



Field notes, Death Valley Expedition, 1891

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Journal no VI

Frederick V. Coville

1
(Sunday) May 10, 1891

We reached Red Rock about 2 A.M. where we changed horses and got a cup of coffee. We reached the summit north of Red Rock at about sunrise, and at nine o'clock in the morning came to Indian Wells. We took breakfast here and changed both horses and driver. At about six o'clock in the afternoon we reached Haywood Meadows where we took supper and changed horses.

May 11, 1891.

Keeler, Inyo County, Cal.

We reached here this morning at 1:30 A.M. My saddle horse was left at Indian Wells to be brought in by the next stage.

The distances travelled yesterday and the day before by stage are as follows: Mojave to Red Rock
; Red Rock to Indian Wells
Indian Wells to Haywood Meadows
; Haywood Meadows to Keeler

Mr. H. E. Wilkinson the U.S. Signal Officer here has very kindly given me the use of his office while in town.

May 12, 1891.

Keeler, Inyo Co., Cal.

I remained at Keeler to-day
answering correspondence.

May 13, 1891

Keeler, Inyo County, Cal.

I remained at Keeler to-day
arranging notes

May 17, 1891.

Keeler, Inyo Co., Cal.

I made a collecting trip to-day in the mesa between Keeler and Cerro Gordo Mt.

The soil is made up of stone broken up so as to be quite small, but little water-worn; and filled and drifted over with sand. The soil is quite alkaline, as indicated by slight deposits in favorable places, and is especially marked as differing from similar mesas in the other valleys by the absence of Larrea except for a short distance below the mouths of the canons and in the beds of the canon washes. The bushes of Larrea in these places appear very healthy, and flower and fruit profusely.

The following plants were

seen in addition to a few
others collected. Alt. 3650 to 3700 ft.

1105 to 1125 m.

- Distichlis maritima
- Atriplex confertifolia
- Suaeda suffrutescens
- Cleome sparsifolia
- Cleomella obtusifolia
- Gilia leptomeria
- Oenothera scaevola purpurascens
- Oenothera gaumeflora
- Atriplex parryi
- Franseria dumosa
- Sarcobatus vermiculatus
- Biscutella californica
- Krynitzkia circumscissa
- Eriogonum reniforme
- Malacothrix sonchoides
- Oenothera brevipes
- Lepidium fremontii
- Oryzopsis cuspidata
- Encelia eriocephala

May 15, 1891

Keeler, Inyo County, Cal.

I went collecting to-day along the lake shore about a mile northwestward from town and then struck into the mesa northward through the sand-hills about a mile and then returned direct to the town.

The lake is bordered near Keeler and as far as the mouth of Owen's River by a strip, from a hundred yards or even less to a mile in width, of clayey sand with a deposit of soda and salt upon it, the sand particles firmly enough held together to prevent drifting by the wind. This ground is firm, dry on the surface, but well supplied with more or less alkaline water be-

neath. On the margin of this strip farthest from the water there is an abundant growth of Distichlis maritima, scantily mixed in some places with other small herbs. In the densest soda deposits the salt-grass cannot grow however and a large part of the lake-shore is therefore utterly devoid of vegetation. In many places, however, springs of fresh, or nearly fresh, water come up along the beach; and these are surrounded by growths of tules (Scirpus foetidus, S. olneyi, and rarely, at this part of the lake, S. lacustris occidentalis) and rushes (Juncus mexicanus).

In the salt-grass, which extends backward into looser lime alkaline sand are commonly found

Nitrophila occidentalis

Heliotropium curassavicum

Cordylanthus

Atriplex

Cleomella parviflora brevipes

Juncus mexicanus

Scirpus nevadensis

Still farther back from the shore the sand is looser and but slightly alkaline on the surface so that it drifts readily and is piled into sandhills. The most conspicuous and abundant shrub of these sandhills is

Sarcobatus vermiculatus

accompanied by

Atriplex parryi

confertifolia

Baccharis suffrutescens

Back of the sandhills the mesa begins with

Atriplex confertifolia

Franseria dumosa

Atriplex hymenelytra

The following plants additional
to those seen yesterday and to
a few others collected to-day were
seen

Chenopodium murale

Atriplex phyllostegia

Heliotropium curassavicum

Junas mexicanus

Polygonum aviculare

Composite, divaricate, small-leaved

Cordylanthus

Nitrophila occidentalis

Atriplex canescens

Scirpus olneyi

" nevadensis

" pungens

" lacustris occidentalis

Atriplex hymenelytra

May 16, 1891

Keeler, Inyo County, Cal.

Drove to-day with Beth and the two small Wrinkle boys to Swansea and the marble-quarry.

On the trip out we stopped at the old Swansea ranch then followed along the road at the base of the foot-hills to the marble-quarry. The earth-quake crack between the ranch and the point of hill westward is still clearly discernible.

When near the marble-quarry we took a cross-road to the salt flat along the lake and returned by that road.

Several new plants were collected at the spring of the old Swansea ranch and on the rocks near by some others were collected, besides the following seen

Tricuspidata = *Tridalia pulchella*

Lygodesmia exigua

Sisymbrium canescens

Scirpus fungens

Chorizanthe rigida

Eriogonum, shrubby

Bigelovia gravesolens

Anemopsis californica

Lycium cooperi

" andersonii

Nicotiana

Chenopodium

Malvastrum rotundifolium

(Sunday) May 17, 1891

Keeler, Inyo County, Cal.

I remained at Keeler to-day.

Nothing new observed. List of the
plants here for collection.

Mr. Farnston came in from
Cottonwood Cañon for supplies, one
party, Mr. Nelson and himself with
Ti Sing, being encamped there.

May 18, 1891

Willow Cr. Camp, Panamint Mts, Cal.

I left Keeler this morning with Mr. Funston by the Cottonwood Cañon trail, crossing the southern end of the Inyo Mts just south of Cross Gords Mt and descending nearly two thousand feet into an elevated valley filled with yucca arborescens, to be known in these notes as Yucca Valley. The trail then gradually ascends about a thousand feet westward passing through a small narrow cañon containing a poor water-hole; and descends five hundred feet or more to the divide between Panamint and Saline Valleys. The camp is about two miles northeastward from this divide, about a half-mile west of Jackass Spring, about 50 yards from Willow Creek.

The names following are defined to show what is hereafter meant by them.

Mill Cañon Divide is the divide between the north end of Panamint Valley and Saline Valley.

Mill Cañon is the cañon running from this divide down into Panamint Valley.

Willow Creek Cañon is the cañon down which the stream from Jackass Spring flows, into Saline Valley.

A dry arm of Willow Creek Cañon meets Mill Canon at Mill Cañon Divide. This is known as the south fork of Willow Cr. Canon.

Darwin Mesa is the elevated plateau bounded on the south by the Argus and Coss Mts, on the east by Panamint Valley, on the north by Saline Valley, and on the west by Cerro Gordo Mt.

and Owen's Valley.

Distance travelled Keeler to
Willow Creek Camp about 30 miles.

May 19, 1891.

Willow Cr. Camp, Panamint Mts., Cal.
 Altitude reading at camp ^{= 6400 ft. = 1950 m.} 8530

Mr. Farnston and I went collecting this morning on the hillside facing southward and lying just north of camp. This hillside is rocky (granitic) and is covered with a comparatively dense growth of shrubs. Its southerly slope prevents the growth of the Pinus monophylla, which is very abundant on the opposite side of the narrow valley occupied here by Willow Creek.

The lower part of the piñon here as well as gone, throughout the whole Darwin Mesa is remarkable as being almost entirely devoid of Juniperus californica ^{J. utahensis}. On the slope ascended there was none of it nor does there appear ever to have been any, for no stumps are to be seen.

This hillside which, it should be noted is rocky and in granitic soil, is characterized by the following predominant shrubs

Ephedra, dark green viridis
Purshia tridentata glandulosa
Ceanothus

Eriogonum, shrubby

The following plants were also seen on this hillside

Artemisia tridentata

Bigelovia, stems white, lvs puber.

Elymus, same as 827, condensatus

Ribes leptanthum?

Gilia pungens

Castilleja, smooth, tall

Rosa

Salix longifolia

lasiolepis

Phlox longifolia stansburgii

Lupinus no 764

Helianthus no 806

Phacelia fremontii

} along the creek

Opuntia nitida

Collinsia same as 750

Amsinckia

Viola aurea

Solidago

Mentzelia, same as 748, *albicaulis*

Bigelovia graveolens

Krynitzkia circumscissa

Layia glandulosa

Arabis, no 778, *pulchra*

Phacelia ramosissima

Oryzopsis cuspidata

Astragalus

Erysimum asperum

Cnicus

Eriophyllum

Anisocoma acaulis

Salvia columbariae

Mirabilis multiflora pubescens

Castilleja

Poa no 781

Stipa

Galium, glabrous

Eriogonum, shrubby, with white rounded leaves

Caulanthus crassicaulis

Thysanocarpus

Phacelia, no 779 curvipes

Cheilanthes nuxiophylla

Delphinium

Altitude reading at summit of hill
9750. = 7600 ft. = 2315 m.

This afternoon Mr. Funston and I ascended the hill south of camp. It is covered with Pinus monophylla on its north slope, down to the camp, but its uppermost part is probably of sub-pinon nature again as it bears no piñons and appears to run over from a slope of sub-pinon character on the south side.

The plants here abundant in the piñons and apparently characteristic of them are

Pinus monophylla

Ribes leptanthum?

Artemisia tridentata

Lupinus, same as 764

Poa same as 781

Poa, no 782, californica.

The dense shade of the pinons may have prevented some characteristic plants from growing in this particular place. Wherever the pinons are wanting Artemisia tridentata is especially abundant.

The following plants additional to those already recorded to-day were seen.

Krynitzkia pterocarya

Acrothobium on *Pinus monophylla*

Gilia inconspicua, no 780

Hymenatherum

Symphoricarpos

Silene, with oblanc. acute lvs 2 to 4 in long.

On the top of the hill in sub-pinon ground were found the following not recorded this morning

Solanum xanthi

Tetradymia canescens

Argemone hispida

altitude reading at summit of hill 9750 ft.
= 7600 ft. 22315 m.

May 20, 1891.

Willow Creek Camp, Panamint Mts, Cal.

Altitude reading at camp 9225 ft.
 " " " " at night 9400 ft.
 = 6400 ft. = 1950 m.

I went to-day to Mill Cañon Divide and southward on the Darwin road two or three miles farther, the road bending around to the eastward, and then proceeded down a canon to its junction with Mill Cañon at the old mill. The canon down which I came I have called the south fork of Mill Cañon. After proceeding about a mile down the canon below its fork I returned up the main or north fork to Mill Cañon Divide, and returned to camp by the trail.

Altitude reading at Mill Cañon Divide, on the way down, 8450 ft. = 5658 ft. = 1720 m.

On a southwest slope at the divide and a hundred feet higher is the upper limit.

of the following plants

Grayia polygaloides

Lupinus ^{ornatus}

Coleogyne ramosissima

Atriplex canescens

The plant most abundant just above these is Ephedra ^{viridis} dark green.

In the lower edge of the pinons on the north slope south of the divide is

Audubertia incana

The lower edge of the Pinus mon on a very gradual north slope is at a reading of $5-800\text{ ft.} = 1770\text{ m.}$

The north slopes and south slopes on small hills here present strikingly different appearances. The north slopes just below the pinons are covered largely with Artemisia tridentata; the south slopes, principally with dark green Ephedra ^{viridis} and Purshia tri-
dentalis ^{glandulosa} and the resultant color

are respectively gray and green.

Another conspicuous feature of the landscape due to slope exposure is brought out in this region by looking southward and northward at hills situated at about lower piñon line. In looking northward one sees scarcely a piñon, merely bare hills; while southward the slopes may be half covered with them.

On the plateau at a reading of 8700 ^{$= 5900 \text{ ft.} = 1800 \text{ m.}$} were

Juniperus californica utahensis

Artemisia tridentata

Ephedra ^{viridis} _^ dark green, and an occasional

Parachia tridentata glandulosa

On a gentle southwest slope at a reading of 8600 $= 5800 \text{ ft.} = 1770 \text{ m.}$

Coleogyne ruscissima was abundant

Juniperus californica ^{utahensis} _^ abundant,

Artemisia tridentata and

Ephedra ^{viridis} _^ dark green, about equal.

at a reading of 8550 ^{$= 5750 \text{ ft.} = 1750 \text{ m.}$} , on a

level plateau, where there were no rocks (the soil seen before has been rocky), the main vegetation is

Ephedra ^{nevadensis} _{glauca},

Artemisia tridentata

Helianthus same as 806

Yucca (brevipolia) ^{arborescens} begins here.

The old mill is 2100 ft below camp. = 4300 ft. = 1310m.

The south fork of Mill Cañon has no water, but the north fork is well supplied with small springs.

Altitude reading at camp at night = 6400 ft. = 1950m.

Following is a list of plants seen to-day in addition to those collected

Amesinkia tessellata Abundant up to pines.

Arenaria

Argemone hispidula

Artemisia spinescens

" tridentata

Aster (tortifolius) mohavensis

Asclepias erosa

Audubertia incana Below pines

Baccharis (of streams)

Bigelovia tertifolia

Castilleja

Ceanothus

Chaenactis With Coleogyne

Claytonia perfoliata

Clematis ligusticifolia

Cnicus

Coleogyne racemissima

Dalea frmontii

Delphinium

Elymus Abundant just below pines

Encelia frutescens

Ephedra viridis

" nevadensis

Equisetum no 808

Epipactis gigantea, no 809.

Eriogonum no 804

Eriophyllum no 793 = Syntrichopappus ^{frmontii}

Erodium cicutarium

Eschscholtzia minutiflora

Euphorbia albomarginata

Eurotia lanata At about upper Larra, scarce.

Galium

Gilia filiformis In upper Larra

" matthewsii In sub-pinson

" inconspicua

Grayia polygaloides

Helianthus, same as 806

Hordeum nodosum =

Juncus mexicanus

" xiphioides

Juniperus californica utahensis

Larrea mexicana About 1500 ft below camp

Lupinus ~~ornatus~~

" same as 764

Lycium cooperi

Lygodesmia exigua

Mentzelia, same as 748, albicaulis

Mimulus no 807

Hymenoclea salsola Extending above Larra.

Oenothera scapoidea frutescens

" caespitosa

Opuntia basilaris

Pectocarya setosa, no 800

Pentstemon

- Peucedanum, same as 745, parishii
Cymopterus no 789 = Peucedanum vaseyi
Phacelia fremontii
 " ramosissima
Pinus monophylla
Prunus fasciculata, no 801
Purshia tridentata glandulosa
Rumex, same as 823
Salix no 805
 " lasiocarpa
Salixaria mexicana
Salvia columbariae
Scrophularia californica
Sisymbrium canescens
Solidago, same as at Willow Cr.
Sphaeralcea, scarlet, munroana
Stanleya pinnata
Tetradymia comosa
Thamnosma montanum
Vitis In upper Larrea
Yucca (brevifolia) arborescens

May 21, 1891.

Alt. 3200 ft. = 975 m. Camp, Saline Valley, Cal.

This morning I took a short ride to Jackass Spring from Willow Cr. Camp, where I found additional

Smilacina sessilifolia

Mr. Nelson, Ti Sing, and I went to Mill Cañon Divide, down the south fork of Willow Cr. Cañon to its junction with the main cañon and down this to Saline Valley, camping just where the cañon opens into the mesa. The main cañon contains water throughout its entire length; while the south fork is dry.

In the afternoon I collected from camp up the cañon about a mile.

The lower two or three miles of the cañon led in Larrea, the upper portion in sub-pinon, and a few of the upper north slopes in pinon Pinus monophylla

May 22, 1891

Willow Cr. Camp, Panamint Mts, Cal.

I returned alone from Saline Valley to this camp this morning, by the same route taken in going down.

The plants seen yesterday and to-day are as follows.

alt. 3200 to 6400 ft. = 915 m. to 1950 m.

Amsinckia tessellata

Artemisia brevifolia, no 825

Arenaria, no 830, macradenia

Arabis as in Johnson Canon

" narrow leafed, with pubes. pods

" " glabrous "

Argemone hispida

Trisetum barbatum

Aristida (?) resembling Bromus = 1

Artemisia ludoviciana

" tridentata

Aster (tortifolius) moshavensis

Astragalus same as 783

" casei " 747

Atriplex canescens

" polycarpa

Asclepias rosea

Baccharis of wet soil

Babbia juncea

Bigelovia graveolens

Brickellia with ovate leaves = 1 aplophus interior?

_____ atractylodes

_____ longifolia

Castilleja of sub-pinnous

_____ of moist soils

Centauria melitea

Ceanothus reticulata

Cercis engelmannii

Chenopodium, no 813, album ~~mutate~~

_____ , " 815, fremonti

Chaenactis

Cheilanthes myriophylla

_____ viscida

Chorizanthe brevicornu

_____ rigida

_____ thorberi

Claytonia perfoliata

Clematis ligusticifolia

Cnicus

Coleogyne ramosissima

Cucurbita, with palmate leaves

Dalea fremontii

Delphinium

Distichlis maritima

Draba cuneifolia sonora

" no 816 = Capsella divaricata

Eleocharis, without fruit.

Ellisia chrysanthemifolia

" same as 622, micrantha

Elymus, no 827, condensatus

" condensatus triticoides

Encelia frutescens

Ephedra nevadensis

" viridis

Epipactis gigantea

Equisetum, same as 808

Eremiastrom bellioides

Erigeron, with stiff ascending stems

Eriogonum inflatum

" annual, birds-nest-like.

" fasciculatum

" similar to fasciculatum, yellow-fl.

Eriophyllum, no 834, ambiguum

" pringlei

Erodium cicutarium

Euphorbia albomarginata

Eurotia lanata

Festuca microstachys

Franseria dumosa

Galium no 831

Gilia filiformis

" latifolia

" matthewsii

" same as 772

" similar to inconspicua, but broad-fl.

Grayia polygaloides

Gutierrezia

Gymnogramme triangularis

Helianthus, same as 806

Hordium nodosum, no 833 = Elymus sitanion

Hosackia no 819 = Lotus americanus

Iva axillaris no 832

Juncus bufonius

" mexicanus, no 810

" repensoides

Juniperus californica utahensis

Krynitzkia barbigera

" circumscissa

" micrantha

Krynitzkia racemosa

Larrea mexicana

Lepidium fremontii

" lasiocarpum

Lupinus with small pink flowers

" same as 764

" ~~chamissoi~~ ornatus

Lycium andersonii

" cooperi, no 826

" smooth-stemmed. In Saline Valley

Mentzelia, same as 748, albicaulis

Minimus luteus (glaucescens)

" same as 807

Mirabilis californica

Hymenoclea salsola

Nemacladus, no 811, ramosissimus

Nicotiana trigonophylla

Notholaena parryi

Oenothera biennis

" caespitosa

" scapoidea purpurascens

" no 820

", same as 75-9, dentata

" contorta pubens

Opuntia basilaris

rutile

Oxytheca perfoliata

Pectocarya setosa

Pentstemon, glaucous, linear-leaved with broad ^{corolla}
" " " " with narrow corolla

Phacelia fremontii

" hispidula

" ramosissima

" purple with pinnatifid leaves

" rotundifolia, no 814

Phoradendron bolleanum

Phragmites communis

Pinus monophylla

Prinosia

Poa

Potentilla, no 821, rivalis millegrana

Prosopis juliflora

Prunus fasciculata

" andersonii

no 829 = Forstiera parviflora

Pterostegia drymonioides

Purshia tridentata glandulosa

Rosa no 828

Rumex crispus

" no 823

Sabbatia no 818 = Erythraea exaltata

Salix lasiandra

" lasiophis

" longifolia

Salizaria mexicana

Salvia columbariae

Scrophularia californica

Senecio douglasii

Polygomon monspeliensis

Sisymbrium canescens

Solanum xanti

Solidago

Sonchus

Sphaeralcea, scarlet, munroana

" no 822

Sporobolus airoides

" like Epilampos

Stanleya pinnatifida

Stachys

Stephanomeria

Stipa

Symphoricarpos, no 836, longiflorus

Tetradymia spinosa

Thamnosma montanum

Tricardia watsoni, no 837

Typha

Vitis

Yucca (brevifolia) arborescens

Phlox longifolia stansturgi

Anisocoma acaulis

Mirabilis multiflora pubescens

Brodiaea

Festuca microstachys
Bouteloua, same as 775 =

Caulanthus crassicaulis

Composite same as 794 = Aphlopappus interior

" " " 802 = Aphlopappus monactis

" " " no. 839 = Crepis intermedia

Grass no 824 = Deschampsia calycina

Altitude of Saline Valley camp, 3200 ft. = 975 m.

" " lower limit of pinons ^{= 4400 ft. = 1340 m.} 400 above

" " upper limit of Larrea ^{= 3600 ft. below Darwin} 1200 ft

On the mesa in Saline Valley, annual vegetation is dead. The following are shedding their yellowed leaves, Lycium andersonii, Symonclea salecta, Dalea fremontii.

May 23, 1891

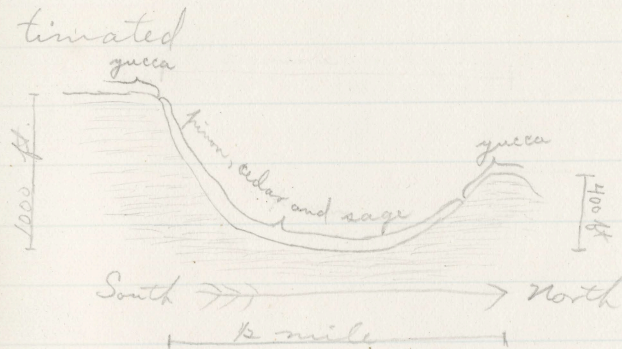
Keeler, Inyo County, Cal.

I returned from Willow Cr. Camp to-day by the same trail on which I went there.

Altitude reading Willow Cr. Camp	8475	= 6400 ft. = 1950 m.
" " Mill Cañon Divide	7725	= 5650 ft. = 1720 m.
" " summit east of Yucca Valley	8700	= 6300 ft. = 1920 m.
" " spring 8 miles from camp	7750	= 5600 ft. = 1705 m.
" " Yucca Valley	7525	= 5400 ft. = 1645 m.
" " lower pinon, north slope Cerro Gordo	8100	= 5950 ft. = 1815 m.
" " crossing of Darwin-Cerro Gordo trail	9200	= 7100 ft. = 2165 m.
" " summit overlooking Keeler	8900	= 6700 ft. = 2040 m.
" " Keeler	5450	= 3650 ft. = 1115 m.

Where the trail ascends the east slope of Cerro Gordo Mt. there is a small lateral valley, between Yucca Valley and Cerro Gordo Mt., in which an interesting case of slope exposure may be seen. It is especially interesting as it appears not only to show the lower limit of *Pinus monophylla* as a line of varying altitude, but the *Yucca arborescens* actually appear above

the pinons. The following diagram shows the situation, the section being a vertical one from north to south. The distances were estimated



(Sunday) May 24, 1891.

Keeler, Inyo Co., Cal.

I remained at Keeler to-day.

May 25, 1891.

Keeler, Inyo County, Cal.

I remained at Keeler to-day
preparing a catalogue of species
so far seen.

I bought a horse for Beth
to-day.

May 26, 1891.

Keeler, Inyo County, Cal.

I remained in town to-day
writing on my report.

May 27, 1891

Keeler, Inyo County, Cal.

I went to-day with Beth to the cañon north from Swansea. It contains no water and is narrow and shallow. The following plants were seen in the cañon:

Aster (tortifolius) mojavensis

Atriplex confertifolia

..... hymenelytra

Brickellia atractylloides

..... longifolia

Cereus engelmannii

Chaenactis

Chorizanthe brevicornis

..... rigida

Echinocactus polycephalus

Encelia frutescens

Eriogonum inflatum

" same as 869

" birds-nest-like.

Eschscholzia minutiflora

Encinide arvensis

Franseria lunosa

Gilia latifolia

" tenuiflora

" floccosa

" like inconspicua but broad-leaved

Krynitzkia barbigera

" circumscissa

"

Larrea mexicana

Lepidium fremontii

" lasiocarpum

Lycium cooperi

Malvastrum rotundifolium

Medicago sativa

Melilotus (parviflora) indica

Mentzelia (of Owens Valley)

Mirabilis californica

Mohavea viscida

Nicotiana trigonophylla

Oenothera brevipes

Opuntia basilaris

Oxytheca perfoliata

Petalonyx

Pseudophyllum schottii

Phacelia, fl. purple, lvs pinnatifid

Salizaria mexicana

Salvia columbariae

Senecio douglasii

Sphaeralcea, scarlet, munroana

Stephanomeria

Stipa

Stanleya elata

Thelypodium, similar to Stanleya = ^

Hymenoclea salsola.

May 28, 1891.

Keeler, Inyo County, Cal.

I was prevented from starting for Coos to-day by the continued soreness of my horse's back. I therefore began determining species that were collected since the last sending to the Department.

May 29, 1891

Keeler, Inyo County, Cal.

I remained at Keeler to-day
determining plants.

May 30, 1891

Keeler, Inyo County, Cal.

I determined plants to-day.

Late in the afternoon Mr.

Palmer's party came in from Coss. It consisted only of Dr. Fisher, Mr. Palmer and Mr. Koch. They went into camp in the sand-grass between Keeler and the lake.

(Sunday) May 31, 1891
Keeler, Inyo County, Cal.
Remained in Keeler to-day

June 1, 1891

Keeler, Inyo County, Cal.

I wrote up notes and catalogues to-day.

June 2, 1891.

Keeler, Inyo County, Cal.

Worked on notes and plants to-day

June 3, 1891

Heeler, Inyo County, Cal.

Worked on notes and plants
to-day.

June 4, 1891

Keeler, Inyo County, Cal.

Mr Palmer and his party went to Lone Pine to-day. Beth and I accompanied them as far as they went before lunch, about a mile north from the north end of Owen's Lake.

They took what is known as the "Lower road" passing the old adobe house between Swansea and the marble quarry.

At the Adobe House Spring the following plants were seen

Anemopsis californica

Lemna

Nasturtium officinale

Ranunculus cymbalaria

Rosa

Scirpus pungens

Polygonum monspeliensis

Zinnichellia palustris

The following new or interesting plants were seen at the

north end of the lake and along
the river.

Abronia same as 845-

Atriplex canescens

" confertifolia

" torreyi

Atropis (1)

Blitum

Dalea polyadenia

Elymus condensatus triticeoides

Snaphalium

Krynitzkia circumscissa

" micrantha

Nasturtium curvisiliquum lyatum

Poa

Psathyrotis annua

Oryzopsis (cuspidata) membranacea

Ranunculus cymbalaria

Tissa

Sarcobatus vermiculatus

Scirpus laevis occidentalis

June 5, 1891.

Keeler, Inyo Co., Cal.

Worked on plants and notes to-day

June 6, 1891

Keeler, Inyo County, Cal.

Worked on plants and notes today.

(Sunday) June 7, 1891

Keeler, Inyo County, Cal.

Beth, Mrs. Wilkinson, and I went to Lone Pine to-day, and took dinner at the camp, at Harvey's ranch, about a half-mile north of the town.

In the afternoon Dr. Fisher, Mr. Palmer, Mrs. Wilkinson and I went to the cemetery then to the nearest point of the earthquake crack and then back by way of the swamp on Mr. Harvey's farm. I collected several species not before seen.

We reached Keeler on our return at about half past eight o'clock.

June 8, 1891.

Keeler, Inyo County, Cal.

I met this morning Mr. Frank Kennedy a prospector who has lived several years among the Indians, recently at Wild Rose Panamint mts. He gave me much new information.

In the afternoon I went with him about two miles on the road to Cerro Gordo. The only plant seen not recorded from this place before was

Atriplex polycarpa

June 9, 1891.

Keeler, Inyo Co. Cal.

I spent to-day writing up my
journal.

June 10, 1891

Keeler, Inyo Co., Cal.

I spent to-day writing up my
journal.

June 11, 1891.

Crystal Spring, Coso Mts, Inyo County, Cal.

Went to the Coso Mts with Beth today.
We took Geo and the cart, and Bucephalus.
We followed the Darwin road to the
upper Stone Corral and then took
the right-hand road towards Coso.

Altitude of the lower Stone Corral ^{5:15 A.M.} 4680 ft. = 1425 m.

Summit of first canon = 4800 ft. = 1465 m.

Darwin Mesa, first Yucca = 5830 "

" " " = 4300 ft. = 1325 m.

" " " = 3350 "

" " " = 4650 ft. = 1415 m.

" " " lower Yucca line = 5650 " 11:5 P.M.

This is just a few feet higher than
the upper Stone Corral.

First Artemisia tridentata and Purshia triden-
tata in a wash, 6500 ft. = 5800 ft. = 1675 m.

Artemisia tridentata abundant 6825 = 5800 ft. = 1765 m.

The following plants were seen to-day
after entering the wash a mile or two
above the lower Stone Corral.

Abroonia (collected at Kulis)

Acanthopappus shamocephalus

Amsinckia tessellata

Anisocoma acanthis

Arabis (pods reflexed, pubescent or smooth)

Argemone hispida

Artemisia spinescens

" tridentata

Asclepias erosa

Aster (tortifolius) mohavensis

Astragalus

Atriplex canescens

" confertifolia

" hymenelytra

" phyllostegia

" polycarpa

Bigelovia (large like testifolia) paniculata

Castilleja (of sub-pinnous)

Chaenactis

Chorizanthe brevicornu

" rigida

" thurberi

Dalea polyadenia

Dicoria canescens ~~##~~

Echinocactus polycephalus

Encelia frutescens

Ephedra viridis

Ephedra nevadensis

Eremiastrium belliioides

Erigeron (yellow)

" same as 931

Eriogonum inflatum

" plumatella

" trichopodium

" reniforme

" same as 869

" same as 909

Eriophyllum pringlei

Euphorbia albomarginata

Eurotia lanata

Franseria dimosa

Gilia floccosa

" latifolia

" matthewsii

" setosissima punctata

" tenuiflora

" inconspicua ♂

Grayia polygaloides

Gutierrezia

Helianthus (like Gymnoloma)

Hordeum nodosum = Elymus citarion

Hymenoclea salsola

Kochia, (?) no 905, americana

Krynitzkia latigera

_____ circumscissa

Larrea mexicana

Layia

Lepidium fremontii

_____ lasiocarpum

Lupinus same as 817

_____ andersonii

_____ cooperi

Lygodesmia exigua

Menodora spinescens

Mentzelia

Mirabilis californica

_____ multiflora pubescens

Nicotiana trigonophylla

Oenothera brevipes

_____ caespitosa

_____ gauraeflora

_____ scapoidea

_____ scapoidea purpurascens

Opuntia basilaris

Opuntia echinocarpa

" rutila
membranacea

Oryzopsis (cuspidata) (into the Yuccas)

Oxytheca perfoliata

Palafoxia linearis

Pectocarya setosa

Pentstemon (same as 922)

Petalogyne

Pencedanum, same as 745, parishii

Phacelia fremontii

" ramosissima

Purshia tridentata glandulosa

Salizaria mexicana

Salvia columbariae

Sisymbrium canescens

Sphaeralcea, scarlet, munroana

Stanleya pinnatifida

" elata

Stephanomeria

Stipa

Tetradymia comosa

" spinosa

Thelypodium (?) same as 925 = Caulanthus pilosus

Tricuspis = Triodia pulchella, Yucca (brevifolia) arborescens

June 12, 1891

Crystal Spring, Coso mts., Inyo Co., Cal.

Altitude reading, camp 8 A.M. $7160 = 6000 \text{ ft.} = 1830 \text{ m.}$

I collected up to an altitude of 7450 (10 A.M.)
directly above the spring in the forenoon.
 $= 6200 \text{ ft.} = 1890 \text{ m.}$

Altitude reading at camp, 11:30 A.M., 7300
 $= 6000 \text{ ft.} = 1830 \text{ m.}$

In the afternoon I went to the first ravine southward from the spring, about $\frac{1}{2}$ mile, and ascended this to an altitude of 7670 ft.
 $= 6700 \text{ ft.} = 1950 \text{ m.}$

This was somewhat above the line of lower piñon on north slopes, but all the trees have been cut off for firewood.

Altitude reading at camp 7400 (4:30 P.M.)
 $= 6000 \text{ ft.} = 1830 \text{ m.}$

Following are the plants ^{seen} collected to-day in addition to some of those collected yesterday and others collected to-day.

June 13, 1891.

Keeler, Inyo County, California.

We left Crystal Spring this morning and took the road to Darwin, and from there proceeded by the stage road to Keeler.

Altitude reading ^{at Crystal Spring} at 6 A.M. 7300 = 6000 ft. = 1830 m.

" " crossing of wash from Crystal Spr.

and first road

6975 = 5780 ft. = 1735 m.

= 5000 ft. = 1525 m.

Upper Larrea mexicana

6230 8:20 A.M.

Lower Yucca ^{arborescens} _{about}

= 4200 ft. = 1280 m.

5350 8:45 A.M.

Darwin

= 4840 ft. = 1475 m.

5900 9:15 A.M.

= 5700 ft. = 1535 m.

Upper Larrea ^{mexicana} south slope northwest of Darwin 6300 10:30 A.M.

= 5300 ft. = 1615 m.

Summit, Darwin - Keeler

6500 11 o'clock

= 4550 ft. = 1385 m.

Stone Corral

5750 1355 m.

Summit of Canon

= 4450 ft. = 1320 m.

5640 3.20

Keeler

= 3622 ft. = 1105 m.

4850

June 14, 1891

June 15, 1891

June 16, 1891

June 17, 1891

June 18, 1891

June 19, 1891.

Walker's Ranch near Olancho, Inyo Co., Cal.

We left Lone Pine this morning at about seven o'clock, Dr. Merriam, Mr. Palmer, Beth, and I with McGaff for teamster. Beth and I rode in the cart after Gosi.

We went down the west side of Owens Lake keeping the regular road. This is at some points about a hundred feet above the level of the lake. The region lies in upper Lamra, but this plant is wanting except in the mouths of some of the canons. The first seen was near Cottonwood, and from that place southward it grew about the canon mouths in greater abundance. It is now in fruit and the white capsules give the plant a gray appearance that renders it not very easily distinguishable at a distance from the *Atriplex* brush.

The most abundant shrubs are

and Fanseria dumosa
Atriplex confertifolia, with, in some
 parts of the way, Artemisia tridentata,
 while the following occur frequently

Lycium cooperi Dalea fremontii

Tetradymia comosa

sp. spinosa

Acanthopappus sphaerocephalus

Composite, same as 802 = Aphelactis mon-
actis

Lycium andersonii

We crossed several water-courses,
 in which were growing Populus
Fraxinus and ashes, with willows, Salix
 and other moist soil species.

On the mesas on the richer soil
 especially about the ranches at the
 lower end of the lake Bigelovia grac-
colens and B. douglasii were abund-

ant.
 The country has been much
 traversed by sheep so that
 nearly all the annual vegetation
 is gone.

The following plants were also
 seen.

Anemopsis californica

Argemone hispida

Artemisia ludoviciana

Artemisia spinescens

Aster (tortifolius) mohavensis

Atriplex canescens Atriplex parryi

" polycarpa

" torreyi (near Walker's Ranch)

Azolla

Burchellia longifolia (Cottonwood)

Chaenactis carphoclinia

Chomella obtusifolia

Cuscuta

Dalea polyadenia

Dalea

Datura meteloides

Distichlis maritima

Encelia frutescens

Eriogonum inflatum

" fasciculatum

" annuel, leafy above

Erodium cicutarium

Eurotia lanata

Equisetum

Franseria dumosa & F. hookeriana

Faxinus coriacea

Gilia floccosa

" matthewsii

Glycyrrhiza

Grayia polygaloides

Heliotropium curassavicum

Lemna

Legume same as 900 = Lotus oblongifolius

Mimulus luteus (small)

Nasturtium officinale (?)

Oenothera gauraciflora

Opuntia basilaris

" echinocarpa

Petalonyx

Polygoum monspeliensis

Ranunculus cymbalaria

Rosa

Salix lasiandra

" longifolia

Sarcobatus vermiculatus

Scirpus nevadensis

" frungens

Senecio douglasii (Cottonwood)

Sesuvium portulacastrum

Sisymbrium canescens

Sim = Berula angustifolia

Spirogyra

Sporobolus airoides

Stanleya pinnatifida (1 inch trunk)

Suaeda suffrutescens

.. same as 894

Trifolium

June 20, 1891.

About six miles south of Little Lake, Inyo County, Cal.

We left Walkers Ranch this morning at half past six and followed the road southward passing Olancha, Haywe Meadows, ^{Rose Spring} Goat Ranch, and ^{Olancha} Little Lake; and made a dry camp at this point.

About a mile south of Little Lake the axle of my wagon broke, and I mended it with bars of iron and baking wire so that it could be ridden.

The country traversed was similar to that passed over yesterday, as far as ^{Rose Spring} Goat Ranch. Here the Larrea began to cover the ground except the lowest portions of the valleys. The growth of them is very healthy and large, and there is little else than Franseria dumosa among them.

Altitude reading at camp this morning	(6:30)	4630	= 3760 ft. = 1130 m.
<u>arborescens</u>			
<u>Yucca</u> " begins	(7:15)	4700	= 3800 = 1160 m.
Haywe Meadows	(10:00)	4725	= 3800 = 1160 m.
Rose Spring	(11:20)	4550	= 3545 = 1088 m.
Valley north of Little Owen Lake	(1:00)	4440	= 3460 = 1050 m.
Spring by road just below	(4:00)	4325	= 3300 = 1005 m.

Sunday. June 21, 1891

Cambrake Creek, Kern County, Cal.

We left camp at six o'clock this morning, proceeding southward along the stage-route till opposite Walker's Pass. We then took the road to the pass and reached this place at about seven o'clock.

The lowest reading on the stage road was 3200 ft and at this altitude and for a few hundred feet above the main vegetation was Larrea mexicana, Franseria dumosa, and Dalea pambontii.

The following altitudes were taken

This morning's camp (6:00)	= 2350 ft. = 715 m. (3575)
Indian Wells (11:00)	= 2606 ft. = 795 m. (3800)
Top stage road + Walker's Pass road	= 3050 ft. = 930 m. (4250)
<u>arborescens</u>	= 3400 ft. = 1035 m. (4500)
<u>Yucca</u> in wash	= 3750 = 1145 m. (4850)
<u>arborescens</u>	= 3800 = 1160 m. (4900)
<u>Yucca</u> (lower) on hillside	= 4000 ft. = 1220 m. (5000)
<u>Larrea</u> ceases	= 4200 ft. = 1280 m. (5200)
Spring by roadside	= 4900 ft. = 1495 m. (5800)
<u>Tetradymia spinosa</u> abundant	
<u>Pinus monophylla</u> begins (north slope)	

Summit of pass and uppermost

grasses on south slope

$\approx 5722 \text{ ft.} = 1540 \text{ m.}$
(6050)

On the west slope of the pass, going down,
the following altitudes were taken

Yucca ^{arborescens}

(upper limit but often goes lower)

$\approx 4900 = 1495 \text{ m.}$
(5600)

Canebrake Ranch

$\approx 3907 = 1190 \text{ m.}$
(4900)

Following is a list of plants seen in addition
to some others collected.

Acanthopappus sphaerophalus

Anemone californica

Argemone bispidula

Artemisia tridentata

Asclepias erosa

Astragalus

Atropis canescens

confertifolia

polytricha

torreyi (on the east slope of the divide at about
[4600] 3800 ft. $\approx 1070 \text{ m.}$)

Audubertia incana filosa

Baschania (of moist places) (at Indian Wells)

Bigelovia Douglasii

graveolens

" (tortifolia) (at summit and on west slope)

Ceanothus ^{cuneatus} (reticulata) same as 1026

Chorizanthe thurberi

Cucurbita perennis

" no 1011

Dalea fremontii

Datura meteloides

Distichlis maritima

Encelia frutescens

Ephedra nevadensis

" viridis (in the pines east of the [divides])

Eriogonum fasciculatum

" inflatum

" viriforme

" scandens

Erodium cicutarium

Euphorbia albonervata

" pediculifera no 1008

Franseria dumosa

" hookeriana

Gilia matthewsii

Grayia polygaloides

Heliotropium curassavicum

Hosackia no 1017 = Lotus procumbens

Hymenocallis salicicola

Iva axillaris (Canebrake Ranch)

Juncus mexicanus

" siphnioides (spring on east slope of divide)

Juniperus californica

Larrea mexicana

[Grassvine Creek]

Lepidoschartum squamatum (first seen near

Lupinus shawii ornatus

Lycium andersonii

" cooperi

Minulus luteus

Mirabilis multiflora pubescens

" californica no 1018

Nicotiana

Nitrophila occidentalis

Oenothera scabrida purpurascens

Opuntia basilaris

" eschinocarpa

Oryopsis (cuspidata) membranacea

Pentstemon (shrubby, of pinnate)

Petalogyne

Pholisma arparium

(first seen near Indian Wells)

Pinus monophylla

" sabiniana

" jeffreyi

Polygonum aviculare

Polygoum monspeliensis

Populus (seen only west of the divide)

Prunus fasciculata

" andersonii

Purshia tridentata glandulosa

Ranunculus cymbalaria

Rosa

Rumex crispus

Salix lasiandra

" lasiobasis

Salizaria mexicana

Salvia columbariae

Sambucus

Scirpus pungens (spring on east slope of divide)

Senecio douglasii

Sium = Berula angustifolia

Stipa

Tetradymia chinensis

" canosa

Trifolium

Yucca (brevifolia) arborescens

The desert flora does not end abruptly at the divide as in Cajon Pass but extends over with comparatively little

change. The altitude is too great for the laurea belt so that several shrubs characteristic of it do ~~not~~ appear on the west side of the divide.

The most conspicuous difference in general appearance of the vegetation as one passes the divide is the addition of Pinus sabiniana and Fremontia californica in the pinyons, while higher up and not appearing on the east slope of the mountains is Pinus jeffreyi.

In the ascent to Walker's Pass we encountered a strong west wind, which continued until we went into camp. That this is the prevailing wind is evidenced by the trees and shrubs bending to the eastward on both slopes of the pass.

June 22, 1891.

Ranch 1/2 mile south of Kernville, Kern Co., Cal.

We left Cambrake Ranch this morning, following the main road downward until we reached the bottom of the valley on the south Fork of Kern River. We proceeded down this branch of the river until we reached the fork and then turned northward up the North Fork to this place.

The wind continues to blow from the west. Along the South Fork the vegetation is swept permanently eastward, along the north fork northward.

Yucca ^{arborescens} continues to grow in abundance down to the valley bottom near its junction with the South Fork; and nearly all its characteristic vegetation in the desert accompanies it.

This valley of the South Fork of the Kern River is a transition region between desert and interior flood, the line of greatest change lying at the western limit of the yuccas.

The following plants characteristic of the desert, and found on the east slope of the base of the desert, were not seen west

of the summit

Larrea mexicana

Franseria dumosa

Atriplex confertifolia

" polycarpa

" torreyi

Dalea franseriai

The following may have gone over a short distance but I am not certain

Acanthopappus schaefferianus

Grayia polygaloides

Parachia tridentata glandulosa

Salpiglossis mexicana

The following species did go over and held their accustomed places ~~among~~ⁱⁿ the desert vegetation

Artemisia tridentata

Atriplex canescens

Audubertia incana pilosa

Encelia frutescens

Ephedra nevadensis

Hymenoclea salsola

Lycium andersonii

" cooperi

Opuntia echinocarpa

Prunus andersonii

" fasciculata

Senecio-like shrub = Aplopappus interior

Tetradymia spinesa

" comosa

besides the following which may not be especially characteristic of the desert

Bügelovia douglasii

Eriogonum fasciculatum

Leptodermis squarrosa

Lupinus ornatus

Opuntia basilaris

Salix lasiantha

Senecio douglasii

The new plants found before leaving the yuccas are

Ceanothus cuneatus Sambucus (?)

" divaricatus

Fremontia californica

Phoradendron flavescens macrophyllum

Pinus sabiniana

and after leaving the yuccas, the following

Cercis occidentalis

Eriodictyon glutinosum

Mimulus glutinosus

Quercus wislizeni fontescens

Rhamnus californica

Yucca whipplei

Alnus rhombifolia

The five plants that are known not to go over all belong to a belt not represented on the west slope, so that the entire desert flora practically goes over to the South Fork of the Kern River at its junction with Canebrake Creek. From this point down the river there is little shrubbery, the land being all cultivated and the hillsides covered ^{mainly} with Pinus sabiniana, Quercus wislizeni fontescens and the two Ceanothus: Ceanothus cuneatus and Ceanothus divaricatus.

On the hill-slopes south of Kernville, Juniperus californica is abundant.

Following are the plants seen to-day in addition to those collected.

Abronia as at Keeler (along Kern River)

Alnus rhombifolia (along Kern River)

Amarantus albus

Anemopsis californica

Argemone hispida

Artemisia tridentata (to the fork sparingly)

Asclepias erosa

Atriplex canescens (in the yuccas, sparingly)

Audubertia incana

Azolla caroliniana (bottom of North Fork)

Bigelovia douglasii

Calochortus (bottom of South Fork)

Capsella

Castilleja

Ceanothus, no 1026, cuneatus

" no 1032, divaricatus

Atriplex like A. armaria

Chorizanthe no 1033

Cicuta (bottom of south fork)

Cnicus same as 1105

Coldenia

Cucurbita perennis

" ~~patent~~

Cuscuta

Datura meteloides

Distichlis maritima

Elymus condensatus triticoides

Encelia frutescens

Ephedra nevadensis

Equisetum litoreale same as 1042

Eriogonum angulosum (down to the fork)

Eriogonum nudum no. 1031

" (similar to angulosum, same at Coso)

" fasciculatum (down to the fork)

Erodium cicutarium

Euphorbia albomarginata

" pediculifera

Frasinus

Fremontia californica

Glycyrrhiza lepidota

Heliotropium curassavicum

Hordeum jubatum

Hymenoclea salsola (in lower yuccas)

Juncus mexicanus (table slopes)

Juniperus californica (down to the fork on favor)

Lemna

Lep^{ido}partum squamatum

Lupinus ornatus (North Fork Kern River)

Lycium andersonii

" cooperi

Marrubium vulgare

Melilotus ^{indica} (parviflora) (South Fork Kern River)

Mimulus luteus

" glutinosus

Nicotiana

Oenothera dentata

Opuntia basilaris

" echinocarpa

Pentstemon (shrubby, of pinnons)

Phoradendron flavescens (on cottonwood) macrophyllum

Pinus sabiniana

Polygou monspeliensis

Populus

Potamogeton pectinatus

Prunus fasciculata

Quercus wislizeni futescens

Ranunculus aquatilis

" cymbalaria

Rumex crispus

" hymenosepalus

Salix lasiandra

Sambucus

Scirpus lacustris occidentalis

Scrophularia californica

Senecio douglasii

Sium

Solidago

Lonchus

Sphaeralcea (black-colored)

Sporobolus airoides

Stanleya pinnatifida

Tetradymia comosa

 spinosa

Trifolium

Typha latifolia

Urtica holosericea

Yucca (brevifolia) arborescens

Yucca whipplei (hillside on south fork)

Gnammichellia palustris

Senecio-like shrub = Aplopappus interior

The roadsides in South Fork bottom are covered with a fine closely-grazed coat of Dietrichia maritima

Altitude readings as follows

Canebrake Ranch 7:40 A.M. = 3904 ft. = 1190 m.
(5000)

arborescens = 2900 ft. = 885 m.
Yucca at bottom of Canebrake Cr. valley (4000)

Quercus wislizeni = 2600 ft. = 795 m.
(3700)

June 23, 1891

Havilah, Kern County, Cal.

We left Kernville soon after noon to-day, after having our horses shod and my cart-axle mended. We took the road to Caliente, re-tracing our yesterday's course to the fork of the river, and going thence southward over a spur of the Sierras into ~~Wathere~~ ^{Wathere} Basin; and ~~over another divide into the valley in which Havilah lies.~~ The river turns westward a mile or two below the fork and was seen no more for the remainder of the journey.

The change to interior flora is complete as we begin to ascend the first Sierran spur south of the fork. The characteristic vegetation of the hill slopes after leaving the valley bottom is

Pinus sabinianaJuniperus californicaQuercus wichizeni fulvescens, — (caerulea) douglasiiCeanothus same as 1026 cuneatus, — same as 1032 divaricatusYucca whipplei

and higher up on the spur

Cercocarpus parvifolius

Following is a list of the species seen

Alnus rhombifolia

Arenaria californica

Arceuthobium on Pinus coulteri.

Argemone hispida

Artemisia tridentata

Asclepias, no 1072, eriocarpa

Azolla caroliniana (South Fork Kern River)

Bigelovia douglasii

Castilleja

Ceanothus same as 1026 cuneatus

" " 1032, divaricatus

Cercocarpus parvifolius no 1063

Chenopodium murale (Havilah)

" (not album)

Chorizanthe same as 1033

" no 1045

Cnicus same as 1105

Coldenia (sandy bed of Kern River)

Cucurbita perennis

Cuscuta

Cyperus aristatus (North Fork Kern River)

Datura meteloides

Dicentra chrysantha

Distichlis maritima

Emmenanthe penduliflora no 1056

Encelia frutescens

Ephedra ^{viridis} (dark green) (on the divide)

Eremocarpus setigerus

Eriodictyon glutinosum

Eriogonum nudum

" no 1068

" fasciculatum

Erodium cicutarium

Erysimum asperum (orange-fl.)

Echscholtzia same as 1115

Euphorbia albomarginata

Frauseria hookeriana

Fremontia californica (on the divide)

Gilia no 1049

" " 1051

Gymnogramme triangularis

Heliotropium curassavicum

Hodium jubatum

Hosackia

Iva axillaris (Harilak)

Juncus bufonius (North Fork Kern River)

" mexicanus

Juniperus californica

Krynitzkia no 1054

" " 1058, intermedia

Lepido partum squamatum

Lupinus no 1047 = Psoralea californica

Marrubium vulgare

Anthemis cotula

Melilotus (parviflora) indica

Mimulus glutinosus

" no 1038

" " 1039

Name same as 1022 = Lemmonia californica

Nasturtium officinale (Kern River)

Nicotiana

Oenothera gauraeflora

Opuntia basilaris

Pectocarya, no 1055, setosa

Pentstemon

Phoradendron flavescens villosum

Pinus sabiniana

Polygonum aviculare

Populus

Altitude readings to-day as follows

Kernville about noon (3650) = 2550 ft. = 775 m.
= 3750 ft. = 1145 m.

Summit of spur of Sierras (4850) 5 P.M.

Valley of Havilah 6 P.M. (4100) = 3100 ft. = 945 m.

Havilah (4150) = 3150 ft. = 960 m.

Polygomon monspeliensis

Prunus fasciculata (on the divide)

Quercus wislizeni frut.

Rhamnus (caerulea) douglasii

Rhamnus californica

Rhus diversiloba

Ribes, no 1062, leptanthum

Rosa (Kern River)

Rumex

Sabbatia (Kern River) = Erythraea

Salix lasiandra

Salvia columbariae

Sambucus

Senecio douglasii

Solanum xanti no 1064

Tetradymia comosa (on the divide)

Trifolium

Urtica holosericea

Xanthoxylum spinosum

Yucca whipplei

Senecio-like shrub = Aphelocarpus interior

Bigelovia douglasii is characteristic of the South Fork valley west of the Yucca arborescens

June 24, 1891

Ranch 4 miles east of Caliente, Kern County, Cal., on the Caliente Tehachapi road.

We left Havilah this morning crossing a divide into Walker's Basin, then another divide into Caliente Valley, and from Caliente ^{we went} eastward on the Tehachapi road to the present camp.

The whole country belongs to the interior flora.

Following is a list of the plants seen

Asculus californica

Alnus rhombifolia

Amaranthus albus

Anemopsis californica

Anthemis cotula

Arceuthobium on Pinus coulteri

Argemone hispida

Asteriscia ludoviciana (Caliente Valley)

_____ tridentata

Asclepias erosa (Caliente Valley)

_____ mexicana

_____ eriocarpa

Ozolla caroliniana

Baccharis (an inside aquatic species)

Bigelovia douglasii

Blitum same as 1059 = Chenopodium californicum

Calochortus no 1097

Caprilla

Ceanothus, same as 1026 cuneatus

" " 1032, divaricatus

Cercocarpus parvifolius (divide south of Walker Beach)

Chorizanthe no 1090

" " 1100

Cnicus, no 1102, californicus

" " 1105

Cotyledon no 1106

Cucurbita peruviana

Cuscuta

Datura meteloides

Elymus condensatus triticoides

Emmenanthe penduliflora

Eriogonum retigens

Eriodictyon glutinosum
~~condensatum~~

Eriogonum angulosum

" fasciculatum

" nudum

" same as 1068

Erodium cicutarium

Erysimum asperum

Eschscholzia same as 1115

Euphobia ocellata no 1081

" albomarginata

Fremontia californica (divide north of Walker's Basin)

Gilia no 1088

" " 1108

Godetia no 1099

Hordeum jubatum

Hosackia glabra = Lotus glaber

Juncus bufonius

Juniperus californicus

Krynitzkia no

" " no

Lemna (Walker's Basin)

~~Lepidopartum~~ ^{ido} squaratum

Lupinus

"

Marrubium vulgare

Melilotus (parviflora) indica

Mentzelia no 1086 disperca

Mimulus glutinosus

" no 1084

Mirabilis multiflora (type) (South of Caliente)

Same as 1022 = Lemmonia californica

Nasturtium officinale

Nicotiana

Oenothera no 1078 micrantha

" " 1082 contorta

Opuntia basilaris (Caliente Valley)

Pectocarya penicillata no 1089

Pentstemon no 1095-

" " 1096

Phacelia (very large on rocks)

Phoradendron flavescens villosum

Pinus sabiniana

" jeffreyi?

Poa annua

Polygonum aviculare

Polygomon monspeliensis

Populus

Prunus ilicifolia?

Pterostegia drymarisoides (Caliente Valley)

Quercus wislizeni fruticosa

" (coerulea) douglasii

" no 1103

Ranunculus aquatilis (Walker Basin)

Rhamnus californica

Altitude readings to-day were as follows

Havilah 6 A.M. (4100) = 3150 ft. = 960 m.

Cercocarpus ^{parvifolius} ~~begoni~~ (4600) = 3600 ft. = 1100 m.

Divide north of Walker's Basin ^{9:45} (5200) = 4100 ft. = 1250 m.

Walker's Basin 11:20 (4200) = 3100 ft. = 945 m.

Summit south of W.B. — = 3850 ft. = 1175 m.

Bandin road 2:30 (3600) = 2500 ft. = 760 m.

Caliente 5:00 (2375) = 1295 ft. = 395 m.

Rhamnus ~~californica~~ (Caliente Valley, both slopes)

Rhus (aromatica) trilobata

Rhus diversiloba

Ribes menziesii no 1077

—, same as 1062, leptanthum

Rosa

Salix lasianдра

— lasiolopis

Sambucus

Scrophularia californica

Selaginella rupestris (Caliente Valley)

Senecio douglasii

Solanum xanthi

Solidago

Typha (Walker's Basin)

Urtica holosericea

Xanthium spinosum

Yucca whipplei (abundant to Caliente Valley)

Aplopappus interior [of Walker's Basin]
~~erect-like shrub~~ (abundant to divide north)

Platanus racemosa (Caliente Valley)

Achillea millefolium

Celtis (Caliente Valley)

Myrtis same as 1067 = Balsamorhiza deltoides

June 25, 1891

Cameron, Tehachapi Pass, Kern County, Cal.

We left camp this morning and followed the Caliente-Tehachapi road to this point passing Keene, Tehachapi summit, through Tehachapi Valley and the town of Tehachapi, to this point.

A prevailing west wind blows across Tehachapi Valley, and through the pass.

Following is a list of plants seen to-day.

Achillea millefolium

Arctostaphylos californica (to Tehachapi summit)

Amaranthus albus

Anemopsis californica

Anthemis cotula

Asclepias erosa

" eriocarpa

" mexicana

Astragalus, no 1112, oocarpus

Atriplex canescens

Azolla

Bigelovia douglasii

Blitum same as 1059 = Chenopodium californicum ^[Lam.]

Brassica probably sinapistrum

Calochortus (Tehachapi Valley)

Capsella

Carap

Chara (In water-trough at Cameron)

Chorizanthe

Clematis

Cnicus same as 1105

Cnicus no 1118

Cressa eratica (Tehachapi Lake)

Datura meteloides

Distichlis maritima (Tehachapi Lake + east to Cameron)

Eleocharis, no 1123, palustris

Elymus condensatus triticoideus (forming natural
almeadows in east end of Tehachapi Valley)

Ephedra nevadensis

Eriogonum setigerum

Eriodictyon glutinacum (west of Tehachapi Valley)

Erodium cicutarium

Eschscholzia no 1115

Euphorbia albomarginata

Frauseria hookeriana

Fumaria californica (west of Tehachapi Valley)

Glycyrrhiza (near Cameron)

Godetia (Tehachapi Valley)

Helianthus annuus (abundant in Tehachapi Valley)

- Heliotropium curassavicum (near Tehachapi Lake)
Elymus citarius
Hordeum no 1121 \wedge (abundant in Tehachapi Valley)
Horachia glabra (west of Tehachapi Valley) = Lotus glaber
Juncus mexicanus
Juniperus californica (near Cameron)
Lathyrus no 1120
Lepidium fremontii
Lepidophartum squamatum (west of Tehachapi Valley)
Lycium cooperi
Marrubium vulgare
Melilotus (parviflorus) ^{indica} (Tehachapi Valley)
Mimulus glutinosus (west of Tehachapi Valley)
 " luteus (east end of Tehachapi Valley)
Mirabilis californica (red) (1 mile west of Cameron)
Nasturtium ^{officinale} californicum (west end of Tehachapi Valley)
Nicotiana
Opuntia basilaris
Pentstemon same as 1096 (Tehachapi Valley)
Phacelia (large, on rocks) (west of Tehachapi Valley)
Phoradendron flavescens villosum (into Tehachapi Valley)
Phragmites ^{communis} (east end of Tehachapi Lake Valley)
Pinus sabiniana (mountains all around Tehachapi)
 " jeffreyi ? (Tehachapi Mountain)
Platanus racemosa (to Tehachapi Valley)

Polygonum aviculare

Polygona monspeliense

Populus (west of Tehachapi Valley)

Suaeda wislizeni frutescens

" lobata (from west of, into, Tehachapi Valley)

" (caerulea) douglasii

Ranunculus

Ribes ^{leptanthum} same as 1062 (west of Tehachapi Valley)

Rosa

Rumex crispus

" no 1117

Ruppia maritima (Tehachapi Lake)

Salix lasiandra

Sambucus (west of Tehachapi Valley)

Scirpus lacustris occidentalis (Tehachapi Lake)

" maritimus (Tehachapi Lake)

Sicymbrium canescens (Tehachapi Valley)

Sium (west of Tehachapi Valley)

Solanum xanti (1 mile west of Cameron).

Sonchus east end of Tehachapi Valley

Urtica holosericea

Viola, same as 1087, praemorsa

Yucca whipplei (west of Tehachapi Valley)

Serecia-like shrub = Aplopappus interior

A tree of Quercus lobata in the western part of Tehachapi Valley measured 19 ft in circumference at seven feet above the ground.

The flora of Tehachapi Valley is an interior one, the foothills about the valley (seen only at a distance) being covered with Pinus sabiniana and live oaks, Pinus jeffreyi ~~see?~~ occupying the higher points. The valley bottom (about 6 x 10 miles) is all under cultivation, but appears to have been a shrubless area characteristic of the flat dry lands of the interior. No desert forms appear until one enters the canon that connects the valley with the Mojave Desert at the extreme eastern end of the valley. The first desert plants that appear are about a mile west of Cameron, as follows:

Atriplex canescens

Ephedra nevadensis

Juniperus californica

Lepidium fontinalis

Lycium cooperi

Senecio-like shrub. = Aphelocarpus interior

In the eastern end of the valley

is a shallow salt lake about $\frac{1}{2}$ mile in length, which dries in summer leaving large deposits of salt ^{that} which are used commercially. About this lake are a number of interesting saline plants as may be seen by the lists and the catalogue for to-day. Nitrophila occidentalis was not seen there.

June 26, 1891

Willow Spring, Antelope Valley, Kern County, Cal.

We left Cameron this morning and proceeded through Tehachapi Pass and across the Mojave Desert to Mojave, where we remained till after two o'clock, sending telegrams, answering mail and getting provisions.

Desert plants begin to appear one by one after leaving Cameron. Until, about two miles east of the station, the change to desert flora is complete. The altitude is too great for Larrea however, and it does not appear until the mouth of the canon is reached.

The following plants were seen between Cameron and Mojave.

Acropteron splendensAmaranthus albusArgemone hispidula (in Tehachapi Pass)Aster tridentata (specimens in the pass)Aster (torrifolius) mohavensisAtriplex canescens (in the pass)" (like A. canescens) (along stream in the pass)Artemisia tridentata (a few seen in the pass)Bigelovia douglasii (in the pass)

Bigelovia tertifolia (in the pass)

Chorizanthe thurberi

" monticola no 1135

" perfoliata no 1136

Crocea critica (by the stream in the pass)

Distichlis maritima (by the stream in the pass)

Encelia farinacea

Ephedra nevadensis

Eriogonum aureum no 1131

" plummatella

" trichopodium

" angulosum no 1133

" like angulosum no 1134

Erodium cicutarium

Euphorbia albomarginata

Eurotia lanata

Franseria hookeriana

" lunata (begin at mouth of [pass])

Gilia matthewsii (begin in the pass)

" floccosa

Layia polygaloides

Hymenoclea salsola

Juniperus californica

Larrea mexicana

Lepidium fremontii

Lepidospartum squamatum

Lycium andersonii (began low down in [the pass])

" cooperi

Mirabilis californica (red) (into the yucca [at least])

Opuntia basilaris

" eschweicaipa (began in the pass)

Oryopsis (cuspidata) membranacea

Oxytheca perfoliata [iforata in the pass]

Phoradendron bolleanum (on juniperus cal)

Pinus monophylla

Forestiera parvifolia (in the pass near [in the pass])

Salix mexicana (abundant low down)

Stanleya pinnatida (near mouth of the pass)

Tetradymia strobilifera?

Yucca arborescens

Aplopappus interior (the pass sparingly) [goes nearly through the]

Senecio-like shrub (to mouth of pass)

Franseria fine-leaved composite (beginning [the pass])

The sides of the canon in the pass are covered with low desert shrubs and occasionally a juniper. These (the junipers) occur in side-canons on both north and south slopes, and occasionally often

come down to the bottom of the main cañon.

On the north slopes are occasional small patches of Pinus monophylla, which in one case come down to about 200 ft above Cameron Station.

Yucca arborescens occurs westward as far as Cameron station, and Yucca whipplei goes eastward in small patches or singly nearly to the mouth of the pass.

After leaving Mojave we proceeded southward, or southwestward into Antelope Valley and went into camp about 8:30 at Willow Spring. The entire area over which we passed is an upper Larrea and sparsely supplied with Yucca arborescens. In some portions there are slight depressions with dry clay deposits and these are provided with Atriplex canescens and A. polycarpa.

Following is a list of plants seen this afternoon.

- (Amelanchier alnifolia abundant)
- Artemisia tridentata (1 plant only)

Aster (ortifolius) mohavensis

Atriplex canescens

 polycarpa

Begelovia douglasii

Caulanthus (probably inflatus)

Chorizanthe thurberi

 perfoliata

 watsonii

Datura meteloides

Ephedra nevadensis

Eriogonum trichopodium

 no 1137

 no 1138

Erodium cicutarium

Euphorbia albomarginata

Eurotia lanata

Franseria lunosa

Gilia florescens

 matthewsii

Grayia polygaloides

Hymenoclea salsola

Larrea mexicana

Lepidium farnsworthii

Lycium andersonii

Lycium cooperi

Opuntia basilaris

" echinocarpa

Oryzopsis (crispidata) membranacea

Oxytheca perfoliata

Psathyrotis (1 specimen)

Rumex crispus

Salizaria mexicana

Salvia carduacea

Stipa

Tetradymia stenolepis

Yucca arborescens

Franseria fine-leaved composite.

Many herds of sheep have been driven across this part of the Mojave Desert so that almost no herbaceous vegetation occurs, except that which is able to spring up and flower between the times of sheep-crossing. While we were at Willow Spring (on the morning of the 27th) two large herds passed.

June 22, 1891.

Crane Lake, Antelope Valley, Mojave Desert, Cal.

We left Willow Spring this morning and took a road westward along the north side of Antelope Valley to a point about eight miles east of Liebre Ranch. We then crossed to the south side of the valley and proceeded westward to Crane Lake, about four miles west of Liebre Ranch.

Larrea mexicana ceases about five miles west of Willow Spring, the main body of it at two or three miles less than that.

Yucca ^{arborescens} (brevifolia) and Bigelovia graveolens continue in the bottom of the valley to a point about three miles east of Liebre Ranch, the Bigelovia extending farther than the yuccas. Westward still farther and ~~east~~ ^{along} the lower side slopes of the valley for a few miles eastward on either side the natural vegetation is composed almost entirely of grasses and other herbs, a vegetation similar to that west of the yuccas in the valley of the

July 3, 1891. Mr. Palmer informs me that Pinus sabiniana and the live oaks extend to about twelve miles distance east of Libre Ranch.

South Fork of Kern River, Tehachapi Valley and in general the interior ^{plains} region of California.

Pinus sabiniana and live oaks of some sort occur on the Libre mts, on the south side of Antelope Valley, several miles eastward from Libre Ranch.

On some of the ranches in Antelope Valley, the fence posts are made from Yucca ~~arborescens~~ ^{serotina} and are said to serve the purpose well. Some that were set three years ago had short green sprouts at their tops. They serve well too for corals.

The plants seen to-day are as follows.

Acomptopappus sphaerocephalus

Amarantus albus

Artemisia tridentata (End of the yuccas sparing toward the west)

Asclepias erosa

Atriplex polycarpa

" torreyi (at Willow Spring)

Bigelovia graveolens

Chorizanthe watsoni

Cucurbita peruviana

Distichlis maritima (at Willow Spr. & ^{Crane} Lake)

Eleocharis (Willow Spring)

Elymus condensatus triticeoides (Antelope Valley, abundant)

Ephedra nevadensis (in the yuccas and eastward)

Eremocarpus setigerus (very abundant west of the yuccas)

Eriogonum fasciculatum

" (scandens)

Erodium cicutarium (abundant throughout)

Euphorbia albomarginata

Galium floccosa (yuccas and eastward)

Grayia polygaloides (east of yuccas)

Helianthus annuus (abundant west of the yuccas)

Heliotropium curassavicum (Willow Spr. & Crane Lake)

Hordeum jubatum (very abundant west of yuccas)

Hymenoclea salsola (?)

Juncus bufonius (Willow Spring)

" mexicanus (Willow Spring & ^{Crane} Lake)

Juniperus californica (down to altitude of ^{Crane} Lake)

Krynitzkia circumscissa (east of the yuccas)

" micrantha (east of the yuccas)

Larrea mexicana

Lemna (Willow Spring)

Lycium andersonii (?)

" cooperi (?)

Marrubium vulgare (west of the yuccas)

Mimulus luteus (Willow Spr. & Crane Lake)
[fields just west of the yuccas]

Mirabilis multiflora pubescens (abundant in

Nasturtium officinale (Willow Spr. & Tejon Lake)

Nicotiana

Oenothera californica (more frequent west of the [yuccas])

Oryzopsis membranacea (cuspudata) as far west as Bigelow [gradiolus]

Pentstemon (linear-leaved, shrubby, of pinons not in fl.) [in yuccas]

Pinus ~~scaberrima~~ resinosa [yuccas in low soil]

Polygonum monspeliensis very abundant west of

Potamogeton pectinatus (Crane Lake)

Quercus no

Quercus no
Forstiera parvifolia

Rhamnus-like shrub (Willow Spring)

Ribes (arcuate) (near Liebs Ranch in live oaks)

Rumex crispus

same as 1117

Salvia carduacea (east of the yuccas)

Sambucus (Willow Spring)

Scirpus pungens (Willow Spr.)

Solidago

Sonchus (Willow Spr.)

Stanleya pinnatifida (yuccas and eastward)

Tetradymia stenolepis (yuccas & eastward)

Trifolium (Willow Spring)

Yucca (*brevifolia*) *arborescens*

" *whipplei* (near Lieber Ranch, in live oaks)

Gammichellia *palustris* (Willow Spr. & Crane Lake)

June 28, 1891.

Fort Tejon, Kern County, California.

We left Crane Lake this morning and reached Fort Tejon at about noon, passing Gorman's Station and Castac Lake.

We camped on the old parade ground underneath the mammoth oak.

June 29, 1891.

Fort Tejon, Kern County, California.

I remained in camp to-day writing up notes and cataloguing plants.

June 30, 1891.

Fort Tejon, Kern County, Cal.

I remained in camp to-day writing up notes.

July 1, 1891.

Fort Tejon, Kern County, Cal.

I went to Castac Lake to-day, and walked completely around it. Little was found to collect. The lake proved rather uninteresting botanically. It is about a mile long and one-

third is wide, extending north and south and lying in an elbow of the Cañada de las Uvas. The banks are grassy slopes with a few live white oaks (Quercus lobata) and cottonwoods (Populus tremuloides?). At the north end is a small tule (Scirpus lacustris occidentalis) marsh, and at the southern end a low natural meadow mainly of wild rice (Elymus condensatus triticoides).

The shallow margins of the lake are filled with Ruppia maritima and in some mud-covered sandy soil on the southwest side of the lake a small Chama (no 1146) was found. In the meadow at the south of the lake was collected Juncus rugosus. The other plants seen were common.

July 2, 1891.

Fort Tejon, Kern County, California

I collected to-day on the hillsides southwest of the fort, about the mouth of Johnson's Cr. The slopes here are covered mainly by oaks (Quercus douglasii, Quercus caerulea), Quercus wislizeni frutescens, horse-chestnuts (Aesculus californica), poison ivy (Rhus diversiloba); and bear some juniper (Juniperus californica), live oak (Quercus chrysolepis), Cercocarpus parviflorus, and

Pseudotsuga macrocarpa. This is about the lower limit of the former species in this locality. The spruces are very scarce.

July 3, 1891.

Fort Tejon, Kern County, California.

I remained in camp to-day cataloguing and writing notes.

(Independence Day) July 4, 1891

Fort Tejon, Kern County, Cal.

Drove to a Mexican's ranch above the lake for provisions.

(Sunday) July 5, 1891

Fort Tejon, Kern County, Cal.

I remained in camp to-day.

July 6, 1891

Fort Tejon, Kern County, California.

I went collecting to-day up Johnsons Creek in the mountains just back (south) of Fort Tejon. At about 500 ft above the fort, pines (Pinus monophylla) become abundant, and the

Aesculus californica

buckeye & disappears, while the most abundant oak is Quercus chrysolepis.

July 7, 1891.

Fort Tejon, Kern County, Cal.

I went to-day up _____ Cañon, which enters Carrizo de las Uvas from the south about a mile east of Fort Tejon; and followed it to its head. I there ascended the mountain slopes to the westward where, in a north-sloping draw, I found Abies concolor. I then kept on up the steep slope southward through the scrub-oaks and pines to the summit of the peak. From this point Mt Piute is visible two or three miles southwestward, Fraser Mountain southwestward, Castac Lake and Antelope Valley eastward, Mt Whitney northeastward, and the Tulare Plains northwestward.

The summit has along its northern edge and slopes a chemise growth of Quercus parvifolia, Quercus chrysolepis, Ceanothus ^{retusus} ~~no~~ 1194 and Fremontia californica.

Looking northward the Sierran foothills and mountains are crossed, and

have a very scanty growth of oaks; southward the mountains are densely covered with shrubs and trees.

July 8, 1891.

Fort Tejon, Kern County, Cal.

I remained in camp to-day cataloguing and writing notes.

July 9, 1891

Fort Tejon, Kern County, Cal.

Mr. Palmer and I went to-day to Frazier Mountain. We went by the road up the Canada de las Uvas turning off at Cuddy's Canon and following it up to Cuddy's Ranch. It was said to be about ten miles to the summit of Mt. Piros, and about six to that of Frazier Mt. We chose the latter trip and at about noon left Cuddy's taking an old road from that ranch directly up the mountain.

The valley and lower slopes of the mountain at this point are covered with pines (Pinus monophylla) and by patches of chaparral. About half way up the mountain the yellow

A portion of the mountain ^{Tracy} (Pinos) is in Ventura County,
a portion in Los Angeles County.

Pinus jeffreyi
pinus. [^] begin, and among them are scattered
a few trees of Abies concolor.

Among the pines the shrubs do not
form thick chaparral but are neverthe-
less quite evenly ^{spread} scattered over the ground.
The principal shrubs were Artemisia tridentata,
Lonicera and Ceanothus cordulatus. The latter
latter grow in dense flat-topped mats,
about three feet high and entirely impenetrable.
The pine trees are very scattered, compared
with the trees of an ordinary forest. They all
belong to Pinus ponderosa jeffreyi.

From the summit could be seen the whole
mountain system of the Tejon Pass region, the
western end of the Sierra Madre, Soledad Pass, San Francis-
quito Pass, Castac Canon, the upper end of the Santa
Clara valley, Santa Inez Mts., Mt. Pinos, Tulare
Plains, Kern Lake, Cascada de las Uvas, Sierra
Nevada, Castac Lake, Antelope Valley, Crane Lake.

We proceeded northward over the top of the
mountain, and descended a steep northwest-
ern slope of the mountain to a ranch in
Cuddys Canon, reaching camp about nine
o'clock.

July 16, 1891

Fort Tejon, Kern County, Cal.

I remained in camp this morning cataloguing plants and writing notes. In the afternoon Beth and I went to Borman's Station after the mail.

July 11, 1891.

Tejon Ranch, Kern County, Cal.

We left Tejon Fort this morning at about half past ten, and went down Cañada de las Uvas to the Tulare Plains, following the direct road to Rose's Station. From that point we turned to the right and proceeded to Tejon Ranch.

Near the bottom of Cañada de las Uvas the oaks become scattered and finally disappear entirely. The ground is covered, in most places sparingly, with dried grass; while the only shrub seen was Isomeris arborea. In the cañon, along the stream, occur besides the oaks, Acer negundo (Negundo californica), Vitis

californica, Populus monilifera, Platanus ^{rupestris} race-

The plain itself is an even gentle slope, at this part of it, sparingly covered with grass and singularly devoid of shrubbery. The few shrubs that do occur with the identifiable ^{herbaceous} plants that are characteristic are Helianthus annuus, Croton californicum, Grindelia, Eremocarpus setigerus, Mirabilis multiflora pubescens?

In the vicinity of Tejon Ranch there are large groves of white oaks (Quercus lobata), and along the creek that flows past it are cottonwoods (Populus monilifera) and dense masses of wild grapes (Vitis californica), both climbing the trees and trailing over its banks and forming hummocks three or four feet high.

(Sunday) July 12, 1891.

Tejon Ranch, Kern County, Cal.

Mr. Palmer and I rode to-day to Tejon Pass following up the cañon that furnishes water for Tejon ranch, and ascending one of the

A few pines (Pinus monophylla) occur with Pinus sabiniana below the yellow pines.

higher divides. An old wagon road extends to within about a half-mile of the summit, and beyond this point the ascent is altogether too steep for a road.

At the lower end of the canon the common trees are Quercus lobata, Q. wislizeni frutescens, some of them attaining a diameter of more than a foot, Platanus racemosa, Populus monilifera, P. trichocarpa. With these are found a few trees of cedar, Libocedrus decurrens.

At 3000 ft (computed), Pinus sabiniana ~~concolor~~ ^{begin and soon becomes} here digger-pine or bull pine, ~~is~~ abundant.

At an altitude of about ft, Artemisia tridentata begins and continues to be the most characteristic shrub up to about the summit of the divide.

The next zone is that of Pinus ponderosa. It contains also as a characteristic tree, Abies concolor, and higher up Pinus lambertiana. Two easily distinguishable forms of Pinus ponderosa occur, one at a lower altitude, a tall large tree, lanceolate or triangular-lanceolate in outline, with an acute top, and small cones with thin narrow scales. One of the larger trees

was 16 ft 7 in in ~~the~~ circumference. The other form grows at a higher altitude (from the summit to about three hundred feet below), and is a smaller tree with usually oblong outline and a rounded top (apparently due to the continued tendency of the uppermost shoots to be broken by the wind) and a much larger heavier cone. This latter form is the same seen on Frazer Mountain and appears to be the true Pinus ponderosa jeffreyi.

The computed altitude of the summit that we reached is 5800 ft. From this point we could look down upon the western part of the Mojave Desert in the direction of Willow Spring. Neither Mojave Butte nor the mountains south of Antelope Valley could be seen.

We descended by the same route.

The altitude of Tejon ranch was called 1450

July 13, 1891.

Bakersfield, Kern County, Cal.

We left Tejon ranch this morning and took the direct road from there to Bakers-

field, going into camp about a quarter-mile north of the town.

The road across the plains is very level and hard, in some places somewhat dusty and with but a mile or two of sand. There are no trees until we approach Bakersfield, where they occur along the ditches and streams.

The higher portions of the plain, near Tejon ranch, are characterized by the same plants mentioned in the journal for the 11th inst. with the addition of Asclepias erosa.

The lower portions are moister and somewhat alkaline and are characterized in various parts by Atriplex polycarpa, Distichlis maritima, Salicornia ambigua, Spirostachys occidentalis, Sporobolus viridis, Suaeda suffrutescens, Suaeda and Fraukenia grandifolia.

A portion of the higher plain towards Tejon ranch was characterized by the presence of Opuntia basilaris.

At Bakersfield we met Dr. & Mrs. Merriam & the baby. Dr. Merriam has been ordered to the Pribilof Islands and leaves for Visalia ^{to-night}.

July 14, 1891.

Bakersfield, Kern County, Cal.

I remained in camp to-day making notes and cataloguing plants. Mrs. Palmer has gone to San Francisco with Dr. Merriam.

July 16, 1891.

Poso, Kern County, Cal.

Beth and I, with Mc Grath, left for this point to-day.

The teamster was misdirected as to the road and shortly before noon we reached Poso Station, on the Glenville stage line. We therefore turned down the bed of the creek for two or three miles at which point we came upon the old road along Poso Creek. This we followed for three or four miles more after which it turned northward from the creek to the station Poso on the Southern Pacific R.R. The entire distance from Poso Station to Poso is about 14 miles. We went into camp at Poso.

The road from Bakersfield to Poso Station after crossing the Kern River bridge lies over

dry clay foothills almost entirely bare except for the now dead and closely grazed annual vegetation.

Some of the washes contain a leafless and seemingly dead shrub, and the only other scant vegetation is Asclepias erosa, Eremocarpus setigerus, Brindelia, Opuntia, and an occasional Cucurbita peரும்is and digitata.

In the vicinity of Poso Station were seen also Isoneria arbores, Atriplex canescens, Mirabilis multiflora pubescens.

Poso Creek itself is at this season quite dry, and its bed is filled with a fine very yielding sand. The fall of the stream is very gentle, and no gravel is carried along in it. The trees along its banks are cottonwoods (Populus monilifera) and willow (Salix nigra) and sycamores (Platanus racemosa).

The plains beside Poso Creek are the same in vegetation as those described.

Many ranches through this region are deserted. The divide between Bakersfield and Poso Station is about eight hundred feet higher than Bakersfield.

July 16, 1891.

Near Tipton, County, Cal.

We left Paso this morning and proceeded along the railroad to this point, camping by a ranch on the bank of Tule River, about $1\frac{1}{2}$ miles north of Tipton.

The country traversed is a dry, hot, clay plain, and like that seen yesterday is devoted to the raising of barley and to grazing. There is such a scarcity of water that fruit and alfalfa can scarcely be grown.

Tule River is dry and bears along its banks a few white ~~oaks~~ oaks (*Quercus lobata*) and sycamores.

July 17, 1891.

Visalia, Tulare County, Cal.

We continued this morning along the railroad to Tulare and then followed the motor road to Visalia, reaching here about eleven A.M.

As we approached Tulare, white ^{*Quercus lobata*} oaks, ^{be-} came frequent in the fields and there was

every evidence of a moister soil. Fruit is quite generally cultivated, and alfalfa fields as well as barley became numerous.

Between Tulare and Visalia all the land is fenced, and devoted to agricultural purposes as noted above. The natural pastures are of salt-grass, *Distichlis maritima* with a little *Juncus mexicanus* interspersed.

We went into camp about a mile and a half north and slightly ~~west~~ ^{east} from the town on a ranch worked by Mr.

July 18, 1891.

Visalia, Tulare County, Cal.

I went to town this morning and this afternoon wrote up notes and catalogue.

(Sunday) July 19, 1891

Visalia, Tulare County, Cal.

Beth and I went to church this morning, and in the afternoon remained in camp.

July 20, 1891.

Visalia, Tulare County, Cal.

I went collecting this morning along the road as far as the river, northward from camp about a half-mile. In the afternoon I catalogued specimens and later went to town.

July 21, 1891

Visalia, Tulare County, Cal.

I collected a few plants to-day near the camp, and spent the rest of the day cataloguing and writing notes.

July 21 to 24, 1891.

Visalia, Tulare County, Cal.

These days were occupied in outfitting for the Mt Whitney expedition. Mr. Bailey, with Dr. Fisher, arrived from Bakersfield and Mr. Palmer from San Francisco.

July 25, 1891.

Three Rivers, Tulare Co., Cal.

We left Visalia this morning, Bailey, Beth, and myself, with two packers, and proceeded

by the regular Mineral King road to this point.

Until we reached the foot-hills the vegetation was similar to that about Visalia. In the first foot-hills Quercus douglasii began. Three Rivers lies at about _____ ft, according to Mr. Bailey, above Visalia. I was thrown from my horse, and my an-eroid damaged, just before lunch.

(Sunday) July 26, 1891
 Kane's Flats, Tulare Co., Cal.

We left Three Rivers this afternoon at about 1 o'clock, after a portion of the forenoon had been spent collecting about Kaweah River opposite, or a short distance below, Three Rivers. This place is, according to Mr. Bailey, about _____ ft higher than Visalia.

July 27, 1891.
 Tulare Co., Cal.
 First Sequoia camp, Mineral King Road,

We reached this place this afternoon and went into camp by the stream that flows down the cañon into Kaweah River. Here I saw for the first time Sequoia gigantea.

July 28, 1891

First Sequoia camp.

To-day Mr. Bailey and I went down the road about $\frac{3}{4}$ mile to a hog-back with an old house on it, and turned down the steep slope through the chaparral to the river, descending about 1000 ft below camp to the mouth of the stream that flows by it. We retraced our steps by nearly the same route. In the afternoon I remained at camp cataloging specimens.

July 29, 1891.
Tulare Co., Cal.

Mill camp, Mineral King Road.

We left camp soon after lunch to-day. I spent the forenoon collecting in the cañon near camp to an altitude of 200 ft above it. After lunch we proceeded to this point about $\frac{1}{2}$ mile above the saw-mill.

July 30, 1891.

Mineral King, Tulare Co., Cal.

This morning I catalogued specimens and collected a few things about camp. At about three o'clock we left camp and

and proceeded to Mineral King, camping about
 $\frac{1}{2}$ mile above the old hotel, on the south bank
of the stream under some evergreens.

+ Fuster

more complete
than

