May 14 1894
Left Minneapolis at 7:40 a.m. on the
C. St. P. & O. R.R.

May 15 Daylight at Sioux City.
Went by train to Columbus via Norfolk
and had to wait again at Columbus from
12:30 to 6:15 for train west on U.P.
Grabs good. Lots of rain. Rained all
day. Cold + chilly
Saw one Lynx, campstries + four Coyoungs.

May 16 Daylight at Sidney, Neb., breakfast
at Cheyenne. Lunch at Laramie.
Grabs good all day. Stock looks well.
Not many Farmers
Saw the first Specophilus elagans 2 miles
west of Cheyenne. Saw one Antelope
just west of Laramie.
Drove to Green River City.
Stopped at Fossil at 10:30 & went to
bed in a little log cabin.

May 17 At daylight I found 2 inches of
snow on the ground & the air as full of
snow I could not see across the valley.
Went out & tramped till 10 a.m. &
found lots of Specophilus elagans
shot 2. Saw several 2 campstries
& 2 Sage huns. No Chipmunks.
So snowy + chilly I could not get up
to the fossils today
**Handy Fork**

Took the 10:25 train back to Handy Fork which is 300 feet higher than Forest - is close to the divide between Handy Fork River & Twin Creeks. Hunted till nearly night but could not find a Sisimis. Shot lots of S. armatas but no S. elegans. Shot a bigus canepetus & new others.

The snow left before noon but it is cold & windy. Almost no flowers or green plants. The winter will be a hard one if the ridge or are all removed under. A snowing keeps shows to the north.

Took the west bound train at 10 P.M. A clear night and a young moon enabled me to watch the empty land we that we followed down an often valley to Red River Valley.

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**May 18**

Woke up at daylight near American Falls, Idaho. The night was cold and ice covered little pools in the morning. Low white and yellow flowers partly blanket the Snake Plains in places. Grass is well up. Sage leaves are coming out fresh and green. Sarcobatus is in bloom greening in fully ends. As we descended to the Snake River valley at Bloms Fancy the flowers become numerous and vegetation is far in advance of that on the higher, level covered plains. We leave the River valley again and
Cross more sagebrush plains. At Mountain Home there are some irrigated patches, but the country looks dryland.
At Payette there are more farms and some large orchards of young fruit trees.
Apples are in full bloom.
At Ontario-Wise the Snake Valley is wide and level. Big ditches have been taken out and large areas of land are under irrigation. The towns seem thriving and full of life. A little below Wise the valley closes and the ascent of Snake River begins. We cross the river at Huntington and find the town up 2 miles from and probably 250 feet higher than the river. I stopped at Huntington and walked back to the river and shot some seagulls and set traps.
At this point the slopes come down steep to the edges of the river. Sandy flats and points lie in places along the shores. A good wagon road runs down the river on the west side about 30 miles to Powder River.
The hills are rather smooth and only in places rocky. They rise steeply from the river to 1000 feet in some on each side. No trees on their western, but they are partly covered with plants, weeds, and sagebrush.
The canyon is full of flowers, most of which
La Grand

an strange to me.

Wheels are carried on in places along the river banks. Water wheels turned by the current lift the water to wash gold from the gravel or to irrigate little patches of ground.

This spring has been unusually rainy and crops are growing without much irrigating. There are several stores - of bottles of water.

May 19 Captured a Thorough. Identified a few plants. Left Huntington at 11:00 and reached La Grand at 3:20.

Cruised the highest point of Gold and a little east of Baker City. Saw big mountains to the north and a small range to the south. North Powder is close to the base of a range which seems to be the Wallowa Mts. Rain and clouds covered the water most of the time so I could not see the tops.

A light rain has fallen all day except for about 11 to 3.

May 20 Left La Grand at 11:00 and reached Elgin at 14:30.

Snow covers the mountain tops on the east, west, and south of Grand River Valley but crops are growing, flowers are abundant, and young ephemerals are nearly gone.
May 21
My best horse is missing, has got out of the pasture and gone
I spent most of the day looking
for him but without success.

Probly came today,
flowers are abundant and many
of the species are entirely new to me.
Some hill slopes are yellow, others
are blue, others white.

Today was clear & warm & sprightly,
the asparagus has been cold & wet up
to the present time.

May 22
Rained nearly all day. Could
not do much in Plano, but in PM
went out & set traps & hunted. Decided
to stay at the hotel over Sunday and see
if we could not hear of the lost horse.

May 23
Found my horse - old Stack. Went to a
Horse sale near the foot of junction of the
Wallowa & Mima rivers, but did not buy
a horse. Came back 9 miles in a hail
rain & hail storm. Did not kill any
thing. Probly caught only a show's
tail, but got a lot more traps & made
up okins.

Mr. Stanley tells me that a red fitch
like those of Wallowa lake are common
in the Cheyenne R. between Albertlake
and the big marsh.
May 24.

Found a few things in the traps but nothing of great importance.
Saw a fowling piece stuck in the ground and watched it for a long time.
Got the traps all together and ready to make camp in the morning if Poble is well enough to start.
Rained in morning, then cleared up.

May 25. Pack ed our outfit and moved about 2 miles S.E. of Elgin and made a camp. Went to the traps but caught little. Shot a few birds. Made up stew. Set more traps. Made a trip back to town and found Poble much better but decided not to let him come to camp today. Guess he will not be sick after all.

Cooked some cassava and found it fairly good. It is glutinous and solid. Seems not to contain much starch. Has no decided flavor, but with salt & butter is not bad.

We roasted them in the ashes. When raw the bulbs are white, tender, brittle & milky. When roasted they are almost transparent, yellow & tender.

Today has been pleasant, mostly clear, and entirely without rain. The evening is cool and clear.
May 24.
Caught a *Spasmophillus columnarius* & a *S. elegans* and preserved them in a box for a list of quantity to be used.
A hailstorm in a box of a cubic foot capacity killed them in 6 minutes. Poured 100
gallons of water down a *S. columnarius* box but it would fill only to about 8 inches
of the top.
Caught a weasel, a *Zapus*, a *Psimocercus*, an *Echotamnus*, a *Lania*.
Found tule vases to get a drifter for them.
A pleasant day with only a sprinkling of rain.
A cloud of dust came over the mountains with a west wind.

May 27
Killed 43 *Spasmophilius*, killed *Echotamnus*.
Baskets, weaver, and birds.
Went to town to find better baskets.
A clear, warm day.

May 28
Another splendid day—Clear & warm.
Worked near streams & worked west of the
Time on *Spasmophilius*. Made camp & camp
in time to shoot 2 skunks & same skunk
game.
May 29
Caught some birds to break ties or fill hold with water to wash the silver.
Shot 3 Neptacijus at camp in evening.
Rained in evening. A warm day, mostly clear.

May 30
Broke camp at 7:30 and went south-west through Grand Picnic Valley to Le Grande. Turned up Grand Fork R. through the cajon with the railroad 5 1/2 miles above Le Grande and camped. At 4 P.M. Made up a few things, and packed. Today is Dressing Day. We found Le Grande all on the streets + stories all closed. Roads fairly good most of the way. The central part of Grand Forks valley is sandy + rolling. Good pasturage. All cultivated or pastured. Perry is a sawmill town + most of the timber along the Cañon has been cut + run down the river.
A clear, warm day. A cold wind blew down canyon in evening.
May 31

Followed up the Grand Forke River past Hilgard, then crossed to the north side & blazed the river & followed up a creek through a long ridge to a mile or a half of the summit and camped just after noon. Shot a few things along the road. Saw a Coyote & never saw any fresh bear sign. Stopped and wrote some. Snow banks lie on north slopes so just below our camp. The snow has gone off so badly over much of the ground that very few plants have started. On one side of the creek Vaccinium macrophyllum are in flower & on the other side the ling bushes have not flowered. At camp the zams is purely boreal. Pinus unchara + Picea are abundant, hold the ground on north slopes while Pinus ponderosa + Larix occidentalis occupy the tips of ridges & slopes.

Came about 12 miles; all the way up hill but with easy grade & fairly good roads.

June 1

Rained in the night and part of the forenoon. Stopped in camp & wrote reports till noon. Hunted bear & other things in PM, but did not get much. Caught a Sorex v some Evergreens. Found a lot of Tansy. Found Calypso borealis for the first time.
June 2
At camp the barometer read 4175 at 7:30 A.M. On the highest part of the summit it read 4675 and at Maeham 3900. Snow still lies in deep drifts on north slopes near the summit. The pass is purely forest through transition species reach nearly to it on south slopes. Picea pungens & Abies grandis are characteristic trees. Some Larix, Picea engelmanni & Picea glauca reach the top on ridges. The railroad pass seems to be a little lower than the wagon road.

Camped on the edge of the timber. Plotted over looking Pendleton weekly and of but 1 1/2 miles lower than Maeham. Came about 18 miles. Set traps & made up skins.

June 3
Caught 2 Sons. A cold morning.
Started for Pendleton, followed top of ridge about 3 miles, then descended about 1400 feet to the valley and reached Pendleton at 11 A.M. Struck here. Pendleton gave a little below top of plateau and at Pendleton there is a divided Sonoraan element in bottom of valley. On Indian reservation all the way. Left the timber on top of plateau. The slopes are covered with good grass.
and lots of Indian horses range over them. The valley is fine farm land. Crops are good. Rye is headed out, wheat is just high in some fields. Most fields of wheat are full of weeds—especially alfalfa and little-seedling (?).

Spermophiles hallizi & columbius were common on top of plateau. No spermophiles or hohs were seen on slope. S. townsendi is common in bottom of valley only.

Got mail & grub & climbed over thin & set traps & made up chains & went report in evening.

Froze cold, afternoon warm & clear.

From the edge of the plateau we saw 3 snow peaks, two to the west & south. A good hiker told us they were Mt. Hood, Mt. Adams & the northern one Mt. Rainier.

June 4. Rained about half the day. Caught nothing. Dismissed & dug out spermophiles & counted their holes on an axis.

June 5. Rained all night & part of day. Cleared up so I caught & photographed & banded spermophiles. Took train for Winona Wash. via Walla Walla at 2 A.M.

of June.
June 6
Woke up at daylight at Wallawalla, had breakfast at Steptoe and stopped at 7:30 at Richea where the R.R. crosses the Snake River! Hunted Saskatchewan's shot & S. tanaceti but found no other species. Got some plants. Wrote an report.
A cold night & warming & cooling day.

June 7
Started at 7:25 & stopped at Winnem at 8:47. Found only S. tanaceti still. Biscutuhid shot in bold & wrote report.

Winnem is well up on top of prairie. Cliffs of bare crag out along the creek. The big hills are smooth & seem to be good farming land. About half the land is pasture & the rest in grain.

June 8
Secretary Monday. Went to my Bursid's house & found that over half of the Saskatchewan's had come out.
Rode train at 8:45 A.M. for Colfax.
Saw only S. tanaceti in bull near Diamond & there are both tanaceti & Columbia's but only Columbia to the rest of way over the 'Crest' & at Colfax. Reached Colfax at about 9:30 & hunted all day till 2 P.M.
Wrote on report in P.M. started back at 7 P.M. for Heppner.
Willows

June 9. Arrived at Willows Junction at 2:30 AM and got a few hours sleep before breakfast. Found myself near the Columbia River and in a region of sagebrush, sand, and lava rocks & logging wind. The river is very high and is an immense strait.

Found lobes & treasurer and saw tracks & bodies Peridotus & probably Perisogonius or Angelomys. Some of the birds & most of the plants are Sorayan & I consider the valley almost pure Sorayan. Sand blew all day.

June 10 dug out & got a Peridotus & a Perisogonius. Caught a Perimitis & shot a thrush & got a few traps near the path & the dikes. Got some lizards & a cactus. Packed my things ready to start early in the morning. Cold & hot.

July 11. Got up at 2 AM & found my shield with a Peridotus in one & an Angelomys in another. A light wind was blowing in the east as well. Left Willows Junction at 2:30 PM. Followed up Willow C. to Shapper for 40 miles up a steady grade. The valley is narrow & steep, not formed along the lower half. There are good places along the bottom where it drops. Got wind. Made a stop. Found S. Williams & treasurer.
June 12
Stayed at camp and wrote in reports and tried to find a camp near.
Hot.

June 13 Moved camp to a mile above town and got supplies and did some writing.
A clear hot day.

June 14 Sunday
Did nothing but write and hunt for wood.
Hot and clear.

June 15 Started at 9 A.M. and climbed steadily up grade for about 4 miles and probably 800 feet altitude. Barometer would not work. Crossed a flat, topped ridge and went down another gully to Ray Creek, about on a level with referee. At lunch here then followed up another gully for several miles and came out again on top of the plateau level. Followed arroyo for 8 and 10 miles and again started down through Buttermilk Canyon to Rock Creek and camped at 5 P.M. Came about 27 miles.
Found firs and grass fields all across the platina top and in bottom of valleys, but the sloping country is rough and hard crossed and is pastured to left for range.
Saw some timberedridges to the east & S. but no other trees till we reached Rock Creek. Here in the canyon bottom are lots of Poplars
Rock Creek

Vastawilla, Willow & Alders. High Lava cliffs border the canyon. The bottom is narrow with little patches of water cleared all along for fields. The creek is solid & crossed with muddy bottom & high divide.

June 16. Rock Creek Camp.

Stayed all day and shot 5,000 rounds & set more traps & went up slopes. Found lots of sloughs & mud in the creek bottoms and some tracks along the trail.

A clear, warm day.

June 17. Tried to get an early start, but after getting in our lines of cliffs & helping pack wagon did not get under way till 11:30.

Followed up a side canyon about 4 miles out on top of the plateau 1400 ft above camp. Had a fine view of Mt. Hood & Mt. Adams and a rare distant view of St. Helens.

Found mostly transition plate & on tops. Lots of Laurea in full flower on the patches of lava rock. Found Western evening primrose.

Descended another gulch to Lone Rock, 1000 ft below and then climbed the hill beyond 1350 ft to top of lava plateau & then about 500 ft into St. Helens Valley. Then up a long spur to 2000 ft. Night and then down along a road about 8700 ft and up over another ridge 950 ft with closer to Fossil 1150 ft lower.
Followed up a creek valley a mile or so and camped 200 feet higher than fossil. Came 30 miles and went up and down big hills and over mountains ranges.

Fossil: Saw several species in bottoms of valleys and transition on tops of ridges with a few broad species in cool corners on the highest. From Lone Rock to fossil we were with scattered pines pines and junipers much of the time. Junipers is common.

Climbed from solid blue beds of sandstone of some in extent in Lost Valley. It grows in wet valley bottom and the floor staked out as thick as wheat. The fields of it have been flaxed in one we saw a lot of hogs.

Some saw mills in last valley.

Could see Coward about 18 miles to the N.W. The whole country is covered with lava but near Lone Rock to fossil layers of clay and stratified rock appear below the lava. They are said to be fossil wood fossil and fossil bones and a great west of town, Eocene fish bones. Saw one print squint in Lost valley.
June 18. From camp we followed up the creek in mile or two & then turned west and climbed the ridge and struck down onto Pin Creek & followed it to John Day River and down the river a mile to the ford & encamped. Arrived at camp about 2950, on ridge 3750, at John Day R. at 1:00 PM. Followed a crooked, rough gulch with many high cliffs and side canyons down Pin Creek. Found beds of yellow clay & sandstone & gypsum and stratified rock appear in many places look like good ground for fossils. Struck Sovereign Mine at about 3000 ft. Can not read in the gulch & more Sovereign in river valley.

High country all rocky & rough, good grass but no fences. Small bushes along Pin Creek and big hay patches along river valley. Sage is cut for hay & is the main crop. Good orchard of apple, cherry & peach trees will soon along lower part of Pin Creek.

Passed through Post office of Johnsville & Clarne. Crown Rock P.O. used to be of unimportance but it was abandoned & the P.O. of Clarne established near the mouth of Pin Creek and named for old man Clarne, of the army.

This old fellow is a character. Settled here in 47 & bit mining & raised cattle & horses & raised boys. His very ignorant & still knows much that would be of value to others. Here a gallation of 'cooperities', indians
relies + "petrified" specimens. Explains the
lava rock formation as caused by a great
"volcanic eruption." Says thebeddies
along the river do not redbry here. They may
come from some foreign country. It can
not yet Washington treated. can not separate
it from Washington state.

Set traps for Progeothus but found
no signs of other mammals. S. bidding
came down to near the mouth of Rio Te. but
we found none in the valley.

John Day River is not quite as long
as the Big Horn. It is rapid, muddy, + crooked. The
canyon is always not + valley-like with
overhanging ledges in places. Lava cliffs + bulges rise 2000' quiet. Rocky rolling ridges
slope down to the valley. The riv is clay
+ sand & the plants are desert like.

A few stands of junipers grow along rocky
shelves. Willows grows along the river banks. The few trees are evidently introduced as
most of them are Lombardy poplar.

Sagebrush & bigelovias are the conspicuous
valley shrubs. The flood lands are
all in sage.
June 19
Caught only Percaptorhus + Pebbly got 4. Miss murrellus. Crossed the river +
camped at a spring & family stuck for river on sheet side. Washed dishes + set traps + shot rats + picked up forest wood.
A very hot day.

June 20
Caught a Perchish + Pebbly caught a

Walton.

Started for Antelope at 8:30 and climbed steadily about 8 miles to the summit of
ridge and camped by some spring.
Arrived 1200 at camp by John
Day River and 3400 at today's camp.
Climbed to top of tallest peak which averaged
read 4125. Could see Mt. Adams + St. Helens +
Panies + Hood + a dozen peaks along the
range farther south. Could see across the valley
of the Deschutes R. and down the John
Day R.
Catched 5. wolves + saw more. Set
traps for Chirp + Thimys + Pebbly
set some Walton's traps.

Found a sandy patch in the gulch about
500 feet above the river + two 1 foot
tracks + horse in it. Found Perchish
tracks up to 1200 feet above river. Just
above the first stream. Pitcher were open.
Hot in morning at river but cool on
ridge + cold in evening.
June 21

Caught 2 warbles - 2 Yellowggs - a pair
4 Chittis & 2 S. moths besides the lot caught
by presses. Swarmed my manuals - in
P.M. drove down to Antelope. Allen had
not arrived, got no mail, but got some
supplies. Saw the city.

The divide is 200 ft. higher than our
camp & Antelope is 1100 ft. below the
divide. It is in a gumbro gully where
warberries seem to be scarce. Saw
one S. moth near town, no other moths.
The town consists of some 20 log cabins,
one good store & some others. 4 hotels, 2
saloons & a church & P.O. It is in
a little farming valley. In a tule
region.

June 22

Took up traps & moved camp down to about
4 miles of Antelope & then drove down and
got mail at Cleveland. Allen returned to
camp & out traps.

June 23

Left camp at 8 & started for Primavilla.
Caught a big badger in his hole & 3 0's as
could not pull him out till we got a rope
on our foot. Passed cold Camp & followed
the upper road by way of Trout Creek &
camped within about 4 miles of Pay Creek.
Crossed big ridges & rough country.
To Prineville

with good grass and few ranches. Some sheep & a few horses & cattle.
Found 5.080 miles with 5.080.

June 24. Started at 9 and in about 4 miles
Hay Creek. Followed up Hay Creek over
a ridge to Willow Creek, then up a
ridge to join timber and down into
Crooked River valley to Prineville.
Crooked River valley is a broad, dry, sandy, gravelly wash valley
of the Great Basin type. The hot,
dry sand is covered with tracks
and runways of jack rabbits, spermaceti,
road pups, etc.
Some of the valley is irrigated &
good crops are raised.
The roads are dusty but fairly
good.
A hot day. Travelled 28 miles.
Camped at a pasture 1/2 mile S. of
Prineville.

June 25. Made up a few specimens with
some in wood & got back some
printed & rough outlines.
Hot & dry & dusty.

Rained in P.M.
June 26    Left Prineville at 10 A.M. on the Burns Stage road, and traveled till 4 P.M. and camped on the bank of the Crooked River. Came about 20 miles. Uncoiled at Prineville 2800, on ridge 3950, at camp 3250.

From Prineville we followed up an open wash or wide canyon with rocky, cinder-covered ridges for some 5 miles and came out on level topped plateau. Then we went up and down ridges and finally struck down a crooked gulch and followed it till we came to Ochoco River and camped. At the highest point we were close to Prineville peaks, but did not quite reach it. Numerous junipers and cedars all along the rocky slopes. Sagebrush and Ponderosa pines are abundant, but most co-paved in the low valleys.

Both the Crooked River Valley at Prineville and the Ochoco Valley are savannah.

Sat night.

June 27    Sunday. Caught a few things and washed them up. Worked some reports and stood all day around camp. A thunderstorm passed by in P.M. and cooled the air.
May 29. Broke camp at 7 a.m. and traveled up
the river about 16 miles and turned up a wood road into the north end of the
Maury Mts. and camped in pine thicket
at a point a little below the crest of the
range.

Averoid reached 3 30 p.m. at camp 3 50 p.m.
at a point near where we left the river,
4 4 miles of camp in the pict.

The valley is dry, rough, rocky, and
covered with sagebrush, cedars, firs, and many common plants.
Large rock, clay beds, some stunted
bushes and rocks.

Narrow strips of bottom land along
the river and Bartlett Stage field.
High up on the sides of the valley
the sagebrush is scarce, but grass is
better. At the edge of timber the
grass is splendid. Springs are
common.

We looked across Ophir's Ridge to the
west and saw the Blue Mts. This extreme west
end is opposite us.

June 30. Caught six good things. Pulled
shot some birds. Made up a list of skins
in PM. Went about 4 miles west along the
range and on top. Saw lots of Deer tracks
but no Deer.

The highest part of the range reaches
to probably 8000 ft. Blue lake
masses of rock crop out along the crest and sides of gullies. But most of the Wavy Hills are covered with good soil and grassy bluffs. The slopes are long, gently and easily climbed. Below the trees the woods are generally open, grassy and clean and pretty. Pines ponderosa, Pseudotsuga are the principal trees. They are large, clean and thrifty. Larix occidentalis and Chrysothamnus grow on north slopes, Juniperus virginiana. Acer pseudoplatanus and Prunus virginiana grow on rocky south slopes to the top. Peganthus robustus is sparingly found below camp to the summit. Only the north slopes appear to be transitional. Most of the wildlife lives in transition.

The following mammals occur: Pteronotus, Mephitis, Procercus, Zamia, Sparthophloeo sis aligoodiana, S. Chendo, S. Termes, Moturna, Cricetus, Bat, Sorus.
Camp Creek

July 1. Instead of returning down the mountain the way we came up we climbed still higher and crossed the range & came down the south slopes to Camp Creek. Learned that there were good places in the clay hills near Camp Creek & to camp for the night - dug boxes in the afternoon. The grade is very up both sides of the hills. The south slope is covered with trees for several miles down & there are many little springs & creeks. Grass & flowers under the green woods pretty & attractive. Dead trees were seen in the trails.

At Camp the averaged read 4600, out of the range 5500 and at our camp on Ca at the forested 4250. A few Sorocene plants appear in Camp Creek Valley. Grazia, Sandstongis, a small amount of Dryopis! Sagebrush predominates. Some blackberries, not much water.

On the west side of Camp Creek Valley stands a high, flat topped Butte with four sides. To the S.E. if its a larger round topped round & still beyond this mouth. We went up a coulee between these two & at the mouth of it we found a lone fossil skeleton of some mammal. The skull resembled in a general way the skull of a hog & was about as big as a black bear skull. We took out all that we could find of this skeleton & picked up loose bones. Pieces of bones of animals are scattered all along the trail. The fossils are billed in
Camp Creek

Gray, blue, yellow clay, or soft rock. The sides of the valley are perfectly bare of vegetation, much cut and broken up, steep and all around as pretty backlands as I ever saw. Lava rocks edge the tallest butts of broken pieces have fallen down.

A thick black colored pumice or scoria full of irregular pieces - blocks of this rock of volcanic origin forms boulders. It is light and porous. The fossil beds are considerably tilted.

July 2. Followed down Camp Creek Valley a few miles - then crossed over a ridge & the south into a big dry basin & then over another ridge to Camp Creek & camped for the night. Passed some more clay beds in Camp Creek Valley & dry sagebrush country all the way with lava cliffs all around. Came about 19 miles.

July 3. Continued up through the big sagebrush basin past about 8 miles of marshy, alkaline flat with a large creek coming from the lake at upper end, & then turned S.E. over a slight rise and down to Buck Creek. Followed up this to near its head & camped at the head of one of its branches.

July 4. Followed the dry gulch to the S.E. and found timber near the summit of the divide. Traveled through pines timber about 8 miles and came down a slight grade till we reached Camp Curry Spring on Silver Creek. Found no water over the range but fine grass all the way. Timbered ridges stretch away west & high buttes & peaks stand up beyond the ridges.

SteinWits show plainly from the upper end of Silver Creek Valley. They are well covered with snow.

Followed down the valley about 10 miles and camped at Reyes on the alkaline flat.

Fixed the meridian of camp & set it at 4125. On summit of range it read 4700. The timber reached down on south slope to 4170.

At Silver Creek it read 3750 & at camp 3725. Came about 30 miles. Hot & dusty.

Silver Cr. Valley is a great sagebrush plain with wide grass flats all along the stream. Pine covered ridges rise to the north, lower ones with junipers run to the south.

July 5, Sunday. - Started early & traveled 20 miles & camped at noon at a point of rocks 4 miles south of Silver Cr. where several large warm springs come out of the rocks & flow to the big wash of Mother Lake. Arrived in camp the crest of day.

Very dusty & hot. Travelples sagebrush & cedar country but little drought wood.
July 6. Drove up to Burns & got mail & supplies & made up skins & set traps. Hot & dusty.

July 7. Set more traps & hunted over the big marsh & made skins & passed Obsidian.

Another hot day. Obsidian covers the ground in small pieces that had been chipped from arrowheads. We have found a number of good Obsidian arrowheads. Between here & Silver Creek we crossed miles of country where Obsidian boulders were scattered over the surface. Here & there some of the washes bring down much of it in small pieces.

July 8. Broke camp & went to Burns then east to Harney & then turned north up the Rattlesnake Creek to Kings Mill and then went a mile and camped just over the divide on the east of Indian Creek. From Burns to Harney there is grassy flat most of the way and is smooth & good, but very dusty.

The remainder of our march extends south to Malheur Lake. Crossed up streams except Silvis R. at Burns. Entered pine timber 7 miles north of Harney, and camped under big pines with good grass & water. Recorded road 3550 at Burns 3650 at Harney 4650 at side of pines 5300 at King Mills Station.
July 9. Made up yesterdays skins, basket and prepared for tommorow's pack trip. Found a placer mining camp, just below us, I passed the rolls all over it. Hills, the country is open and grassy in the valleys north west I us. Good pine timber covers the ridges. The whole region seems to be transition. Covell arrived in camp at dusk.

July 10. Went down to Harvey with Covell and came back up another road farther west. Stopped at Mr. Gilbert's Ranch.

July 11. Started for the Wild near Strawberry Butte. Traveled nearly due south 35 miles and camped, close to the base of the range. Passed through several large valleys with grassy runnels and lots of trees but no cracks. The lowest point reached was 4800 feet. Camp was 6050. Our next camp is 5050 and is among fives meadows on Antelope Creek about 3 miles from the junction with Bear Creek.

July 12. Followed down Antelope Creek to Bear Co. up the south ridge of Bear Co. to about the open meadows & the crossing of the ridge. Followed up the hill toward Strawberry Butte. Climbed the ridge that flowed west & then kept on the
Crest of the ridge till we reached a point at 7000 ft. about 2 miles south of the peak, Strawberry Butte. Camped by a creek that winds to ESE to the Malheur R. Had a trail all day and did some hard climbing but found open woods most of the way. Prunes on ground had been burned and fallen in places and formed dead woodfells. Camped at 6 P.M. got supper at 40 trips. A cool day with thunderstorms.

July 13. Went up the ridge. To top of main ridge, could see down into the John Day Valley and over much country. Collected alderwood and roosevelt juniper. Big spruce trees are immense. Trees are dwarfed by timberline species. Vegetation is beginning to grow but few flowers are out. Much of the ground is type. The area is rough but not so rough. Mostly stratified rocks. Glaciers swept out some of the gullies long ago but most are flat bottomed from erosion. Roots trails and ice slides on snow slides are common. A few little green lakes were seen in the gullet east of Strawberry Butte. Corvallis and Allen went to top of Strawberry Butte and found it 9100 ft. It has a timberline but it may be only from the bare rocks.
Strawberry Butte

Abies concolor affinis grow up to within a few hundred feet of the tree line. The trees are slender and sparse. The peak is sharp and looks perfectly and well rounded from the top.

Loganberries were found in the day on the sides.

I camped on the ridge and shot loganberries and 5 columbines and Laminas.

A broad zone begins below our camp, generally at about 6000 ft. It is marked by a jumble of plants, birds and animals. It is a zone of transition forest covers much of the Blue Mt. region.

July 14. Caught a wildcat. Some of the good mammals. Started back for camp at 8:30 at the edge of Red Lake Mt. too far to the east. Next to follow down the creek about half a day before coming out to the valley. Crossed ridge and struck Ashtabula Creek at low end of big meadow and camped at head of the meadow at a sulphur spring.

Some red deer and 3 black bears. Bluegrasses + Childs & Allen grass. Killed a large grouse.

Bear Creek is a fine trout stream. Passed through beautiful pine woods full of deer. The woods are mostly open and grassy beneath the trees. Pines and spruces + larch are dominant. Are large + hardy trees.

Came about 20 miles.
Harvey Oregon

July 20. Dr. Merriam arrived by stage.

We split camp. Cothill going south to meet Liebey, Pruble + C. Allen going across to the Chutus River with buckskin. Dr. Merriam + I started for Steen Mts. + Klamath + Crater Lakes with pack outfit. From now on Pruble will keep this journal + Dr. Merriam will keep journal for our trip. -V. Bailey

Blue Willamette

July 15. Pushed through to camp where we arrived at 4 PM. + found Pruble with a good lot of specimens made up during our absence but rather short of graft. Made up some + our skins + went to bed thoroughly tired.

July 16. Finished making up skins in AM.

Afternoon started down to Harney. Camped half way between Harney + the inlet. A thick fog. There was not a stick left to mark the post + the graves have been dug up + the graves returned to the Nat. Cem. of San Francisco. Camped at the ranch of Mr. Rains + was treated to with unusual hospitality. M. Rains has given us some good information in regard to crop + ground squirrels.

E.Q. Pruble from here on

July 17. Stayed in camp. Made reports + set traps. Bailey went to meet the stage in the morning to meet Dr. Merriam but he did not come.


July 19. Caught a lot of specimens. Dr. Merriam died 7/20 from pneumonia. Although Messrs. Bailey, Alley, Cole + we got up early to meet him.
Harney Oregon

July 20. Bailey repeated his family moving by stage to town.
And there we left, some distance with
Dr. McCracken, who was stoped by
from going on stage near a
lot of skeletons and made
them up.

July 20. Dr. McCracken arrived by the

Homing stage. Came in making a

contact with Dr. McCracken at what
left us and went down to that
point. We got some specimens
and made ourselves and in

the late afternoon after getting

a supply of provisions we

left Habacks and travelled to

Brooks to find the home of Culps

from Dr. McCracken pushed to

hike to pack on the trip through

the Sierras mts. Travelled until

nearly 12 and arrived at a

level which we supposed to

be Culps but could trange no

one. So camped for the

night.

July 21.

Leaving that Culps ranch was

about 2 or 3 miles distant we

left before getting breakfast

and found that we had gone

off to get another job. We returned

the next day about 5 o'clock when
We arrived at Silver's Creek above Burns where we had breakfast. In the meantime Bailey had gotten another man after breakfast and continued down to Burns where we got a few things and went by the lunch at bus old camping place at the mouth of Irkys below Burns. Continued on to about a mile from the Narrows where we camped at a ranch as it was late. Traveled about 35 miles. Between a ranch about 10 miles from Burns and our night camp about 20 miles there was not a drop of water on the road.

July 22. Dr. Morrison & Bailey packed up for their trip and left us to get a few additional things. They went on toward Narrows with the expectation to arrive that night. We camped at the Narrows and set out some traps. The afternoon.

July 23. Set some specimens including Orthodonticus. Made them up and set more traps. A good list of water birds noted about the Narrows a slough about 100 yards wide and covered
by a bridge. There is almost no current here. The stream connects Harmony & Mathew Lakes. He talked with Mr. Names who keeps the store and he gave us some information about the lakes. He said that about 1880 this marsh had about here were all under water and a part of Mathews Lake. Harmony Lake was much smaller that at present. A sand ridge breaking away let the water into Harmony Lake increasing its expanse and making general of the country around here and put thereby greatly increasing the size of Mathews so that it is now that many of the branches of the streams between the lakes is said to be about 15 miles at present. It's lined up a great many broken wooden limbs and some perfect ones some of old willow and some of aspen. Flute

July 24
Remined in camp. Got some more specimens and made these repot. Potted in Repot, and packed specimens in the afternoon.
July 25. Stayed in our camp and got a lot more specimens. Ducks and geese very common about the marshes.

July 26. Intended to leave this morning but caught a Micropteryx and concluded to stay another day and try to get some more. Set out shortly all our small traps in the sandy patches.

July 27. Caught a lot of specimens including 5 Micropteryx. Left camp early and started to make Relief if possible. Was told it was about 35 miles off from camp a little and passed from shops. We arrived the town saw 5 mollusks about half way between Harrows & Warm springs. Reached Riley about 9 a.m. having travelled about 40 miles. A cool day with gentlemen.

July 28. Skinned the mammals baked the day before and left camp about 10 a.m. Had lunch when the road passes Silver Creek and reached our old camp near Fush Creek at 4:45. Anemometer read 4,800.
July 29.
Left camp about 8 o'clock and kept on back on the road toward Prineville. Traveled nearly 20 miles and camped near Prineville P.O. Anemom. read 38° 50.

July 30.
Kept on the road toward Prineville until we passed Crook P.O. and then took the road to the left toward the Deschutes River. Traveled about 30 miles and camped on the side of the Bear Creek Buttes. Anemom. read 52° 00 at the place where we struck the head of Bear Creek, on a branch of the river near Crook P.O. At the ridge near Crook. We regazed 8° 00 and got our camp in the brush of the Bear Creek Buttes 41° 00.

July 31.
Left camp early. Where we had gone about 7 miles came to a cabin. Roads were signs broken and 15 miles to Prineville. As we needed grain we concluded to go to Prineville and from there to the Deschutes as it was not far out of our way. Reached Prineville about 2:30 and camped. Anemom. read 28° 00.
August 1. Left Prineville quite early and took the road toward Parsonet Bend. Our route lay over the desert all the way with no water in the way a distance of 30 miles. Cedar trees found all along and when within about 10 miles of the Bend we passed through quite extensive groves of them. Soon after trees began to be common (Pteropus proctori) and Pines (pseudocarya). Then near Bend (Esthwaite spruce) became common. We reached Bend about 4 o'clock and followed up the river about 5 miles when we camped on the Des Chutes River. Put out a few traps and caught a mess of Trout for supper.

Aug 2. Put out more traps, saw air streams neat just below new camps. It contained large young.

Aug 3. Remained in our camp and put more traps. Got some rainbow and made them up and caught some trout as odd tanks.
August 4.

Fork up our traps and got a fair lot of specking. Left camp about 9 o'clock and continued on toward People's where we arrived between 3 and 4 o'clock. Being told we could reach Paulina Lake from that point we camped and made up our specking and went to reaching the Lake the following day. Arrived 4 o'clock Aug 5.

Being told we could reach the Lake by backpack and left our boat excepting what we needed for a day or two and started toward the lake. We passed through a level prairie and then taking a dense road we entered the woods of pines and commenced to climb. We had some trouble in finding the road at times but yet along well until morning about 3 miles of the lake when we were prevented by sand falls from proceeding further and the river. So we packed our baggage to the two paddles and reached the lake in time to put out a few trophy.
Aug. 6. Climbed to the top of the peak above the Lake to ascertain what animals live there. Saw nothing of particular note in the way of mammals but a few specimens of Birds and reptiles. All my traps, excepted one, failed entirely.

Aug. 7. Took up all traps and got quite a number of desirable specimens. Left the Lake quite early and reached our camp at noon in time to finish up after skinning.

Aug. 8. Left our camp in the morning and travelled on through the pine woods to little meadows where we camped early and put out a few traps.
August 9. Went on toward Bean Marsh to Beam Marsh where we camped. Being told of a road to Diamond Lake leading from this point we decided to make a trip of a few days to that place.

Aug 10. Left early and went up to Diamond Lake where we arrived in time to set out some troops Diamond Lake lies directly between Mt. Hudson and Old Bailey or Bailey as the inhabitants call it. Passed over the end of Mt. Hudson about 5 miles long the Lake Mt. Hudson is called "Cow Horn" by many of the inhabitants from the shape of the peak which need no a sharp point which is said to be impossible to climb.

August 11. Got some specimens but put out all day trying to make a trip to timberline on Mt. Hudson and got some birds and Lagongas. Drew and furiously muskets about the lake.

Aug 12. Stayed at the Lake and got fresh specimens and made sketches.
Aug. 13. Lift camp quietly and after securing a lot of spearing in our traps. Intended to make Big Springs but met with an accident near the summit of the ridge which delayed us and the campaign at Beacon Mound.

Aug. 14. Started on to Sanz Creek at about halfway to Klamath Regency.

Aug. 15. Lift camp early and went to Klamath Regency. Hunting we could get anything wild but could not get any game up to Fort Klamath when we camped.

Aug. 16. The sun wheel failed and would not work for cooler days when we arrived about dark. Found Dr. Mannan & Bailey with Cowles party. They had arrived a couple of days ahead of us.

Aug. 17. Put out some traps to catch the woodchuck. Bailey and I climbed some steep hills about a mile back of the lake and found numerous holes and oogmys where we put out lots of traps.
Aug 18. Made a good catch of mammals including Necrotrichias. Made them up in the afternoon and set more traps baited with meat.

Aug 19. Got a good catch of mammals. Made them up. Changed the position of many traps to better places.

Aug 20. Made a fairly good catch and worked all the afternoon on specimens.


Aug 22. Caught a Phascogale using bank of traps in the hillside. It was taken in a burrow among big burs, bushes, and grass on the ground beside a ledge of rocks.

Aug 23. Made a good catch and made the specimens up in the afternoon. Began to plan my trip north including to go via Diamond Lake.

Rogue River Valley.

August 25.
Lift Crater Lake and started down toward Prospect. After going a few miles I turned back now past a place in which was a great deal of undergrowth and mosses. We had to go slow and camped at night at Union Creek having made about 20 miles.


Aug 27. Got a few mammals and made them snap and set out lots of traps. Found Douglas squirrel highly common.

Aug 28. Got a good catch of mammals and made them snap and set more traps.

Aug 29. Got some mammals and made them snap. Got 20 traps in a very damp morrow place below the Mile Creek Falls.

Aug 30. Got a Babacarius along a bed of rocks near the Rogue River. Gone set in in the afternoon.
August 31.
Rained hard nearly all day.
Left about 12:30 am on morning back toward Crater Lake. Headed about 16 miles and camped at a lap camp, about 4 miles from
Anora Creek.

Sept. 1st.
Left camp early and reached Pole Creek, next Anora Creek. Camp about 3 o'clock. Made camp and put out some traps along the creek.

Sept. 2.
Spent most of the forenoon hunting for Apachestinae and setting traps for them. Found plenty of holes in Anora Creek. Camp not more than 1/2 a mile from camp.
In the afternoon put out more small traps and caught some specimens.

Sept. 3.
Caught 2 Apachestinae and a lot more specimens. Set some traps for flying squirrels and marmots.

Sept. 4.
Remained at Pole creek. Shot a fair catch of small mammals. KILLED them in the after
noon. Due a martinet just before nightfall but did not succeed in getting him.
Sept 5. Remained at Pole Creek all day. Got a fair catch of mammals including 2 raccoons. Caught it in a glododontia shumwayi thick bank grass bordering Anne Creek.

Sept 6. Took up all my traps on the farm. Caught a man at the same traps that caught one the previous day evidently its mate. Caught a Neurotriches under a log beside pole creek. Frog and grass dry. Beneath the log and the bank was set in a little depression made by the hand.

Left camp about noon and reached Fort Klamath about 5 o'clock. Saw James toneville about half way down and saw a chipmunk which I shot to be tormented near the fort. Camped by Missouri River beside that road. Put out a few traps.

Sept 8. Made a large catch and was kept busy all day attending to them but none troops.

Sept 9. Made a very large catch of mammals. Saw a Red Fox near Fort Creek but did not succeed in killing it.

Sept 10. A large catch of mammals. Saw a white beaver at Dry Creek near Fort Creek about a quarter of a mile above the road.

Sept 11. Got another Neurotrichus near where the forest was taken. It was near the bank of the river in a rather dry position and the trap was set in a place convenient with the wind at the base of a bunch of reeds.

Sept 12. A large catch. Got another Neurotrichus in same place as the others.

Sept 13. Got a fair catch of mammals including another Neurotrichus but couldn’t stop with my hammer in what I had fallen behind an act of extremely large catch.

Sept 14. Intended to leave the camp early but had trouble getting the horses as did not get away in time to make the Millisentine Post.
early as possible at Fort Keogh.

Sept. 15 Got an early start and

Sept. 16 Got some Berenymatius and

Sept. 17 Got a few specimens

Sept. 18 Remained in camp and

Sept. 19 Got specimens of both

went on to the place

where the road entered the

tree forest, labelled

at both places.

Retired for body squamels but
did not find any. Secured

drums, bunsens and head

T. lempnurie.

were quite early. For unusual

height, intending to hunt for
May 10. Keenahan Basen

Chaparral on the hills above Keenahan Falls but as it had rained nearly all the previous week and was increasing in violence was obliged to give it up. Read the

Prayers of Matthew Henry in the Chaparral while we were having lunch.

Got to Keenahan Falls short by afternoon and after getting wood and provisions spent the evening on the valley about 10 miles and camped in

Fort Ross.

Sept. 20. Cut up many Traps

for Porcupines Melolopus etc.

Left two men at almost immediately after setting traps and on completing the line went back and took out 4

more. Set a few steel traps

after and saw some very

small native bucks which

may be D. idealensis

Sept. 21. Did not have much success but put out more traps for

Porcupines etc. Set a cage

chippewa.
Sept 22. Shot a coyote and got a few specimens to put in my traps.
Sept 23. Saw a Thermophile's nest and was at the first one I have seen for a long time. They are commonly reported as grey in August.
Sept 25. Lifted Lost River in the afternoon to try to find a better locality to trap a night or two. Had intended to pleure Tuesday but the horses had muddled off and were finally found at Thousand Falls. Ran to the night near Tule Lake.
Sept 26. Went down on the north side of Tule Lake a short distance and camped near the lake shore. A ledge of rocks runs along here and the place furnished well for trapping by about all my traps. Set desktops in the shanties.
Fall Lake

pressed up etc. Found a large gashull with portions of the skeleton and numerous other bones in a nest of vegetation among the rocks.

Sept. 27. Picked up my traps and a fair catch of mammals including bat, fox, skunks, porcupines, muskrats, etc. and left for Kamat falls. Arrived there some time before dusk. Found Culp wearing me hung just behind. Made camp for the night at the place of C. W. Brandon at the Warm Spring, camp ground. Rested for the

Sept. 28. Made a short trip up to the edge of the timber about 3 miles above the Warm Spring. Spruce wren in the spruce wood bordering the T. Aqueness. In the afternoon I put out traps for Ruffo, waterfowl, etc. and worked on specimens.
To Coger.

Sept 29. Having made all friends to go to Coger, called a gentleman who offered to be gone there. Took up my traps and put everything away. Packed the furniture packed my specimens and marched them. Left Klamath Falls about 7 o'clock, stopped at night at "Rossey," near the summit of the range, about 25 miles from Klamath Falls. Saw many Chinmen and 5 Chinwomen. The last part of the night

Sept 30. Began to see snow on some of the trees, and ground was stirring, and few monks of both for the next 25 miles. Reached Coger, some time before dark.

E. B. Pyle
## Distance Traveled

### May 30 - 27 Miles

- 30: 27
- 31: 12

### June

- 2: 18
- 3: 15
- 4: 45
- 5: 27
- 6: 30
- 7: 8
- 8: 14
- 9: 10
- 10: 28
- 11: 28
- 12: 20
- 13: 20

### July

- 1: 10
- 2: 19
- 3: 20
- 4: 30
- 5: 30
- 6: 31
- 7: 35
- 8: 15
- 9: 20
- 10: 30
- 11: 8
- 12: 22
- 13: 28
- 14: 27
- 15: 22
- 16: 12
- 17: 16
- 18: 16
- 19: 22
- 20: 8
- 21: 22

### August 1

- 1: 25
- 2: 5
- 3: 15
- 4: 15
- 5: 27
- 6: 25
- 7: 25
- 8: 13
- 9: 25
- 10: 7
- 11: 15
- 12: 15
- 13: 25
- 14: 26
- 15: 34
- 16: 27
- 17: 20
- 18: 12
- 19: 16

### Sept 1

- 1: 16
July 25, 1896, Frederick C. M.
Camped at "The Toes" on Sten Mt., 7100 ft.,
2.2 miles from Diamond.
In aspens.
a big snowbank came down today.

Cancel down begins about 6,500 ft.
on west slope of Sten Mt., but not well marked.

July 26, camped on summit of Sten Mt., at 9000 ft.,
some snowdrifts and ice.
Snowbanks and snow just 7000 ft.
cold slopes and increase in size up to the summit at 9250 ft.
Aspens run up to 8000 ft.

July 27, down to lake at 8100 ft.
- mouth of Wild Horse Canyon.
Aspens up to 8000 ft.
Transition zone 4800-6500 ft.
Alcove valley bottom 4000 ft.
Mt. Hood, Sept. 5 — 1896.

Wapunista — 1800 ft.
Cameron Prairie, 19 mi. W. of Wapunista.
Yellow pines begin 5 mi. W. of Wapunista, about 2000 ft. on W. slope.

Cedarrens zone begins 18 miles west of Wapunista at 2700 ft. on Bear Creek.
Prions incamopanu, wintikola, Picea
Zapothamiasiana, cyt maus begins here.

Fort Camp 3600 ft. — should be 3850.
Ridge east of Fort Camp 3800

West of Fort Camp 15 miles to Salmon R. at 9000 ft.
Prions incamopana on W. slope, 4 to 7 mi.
west of Fort Camp, at 2400 ft. to 1700 ft.

Two journals of B. M. 1896.
Summit on old military road to Shiek 5700 ft.  
Second summit 5500 ft.  
Shiek in Catalow Valley 4500 ft.

July 29. G rave Valley 5200 ft.  
Camps on Warner Co. 5300 ft.

July 30 Summit of Kokeep range (coast  
Warren Lake) 6800 ft. aspens.  
The highest peak (called Warren Peak) is 7700 ft.  
No timber but aspens in gulch.  
Warren Lake 4400 or 4500 ft.

Aug. 3 Warren River east of Grave Lake.  
highest peak 8100 ft. Others even higher.  
Big snow banks. Pines unryena, unryena  
Abies concolor. Populus tremuloides  
below as Pines ponderosa, Acer cascou.  
 etc.

Grave Lake 4800 ft.  
Journal L.H.M. 189
The ocean: next morning it was a girl.

Next morning it was a boy. Then they took a clam shell from the ocean. II-te-pan-ge [Dentaeliwm] and put it in fresh water.

Celied II-te-pan-ge [Dentaeliwm] and put it in fresh water; they took from the ocean a small shell — a long slender horn-shell Anntkedel who was in the air and he told them what to do. They childeren — two, or three, or four childeren. They sang to one men and one woman (called Law-te-pee-che) wanted

After a while there were twelve; about half of them were girls.

In all, five people came to the world without being born.
Great Lake Aug. 13, 1894.

Canadian zone 5000 - 7000 SW
Hudsonian zone 7000 - 7100 SW
Canyon area of lake 7100 ft.

Diamond Lake
East slope, Pine prairie at 5000 ft.
Pines uneven and concealed among trees
Pine needle growth

Finn Journal of O.H.M. 1894.
Sept. 18

Up Mt. Hood to 7000 ft.

Up to great mass of snow - 5410 ft. west of

Horizon. Reaches 11,000 ft.

Sept. 19

N E slope Mt. Hood.

Canadina zone begins about 8000 ft.

Alpinus graniticus, Picea, 2 hemlock, and a small patch of Pines, moris area begin.

Pines albicantia begins near West

Cap lawn at about 4500 ft. and above.

From Journal of C.W.M. 1894.
8. Extra-stellar nebulae.

astrophotometric journal, vol. 64, 1926

Mount Wilson contributions, no. 324, (25 p.)

7. A spiral nebula as a stellar system - Messier 32.

astrophotometric journal, vol. 65, 226-244, 1926

Mount Wilson contributions, no. 320, (59 p.)

6. NGC 6822, a remote stellar system.

astrophotometric journal, vol. 62, 409-453, 1925

Mount Wilson contributions, no. 304, (26 p.)


astrophotometric journal, vol. 66, pp. 400-438, 1922

Mount Wilson contributions, no. 250, (66 p.)

4. The source of luminosity in Cepheids. (Read at A.A.S. 1922).

astrophotometric journal, vol. 66, pp. 162-189, 1922

Mount Wilson contributions, no. 241, (38 p.)

3. A general study of diffuse Cepheids. (Read at A.A.S. 1920).

astrophotometric journal, vol. 65, pp. 8-25, 1920

Mount Wilson contributions, no. 187, (15 p.)

The color of nebulous stars. (P. H. Seares and Donald Hubble).


The variable nebula NGC 2361.