge of mesa, but 4 others have been cut.
Cold springs. A few dwarfed poplars

A sharp place in the canyon and at an old hand above the canyon. Junipers & live oaks cover the rocks on both sides. Foresting and a big crevice are the main features in the canyon. Bighorn sheep are abundant, also grizzly, black bear, muskrat,

Clown & Cotton go all up the th' canyon. There are lots of hawks & prairie dogs,
To Zuni

Sept. 21. The alkaline water made both Atchison & Reidway sick, so I had to get back part of the meat & stay. Got Atchison longiniformis, basalys, & Curvelinos. Reidway made up 3 miles and we got started at 8:30. Followed the old trail, crossed about 6 miles to Ojo Caliente, a poor little pueblo along the summit of a hill. Then turned north & to Zuni, about 15 miles. Got grain at the store & went up to a spring near the big Zuni Dam and camped. In going around by Ojo Caliente we left the 2nd valley & came into the 3rd again below Zuni. It is a wide, level plain, of good soil but somewhat alkaline. It is mainly covered with several grass Astreba caespitosa & some Sarcobatus, lots of Digitaria caespitosa & Scleropappus, dark green, sweet flat form. Gutierrezia, Croton, Cleome, Solanum (blue), Helianthus, "Helianthella," and in places a rank swarming Salsola. Fow 3 or 4 large Cottonwoods & a willow, but few grass along the stream. Helps the Pueblo people on a cold, cloudy day.
Over the ridges and mesas on all sides of the valley are junipers and pines, but only brush between. 

Grades is generally poor, owing to overgrazing both sheep and cattle. Here the cattle

The big dam and reservoir above is going to make a rich farming valley for third people. The land lies well, if there is plenty enough the valley can be irrigated for 15 or 20 miles and one to 4 miles wide. The one big ditch runs along the west end of the valley, or north edge at this and is 10 to 15 feet wide on the bottom and 2 to 4 feet deep. It is just completed, but has not been used. The Indians seem to think it was built just for their winter quarters and they came from far to near to occupy the banks. They overflow in near the bank and go straight back and hundreds of their overflows enter the lower back of the ditch.
Farmers also gather along the ditch but burrow more in the upper banks where the only damage I'm filling up the ditch. Many also burrow in the lower banks where they are sure to pierce the wall. Recognizing, Dungbees and numerous other little burrows appear in the banks and by time to turn the water in next spring a new ditch banks will be needed. Some one ought to get busy with a line of poison along the ditch.

The Indians of present raise little fields of corn & squash which are set all over the country without irrigation. Any little sandy plot when soil is good the water will stand after a rain in a hill or placed up with plenty of fib to take its current. This year has been unusually rainy & crops are pretty good. Corn that has apparently never been touched has a fair yield of ears. & little patches of squash in the sunburnt have good fruit. At O'Keef's we scant little patches of onions & chile are irrigated.
Sep 22, 1923 - From Zuni we follow a good wagon road almost due north, gradually rising higher till we climb into large yellow pines and gambel's oaks. Then we get into gentle slopes, our riding uphill. Soon we reach a great ridge, then down to about 1200 feet, camped 12 miles north of Gallup. From here we followed down a long gulch that leads off to the west, then over several ridges and reached Gallup at noon. Got our night's and noon's supplies and returned back with an old, Zuni road to east by a big teja.

From Zuni to Gallup the country is dry, with only a few places of very poor water, little grass, few people and no stock except sheep. It is mainly wooded ridges covered with junipers and nut pines. Almost all the way, well mixed with yellow pines and gambel's oak on the higher ridges and cold slopes. These ridges are the western end of the Zuni Mts, which rise black and fronted just east of us.
At our camp 15 miles south of Gallup we caught Western Peruvian and Peruvian mantises. We saw Entomis dorsalis, Callinotus grammatus, Carups grammatus, Sphace angora and Amblypia. Elephant sulcatus and beryl cucutes. The small alkaline stream where we camped is barely drinkable but this seems to be a great winter.

Sept. 24-25. Remained at our camp near Gallup writing reports, shipping specimens, making out yachts and collecting. Weather windy and occasionally with showers until the 25. Froze hard and blackened, thick the morning of the 25. 27 but clear and pleasant days.

Sept. 28. Got supplies and started for the Chuska mts. Camped about 2 miles beyond North Springs on the road to Ft. Defiance.

Came about 14 miles. Camped near some little lake, a rich pool of fairly good water. No change in some 12 species from the valley at Gallup.

All letters from...
Sept. 29. Caught 3 fish by Dipodomy. Mole hills and a Dipodomy or. A Molehill went off with a tent & 1 boat line. Packaged & started at 8:30 & arrived at Ft. Defiance, Arizona at 3 P.M. I camped at the agency. Came about 18 miles.

The country is very dry and barren no grass root of the way, all bushes. Not one tree eaten off by goats. Had to get hay at the agency store.

It is all Ponderosa zone, with mixed pines & Junipers where there on the ridge of Pinyon pines seaward. Sagebrush vegetation in the valley. Helianthus annuus & Pooaceae grow where not eaten by sheep.

Transition zone shows in yellow pines along the top & cold slope of the Big Mescal west of the Arizona line and over Big Mescal east of Ft. Defiance. A lot of scrubby yellow pines grow in a few rocky spots like of aidget 18 miles SE of the agency, but grow thin from severe abnormal weather.

Saw a coyote & heard his roar. Saw a few quails & quail hens. 

To Ft. Defiance, Arizona
Up chief's Mts.  

Sept. 30. Left Ft. Defiance and followed north up the Rose Valley about 6 miles then turned east up a canyon between high red sandstone cliffs and followed it back on top of the mesa to its very head, then on into other draws across plates and ridges, N.E., and camped at a spring 2 miles N.W. of Cheedaup Peak at about 5200 feet.  

The sandstone mesa cut up into canyons and plates, but above 8000 ft. in SW & N.W. on the slopes they are Transition zone. Open yellov fire成立了 Gambel's oak / some = buckthorn in cold slopes. They are rather dry with a few springs or small streams of long individuals. The grass is good in places but is very mostly eaten up by sheep & goats. The Mormons have numerous Hogans near the water places & run their sheep far back on dry ridges. They have now mostly left the hills, so the grass is drying up & it is getting cold & positive. All the sheep & horses on the open flat grass at camp was passed to a few small corrals.
Oct. 1. Remained at camp all day making up specimens and painting or setting tasks. Went to top of high mesa point just north of Cliffs Pike and got a good view of the country, colored in some maps and picked out trail to high road to north.

Found Adonis and Juniperus communis and Jepsonyrae canadensis on north slope and Labridae genus woodruffins all at about 8,500 feet, a string trace of Canadian zone.

Most of the mountains are一点一点的 heavy yellow and timbers with Gambel's oak on rough slopes.

Upper Sonoran that finds Juniperus scopulorum & non-nomadic Cosebeaters persisting came up on steep rocky slopes to above 6,000 ft. in places.

The Navajos have left their with their sheep, but recently there is little grass left. Horses are seen everywhere within mark of water. Some Siegmeister are penned in for miles of horse feed, but corralled are found on all sides for the sheep, and usually a season camp is begun by each corral.
Oct. 2. Packing up and started N.E. Climbed onto a long flat top ridge and followed it until it joined the main high mesa and then followed good trail 2023 miles N.E. through open, clear forest of fine yellow pines to the first lake. After passing 2 lakes we struck a shallow gulch leading off to the south and camped in it by some waterhole at about 8,500 ft. in a grove of pines. It was cold and windy and we found this gulch well protected and the most comfortable spot available. Camped about 10 A.M. Set traps up and down the gulch of that same specimen. Grassing short but the horses got through well without water. 2d P.M. I rode over point 4,935 mm N.E. to the N.E. and out to edge of the high mesa over the green meadow of the Chelsea with overlooking the great forested west of the Chelsea river valley. The wind was blowing a fierce gale so I could hardly ride against it, its dust was all dust with dust.
October 3. Still windy and cold and a little snow flying, not all day. Set Coyote and bobcat traps up by the lakes and sprinkled in woods. Got a wallard - big squirrel & saw turkey tracks and porcupine does.

Coyote. Clear of without storming but for a very cold night, have foot & thick ice. Warmed up with the sun and had a pleasant, quiet day.

Caught 2 porcupines, 2 whites & Hounds, 600 or 6000. Hounds, Houndsman, Houndsman, put into a place, & Beidens got most porcupines, Scirrus sogollumus, Entanies, Micrus, & Pinyons. A Coyote howled around eagle's Nearly all night but did not find any tracks up by lake. Set a few more traps.
Oct 5. Caught a coyote and a few more. Took up small things so as to be ready to start in morning. A very cold night, ice much, thick slept and inspite of fire impront of tent. Explored mountains and found a lot more lakes, shot 3 woodchucks in one dry lake that did not freeze over. Bluebirds perching on the ice of lakes. While the horses scattered out and sneaked off and hid in different directions so we found to track up each bunch and did not get them all till noon. Then packed up and traveled north over top of the mountain plateau past the big lake and beyond to where the big trail crosses to Shoshone on the east. Here we found wolf tracks so camped in flat spot. Came about 12 miles over land. Yellow pine forest country past legends of little big lakes that occupy almost every basin. Aspen trees cover all north slopes and fill the golden. Foulfels oak is abundant on rocky, east of ridges and stop slopes. Sunflowers and fellow grow mostly with aspen
Oct. 7. Continued north along top of flatland over same kind of country but at about 8,500 to 9,000 feet. Passed half a dozen large and small lakes until we came out on rim of deep canyon with wagon road in bottom that crosses the range in deep notch. Couldn't get down to road so camped at a little lake with fresh turkey tracks all around and set traps. This north end of the range has long deep slopes covered densely with Aspen and Picea pungens and Alders, arraigned along the stream gulches! There is a more extensive area of Canadian grass here than at the south end of the range where it appears only on local cold slopes and levels of canyons or north sides of ridges.

From just north of our last camp a high ridge of hard rock runs along the east crest of the range, deeply overlaid by horizontal sandstone beds. This reaches its highest point where it drops abruptly to the notch that which through our road passes.
Oct. 8. Hunted turkeys in prairie but did not find any. In P.M. took a horse and went down to road in canyon and up the range north of it, the Zuneda Mts. if the wagon road is correctly located on contour map. This range is largely volcanic and very rough in great black buttes and ridges on the same old sandstone mesa. There are huge buttes and cliffs of black basalt and deep canyons calyopites. In places the sandstone forms the floor of level valleys between the ridges.

The range is on a level with the Chushees, 8,500 to 9,000 feet generally. It is generally the same with the one time. Transition yellow pines, Douglas oak, butlat over the flat part of north slopes. Aspen and threes is fit on the higher cold slopes and in cold gullies. It is ever better and more sheeped off than the Chushees as the study slopes tare but little grass to start with and this is soon destroyed.
Oct. 9. Started down the wagon road to go to Flat Bluffs for mail but 8 miles down encountered the team (or substitutes) of Crystal with good stores, post office & daily mail. So shut down to Flat Bluffs (25 miles) for our mail and got what supplies we needed and some good tobacco. Crystal is about 2 miles east of Red Lake (called Black Lake on the map), a large body of water in the valley. No other in the country are heard of Black Lake. Our camps is at Cottonwood Flats, the only pass with a good across the little they say. From the pass it is about 5 miles to Fruitland.

I found transition zone down close to Crystal and even beyond on cold slopes. There are strips of willows and patches of yellow pine scattered over the valley where the slope changes from warm to cold. The warm slopes and flat part of valley are western Oregon, neither open to control with nut pines andf pinetrees. These extend just into the basins on steep U shaped slopes, while Carbohydrate zeros appear & slopes run halfway down. The roadキャン經濟 on cold slopes.
A few Populus angustifoliis seem near mouths of canyons probably give the name Cottonwood to the places. A few Indians live in loweredy canyon and one family have sheep & goats up a hill in the canyon. At this place an Indian was taking a sweat house bath with hot stones in water in a clay oven. These sweat houses are seen by fire, lake & stream or spring & pool all over the valley. It seemed to be muscled and hot. The Indian who was attending to the sweat house was talking & some animals was entirely naked & as finely formed as a woman as one often sees, with heavy chest & shoulders, slender waist & good limbs.

Oct 10, Audited turkeys most all day but did not see any. The tracks are miraculous. Saw a few bear tracks - Hotchkiss Peak & south of it a coyote. Fishings caught no yesterday, making it a vacation for this range.
**Oct 11.** Went down to Crystal prev. day and took a short cut across the flats. Down a canyon on west slope. Found this canyon about the same as Cottonwood Canyon only not so wide or long with a smaller stream. No one lives in it but sheep & goats are headed in the lower past.

Junipers & nut pines cover on south slope into lower past. Robins & Sandpipers are common in the Junipers and the Sandpipers singing jubilantly.

Saw a fresh bear track at head of canyon.

At Crystal the upper Sonora zone is ranked on warm slopes by Junipers & nut pines, Bigbuck, tortillo, Salvia carneas, Garrya & Opuntia. Bg. Arctostaphylos & Atriplex.

It is not very strong or plush.

**Oct 12.** Started at 7am, passed through Cottonwood Pass & down into the second basin, then north 5-06 miles and down to the plat of Huerfano Creek and down the creek to the Indian settlement & camped long after dark. Came about 20 miles.

From the lower edge of Huerfano Zone at 7000 ft we passed through a belt of Nut pines, Junipers (Crotolaria californica), Artemisia, Helenium & Arctostaphylos, Tarragon, Cresoceus & parviflorus, Guarea amorphus + breviflora, Opuntia (3 & 7 rose-thorn)

At about 5000 ft we left the pines belt & came out onto short grass plains for the rest of way.

Half a dozen big, wide leaf Cottonwoods are scattered along the plat & gulches at the Indian settlement, but other vegetation is scarce. Sarcobatus &tiny<br>Camisia & Conefirs are abundant on some hills.
Rocky Co. - Aug 23.