

U. S. Department of Agriculture.

FIELD DIARY

OF

Mr. Vernon Bailey

Biological Survey

(Official title.)

Glacier Park,

1917.

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S-2887

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D. F. Houston
Secretary of Agriculture.

3-2887

1917
July 1. Left Washington for
Glacier Park 6:15 P.M. on
Pa. Ry. Cool & pleasant.
Crops good & winter
wheat ripening and a few
fields cut.

July 2. Daylight in Ohio.
Crops late and winter
wheat headed out but
still green. Corn well
only 4 or 5 inches high.
Reached Chicago 2 P.M.
and left at 10 P.M. on
C. & O.

July 3. Daylight along
east shore of Lake Pepin.
Reached St. Paul at 10 AM.
Came from Minneapolis
went up west side of Miss.
R. to Monticello & St. Cloud
and reached Fargo at
7 P.M.

Crops in Minn. - & Dak.
good but late and small.
corn only 2 or 3 inches
high - only a few early
potatoes in blossom.

Flowers mainly Epidendrum,
Puccoon, wild roses,
Orange Milkweed, galium,
Astragalus borealis, Geranium,

July 4. Wakeup at Williston,
N.D. A good growth of
short grass over prairie,
Dry farm crops fair,
Winter wheat heading out.

Montana.

Cactus & wild roses in blossom.

Milk River.

- | | |
|------------------------------|------|
| <i>Populus fremontii</i> | ab. |
| <i>Negundo</i> | |
| <i>Salix</i> | " |
| <i>Lepargyrea angustata</i> | " |
| <i>Eragrostis angustata</i> | |
| <i>Artemisia cana</i> | " |
| <i>Helianthus annuus</i> | " |
| <i>Opuntia missouriensis</i> | com. |
| <i>Malvastrum coccineum</i> | " |

At lakes east of Malta saw
3 Pelicans, Great Blue herons, ducks,
Avocets, Gulls, Phalaropes & lots of
waders, terns etc.
Big tule bordered lakes
Sage grouse near Chenook 4

Prairie dogs, a few at Pooqan
& Chenook & Hovee &
Krevlin & Gifford, Chester,
Devon, Shelby!!

Citellus richardsoni, all along to
Shelby &

Glacier Park Hotel

- 4 Buffalo heads mounted + 24 skulls.
10 Sheep skulls
1 Mule deer head, mounted \$27.50
White tail deer heads mounted
26 Grizzly bear skins of many kinds.
3 Alaska brown bear skins

July 5 - Glacier Park Hotel,
Hunted and trapped and
waited for Mr. Goodwin,
the

July 6 ~~Same~~

~~July 7~~ Up to Two Medicine Lakes
and return, up to near timberline
where sheep trails were common +
Hudsonian zone flowers + plants
profuse. Eriogonum common in
trails, Fresh bear signs of all
green plants.

Canadian zone west of way.
Pinus murrayana abundant, *Pinus*
flexilis on lower hills, abundant
up above lakes, *Pseudotsuga*
along lower lake, *Picea engelmannii*
+ *Abies lasiocarpa* common cold slopes
to timberline. *Populus balsamifera* along
streams, aspens on slopes + foothills.
Alder + willows abundant.

July 7. Left Glacier at 1:30
& reached Many Glaciers hotel at
6:30 - 55 miles.

The road crosses big moraine
between Two Medicines & Cut Bank,
then a broad valley and over
another moraine to Milk River,
then over another to Divide Cr.
and a point of forested mountain
& down to St. Mary Lake.
then around lower St. Mary L.
& up the Swift current to
Many Glaciers hotel.

The plains country species
come into edge of park at
Cut Bank where *Citellus richardsoni*
was seen along the road & may
extend actually into the park,
and at lower end of Upper St. Mary
Lake where *richardsoni* is
abundant actually inside of
the park boundary.

This big flat is the lowest
and vast plains like of any
point ~~at~~ along the east slope.
& the only real transition zone
spot.

Lake McDevint is in pure
Canadian with *Pinus murrayana*,
Picea canadensis, *Abies* & balsam
poplar & Aspens as the most
abundant forest trees.

See note book for list of plants.

July 8. - Went up to Lake Josephine
along south side & around &
back on North side. Saw
bear tracks & lots of birds &
a few Columbia ground squirrels
& mule deer tracks & heard pine
squirrels. Saw flocks of 11 & 12
downy young Golden eyes & a
brood of 3 older ones & a few old
females without young.

The Garden Wall is a great
line of sheer crags & cliffs
around the head of this valley,
hanging with glaciers &
snow fields & inclosing
lakes & streams in the
forested basins below.
Grinnell Mountain across
the lake from the hotel partly
hides the Grinnell glacier
just above Grinnell Lake.

July 9 Took saddle horse & went up ^{Cascade} Crocker Creek to Crocker Lake and Snyeh Glacier and found a new and very unwrapped glacier above it to the north! The lake is about timberline in an open valley between great craters. The glaciers are at the foot of great cliffs & both are small. The lake is milky green. Great snow banks come down to it.

Saw a hoary marmot & lots of columbian ground squirrels & saw tracks of sheep or goats. One bear track on trail & one elk track.

Wonderful flower parks & meadows & slopes. Low blue columbines, Dryas, Sibboldia peruviana, Silene acaulis

July 10, Many Glaciers.
Caught *Citellus* down on
big flats below the falls

July 11 Went up to Grinnell
Lake and explored the head of the
canyon but found no goats or
sheep. Set traps in the woods

July 12 Went to Leeburg Lake
and followed goats over the cliffs

July 13 Caught Woodrat &
photographed it & ground-
squirrels. Gave talk in evening
to people at Hotel.

July 14 - Bright & fair -

July 15 - " "

July 16 - Went over Swift-current
Pass to Granite Park where
arrived at noon. In P.M.
went to top of Swift-current Park

7
and made list of plants & collected
specimens. I photographed
Ptarmigan & young that
Mrs. Bailey found just
south of the Pass.
Staid over night at the
Granite Park Chalet.

A wonderful panorama of
snow capped & ice covered peaks
peaks & ranges all around.
Mrs. Bailey saw one goat &
five mules deer ran past the
Chalet. Lots of goat & sheep
tracks & trails over the slopes
but too many tourists have
scared most of the animals
away.

July 17 - Went around the point north of the Chahit and found where the hoary marmots lived along a cliff & on the big boulders below. First heard the long, loud & shrill & evenly sustained whistle, like a police whistle only more penetrating. Found 2 sitting on a ledge where they could overlook the whole valley and another below on a big boulder. Their long and bushy tails and galloping gait are very striking characters.

Mrs. Bailey saw 3 mountain sheep in the pass & Mrs. Ford saw 2 near the Chahit.

Several more ptarmigans were seen and another marmot.

Old convey signs & lay & woodrat signs seen in rock stidly at 4500 ft.

July 18 - Went down into the meadows south of the Chohit & on the ridge beyond where I could see the whole length of Lake Mc Donald.

Wonderful flower gardens cover the ridges and meadows, acres of great yellow *Erythronium* in solid stands, beds of big creamy buttercups, shooting stars, spring beauties, buttercups, *Bryanthus* - *dedum*.

Bears had dug yards of sod out in search of *Erythronium* bulbs, some very fresh.

These big crisp, tender bulbs are very pleasant tasting & more delicate than carrots.

Bears have also dug out numerous quadrupeds last fall, tearing out roots & bear grass roots & stones & one little balsam tree & generally finding the nest down 2 or 3 feet, & 4 to 8 feet back.

Extreme timberline is at about 8000 feet on SW slope of Swift Current Peak on SW slope and this seems to be as high as any.

7000 on NE slopes seems to be about the average, tho in shot in circles like Cracker & Sebud & Ginnell it is not above 6000 feet.

A porcupine got into the store house & came around the garbage pile for food.

Snowshoe rabbit signs seen in brush

In PM returned to Mary ~~Fort~~ Glacier. Found Cassiope in the Pass and great beds of Dryas & Silene acaulis, Bryanthus & Kalnia glauca, a big white Caltha or Ranunculus, besides lots of shooting stars, buttercups, potentillas etc. There are many large snowbanks still lying in the pass and patches of dwarf spruce & fir & Pines albicaulis are scattered over it, but all much flattened & dwarfed.

The trail makes numerous zigzags down a steep wall over a 1000 feet & strikes the bottom of Swift Current Valley.

July 19. Wrote reports and notes
of the last trip

July 20 - Walked down to
the Upper Sherburne Lake
through the flat valley bottom
over 3 large prairie strips
and in the willows and aspens
between. Found a fish hawk's
nest + a lot of valley birds.
Some good beaver dams + ponds
+ houses along side creeks and
an old dam and a big house
on flooded bottom of Sherburne
Lake. A dam is being built
across the lower end of the lake
by the Reclamation Service to
make a reservoir of the valley +
the beaver are crowded back up the
valley as the water rises.
Saw a muskrat + a big bear track
+ lots of *Citellus columbianus*
clear down to the lake, and lots
of big hills of *Thomomys talpoides*
at lower part of valley.

July 10. Bl. L. 1. 1. 2. 1.

July 21. Took part of our outfit
needed for camping and came
around by stage to St. Mary
where we stopped over night
to study birds & mammals of the
low country below the Chakt.
Tramped over the big prairie
flat below the Upper Lake
where *Citellus richardsoni* &
gopher hills are abundant inside
the Park line. This flat is
4448 feet, the lowest point
on the east slope of the Park and
brings a number of low plains
species into the park that are
not found elsewhere in it.
viz. *Citellus richardsoni* & *Blarina*
& *Microtus pennsylvanicus* & species
of birds & plants.

The blackflies are the worst I ever
saw them & make life unbearable
in the open. They are the ^{most} plentiful

July 22, Sunday. Took boat at 11:15 AM for Sun Camp about 3 miles below upper end of Upper St. Marys Lake. Arrived at 12:30 and found a most picturesque chalet on a high point of wind swept rocks at the very foot of going to the Sun Mtn.

In PM followed trail above head of lake & met Harold Bryant & part - his wife & Mr. Gentry of Los Angeles & his wife & Mrs. Rich of Boston & her son.

Found water ouzel nest under falls of Baring Creek.

Good trail through dense forest all up north side of lake. Timber mainly Lodgepole Pine, Spruce & fir, but a little *P. flexilis* & *Pseudotsuga*, also *Populus tremuloides* & *balsamifera*.

July 23 - Went up Baring
Creek to Sexton Glacier on east
side of Going to the Sun Peak.
Mapped the life zones and took
photographs of white goats - at
7500 feet, near the Sexton Glacier.
Collected Arctic Alpine plants.

Returned to Sun Camp at the
edge of St. Marys Lake and near
the foot of Going to the Sun Mtns.

Saw a *Lepus macrotimbalus*.

July 24 Did not work far from
Camp. Listed trees & plants
& birds & mammals.



Saw a large *Peromyscus*
in evening.

July 27. Went up Roers Creek
around the east side of Goat
Mtn. but not to extreme head
of creek. This is a long
valley full of dense timber and a
big roaring creek. The trail
has not been cut out for
many years and no one has
been in the canyon lately
if at all this year.

There is no great scenery
or special attraction in the
canyon or it is a good
game region. Saw a few
elk or deer tracks and
numerous trails of goat &
sheep high up and lots of
signs of bear. The trail
had best remain closed
as a protection to game.
Tramped at least 20 miles
about here without trail.

July 24 - Moved camp up to near Piegan Pass and near to Siegel Pass where we camped just below the lakes at 7000 feet in Hudsonian zone, under shelter of dwarf spruce & fir & *Pinus albicaulis* and in meadows of *Erythronium*, *Pulsatilla*, *Buyanthus*, *Cassiopea* & dwarf willows. Big snowbanks & ice rimmed lakes lie just above us and the bare carpet of Arctic alpine plants covers the Siegel Pass saddle just 700 feet above us.

Saw 8 goats on north slope of going to the Sun Mtn.
Listed & collected plants over the pass.

Goats 9, 6, 5, 3, 1, 1,
 Mule deer, 18 near camp
 Citellus columbianus, -
 Callospermophilus, 1 at 7600 feet.
 Eutamias
 Microtus oregonus,   com.
 Evotomys 2
 Peromyscus 1
 Ochotona 1 in Piigan Pass
 Eutamias oregonus 3. " "
 Marmota 1 x 2 yg.

July 27 Went up to Piigan Pass, a mile west of us and then up over the ridge of Piigan Mtn. where we saw 14 goats & would have gone on to the Hanging Gardens but the wind carried us off our feet on the ridges & made travelling hard. + dangerous & little could be seen.

The goats were moving to places of security among the shelves of cliffs where they could be out of reach, but were exposed to fierce winds.

A flock of 6 had one kid, another of 5 had 2 kids + another old goat & kid were on a shelf by themselves. Two lone goats were seen on a ledge on going to the Sun Mtns.

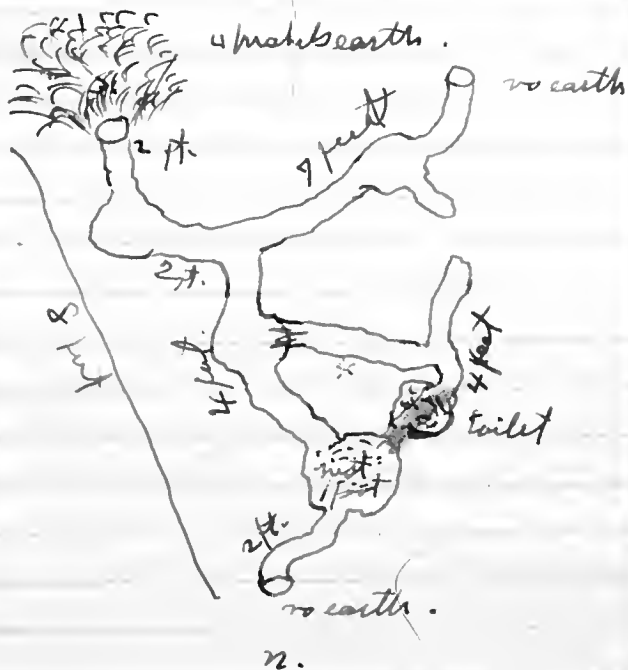
Saw a Coyote in the Pass.

July 28, Wind blew so hard we could not go up the Mts., so set traps & dug out Citellus columbianus den.

The mound at entrance was 5x6 feet & 14 inches high & contained about 4 bushels of earth & indicated a winter den. I caught the ♀ at the entrance then dug out & mapped the burrow, which went directly under the base of a small fir tree. The main burrow was 3 to 4 inches in diameter & ran down a foot deep, then back 2 feet to a small chamber where it turned & 2 feet more to where it foraged, then 4 feet more to a big nest chamber a foot in diameter & a foot below the surface. This was nearly full of old nest of last year with a little fresh grass (Carex) carried in lately & evidently used as a bed chamber.

at the present time. The nest was dry & warm & clean in the middle but old & damp & stinky at the bottom. A small tunnel ran out to the surface 2 feet below nest & the main tunnel ran deeper down to a cavity where all the excrement was deposited 2 feet below the surface in a half full old nest chamber. From here the burrow forked again & one branch returned to the second chamber & the other ran to a blind end. The den had 3 openings, four chambers, one nest & one toilet, no food chambers & no food stores. Its greatest length between doors was 8 feet & its greatest depth 2 feet.

The old female caught at the burrow was only a little fat; stomach full of green herbage.



July 29 Broke camp & went
down to Sun Camp and back
up to Gunsight Lake & camped
at lower end at ~~the~~ 5276 ft.
in meadow among alders & firs
in edge of Hudsonian zone.

All heavy timber up to foot
of Fusilade Mtn. where snow slides
have dried off the timber & left
willow & alder & other soft brush
instead of trees.

Found an small *Thryophilus*
about opposite upper end of St. Mary
Lake, & some *Taxus* scattered
along trail 3 to 4 miles above lake
and *Fatsia* *hirsuta* abundant in
upper end of canyon up to
Gunsight Lake, all overlapping
species from the west slope of the
Mts.

Big mule deer track down trail & a
big Coyote track within a hour's camp.

July 30 Found 2 ♀ harlequin
ducks in Quinsigott Lake,
Arctomias hindsii with big bushy
tail & yellow belly climbed a tree
at old Chalet, Citellus columbianus
are numerous & hoary wampets
are common at upper end of
lake & cones were squeaking
in rocks.

Cold & windy & rained &
snowed in night, but we
have a comfortable camp

Saw beaver dams & ponds along
St. Mary River.

Furnsight Lake & Pass

- Odocoileus* a few tracks
Oreamnos not com.
Ovis - "
Sciurus heard
Eutamias lutescens 1 at Lake
" *oreocetes* 2 in Pass
Citellus columbianus, com. over Pass,
& at Lake & below & at Glacier.
Marmota calligata, com. 4 yg. Aug 1.
Callispermophilus, 1 near Pass
Microtus macropus, signs com.
Castor, 2 in Lake,
Erythron track below Lake
Canis latrans, 1 track.
Ursus com.
Bat 1 seen July 31 at camp
Ochetona bay, old run near glacier
Lepus bandi, com.

July 31, Went over to Blackfoot
Glacier, crossed first lobe and
went out on much larger lobe
of the second col warm glacier
Saw a large Coyote coming
across foot of glacier.

Aug. 1. Over Gunsight Pass
to Lake Ellul Wilson & down to
falls at lower end. Then back
to camp. Got good notes
& photographs in pass.

Aug. 2. Moved camp to our old
camp near Piegan Pass
at 7000 feet.

Aug. 3 - Came over Piegan Pass
and down to Mary Glacier.
Got *Cory* & *Eutamias amoenus*
in pass & took photographs of
Pterodroma & *Citellus columbianus*
& *Marmota* in Pass.

Aug. 4. Camped on Swift
Current River half way from
Mammoth Plains to Sherburne Lake.
Outfitting for long trip
north to Belly River. Waterton
takes & returns.

Aug 5. Made up specimens &
collected a few. Packed up
ready for trip.

Heavy frost in morning.

Flies & mosquitos still bad.

Aug 6. Frost a day.

Aug 7. Broke camp on Swift Current
and came to Reclamation works at foot
of Four Sherburne Lake, then turned
north over big ridge to Kennedy
Creek and camped near the Park
line on the South Fork.

Rained most all day.

Got notes of Stephenson.

Aug. 8. Rained a little in morning. Lots of snow on Mts. A cold night but cloudy & no frost.

A trace of Transition zone on warm slopes of Kennedy Creek, a few *Betula fontinalis*, lots of *Aspen*, *Elaeagnus argentea*, *Gaillardia* and other plains plants. The bulk of timber & vegetation however is Canadian and along the boulder and gravel stream bed of the creek *Dryas octopetala* & *Godetia* from the Hudsonian zone are thickly strewn and both have gone to seed.

Crossed South fork at its line & climbed up the slope of Yellow Mountain to near timberline and crossed between the main ridge and Shurburne Peak, there was a wide Hudsonian zone slope where a new spruce with long

Odocoileus macrotis, track & shed horn
Thompson hills, com. - S. Fork
Sciurus com. in woods
Eutamias luteiventris, com. low down.
" *oreocetes*, 1 on point of Yellow Mts.
Ursus track on trail.
Canis latrans, tracks in trail.
Buffalo horns & skull at Ranger Station.
Ovis horn " " "
Elk horns, " lot at " "
Odocoileus leucurus, 1 horn " "
Ochetona - heard on point of Yellow Mts.

drooping forest was the dominant
tree, then down, down, down,
to the north fork of Kennedy
Creek and camped at the
ranger station on the south base
of Chief Mountain. Can only
8 or 10 miles, but it was
enough with our heavy packs
over the steep trails up and
down. Camped in dense
woods.

Colored zone map for high
point on Yellow Mountain.
Could see ~~Deer~~ Lake & 22 others
from high point & out over plains
into Alberta & the Sweet Grass
Hills.

Aug. 8 - Followed up North Fork
Kennedy Cr. to Slide Lake and then
turned north over high ridge
between Chief Mountain and Goble
Peak, then down to South Fork
of Belly River and camped just
below fork of South and Middle.
Camp about 10 miles.

Stopped on top of ridge & followed
goat & sheep trails along summit
to base of Chief Mt. peak but
found no sheep, tho tracks and
trails are numerous.

Saw 6 goats on point above
Slide Lake, one on peak of
Goble and one old goat with
kid at base of Chief Mtn.
Lots of tracks & wool and the
nails along crest of ridge are
worn deep.

Coyote tracks on all trails and
across swab fields & goat hair in
droppings.

Chief Mtn. Ridge.

- Odocoileus hemionus* tracks at timberline
Oreamnos 9 seen - lots of tracks
Ovis lots of tracks
Sciurus richardsoni heard in woods.
Eutamias amoenus, seen in burns
" *felix* 1 at timberline
" *oreocetes* heard at "
Callospermophilus, at & above timberline, com.
Marmota flaviventris, at & above timberline
Thomomys ~~frankii~~ *frankii*, hills at timberline
" *talpoideus*, abn. at Belly R.
Neotoma, etc. roof at ranger station.
sign on rocks to above timberline.
Peromyscus in cabin at Belly R.
Zapus in meadow " "
~~Citellus~~ abn. on Belly R.
Erythronium signs in Belly R. Valley.

Aug. 10. Belly River.

Rode up South Fork about 8 miles to a point 2 miles above Elizabeth Lake, but it rained so hard & turned back without going to head of canyon. Shot a Franklin Grouse & saw tracks of Moose & goats & bear. Goat tracks were seen in trail along bottom of canyon & goat wool on bushes in woods.

Bear have dug over many roots of *Erythronium* root at end of Elizabeth Lake.

Wonderful mountains all around but obscured by clouds much of the day. Big, dense forest, ideal for bear woods.

Our camp at ranger station is in big meadow of good grass.

Aug. 11 Went up to Crassley
 (The name was Crassley)
 Lake and Glenn Lake to about
 a mile of upper end. Followed
 old wagon road through beautiful
 woods of larch, spruce &
 fir woods but could not see
 out much of the way to either
 lake or mountains.

Open country & beautiful views
 along Crassley Lake & at lower
 end upper end of Glenn Lake.
 Both are beautiful sheets of water,
 deep & clear & dark blue with
 wooded shores & wonderful
 reflections of trees & mountains.
 The view from side of Crassley Lake
 is one of the finest we have seen with
 Cleveland on one side & Cathedral
 Kipp & Merritt peaks at the head of
 canyon & the Olney & Shifford
 glaciers, falls & snow fields in view.

a hotel or Chalet should be
built here. A good auto road
could run to the head of each
branch of the canyon and
lead through pine forests or along
lake shore or mountain foot.
The lakes are full of good big
trout of the cutthroat &
Macbinac & whitefish.

Saw a loon & 6 young
Canada geese & a greening
woodpecker & a porcupine that
was the largest I ever saw.
I estimated its weight at 35 lbs.
but 3 other men including
Bill Gurd put it at 45 & 50.
It ate half a belly band &
part of a better & middle &
was chased out of camp two
nights, then killed &
saved the harness.

Aug. 12 Went again up
to head of ~~the~~ Glenn Lake & then
up toward Shepherd Glacier but
found no trail & woods so thick
& big we could not get even
to foot of the 3 high falls that
come out of the Glacier.
Found some goat signs up a side
of cliff but saw no game except
12 lobsters. Made a hard all day
trip for little returns.

Aug. 13 Bede camp and moved
down the Belly River to the
Canadian line, about 6 miles,
where we camped near river.
The line shows as a wide road
cut through dense lodgepole
pine over the ridges both sides
of river.
Lots of beaver work along river.
Some *Transectia zana* meadows.

Aug. 14, Continued down Belly
River about 6 miles to below the
beaverdams, then turned west, off
the wagon road and followed
trails over low open hills
to the Waterton Lake Valley,
about 6 miles farther, then down
around the lower end of Lower
Waterton Lake across the wagon
bridge and up the west side
of the lakes to the summer camp
at 2 miles ~~to~~ north of the U.S. line
and camped. Came about
20 or 22 miles over good
roads & trails, but it took
all day.

A large part of the trip was in
Transition zone with open plains,
good grass and *Balsamorhiza*,
Symphoricarpos occidentalis, *Pulsatilla*
patens, *Arenaria borealis*, *Oreaster*
& many new plants.

Bully R. & Waterton Lake, ^{Alberta} Aug. 14.

- Odocoileus hemionus*, tracks com.
Sciurus in timber, com.
Eutamias luteiventris "
Citellus richardsoni, com. on Bully R. Holes
com. on Waterton Lake, W. side.
Citellus columbianus - com. at camp - Waterton.
Thomomys talpoides, com. all along.
Fiber - pond. burrows.
Castor, com. along Bully R.
Canis lotor, com. burdig. signs cattle hair,
" mites, ? signs, cattle hair.
Ursus americanus, old bear & 2 cubs -
Putorius longicaudus, 1 dead near Waterton.
Lutreola den & signs ^{lower} on Waterton.

Aug. 15 Waterton Lake.

- Nyctea americana*, 1 in sunlight, 11 A.M.
over edge of lake.

Canadian zone spruce & fir
& aspens & balsam poplar &
Betula glandulosa covers the cold
slopes, gulches, cold bottoms,
and in all nearly half the area.

The Waterton Lakes are like the
others, wonderful bodies of pure
cold water, between wooded
shores, the upper lakes being between
the high rugged peaks in the
deep glacial gorge.

Lots of *Citellus richardsoni* in
the open flats of the Bully River up
to a mile of the Park line &
numerous holes & runs up to near
camp on the Waterton Lake, but
at camp there are only
Columbianus.

Aug. 15. - Went to upper end of Upper Waterton Lake on the boat with Capt. Hanson, about 6 miles & returned to camp at lower end. The lake is low (4186 feet) and a slight element of transition zone species extends above it, tho the forest is generally so called Canadian, Lodgepole, spruce & balsam & pretty dense and continuous.

The mountains rise high & steep and close on both sides of the lake.

Found a *Carnivorus fuscatus* & 3 young at upper end of lake & a fish hawk's nest.

A porcupine had eaten the edges off a table at the ranger's cabin & woodrats had made nests in his storeroom.

Aug. 16. Worked down the valley
toward lower Waterton lakes.
and camp.

Aug. 17. Broke camp and followed
up trail to Owl City & then up
to Wall Lake where we can
get a good view of the Kinella
Glacier by climbing the ridges
above.

Came through burnt timber
to Owl City where an old
prospector well is still trying
to keep alive. Then through
thick timber to the lake at
edge of timberline on steep N.E. slope.

The lake is small and wooded on 3 sides
but snowbanks lie along the cold edges.
Mr. Yard caught 12 pine trout in the lake
for supper. *Citellus columbianus*
are numerous & noisy around camp.

Wall Lake & ridge above Aug. 18.

Oreamnos, tracks & signs & trails
Sciurus richardsoni —
Eutamias
Citellus columbianus, abn. to

Aug. 18. Went up past Wall Lake and on the ridge to the west of it where we had a glorious view of Upper Kintla Lake, Kinthy Peak and Glacier & the Agassiz Glacier. The mountains in this region are the finest of the Park, high & rugged & with many large and small glaciers. From the head of Upper Kintla Lake a trail can easily be made up to the middle of Agassiz Glacier & others to the high passes & peaks of a wonderful Alpine region.

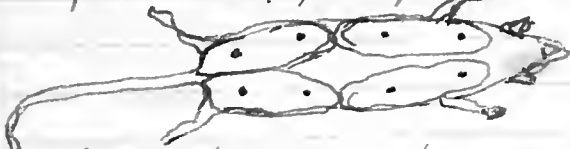
Collected in zone trap as far as I could see.

The western tamarac is said to be common to head of Upper Kintla Lake and from 3000 feet above it I could see the tall trees standing above the black spruces & firs.

Wall Lake ^{B.C.} Aug. 19.

Zapus 2, ♀ I $\frac{1}{2}$, A $\frac{1}{2}$, P. $\frac{1}{2}$ Galen $\frac{1}{2}$.

Mammary glands 4, overlapping but separate - very large & wide & full.



Long feet missing but glands still large & containing milky fluid, not fat.

Stomach ^{intestine} very large & full of grass seeds. Must fatten rapidly.

Sorex obscurus ♀, I $\frac{1}{2}$, A $\frac{2}{3}$, all on 2 mammary glands, very long & large.



The dense stand of spruce & fir & lodgepole pine carries Canadian zone well up on the slopes to about ~~8000~~⁷⁵⁰⁰ on warm & 6500 on cold slopes.

Hudsonian runs 1000 feet above and the ridge where we reached is about 8000 feet and above extreme timberline, tho a few dwarf abies near to the Peak. We are close to Boundary Peak on the same ridge & 500 feet higher.

Abies, Picea, Pinus albicaulis & Larix lyelli are the timberline trees, the tamarac in abundance reaching through Hudsonian zone to extreme timberline. While not quite so hardy on wind swept slopes as Abies it is taller & more of a tree to its limit. When the other 3 trees are dwarfed a little lower it stands 30 or 40 feet high as a sturdy tree.

July 19, Returned to Waterton Lakes.

Aug. 20 - Up past Waterton Lake to Reynolds Cabin.

Aug. 21. Remained at Reynolds Cabin and worked up the valley and around the lakes while Mr. Yare went to Browns Pass and back. Saw lots of birds and tracks of deer and bear + coyote + porcupines and in P.M. wrote up back notes.

Aug. 22. Broke camp and followed up valley through 4 miles of magnificent forest of mainly engelmann spruce. Trees 100 feet high + 3 and 4 feet through. Some loggpole pine + fir and a little douglas spruce mixed through and one tamarack tree, Lyell.

Then climbed up through alders + willows of a big slide track about 1000 feet + then another 1000 through open forest + timberline meadows to the summit of what the guides call Flat-top, but really a great shoulder of Kipp Mtn. The real pass from Waterton Valley to Mc Donald valley lies 1000 feet below us at 6000 feet with a gentle slope up each side and a natural + the lowest highway across the range.

Our summit is 7000 feet + pure hudsonian, mainly trees and beautiful grassy + flowery parks. Came down about 500 feet + camped on Kipp Creek at edge of timber.

~~Saw 5 white ibex + 15 goats.~~

Whitetail deer, 5 above timberline
Goats, tracks along Kootenai Cr. a high up.
Saw 15 goats along high ridges &
at head of Cattlequeen Cr.
Black bear tracks along trails & a bear in camp.
Silverfish, reported in camp, seen by Jurd.
Porcupine tracks along trail, both sides.
Citellus columbianus, abn. at camp
& all over upper slopes.
Eutamias fedix, heard in woods &
one seen. sharp voices.
Sciurus richardsoni, com.
Zapus, 1 dead & several seen.
Peromyscus, com. at Reynolds Cabin.
Evotomys " " " "
Microtus oregonus, com. above timber.
Ochetona, heard high up.
Marmota flaviventris, com.
Coyote, tracks com. all along trails.

Aug. 23 To Granite Park.

Followed down Kipp &
Hanks Mineral Cr. to near
junction with McDevall Cr.
then turned up ridge to
Granite Park & camped.

Found luxuriant forest of
spruce & fir along Mineral Cr.
and on hot slopes low down
Pinus monticola & *Taxus occidentalis*
are common. Found one *Thuja*
plicata & lots of *Zapus* &
Fatsia bartrami, *Saxifraga*,
& on open slopes *Holodiscus*.
Mapped warm slopes as transition
up to 4500 feet.

A big fir with flat branches
& green canes looks like
concolor but I could get only
a branch. A *Picea* with
long, green canes is not englemanni.

The undergrowth is dense & rank
and ferns are big & abundant.
Saw 6 species low down & two
more high up ..

Camped at Granite Park after
a steep climb of nearly 3000 feet.

Aug. 24 Went in to Many
Glaciers & packed up for trip
to west side.

Aug. 25 - Took stage to Glacier
Park Station and waited over
night for morning train to
Belton by daylight.

Aug. 26 Left Glacier at 10 AM.
& reached Belton at 12 &
Lewis's at head of Lake Mc
Donald at 1 PM.

Aug. 27. Went up Mc Donald Creek
& fell and found *Perlequin* ducks
& water ouzel nest.

Saw a bear eating service berries
and tracks of Moose, deer, mink &
coyote.

Aug. 28, Went over summit of ridge
north of lake to trout lake valley
and back. Lots of birds, some tracks
and small game.

Aug. 29, Wrote reports.

Aug. 30 - Wrote and tramped around
lake. Saw a martin climb a tree
and went up after him and made
him jump across to another
tree and then to the ground.

Aug. 31, Returned down lake and over
to Belton. A little snow in night
has whitened the peaks. Cooler.
The weather has been very hot and dry
and big fires are raging S & W. of here.

Ran down to Columbia Falls
and saw the taxidermist, E. S. Bryant,
and got many important notes on
birds and mammals. Also was able
to check up the life zone areas.

The western slope of the Glacier Park
shows peculiar good conditions, the
lower warm slopes showing a great
mixture of Canadian and Transition zone
species, the trees being mainly Transition
and the undergrowth where the sun
never shines on the cool ground
being carpeted with Canadian zone
species such as *Pachystima*, *Linnaea*,
Fragaria, *Cornus canadensis*,
Clintonia uniflora, with much *Taxus*
+ *Fatsia*. The effect of deep shade
heavy snows, and humidity and rich
soil results in the same association
of plants as occurs on the Pacific Coast
slopes of Oregon.

Glacier Nat. Park.
Arctic-Alpine zone Plants.

Polygonum compactum

Silene acaulis

Draba

"

Salix

"

Oxytropis

Saxifraga

"

Potentilla

Aquilegia canadensis

Arenaria

Antennaria

Myosotis

Anemone

Sibaldia

Clatonia ovalifolia

Hudsonian Zone Plants

Pinus albicaulis
Abies lasiocarpa
Picea engelmannii
Salix

"

Geosularia oxycanthoides
Bryanthus empetrifolius
Kalmia glauca ^{*glaberrima*}
Casiopia
Dryas octopetala
Phacelia
Pulsatilla occidentalis
Trillium ^{*abiflorum*, *fig. hille*}
Godetia
Oxaria diggiana
Silene acaulis
Saxifraga
Veronica
Armaria
Stellaria

Orthocarpus
Pedicularis white
 " purple
Edephantella
Astragalus white
 " purple
Arenaria borealis ?
Polonium confertum
Allium
Junonia
Sedum
Sibaldia procumbens
Delphinium
Hypnum
Vaccinium divosum

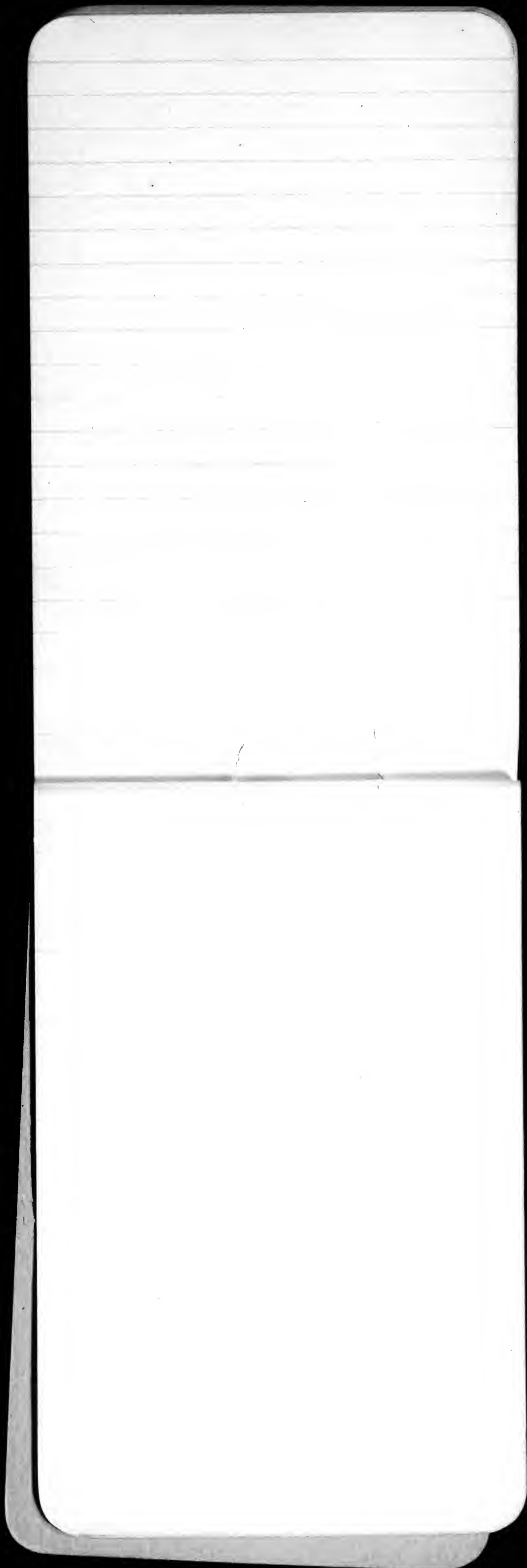
Canadian Zone plants -

Pinus Murrayana
 " *flexilis*
Picea engelmannii
Abies lasiocarpa
Populus tremuloides
 " *balsamifera*
Acer glabrum
Alnus
Salix
 "
 "
Sorbus sambucifolia
Liparoglyca canadensis
Sambucus racemosa var.
Pachystima myrsinites
Betula glandulosa
Zosterophyllum terax
Ribes
Geosulcia
Vaccinium erythrocarpum
 " *ovatum*

Lonicera involucrata
" *corjocialis*
Juniperus communis
Rubus nutkanus

Transition zone plants

- *Pseudotsuga*
- *Populus angustifolia*
- *Amelanchier*
- *Prunus melanocarpa*
- *Juniperus procumbens*
- *Berberis repens*
- *Arctostaphylos uva-ursa*
- *Balsamorhiza sagittifolia*
- *Gaillardia*
- *Diagnus argentea*
- *Betula fontinalis*
- *Thuja*
- *Ribes d. irriguum*
- *Philadelphus Lewisii*
- *Rubus strigosus*
- *Balsamorhiza*
- *Gaillardia*
- *Lupinus*
- *Ceanothus velutinus*



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2,07 sheep counted was Many Hekus
in March, ¹⁹¹⁷ by Walter Scott Gibbs

