

Junius Henderson

Field Notebook

No. 3

1909 - Sept. 6, 1909

Gunnis Henderson
Boulder, Colo.

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Boulder Co., Jan'y 26, 1909.

Bright, windy morning, 40° at 7 a. m.
Went to University for receipt book, etc.,
then took 11:30 train for Ft. Collins, reaching
there at 1:15. Went to The Northern Hotel,
got lunch, ordered team for tomorrow
at Tate's & spent balance of day reading
and writing. Retired at 8:45.

Ft. Collins, Jan'y 27, 1909.

Arose at 5:45. Left hotel at 7 a. m. with
team & driver from Tate's. Cloudy and
cold, ^{east wind} clearing and warming toward
noon. Took Rocky Ridge road. Saw
big flock blackbirds, numerous horned
larks, several hawks and magpies and
one meadowlark. Reached mouth of
Box Elder canyon at 10 a. m.

N. of ^{creek} ~~road~~ Niobrara, ^{and Dakota} dips 66° , strike
 4.55° . Outcrop measures 143 yds horizontally across,

and Dakota about 100 yards.

S. of creek Niobrara dip 82° strike N. 45°
E. carries it directly into outcrop on N. side,
N. end of S. side outcrop swings to N. for last
few feet. 75 horizontal yards across
Benton and 75 across Dakota.

Found no yellow s.s. in Jurassic at
mouth of canyon, but the l.s. containing
the fossils (of which we have had slides
made) and 1 foot (or more) concretionary
zone is present. In isolated hill inside
mouth of canyon the deep red Lykins
passes above into pinkish, ^{roughly} massive
s.s., which abruptly changes to whitish,
in turn abruptly but apparently con-
formably into angular yellow s.s., proba-
bly that in which Hayden found *Penta-*
crinus & *Ostrea*. Above this is the fossil-
iferous l.s. At one point there is a marked
unconformity near base of Jura for 5 ft.
thru ~~the~~ ?

Worked S. back of Niobrara ridge,
found no fossils in Benton and only
Duocerasmus and *Ostrea* fragments

in the Dakota, saw white tailed
jackrabbit.

Then came back to Ft. Collins
by road which passes mouth of
Owl Canyon drainage. Started
back at 2:30, reaching hotel at 5:20.
Has been warm walking this afternoon,
and bright, but a cool south breeze
which made overcoat comfortable
when driving.

Ft. Collins, Dec Jan 28, 1909.

cloudy, a strong, cold north wind. Arose
at 7 a. m., left for Boulder at 8 a. m.

Boulder, Feby 13, 1909.

cloudy, East wind. W. W. Robbins & I started
for Green Mt. via Shunk Canyon at 9:30
a. m. Saw only usual number of mag-
pies and long crested jays, one buzzard,
a few chickadees one canyon or winter
wren and one pine squirrel. Robbins
shot the squirrel. Not a junco, tree

sparrow or any other species. at noon it began snowing and continued till we reached home at 2 p. m. and balance of day.

Tuesday, March 2, 1909.

Started for Ft. Collins with G. W. Bartholomew of the Portland Cement Co., on 7:50 p. m. train. Windy. Reached Ft. Collins on time and went to Northern Hotel.

Wednesday, March 3, 1909.

Started with Bartholomew and team from Daly + Nelsoie at 7:30 a. m., for Owl Canyon. Saw numerous shore larks and red winged blackbirds. Examined gypsum, found section there in the Lyonsine:
Limestone capping escarpment.

red clay 75 ft
Gypsum 25 ft
covered 10 ft.

cross bedded sandstone.

Reached Collins at 4:30 p.m.

Gypsum at Owl Canyon is crossed
by west line of Sec. 6 T₁ P. 9 N. R. 69 W.
Returned to Boulder in evening, reaching
here at 6 p.m. Bartholomew paid me
\$20.⁰⁰ for the trip and all expenses.

Boulder, Colo., March 23, 1909

Delightful morning, but hazy clouds.
I started alone up Gregory canyon at 7:30
A.M. Six meadowlarks before reaching
mouth of canyon, saw Junco sp. at mouth
of ^{Gregory} ~~Boulder~~ canyon. Further up saw nuthatches
and took a chipmunk and chickadee. Saw
a black N. nuthatch. Passed over the
divide into Bear canyon, where
Nuthatches were plentiful, as well
as chickadees and nuthatches.
Shot another of chickadee & nuthatch.

Then worked down Bear Canyon
and over into Skunk Canyon
where I shot a chipmunk of the
other species. Just south of
town had 3 more warblers
and saw 2 bluebirds and one
robin. Longcrested jays all
along the route but magpies
only in Skunk Canyon. Juncos
only at mouth of Gregory and south
of Skunk Canyon. Shot a Nut-
cracker for his skeleton. Began
to sprinkle just before I reached
the University and to rain before
reaching my room at the U. M. C. A.
at 6 p. m. Still raining hard when
I went to bed after a dip in the
swimming pool.

Boulder, Col.

Sunday, June 6, 1909.

Went to church in forenoon, dined with Rev. Pulliam, then hurried to University and marched in the academic procession to the Presbyterian Church and heard the Baccalaureate Sermon.

Monday, June 7, 1909.

Very rainy day. Finished my work at Museum for the semester. Saw 2 night hawks

Tuesday, June 8, 1909.

Clouds low in morning, but soon lifted. Got meals at The Boulders. Took Representative Chas. Hayler, a member of the advisory board, to dinner with me. In evening I went to the campus illumination, etc.

Wednesday, June 9, 1909.

Clear early in morning. Soon

Blonded academic procession
started at 10 a.m. Took cars to Chau-
taque. Terrific rain and hail just
as we reached the grounds, continuing
for some time, then with mild force
nearly all through commencement
exercises. Dined at Home Lunch
counter at 2 P.M. packed trunk
and left for Denver on 4:40 train,
sprinkling again as I left. The
foregoing 4 days record written
on train just after leaving.
Too busy to write it in log diary
this week. The fields & prairie are
beautifully green.

Birds seen: Dove, Meadowlark, redwing,
Dark bunting, kingbird, barn swallow,
Colder hawk, Charr Creek & Platte River
high. Hailed as we reached Denver.
Got wet going to U.P. ticket office &
found it locked. Returned to
Depot and found my sleeper
ticket there. Fudge came into

car and we had a brief talk.
Left Denver for Los Angeles
at 7:05 p.m., got dinner in
diner, went to bed early.
Reached Cheyenne at 10:40.

Cheyenne, Wyo., Thursday.

June 10, 1909.

Still at Cheyenne, held up on account
of floods. Cold and partly cloudy.

Cheyenne paper reports 68 as maxi-
mum temperature, 45 minimum. Clear
part of day. Left Cheyenne at 2 p.m.

crossed Trias? & Carboniferous at 2:45.
and entered granite formations very
irregular in strike and dip, but mostly
strike E.-W. and dip possibly northerly.

~~Uncovered~~. Passed through long
tunnel at 3:30 and 7 minutes later
cut red sandstones again. On Laramie
Plains at 3:45, broad and flat, stratified
rocks (Carboniferous) to north, plain

buried beneath the debris mantle
and rising abruptly from plains
to the south are mountains appar-
ently of granite. Reached Laramie
at 4 p.m.

Ogden, Utah, June 11, 1909

Woke up at Ogden at 5 a.m., bright, but
cool, soon warming up. Mts. bordering
valley with much snow, especially at
Salt Lake. Went into diner just after
leaving Salt Lake. Immediately after
breakfast the engine broke down, causing
another delay. At Tintic there are many
mines - most important camp in Utah.
Beyond great scrub cedar forests,
sw. of Lyone sage brush desert,
with no grass.

Barstow, Cali., June 12, 1909

awoke at 5:30 here, bright and quite warm. Tree quercus here, but soon left behind, as also large "sageweed". Reached Los Angeles at 11 a. m., 15 hours behind. Nellie, Henry, Alice, Iva and Cousin Maunie met me at depot and Nellie, Iva and I went to the house for lunch. Spent afternoon at house, at 7 p. m. the Kittle's called for a few moments, at 8 p. m. we all went to Henry's and spent the evening with music.

Los Angeles, Cali., June 13, 1909

Kittle called with the auto and took Nellie, Frank and I for a ride to Hollywood at 4:30 Nellie and I took the "Salt Lake" train for Long Beach, where Anale George and Dr. A. L. Bryant met us at the train. After lunch we all

walked down on the wharf. Cloudy
forenoon sunny afternoon.

Long Beach, Cali., June 14, 1909

Cloudy morning. I spent most of
the forenoon packing 2800 shells and
sea urchins which Nellie had collected.
In the afternoon Nellie and I walked
west up the beach beyond seaside
where we collected 700 shells, mostly
of *Cerithiidae*?. They were in the sand
which had been pumped out by the dredger
and which formed the dyke along the
channel.

Long Beach, Cali., June 15, 1909

Cloudy morning. arose at 6:30 and
packed the shells collected yesterday.
Left Long Beach on Salt Lake car

with cousin Fannie ~~Hudson~~ ^{Boas} & husband
 at 9:34 for Catalina, fare \$5.00
 Very calm, warm, only partly cloudy.
 Put up at the Delmar, got a very poor
 dinner at the Klondyke restaurant,
 then went to Seal Rocks in the glass
 bottomed boat Hermes. In evening walked
 to a bay north of Avalon. Supped at
 the Arlington cafe. Very good.

Avalon, Cali; June 16, 1909.

Clear, calm and hot. I arose at 6:30
 breakfasted and started S.E. along the
 beach. Found rocks covered with limpets
 of several species, *Littorina* and *Chlorostoma*.
 In an hour or so Nellie and Fannie joined
 me. We walked to Pebble Beach (the
 town dump) and found there a few cone-
 shells etc on the shingle. Have seen
 no sandy beaches on the island
 yet and few pebbly ones. See cliff
 usually precipitous, porphyry and

other igneous or intrusive rocks. Near Seal Rocks it looked like a coarse conglomerate in places so seen from the boat. Returned to Avalon at 2:45 and left on the Hermosa at 3:15, reaching Long Beach at 6:15. Spent evening cleaning snails and spreading their opercula to dry. Collected 497 specimens of limpet spp., Littorina sp., Chlorostoma sp. and other mollusca, but only two land snails. Island very dry.

Long Beach, Calif. June 17/09
Spent forenoon finishing the preparation of the snails. In afternoon Nellie and I were on the beach most of the time. I left for Los Angeles at 4⁵⁰ pm. In evening

Lu, Alice, Iva and I called on Henry and Louise and told her goodbyes as she leaves for the East tomorrow. Frank went to Long Beach, so I have missed him. He returned on late car.

Los Angeles, Cal;

June 18, 1909.

Kettle & I went to Glendale in the auto, called on Dr. Al. Bryant and Mrs. Gass, Gass being away. I left Los Angeles for Long Beach on 2:30 p. m. car. Rained last night, cloudy this forenoon, clear this afternoon. In afternoon Nellie and I walked a long ways east on Long Beach and collected about 150 or 200 specimens of shells.

Long Beach, Cali.

June 19, 1909.

Bright, clear and warm. At 10:30 I started for Los Angeles on electric car. Went to City Hall and found Frank, where Kittle & Melvin joined us. Frank went to the City Club dinner, and the rest of us to a cafeteria, then at 1:30 we all started for Portuguese Bend, above Point Ferriman, in Kittle's auto. Left auto on bluffs and ~~at~~ went down to beach, collected crabs, limpets, etc. Then got supper and made our beds, turning in at 9 p.m.

Portuguese Bend Cali.

June 20, 1909.

I arose at 5:30 and started for the beach, where the others joined

me at 8:30. Got some fine material. Found Keyhole Limpets (*volcanus*) and large chitons and black abalones by turning rocks, other species ^(snails and bivalves) on upper surfaces of rocks. Collected a few fish also and a lizard. Flies were very bad last night and prevented sleep. We found they were swarming along the bluffs where sheep or goats had been grazing, so we packed up and came back to Los Angeles, starting about 11:30. Has been bright and warm all day. Frank and I spent the evening at Henry's, then returned to his house. Collected over 500 specimens yesterday and today. Keyhole limpets (*volcanus*) only found ~~under~~ under rocks, others under and over. Black abalones under and in crevices.

Los Angeles, Calif., June 21, 1909

Dense fog at 6 a.m., but cleared early. I left for Long Beach at 10:40, but did not arrive there until 11 a.m. on account of trouble with the motor. Stayed in house most of afternoon, developed negative in evening.

Long Beach, Calif., June 22, 1909.

Cloudy forenoon and moist. Saw several large slugs on sidewalk. Walked beyond seaside and collected a lot of shells, etc., 67 specimens. In afternoon Nellie and I went to East San Pedro and collected 869 shells on the S.W. end of Terminal Island, possibly the residuum of erosion of Pleistocene beds, though the perfect condition of the most fragile *Pecten* and *brachidulna* are against that idea. Clear afternoon

Total collections to date 4583

Long Beach, Cali., June 23, 1909

cloudy morning, nearly clear by noon.
Stayed about house most of forenoon.
Nellie and I went to theatre and saw
"Winchester" in the afternoon.

Long Beach, Cali., June 24/09

cloudy, misty morning. Nellie and I
took the seaside car at 9:50, then walked
to East San Pedro, returning on 5:45.
Took Lake train, clear afternoon.
Collected 1067 specimens, making a
total of 5650 to date.

Long Beach, Cali., June 25, 1909.

moist
damp, cloudy morning. We packed

yesterday's collections and swept
the house in the forenoon. Clear
at noon, as usual!

Long Beach, Cali., June 26, 1902.

cloudy morning, cleared before noon.
I went to Los Angeles on 10:10 a. m. car.
Went to City Hall and met Frank. We
then went to City Club and from there
to Pacific Electric Station, where we
started on City Club San Pedro excursion
at 1:10, about 250 men in five
cars. at San Pedro the conductor announced
that he could not get the power to run
to Point Firman, which of course the
company knew before the excursion
started. so we boarded six boats
and ran first through the outer harbor,
then through the inner harbor to the
Craig shipyards at Seaside, where

we went through the flaut. The channels of the inner harbor reminded me of tide flats about La Bouverie, on Puget Sound, at high tide. At Seaside we boarded electric cars and went to Long Beach, where we dined at the Virginia, then listened to talks on San Pedro Harbor by Capt. Freis, the engineer in charge of the government, and others. Then ran to Los Angeles, which we reached at 11 p. m. I went home with Henry for the night. My plebitis were badly inflamed, so I bathed them in a saturated solution of baking soda, which allayed the itching.

Long Beach, June 27, 1909.

Clear morning and warm. Henry and I went to Frank's for breakfast, then I went to Kitter, where Nellie arrived last night.

We all went in ^{the auto to} a cafeteria for dinner, then
rode to Eastlake Park and on to Hunting-
ton road, then Nellie and I came back
to Long Beach on 4 o'clock car.

Long Beach, June 28, 1909

cloudy morning, cleared soon and
hot afternoon. Nellie and I went down
to Naples Bay, where we found some
fine Bulla gouldiana, abundant berithi-
des and Melampus? Took car to and from
Mira Mar, just above head of Naples canal.
Got 195 specimens, (including 38 Bulla)
besides 15 specimens I got this morning.
Total collections to date 5860.

Long Beach, Cali., June 29/09

Bright, hot day. Surf very high. In afternoon I went through the reclaimed tideland north of Seaside. *Berithidea* in enormous numbers as far as the tides reach. *Melampus* ^{*olivaceus*} ~~*lutes*~~ *snails* nearer coast. Mud pumped out by dredger contained many *Tegulus*, *Chione*? *ostrea* etc., and a few *pectens*. In evening Nellie and I attended Bide a couple Theater - performance very poor.

Long Beach, Cali., June 30/09.

Hot and bright, I rode to Mira Mar on the Naples car and took photos E. and W. along coast from the point. Then took 14th st. car and went to Salt Marsh N. of Seaside, where I took 2 photos of *Berithidea* and collected 2 tern eggs. Henry Frank, Dan, Lucy and Alice, collected a few shells

Long Beach, Cali., July 1st, 1909.

A hot morning, cloudy and cooler in afternoon. I went to Long Beach and collected 610 Pleistocene fossils, returning at 3 p.m. At 4 p.m. Nellie and I went to Los Angeles, met Francis at the Santa Fe train, dined at Boos Cafeteria opposite Pacific Electric station. Then Nellie and Francis went to Long Beach and I went out to Frank's where I found Zoe Dobson and her children and Gertrude Thompson.

Los Angeles

Long Beach, Cali., July 2, 1909

Bright, hot morning. I called on Ralph Arnold at H. W. Hellman Bldg. Got dinner at Boos Cafeteria, met Nellie at Pacific Electric station and at 1:45 we left for Santa Barbara on Southern Pacific R.R., where

Kittle met us with the auto. It has been a terribly hot day, but cool at Santa Barbara. In evening we went to band concert.

Santa Barbara, Cali.

July 3, 1909.

Hart, Carl, ^{Melvin} and I went into Mission Canyon before breakfast. Then we went to the beach. In afternoon went to the beach again and collected limpets, etc. Bright and hot in the sun where sheltered from wind, but wind cool. Found 3 species of limpets alive, and *Littorina*, one turban shell and one chiton and one coffee bean shell. Many dead specimens of barns, *Chivella*, and *Chama* and mussels. Small mussels alive, also the peculiar non-saddle barnacle like animal which we first found at Portuguese Bend.

Total collections to date $6485 + 80 = 6565$.

Santa Barbara, Cali.

July 5, 1909.

Bright morning, but cool breeze. Harl took the women and small children in the auto and Carl Strock, Melvin + I walked to the beach a mile or so S.E. of the lighthouse, returning at 6:30 p.m. Collected about 130 shells.

Total collections to date 6695

Santa Barbara, Cali, July 6, 1909.

Bright, warm morning. Harl and I explored the bluffs at the bath house and collected about 400 small Pleistocene fossils, mostly gastropods and fragments of Bryozoa. The formation dips westerly or southwesterly. On top of the next point west we found kitchen middens containing

clam and mussel shells. In after-
noon we collected about 300 Pliocene
at S. end and on E. face of Packard
Hill. The S. end is a mass of small
Bryozoa stems, with a few ^{small} Pecten and
other shells. Then Harl and wife and
Helli and I went ⁱⁿ to the swimming pool.
In evening we all dined at Strocks, then
they came to Kittle's and spent evening.
I swam more than I have for years.
Total collections to date 7395;

Santa Barbara, Calif.,

July 7, 1909.

Bright, warm morning. We
left Santa Barbara on the S.P. Ry.
at 10:30 ^{a.m.}, reached Los Angeles 2:30 ^{p.m.}
went out to Frank's house, then
took 5:20 electric car for Long Beach.
Wrote a lot of letters in evening.

Long Beach, Cali. July 8/09

Foggy morning, clearing by 10:30.
Nellie and I took 7:30 train for East
San Pedro on Salt Lake Road. There we
rented a boat from Paul La Morris boat-
house and rowed to Deadman Island.
Collected limpets, marine snails of several
species, one *Bulla*, etc., on beach, then
collected fossils on East end of island.
West end shows Miocene? conglomerate
at base. Found no fossils; above
is a sandstone, probably lower
San Pedro Pleistocene, with few fos-
sils, of which we collected none, above
this is the upper San Pedro, with
several horizons filled with fine fossils.
We collected several thousand. They
were weathered out so that we could
obtain fine specimens with but little
work, especially under on ledges.

At the top of the bluffs is black soil
about 2 feet in depth, containing
kitchen middens, chiefly *Pecten*
aquirostata. Returned to Long
Beach on the 5:45 train.

Long Beach, Cali., July 9, 1909.

Cloudy morning, arose at 5:30, and
Nellie, Dr. Carter and I left on the 7:05
a.m. train for Pomona (Salt Lake
Route). Reached Los Angeles at 8 a.m.,
and left there at 8:31. Reached Pomona
at 9:35 and were met at depot by
John A. Kennedy and taken to his
home at 720 N. Garey St. In afternoon
we all went out in a neighbor's auto.

Pomona, Cali., July 10, 1909.

Cloudy morning, soon clearing.
Nellie, Dr. Carter & I went for a drive,

with Mr. Kennedy. Went through packing house and saw them packing oranges, and through the Waters ^{Canning} ~~Canning~~ House and saw them canning and drying apricots. Then Dr. Carter went to Mr. Hall's.

At 1:18 p.m. we took Southern Pacific train for Ontario, Lou and Frank being on board. Harry Jones met us there and drove us to Maud Harris' home, ^{5 ~~mi.~~ ~~by E.~~} 10 mi. ~~W.~~ of Ontario ^{Ontario} ~~Canada~~ and 7 mi. N. of Corona.

Ranch W. of

Ontario, Cal., July 10, 1909.

Very dense fog at 6 a.m., nearly clear at 9 a.m. Collected *Planorbis trivalvis*, *P. parvus*, *Physa* sp. *Lymnaea balanusoides*? and *Pisidium* sp. in pond at artesian well. The *Lymnaea* was found mostly in the mud outside the little stream at which ~~run~~ ^{run}

through the slough; Harris and
Maud brought Frank, Nellie, Eaton
and I to Ontario for the ~~the~~ 5:40
train and Nellie and I reached
Long Beach at 9 p. m., going out
on the electric from Los Angeles.

Long Beach, Cali., July 12, 1909.

Foggy morning, clearing early.
Spent the day in packing 5 boxes
of recent and fossil shells.

Long Beach, Cali., July 13/09.

Foggy morning. Most common
birds at Long Beach are mocking
bird and Brewer blackbird. Least
seen common on mud flats. In
harbor are ring-billed gulls and an
occasional pelican. At Portuguese

Beud saw California quail and
roadrunners ^{+ burrowing owl} and saw farmer at
Santa Barbara. At Ontario the
following: W. mockingbird ^{abundant} _{com}
Ark. flycatcher abundant
basin " few
Burrowing owl abundant
California shrike common
Brewer blackbird abundant
Black phoebe one
House finch common
Ruffard "
Killdeer "
Dove "
Meadowlark abundant
Cliff swallow "

Collected 3443 specimens at Deadman Isl. + Ontario
Total to date 10,838.

Shipped six boxes early in afternoon
to Boulder, by Salt Lake and Union
Pacific. Paying \$7.00 freight.

Later in afternoon Nellie and I went
east on beach and collected 470 fossils
from base of cliff and also from half
way to top. The Tagelus all came
from upper horizon, also collected
ten recent shells.

Total collections to date 11,318.

Long Beach, Cali, July 14, 1909

Cloudy morning, as usual.

Clear before noon. Packed my trunk
in forenoon. Went to beach to see
Elks National Convention crowd in
afternoon.

Long Beach, Cali, July 15, 1909

Cloudy morning. Nellie and I came
to Los Angeles on the 10:30 a.m. electric,
sending my trunk on the Salt Lake.
At L.A. we stood on a box and saw
part of the Elks parade, got lunch,

at small restaurant opposite Pacific Electric station, then I went to Bell Lake station and from there to Frank's house. In evening we all went to Frank's office in City Hall and saw electric parade of floats on street car tracks. Hot afternoon, cool evening.

Los Angeles, Calif. July 16, 1909
I stayed ~~over~~ at Frank's house until late afternoon, then Frank and I went to Redondo and tried new bath house, returning at 7 p. m. Nellie went with Ina to see parade, and Maud Harris + husband and her mother came back with them. Cloudy morning and evening, bright afternoon.

Los Angeles, Cali., July 17, 1909.

cloudy morning, clear but hazy at 8 a.m. I called on Louise Thompson Lampshire at her store on Pico St., then went with her to her home to see her daughter Margaret, afterwards visited Chamber of Commerce building. Reached home at 12:15. In evening Nellie, Lucy and I went to Harry's.

Los Angeles, Cali., July 18, 1909.

Very bright, warm morning, but cool breeze soon sprang up. Frank, Henry, Lucy, Nellie and I went to Glendale on the 10:30 car, dined at Dr. A. L. Bryants, and I spent afternoon looking over R. D. Goss' shell collection. Henry and Frank returned early the rest of us leaving there about 6:30 p.m.

Los Angeles, Cali., Monday
July 19, 1909.

Travel for this morning. Left
Los Angeles on Salt Lake Road at 10 a. m.,
still hazy. Not as warm as I expected in
forenoon, but afternoon very bright and hot
on desert. F. 96+ at 6 p. m.

July 20, 1909.

Bright morning. For first time I
shaved while train was in motion, ^{and} with
no trouble or cuts. Cool breeze all day.
Fine stream and marshes for muckbirds,
etc., just east of Evans. Does not look
good for fossils. Red predominates in
rocks from Salt Lake to Evans and
further. The tunnel 50 minutes from
Evans (east) occupied 4 1/2 minutes at
fair speed. Bluffs, probably Tertiary.

appeared on both sides before reaching
Lanzer, bounding ^{the} broad shallow
valley of a stream. At Green River lower
part of bluffs very light colored, darker
above and nearly red at top.

Cheyenne, Wyo. Wednesday
July 21, 1909

Bright morning. Left Cheyenne
at 8:31 a.m. Quite warm at noon.
Reached Denver at 11:35. Helger met me
at depot and we talked over our com-
ing trip as we visited D. & R. G. offices.
I left for Boulder on 12:30 train.
Had Gates take me and my bag-
gage to the Museum, where I un-
packed my trunk and examined
my mail. Then went to Boulder
ade Hotel, took a bath and dined.
Fine rain at 6 p.m. Everything here is,

green and beautiful. I am told that rain has been abundant.

Boulder, Colo., July 22, 1909.

Quite warm today. I have written a large number of letters, finished packing and shipping our goods to Newcastle, Colo. for our trip. Terry Duce called in evening to talk over the trip.

Boulder, Colo., July 24, 1909

Cooler. At 1 p.m. there was a terrific thunderstorm. Two or three people drowned and others injured in flood in Two-Mile canyon. Terry Duce called in evening for final instructions.

Boulder, Col., July 24, 1909.

Hot morning, partly cloudy, remaining so through the day. Finished reading Eric Arvill's "Wild Life on the Rockies". Went to Denver on 6:30 p.m. Suburban, riding in seat with Henry Drumm. Went to Albany Hotel and got a room and retired early.

Denver, Col., July 25, 1909.

Arose at 6 a.m. Found W.W. Robbins and mother on 17th st. and took them to breakfast at Home Dairy. Then went to Union Dept and arranged for transfer of Mrs. Robbins' baggage, walked to Moffat Depot and took 8 a.m. train, which was crowded. Bright but comfortable morning. Reached Tolland at 10:15. Dr. Ramaley & I went down gulch a short distance from the Mountain Laboratory. Tolland is

8889 ft. above sea level in a fine mountain valley, modified by glacial action. Moraines consist chiefly of granite and gneiss, and have been cut through by South Boulder Creek. Down Creek in forenoon we saw white crowned sparrows, Lincoln sparrows and Brewer blackbirds, besides a small bird which looked much like the chipping sparrow. In afternoon ^{Robbins, Prosser & I} we went up stream and collected several species of snails under aspens. In evening I identified and labelled the birds collected by Robbins.

Tolland, Colo., July 26, 1909.

Bright, hot morning, cooler and partly cloudy toward 10 a.m. Arose at 6 a.m. and went down gulch to Rollinsville with Ramsey, eating fruit and crackers on the way. The

moraines and where the gulch narrows below Tolland. White-crowned sparrows, hummingbirds and magpies common. A few chickadees. Long crested jays at Golden Sun mine. One gray-headed junco at Rollinsville station. A few barn swallows and numbers of Brewer blackbirds. At 2 p.m. I lectured ~~to~~ at the mountain laboratory on "Birds in their Relation to Man" and at 7:30 p.m. on "The large mammals of the United States." In latter part of afternoon I helped Robbins pack the collections. Rained hard from 3 to 4 p.m.

Tolland, Conn., July 27, 1909.

Bright, cool, windy morning, heavy bank of clouds to the west over the range, soon breaking up. Spent most of forenoon packing up, but collected leeches, crustacea and water beetles for half an hour.

in the lake north of the laboratory
at 3 p.m. lectured at laboratory on
Birds, including a general account
of Colorado birds. at 4.30 Robbins
and I went down valley a short
distance. at 5:30 there were 15 night
hawks hovering low over the narrow
at 6 p.m. saw none. Barn swallows
abundant, violet green heron so. at 7 p.m.
I lectured at the laboratory on "Glaciers
of Colorado, existing and extinct."

Tolland, Colo. July 28, 1909

Bright, fresh, breezy morning.
Started for Juney Lake at 10:15; Robbins
and I and Mrs. + Mrs. Pennoc and Miss
Wolman. came down gulch on
foot. In pond at 10500 ft collected
Pisidia and water beetles, on way back

saw 3 hermit thrushes, one young, at
Newcomb, ⁹³⁰⁰~~9000~~ ft., saw 2 red shafted
flicker and a western robin. At rail-
road bridge saw a nighthawk at 4:30
flying very high. The country traversed
today is heavily glaciated. The Forest
lake and the two above it and many others
occur in a valley heading in a glacial
cirque, some are rock basins, others
moraine. There are rock ridges cutting
across the gulch, as at North Boulder and
Camp Allion gulches. That gulch leads
into another, which in turn leads into
South Boulder Creek (see map in paper
by Ramsley or Robbins). Glaciation
extends down South Boulder to a
mile or so below Tolland. Below that
we saw no plain evidence of it. Up
creek a gulch coming in from the
south looks even more heavily
glaciated. Perhaps this is because the

topography is not so much affected by post-glacial erosion. The bird fauna as I have noticed it of this region is as follows:

- Red shafted flicker
- Brewer blackbird
- Red capped sapsucker
- Barn swallow
- Violetgreen swallow
- Night hawk
- Red wing blackbird
- White crown sparrow
- Lincoln sparrow
- Killdeer (Robbins)
- Golden crowned kinglet
- Pine grosbeak (higher up)
- ^{agouti} Rocky Mt. hermit thrush (higher up)
- Chipping sparrow?
- Broadwinged hummingbird
- Gray headed junco - Rollinsville to timberline
- ~~Chickadee~~
Magpie

Dipper
mt. bluebird
Red headed woodpecker (one specimen)
Western nuthatch
Canyon crested Jay
Blacke brow (Robbins)
Rocky mt. Jay (specimen thrown away)
Yellow rumped Crows
Robin to timberline

The robins I have seen are the western but a specimen taken by Robbins has the white tips of outer tail feather very distinct.

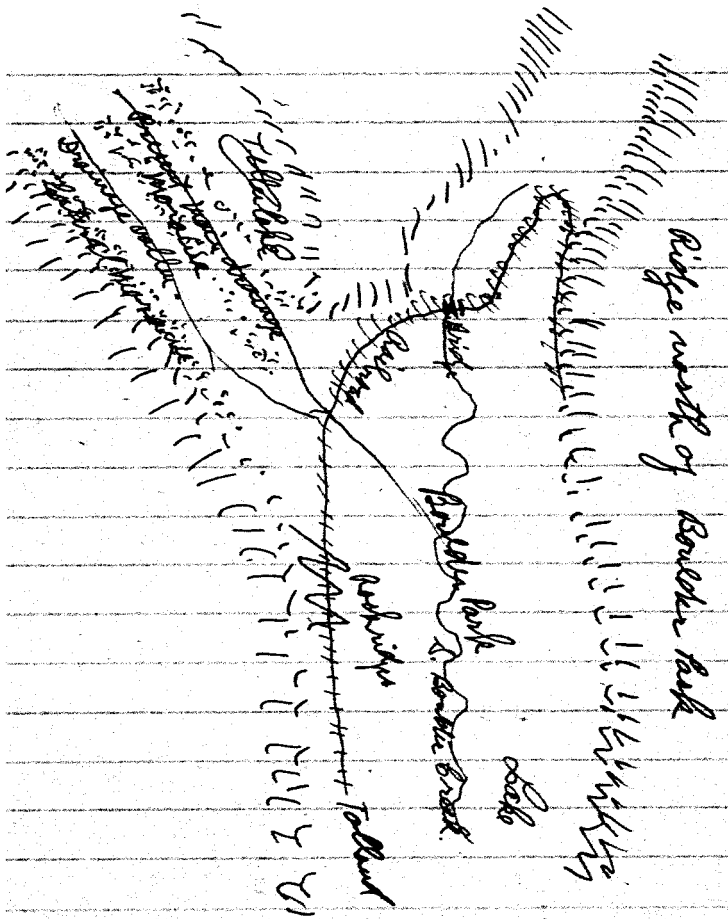
In catching the large ($\frac{1}{2}$ inch long) water beetles today I noticed that I could not catch them at all by grabbing at them as they rested on the ~~surface~~ surface of the water, but never failed when I dipped my hand quickly but quietly beneath them and scooped them up. Very few clouds through the day, rather warmer, sprinkled a little in evening.

Tolland, Colo., July 29, 1909

Warm morning, but partly cloudy. Rained hard during night. At 8:45 Robbins and I started west on the partly completed state road to apex, which climbs the south side of South Boulder canyon. Fine view of Boulder Park. The park is a partly filled and partly drained morainal lake, the moraine being just east of the railroad station a few hundred rods, the remnant of the lake being north of the station. A strip of considerable width through the park has been reworked by South Boulder Creek since the glacier retreated. The terrace is sharply outlined on each side of the present course of the stream, and numerous small lagoons mark the cut-off oxbow loops. The present stream shows a beautiful system of meanders. Along the road a short

distance from the village are several deposits of slide rock separated from the main ridge by a shallow depression. They lie on a steep slope and are apparently the result of rock sliding over a ^{post-glacial} snow and ice bank for years and stopping at the foot of the ice or snow. The moraine here extends up the slopes several hundred feet. There appears to be a roche moutonnée within South Boulder canyon, at mouth of Mammoth Gulch the moraine is very deep, perhaps 200 or 300 ft. On each side there is a hummocky lateral moraine. Two long, ^{parallel} narrow ridges extend up gulch for a mile. Between them flows the creek. E. of the E. ridge is a wet valley in which but little water now flows. To the W. of the W. ridge is Teller Lake and its valley. Perhaps the two stream valleys were subglacial, and continued

to flow from the end of the retreating glacier. Certainly there must have been considerable post glacial erosion, as the grade of the gulch is steep and the present stream is swift. The whole wide valley is a beautiful example of glacial topography. The glacier headed on E. side of James Peak. Teller Lake is moraine, and is very near the mouth of the Gulch. At present South Boulder is the main stream and Mammoth is a tributary. Came down E. valley on way back, and followed railroad through cuts which expose gneiss ridges extending out diagonally into the South Boulder Valley, apparently the result of fluting by the glacier as in ^{North} North Boulder Canyon. A rough diagram is as follows:



Rained hard at one o'clock and continued fitfully through afternoon.

Tolland, Colo., July 30, 1909

Fine, bright morning, cold at first but soon warming. Had early breakfast. Miss Kirkton left on 7:05 train for her home in Canyon City. After breakfast we finished packing everything which is to be shipped from the laboratory and got the outfit to the train by 11:30. Very tired. Miss Broderhin, Robbins & mother, Miss McKenzie and I left Tolland on 3:56 train for Denver. Reached Denver at 6: p. m. Felger met us at Moffatt depot and helped with the baggage to Union depot where we checked it. The others went to Boulder and I went with Felger to spend the ^{night} evening at his home.

Expense account, Museum
Trip to N.W. Colo.

July 24, fare Boulder-Denver	1.00
" 25 Albany hotel	1.50
above paid by Rausley from Laboratory requisition	1.50
July 30 transfer of baggage at Denver	.50
" 31 " " " " " " " " " "	.50
Total car fare & incidentals	1.00
" " " Claster of paper	.30
" " " Lunch self & Fidler	1.23
" " " Dinner	.70
" " " freight	6.10
— 4 round trip tickets	42.40
made on train 1.05 - 50	42.40
	1.50
Aug 2 - Rope	.20
" 3 - Folding work table for camp	2.75
" " " screws driver, screws, etc.	.70
" " " Hugh Miller & Co team & wagon	120.00
" " " Albany Hotel - party - Newcastle	24.00
" " " Bread	.50
" " " Ritter & Kuchel, groceries, etc.	36.10
" " " Terry Duce, expense Denver to Newcastle	3.50
" " " Hay for horses	.25
" 4 Hay, 20 milk - 10	35.00
" 5 Hay and oats 1.75 milk 10 -	1.85
" 7 Hacks here, Co.	2.50

carried to July 9
229.15

Duvey, Colo., July 31, 1909.

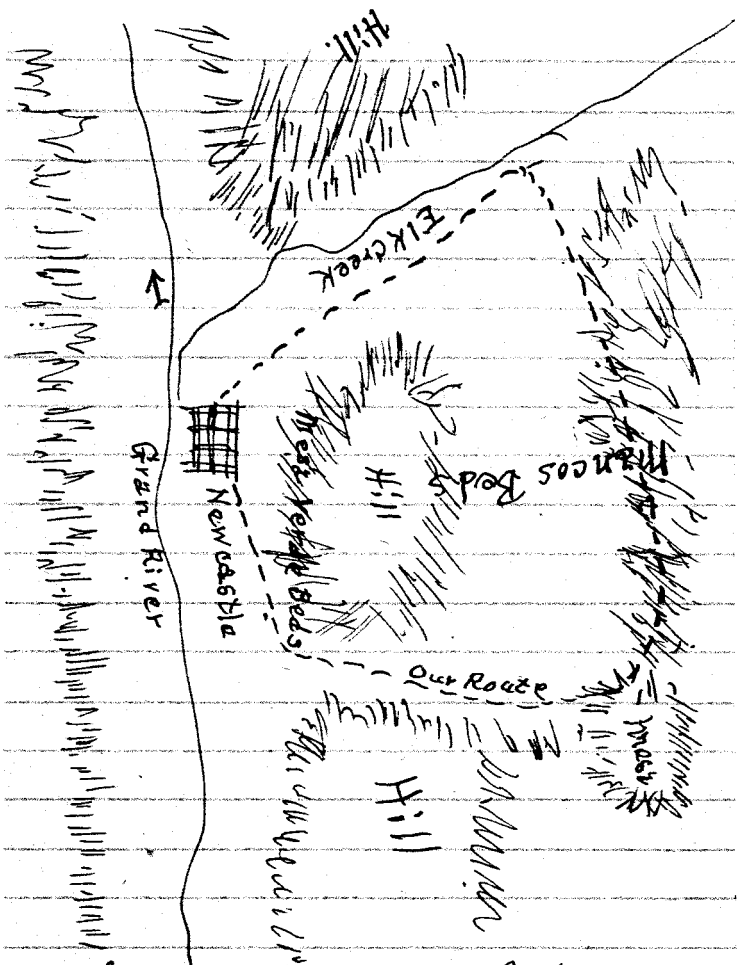
Bright, warm morning. ^{Felger and I} Left Denver
on D. & R. ^{P.M.} at 8 a.m. cloudy, with cool
breeze most of day. Reached Newcastle
at 11:30 and went to Albany Hotel.

Newcastle
~~Denver~~, Colo., July Aug. 1, 1909

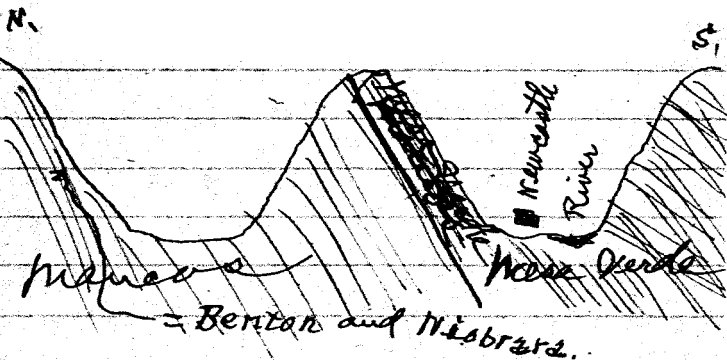
Bright, warm morning. Up at 6:30
and found Terry Duce at hotel. After
breakfast Felger, Terry and I walked up
Elk Creek half a mile to the camp of the U.
S. Geol. Survey party which is engaged in
coal land work under Albert B. Beckley.

At W. edge of town the end of the Great Highroads
has strata dipping ^{about} S. by W. After noon
we circled the big hill north of town, Felger
soon turning back, Terry and I going
across the valley to the lower mesa
lying along the bluffs. We found dead

Crochelia haydeni gabriana sprinkling the slopes wherever we went, and following up to the top of a mesa we found them alive under mountain mahogany, but not elsewhere. The strata dip approximately S. and the angle is about 35° or 45° . At top of mesa is a conglomerate composed of boulders up to 18 inches diameter of red sandstone well cemented. Then we followed along the limestone and calcareous shales resembling the Niobrara of Owl Canyon region, and found Duc-ceramus deformis and Ostra costata. Proceeding up to the pond on Elk Creek above the U.S.G. camp & collected Brevitaca, beetles, etc., then found Crochelia cooperi & under Populus logs and Pyramidula cockerelli. Then visited the camp and met Beckley. He said the sandstone forming S. face of hill N. of town and N. E. face of hill W. of town is base of Mesa Verde formation.



Sketch map of Newcastle Region



Mancoos = Benton, Niobrara and Lower Pierre
 New Verde = Upper Pierre and Fr of Hills.

The Lower Mancoos shows ^{black} shales overlaid by limestone like Benton and Niobrara, the limestone containing Luceramus deformis and Ostrea congesta. Went to M. G. church in evening. W. W. Robbins arrived on the 11:15 train. Sprinkled most of afternoon and until midnight.

Newcastle, Colo. Aug 2, 1909

Bright, hot morning. Robbins and I arose at 6 a.m., got breakfast, got our freight and baggage to livery, stable and I unpacked it while Robbins went collecting plants. In afternoon Felger, Robbins, Terry & I followed S. side of Grand River down to the first gulch - Alkali gulch - Robbins for plants and insects, Felger for birds, Terry and I for fossils. The mesa verde formation is mostly sandstone, partly massive with some shales or very fine, rather friable sandstones. In Alkali gulch, just above a coal vein on the east ~~slope~~ side, we found many leaves like the Laramie material, in sandstone. This coal vein seems to continue ~~so~~ westward to the Keystone coal mine. It has been worked on W. side of Alkali gulch and again on

S.E. side of River opposite Keystone
mine. Up alkali gulch we found
a stratum of sandstone strongly
impregnated with iron oxide, contain-
ing many leaves, and collected a
bag full, including fragments of
palm leaves. Returned at 4:30.
It has been very hot. Nelson, from
the U. S. G. S. camp, says magnetic
declination here is $15^{\circ} 38' E$.

Newcastle, Bala., Aug. 3, 1909.

Bright, cool morning. Had a splendid
night's sleep. Got a 3-inch ^{covered} wagon and
team from Hugh Miller and spent fore-
noon packing and loading the wagon.
Left Newcastle at 1:30 p.m. drove up
Eck creek to the forks, then a short
distance up main fork (west fork) and
photographed the conglomerate unconform-
ably overlying upturned edges of Mancos
^{looking south} and the Lower Mancos (= Nishore l. s. look-
ing West. The N. side of gulch has

the Niobrara l.s. ^{and Benton shale} on basal slope of gulch wall, backed by what resembles Dakota sandstone. Back of this are variegated shales, with probable l.s. like Morrison, all underlain by red beds as east of the range. Far north is a different formation. Niobrara where we photographed it has 70° dip S.W., strike N.W., overlaid by "paper" shales as at Six Mile N. of Boulder, ~~and~~ The conglomerate over the edges of these formation contains quartz, gneiss and red and white s.s. boulders up to 18 inch diameter, quite hard. Manganese shales extend up on slope of south wall capped by Mesa Verde. at top of Benton in one place I found a shaly sandstone containing plant stems as north of Boulder. Where Elk Creek breaks through the "Dakota" we left it and kept on west by north. Here the Dakota extends to base of

slope of canyon wall. On south
wall of canyon, in mesa Verde
formation, coal is burning or has
burned for Newcastle at least
four miles up Elk creek. We
camped a short distance N.E. of
Rifle Gap, at 7:30 p.m., got to bed
a little after ten.

Rifle Gap, Aug 4, 1909.

Arose at 6:30. after breakfast
Terry and I started down into the Gap
on the S.E. side of creek. Between the
first well defined sandstone ledge and the
second we found Bardium speciosum,
Mactra, Strea puchura, Lunatic and other
gastropods in float rock. ^{Immediately} Above the second
ledge we found a highly fossiliferous
stratum 2 or 3 ft. in thickness, dipping
S., angle 73° , containing Aronia recti-

forming, ^{barbicular} ~~ballate~~, Ostrea and Mastrea, with
no Baridium nor cephalopod gastropods.
The first s. s. does not make a ridge on
W. side of gap. Above next s. s. is a
coal vein which has been worked
somewhat on both sides of gap. This
is overlaid by clay shales, then sandy
shales, about 100 ft. above this is a
series of burned s. s. and clays which
I estimated to be 200 ft. thick, probably
metamorphosed by the burning out of
coal veins. This is overlaid by a
massive s. s. like the Laramie, which
in turn is overlaid by alternating s. s. & sh.
as below. I notice two more coal
openings above this on W. side of
gap, the uppermost but little below
the upper ridge making sandstone
ledge. All along the sandy slope
I found dead Orcohelix cooperi.
but saw no live ones, though, far

that matter, I did not look for them.
Took one picture looking at the ~~top~~ W. side
of the gap, down stream, another of the
lower Mesa Verde on W. side from E. side,
another of the upper fossil outcrop
on E. side. Reached camp at 1:30 p. m.
Very hot forenoon. After noon I cleaned
the Oronohia from Newcastle and found
both species ^{to} contain young. Then ^{at 4 p. m.} Terry
and I visited the very steep slope showing
the upper Mancos shales and lower Mesa
Verde sandstones. In Lower Mesa Verde we
found a thick stratum (about 8 inches) filled
with fossils, including Baculites, Bryozoa,
Serpula markwaini, Amshura, et al., but
no Bardium, Mactra, Ballista or Ostrea.
The three faunas we have found here are
very distinct. In this last horizon we also
found 2 specimens of Halysites major
and many plant stems, probably marine.
Reached camp at 6:30. Retired at 9:30.

Rifle Gap, Aug 5, 1909.

Hot, bright morning. Up at 6:30, broke camp and started for Piceance creek at 8:30. Put on the odometer after travelling one mile by mile post. Saw meadowlark, mourning dove, many pine jays, long crested jays, Arkansas flycatchers, one Louisiana tanager, Rock wren. As we passed out of the Gap we found sandstones, etc., dipping to the S. or S.W. about 10° . These I take for Wasatch. Between these and the Mesa Verde sandstones are varicolored marls which surely are Wasatch. I believe that the entire series from the upper Mesa Verde sandstones to the top of the Book Cliffs is probably referable to Wasatch. At one point on Goddard's Creek there appeared to be an unconformity, sandstones resting apparently unconformably on the varicolored. However it seems to be in the axis of a fold and may be faulted.

The ^{400. in} gulch, instead of approximately following the Mesa Verde-Wasatch contact, slowly passes into the latter. We reached Rio Blanco ~~no.~~ stage station $3\frac{1}{2}$ mile from Rio Blanco, P. Co., Piceance Creek, 20 miles N. of Hefle, in Rio Blanco Co., at 5:15 p.m. and camped, having stopped for an hour or so shortly after noon to feed the horses where there was a little water for them. Water at Rifle Gap was very poor, creek water being used from the creek by the ranchers and being affected by irrigation. At Piceance Creek it was ^{id} a little better, but alkaline.

Rio Blanco, Colo., Aug 6, 1909.

It began raining before daylight and still continues. About 10 a.m., after carrying a lot of wood half a mile for camp use, Terry and I started up creek through the Gap. At its mouth is a ^{coarse} conglomerate which is likely the base of the Tertiary. Below it lies the usual series of Mesa Verde sandstones, clays and coals. The walking

through wet weeds and mud was hard, so we did not do much climbing and found no fossils except one Halysacites major which Terry found at the base of the Mesa Verde. Dips very somewhat, owing to folds, but in general are westerly, from Rifle Gap northward. In the gap here above Rio Blanco is a small reservoir, where we collected one leech, a lot of small Physa and water bugs. Under logs we got Louistoides? and Encrinurus trochiformis. Dead Oreohelix cooperi were ^{somewhat} common about the scrub oaks. I found two live ones clinging to the upper surface of rocks beneath oaks. Red wing blackbirds and bluebirds are common here. Also a large ground squirrel. We returned to camp about 1:30, wet and tired. At 4 p. m. I started up creek again, rain having ceased. Found Oreohelix cooperi very abundant

under aspens, etc., crawling about in
the moist atmosphere. Under one small
alder I picked up 25 live ones. In the
same place under cotton aspen sticks
I found *Pyramidella*, *Lombricoides*, *Vallonia?*,
Vitrina, *Encornulus*, *Physanophora*, *Pupilla*,
Vertigo and perhaps others, ^{and an *agassizoides* up farther up.} In creek I
found one dead *Synuasa bulinoides*
(perhaps variety) and a few dead vesicles
of *Pisidium* which could not be saved.
In the reservoir a mile up creek I
got *Physa* sp. The *Orchelimum* were on
slopes of mesa Verde sandstone, as well
as the other land snails. Rained again
while I was out. This noon the wind
was east. Now it is south and it looks
more threatening than ever, so we have
ditched about the tent.

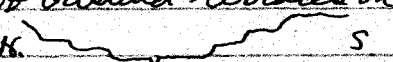
Rio Blanco, Colo., Aug 7, 1909.

Rained more toward evening.
Broke camp at 8:30 & started north,
through Rio Blanco P.O. to ^{stiff clouds} Meeker, about
5 miles from camp we saw ravens and ~~one~~
~~eagle~~ ^{five} ~~three~~ eagles. It rained soon
after noon. Reached Meeker at about
5 p.m., and camped in a vacant lot
in east part of town. We may get
put off by the owner, but hope not.
Clear and warm latter part of afternoon.
Bluebirds common here. Saw a few
say phoebe. On road Brewer
sparrows and lark sparrows were
abundant. Doves numerous here,
not so on the road. Saw two
more eagles just as we reached the
White River. The river is very muddy,
and about 40 to 100 ft wide now.
Good water in the town waterworks,
but somewhat alkaline. We passed

back from the ~~Mesa Verde~~^{Wasatch} formation to the Mesa Verde long before reaching White River.

Meeker, Colo., Aug 8, 1902

Rained hard during night. Bright, warm morning. Robbins and I started out at 9 a.m., going up to Flag Creek road to cross river to south side. The valley here occupies the upper Maussa formation, with Mesa Verde forming strong bluffs on north side. Dip approximately 100° N.W. The Mesa Verde, as usual, is composed largely of sandstones, with some shales. Several coal veins crop out along the bluffs, at least one of which is being worked. Where we reached the south side of the river a low bluff is composed of shaly sandstone like portions of the Pierre north of Boulder. The south boundary of the valley is not at all abrupt. Proceeding down left up

Valley we noted two distinct terraces on each side, thus:  S

did not visit the higher one, but the lower is covered with a cap of boulders, as at Boulder about 2 miles up the valley on south side the dip in the Mancoe shales is a little east of south. There we found in abundance an Ostrea and numerous fragments of a large species of Succinea which I cannot recognize at this point the north slope was strewn with small Orchelima (dead shells) and under ~~was~~ Amelanchia alvifolia and Lespedeza parvifolia ^(nit. mahogany) we found numbers of live ones, mostly under the former, only two or three under the latter, collected a lot of them, thinking they may be new. Also found under a plank near a ditch a Succinea and several Agriolimnaea (small specimens). In the ditches and small overflow sloughs of the river ~~was~~

Lymnaea ^{palustris} and a large Physa are abundant. Collected a few crustaceans in an irrigating ditch. Returned to camp at 4 noon. It has been very hot walking. ~~Later~~ Had fried chicken and lemonade for dinner. In late afternoon I turned over a few logs in a pasture near camp and collected a few Encyonurus, Pyramidula, Lenticoides and one of Agrionomas. Valerius, not found abundantly on this trip yet, as in eastern foothills of Colorado. At 8 p.m. we had another hard rain, with strong east wind. a storm worked eastward to the south of us earlier in the evening and another worked toward us from the southwest. I believe this latter is the one that struck us, but am not sure.

Meeker, Colo., Aug. 9, 1909.

cloudy morning, and rather sultry. Robbins started out at 8 a.m. to collect plants. Terry went with him to look for

fossils in the Mesa Verde ^{sandstone} bluffs north
of town and I stayed to keep camp, wash
the dishes, etc., as Felger wished to
collect birds and mammals, about
9 a.m. W. A. Kyser, who lives across the
street from camp and teaches some near-
by school, and J. L. Riland, editor of
one of the Weeber papers and Superin-
tendent of Schools, called and spent an
hour. They are very pleasant gentlemen
and the latter offered to supply me
with specimens of vanadium, uranium,
etc. from this region. Later Mr. Burroughs,
who lives 3 miles out of town, called and told
us of a fossil locality on east slope of
Cedar Ridge, about 4 miles east of town.
After dinner Mr. Kyser hitched up his horse
and took Terry and me ~~to~~ up there. The
ridge is a dome fold, bringing the Dakota
up and exposing it by the denudation of
the overlying strata. In one place

a gulch exposes Jurassic? strata. To the east and west are Mancos shales. The basal Mancos on the east is composed of hard black shales, with a sandstone ~~block~~ above containing numerous plant stems. In it I found several poorly preserved Jurassic amns dividing and some unrecognizable ostrea. Returned at 5:13 p.m. At about 2 p.m. it rained in camp and sprinkled where we were, the rain coming from the southwest. Mr. Pratt, a guide, called at camp in late afternoon. At the river I saw in addition to the usual birds, one Say phoebe, ^{and} 16 ravens in one flock. In camp, later, saw six nighthawks. Felge took a Lewis woodpecker. White-tailed prairie-dog common from the divide south of Piceance creek to Meeker. Arkansas flycatcher kingbird also common, but have seen few here. After supper Robbins and I went to barber shop and got baths, and I had my hair cut.

Effieise N.W. Co.

Brt. frd. from July 30-09	\$ 229.15 ✓
Meeker Meas. Co.	1.55 ✓
Aug 10 " " No receipt	.70 ✓
" " groceries	.80 ✓
" " fruit	1.00 ✓
" " - Hooper & Co. - hardware & supplies	3.00 ✓
" " - Meeker Merc. Co. - groceries	2.25 ✓
" " - city drug store, phials, etc.	.70 ✓
" " - shoeing horse, etc.	1.00 ✓
Carry over with Meeker, Colo., Aug. 10, 1909	9240.15

Rained again during the night, but bright and warm this morning. At 8 a.m. I started to the bluffs north of town. Stopped at the Review office to see editor J. L. Riland. He gave me specimens of alleged brown and black-gilsonite from Riceauise Creek, ^{30 or} 40 miles S.W. of Meeker, and Uranium and vanadium impregnated sandstone from Coal Creek, 16 miles N.E. of Meeker. I noted two brick kilns starting west of the school house, a few hundred yards from the base of the bluffs. They are using the surface clay, which is probably upper Mansos decomposed. Have made few bird notes, because

Felger is doing the bird work for the trip. I note the absence of House Finches and lack of abundance of red-winged blackbirds. Everywhere blue-birds (*S. arctica*) have been common. Pinon jays are abundant locally, a few magpies occasionally.

Went up the basal slope of the bluffs about half way from school house to the canyon west of it - northwest of the schoolhouse. A little way up the slope "float" appeared containing fossils. Followed it up ^{slowly} to the first distinct sandstone. It comes from calcareous (? see) concretions in the transition beds from the Mancos to the Mesa Verde. I collected two bags full and returned to camp at 12:20. In afternoon Felger and Robbins went with me, and we got two more bags full. The lot includes the following: Baculites ovatus, B. con-
pressus?, Inoceramus barshini, I. saepe-
sis, and others, Sphaerida cordata, Pla-
centiceras sp., Ostrea sp., Panopaea



berthoud(?) Louisiana americana, Thrasia
gracilis, saaphiter sp., Nyctalus(?) sp., Avian-
la rubescens(?), a. sp., Pecten sp., ^{Cordium speciosum} and
 several other species with which I am not
 familiar. Did not rain today, but
 threatened about noon. Perfectly clear at
 bedtime.

Meeker, Colo., Aug 11, 1909.

Cloudy, soon clearing & hot. Mr. Kyes
 hitched up and took Terry and me down
 the river, where we met W. B. Blythe at
 his house. He had a fine Indian vessel
 found a few hundred yards east of his
 house at foot of cliff. E. Gave us a
 palm and some other leaves, and showed
 us two horizons. The lower one, about 150
 yards E. of house, was sandstone containing
 leaves. The other about same distance west
 of house, was clay next to (below) sand-

stone, contained leaves, & palm was from there. This is at least 300-400 feet above the other horizon. The next higher ridge is conglomerate, about 100 yds. to west, probably Wasatch. Going up gulch (north by east) we found, on east face of escarpment, *Corbicula alburna*, *Ostrea* ^{*melanica*} *globosa*, etc., and a razor shell. Above this was a larger *Corbicula*. This is 200 or 300 feet below the lower leaf horizon. Then we crossed to the south side, but did not find the fossil locality of which Gale wrote. On the hill south of the river and east of the Mesker - Rifle stage road I found the small form of *Orchelimum cooperi* in abundance (dead shells) among scrub oaks, Amelanchier and Vit. mahogany. Did not look for live ones. We collected 3 lizards during the day. Reached camp about 5 p.m. and packed a box and bag of fossils for shipment.

Meeker, Colo., Aug 12, 1902

Bright hot morning. Terry and I started north on foot at 8:30, Fulger and Robbins going around through town with the wagons to leave the boxes which are to be shipped. Visited the ^{low} shaly sandstone ridge which starts N.E. of town & runs N.E. It resembles portions of the Hygiene sandstone north of Boulder. It appears to be near the middle of the Mancos formation. Going north, we found the white tailed prairie dog, large ground squirrel and woodchuck abundant. Robins not very common. Saw phoebe occasional. Camped just above a ranch about 3 or 4 miles south of axial P.O., about 6 p.m. Water bad. Collected woodchuck, prairie dog and ground squirrels.

axial, Colo., Aug. 13, 1902

Hot, bright morning. Terry and I walked down gulch to axial P.O., 2 3/4

miles from camp. Road is about N.-S.
apical is at base of Mesa Verde forma-
tions. There is a coal mine just
below our camp on west side of gulch.
At apical P.C. dip is 27° S.W. The
Oak scrub covers north-facing slopes,
opposite slopes barren. No large trees
about here. Then we went up stream
above camp. *Oreohelix cooperi* (large
form) abundant on slopes covered by
scrub oaks and *Ut. macrogonus* no
Amelanchier. ^(but found *Amelanchier* higher up slope) Only dead shells seen. Did
not look for live ones. Three miles
S. of apical found on E. side of gulch
a two foot ledge of black limestone composed
almost entirely of *Ostrea glabra* and
Anomia microcuneus. Opposite, on west
side of gulch, found same stratum,
half way up the hillside. Did not find
Telotoma thompsoni, which Stanton said
occur here, but the bluff where they likely
occur has been badly washed by recent
storms. Returned to camp at 2 p.m.

Has been nearly clear and hot all day. After supper Felger and Robbins rode down to the post office on horseback, without saddles. Robins were common here. Saw the following today.

Golden eagle Swainson's hawk.
Sparrow hawk White throated swift? (Felger)
Rock wren common House wren
Brewer blackbird Meadow lark
Mourning dove ^{common} American goldfinch 2
Robin common Arkansas goldfinch
Arkansas flycatcher Cliff swallow
Evening quite cool.

Diary, Bob., Aug 14, 1909.

Another bright, hot morning. Arose at 6:30. Robbins and I finished poisoning the prairie dog and Spermophile skins taken the 12th. Broke camp at 11 a.m. and started to Meeker, Felger having sprained

his wrist last night by a fall in running
ing one of the horses back. Robbins
shot at a badger a mile this side of
camp but he got into his hole. A
half mile north of the stage station,
which is just north of the divide
at Nine Mile Draw Felger killed
one. A mile north of camp we
collected some ^{fossil} Corbicula. Where
Felger killed the badger I collected *Cres-*
helix cooperi, *Vitrea alaskana*, *Valonia*
sp. We lunched and fed horses
at stage station at 2 p.m. Started
on at 2:45. Crossed the divide ^{or pass} from
Spring Creek to Curtis Creek at 3:04.
Just before crossing Felger killed a
spotted Spermophile, at reservoir about
seven miles from Mober Felger killed
a prairie dog without the white tail,
just where he killed the one on the
12th. We reached Mober at 6:15, got supper
of beefsteak, bread and butter and coffee, then
skinned the badger roughly. Not so cool

as last night. Got to bed about 10:30 p.m.

Meeker, Colo., Aug. 15, 1909.

Got up later. Bright and hot until
3 p.m.; then cooler and sprinkled. In
forenoon we finished putting up the
badger skin. In afternoon Robbins
skinned on prairie dog and squirrel
skins. We also aired all the bedding.
For dinner we had beef pot roast,
dumplings and brood potatoes -
pretty "swell" for camp life.

Exp. N.W. Colo. cont. from 9th

Brof frd from 10 th	240.15
sundry milk	.40
Aug 14 Meeker Co ^{4¹⁰/₁₀₀ .55} supplies	4.65
Aug 16 Hynes Co. "	21.00
July 31 st Aug 12 th Robbins - Gramman negative envelopes	.60
" Denver Boulder	.90
" Boulder Denver	.70
" Room Denver	1.00
" meals on dinner ^{.50 .50}	1.00
" Groceries at Newcastle	1.40
	<u>271.80</u>
Aug 16. meat, bread etc. Meeker market	.65
" " Meeker Co. shipping case	.15
" " Hynes Co. potatoes	.75
" " City Drug Co. sperm oil	.25
" " 5 qt. on bottles milk to rifle	5.55
" " W. H. Holloway wood wool	.73
" " fruit	1.26
" 17 Hynes Co. supplies	2.81
" 24 freight on oats	.50
" 24 Pasture & supplies	3.95
" 29 Green-guide & horses	288.72
" 31 Ladies supper breakfast for the frd to see + 50	15.00
	<u>4.55</u>

Meeker, Colo., Aug. 16, 1909.

Sprinkled considerably during the night, but was unusually warm. Bright, hot morning. While Felger and Robbins finished putting up the mammal skins, I went up town and ordered the supplies. In afternoon Robbins, Felger and I drove up town to the Review office with our specimens, got the boxes we had stered there before going to Arizal, packed and shipped them. We sent one big box of mammals and birds, one of plants and one of mollusks, etc., by express and two boxes and a keg of fossils by freight, the stage company taking all to Rifle and shipping from there to Boulder. Then Felger and I sharpened axes, knives, scalpels, etc., at a blacksmith shop, after that I called on Mr. Lytle (pronounced Little), editor

of the Herald, who is a member of the University Advisory Board and a former member of the legislature. Upon return to camp I found Austin Russell and Miriam Bond, of Boulder, in the tent. After supper we got most of the load repacked. It began sprinkling just before dark. It also rained when we were taking the stuff up town for shipment.

Meeker, Colo., Aug. 17, 1909.

sprinkled considerable during night. bloody morning, soon clearing. Started east at 9 a. m. on river road, crossing south end of dome where Dakota and Jurassic are exposed. The river debris on the terrace contains much sand-stone, some granite and considerable igneous rock. Three miles east of town I collected *Pisidium* from a ditch near the roadside and half

a mile further on collected a very large water beetle, a small snake and some tiny fish fry. About five miles from town we collected *Lygus* sp. in small ditches by the roadside. At the stone schoolhouse, where the river road turns south, we continued east for 2 or 3 miles, and camped on a small creek, a mere rivulet, at 2 p.m. after a hasty lunch we raised the tent, then Felger, Robbins and Terry started out after sage grouse, while I stayed behind to get camp ready for the night. I found small wood in abundance a short distance down the creek. It was sprinkling when the others started out and rained considerably during the afternoon. Creek rose rapidly from heavy rain up stream. We got water from an open well at a ranch house. At dusk

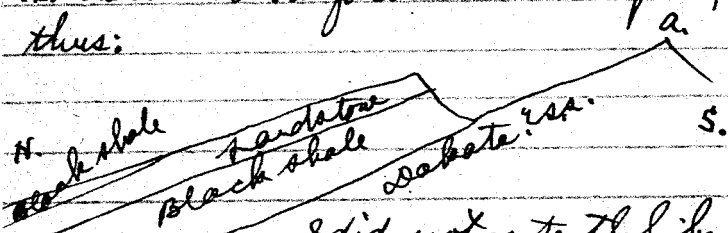
the three men returned with four
sage grouse. Still partly cloudy at
9 p.m. Birds seen today, as far as I can
recall: meadowlark - common. Golden eagle
common (7) Mt. bluebird abundant
young bobolink 2 ♀♀ Lark bunting 3
mourning dove common English sparrow
Brewer blackbird sparrow hawk
Barn swallow solitary sandpiper
Lark sparrow vesper sparrow
Brewer sparrow Killdeer
Ravens.

Our camp is on Little Beaver creek
near John Lounton's house.

Little Beaver creek, Colo.,
Aug. 18, 1909.

Partly cloudy morning, sprinkling at
breakfast time, but hot during later
forenoon. I skinned the worst shot of
the sage grouse - a young chicken.
at noon Terry and I started south,

on foot. It began to sprinkle just after
 we started. At foot of S. ^{side} slope of valley
 we found gully cutting black massive
 shale. Collected an Duoceramus deformis
 and a number of D. dividius. At
 top of low ridge and forming its slope
 is a sandstone containing many
 plant stems, apparently seaweeds, a few
 rudeterminable Duoceramini and Astrea.
 Beneath it are black shales again,
 so the sandstone forms an escarpment,
 thus:



I did not go to the higher
 ridge marked a, so am not
 certain of its character. On the ridge
 saw a poorwill. Flushed it several
 times. It rained most of the time
 on the ridge. at foot of ridge on way

up we saw many dead snail shells,
but none alive, on base of slope, where
the black shales underlaid the surface.
On the way back it was raining and
~~they~~ ^{big ones} were crawling about by hundreds,
under many kinds of bushes, including
sage brush, rabbit brush, scrub oak
and a ^{small} sour apple. Apparently *Creobolus*
gabbiana and *C. cooperi* are mingled,
the former predominating, if I am correct
in assigning all without the red spiral
lines to that species. As many as
25 could be found under a bush two
feet in diameter and the same in
height. There were about as many
under the sage brush as anywhere.
Up the slope on the sandstone there
were none seen by us, either dead or
alive. Returned to camp at 5 p. m. quite
soot and tired. At camp saw night hawks
and killdeer. The channel cut in the
lower Mancos shales just above the
sandstone, where we found the

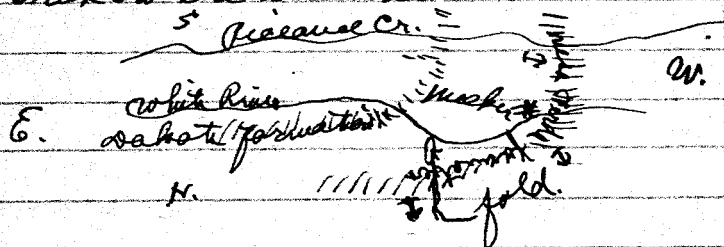
fossil Duveranum south of camp
is up to 10 ft. deep and very narrow,
so narrow in places as to make very
difficult walking and sides too
nearly vertical to be scaled. Little
Beaver Creek below camp has a channel
about 8 feet deep and same width
at top, about 2 feet to 4 ft. wide at
bottom, and cannot be seen until
close to it. ^{swamp} Willows along its banks
furnished our firewood. Lack of
igneous and granite boulders in the
stream debris is noticeable, showing
that the stream flows only through
the sedimentaries. Upon reflection
am ~~well~~ sure the upper sandstone
horizon underlain by black shale
is the same as the one we searched
at the dome east of Meeker a week
or ^{more} ago, and is lower Mauners.

Little Beaver Creek, Colo.

Aug 19, 1909, Thursday

Broke camp at 10:45 a.m., drove back to stone school house 5 miles east of Meeker, then turned southeast up White River. Saw ^{a few} Lark buntings east of schoolhouse. Partly cloudy. Where we were camped there were no trees but scrub willows. When we entered the canyon we found narrow-leaved cottonwoods, etc., in bottom lands. Cedar and scrub oaks on canyon slopes. Dakota formation forms escarpment on south side of river, sandstone at top. Found greenish hard shales or fine grained sandstone as at dome east of Meeker - possible Jurassic or maybe middle Dakota (?). Typical Morrison limestones, sandstones and greenish and maroon shales lie

beneath the escarpment and rest upon reddish, thinbedded, crossbedded sandstones resembling the Lyons sandstones of southern Larimer county, but likely of later age. The river just within the canyon occupies the valley back of the Dakota escarpment. Dips here are approximately north. ^(N. by N. or perhaps) Dips from Piceance Creek to here are thus



collected Vallonia, Pupilla, Vitrina and Pyramidula 10 miles from Meeker, just within the canyon a mile or two. This is the first place I have found Vallonia common on the trip, I believe. We soon passed into the red beds. The

grade of the canyon being less than the dip of strata, we got rapidly into lower strata. Below the sandstone which is mentioned above and which may be the equivalent of the top of the Lykins formation in Larimer county, are typical "red beds", deep red sandstones and shales exactly like the Lykins north of Boulder. Exposures, as usual, are much better on north side of canyon on account of vegetation covering the slopes on the side. There is much oak scrub on the slopes. at 2:30 we fed the horses and lunched 12 miles above Meeker. Rained from 1 to 2:15 p. m. Roads muddy. Continued on to Buford ^{P.O.} just above the forks of White River, on the North Fork, about a mile above the forks, 24 miles from Meeker, reaching there at 7 p. m. We crossed the river about two miles down, then crossed South Fork, which was fortunate, at the P.O. is on south side of North Fork and the bridge is out over the latter. We came up,

all the way on the south side. Vegetation
much more varied than below. Found
first blue and Engelmann spruce several
miles down. Making aspens abundant
on south side of canyon, north side
nearly treeless, cedars having ^{nearly} disap-
peared far below. Upon reaching the
P.O. Robbins received a letter announcing
the serious illness of his mother. Postmaster's
name is ^{J.R.} Barrett, from Vermont. Alt. 7200 ft.

Buford, Colo., Friday, Aug 20/09

Clear, cold morning. Robbins and I
arose at 5:30 and got our breakfast of
bacon, pancakes and coffee. I went down
gulch and collected *Vallonia*, *Pupilla*,
Vitrina, ^{*Encouryptus*} and *Orchelimum cooperi* in aspen
groves. Found one *Planorbis*, ^{without} and some
unknown bivalve in a small natural
pond (probably cut off or low loop) down
stream where we saw ducks last

evening as we drove in. Saw one
red shaft flicker, one Arkansas flycatcher,
one green tailed towhee, a lot of Brewer
sparrows, Brewer blackbirds and cliff
swallows. Robbins left on horseback
at noon for Newcastle, ^{40 miles distant} to catch the
train and return to Boulder, on account
of his mother's illness, having failed in
his effort to get into telephonic or tele-
graphic communication. Ferry ^{+ Robbins} caught
3 trout this forenoon and Felger put up
bird skins. Felger is now (4:45) out
hunting. At 6 p.m. he came in with a
lot of doves and I cooked a trout
supper. It has been a beautiful day,
threatening rain for a while in afternoon
but not raining here. Mosquitoes are bad
here. At dusk we set 3 traps for field
mice, baiting with biscuit.

Buford, Col., Saturday,
Aug 21, 1909.

Partly cloudy morning. Up at 7 a.m.
Found 2 mice in the traps. Set Terry
to collecting plants in Robbins' place.
I put up the usual white Felger put
up birds. At noon it rained hard and
hailed for a long time and continued
to drizzle most of the afternoon. At
4 p.m. we had dinner consisting chiefly
of 9 ^{mourning} doves, a real treat. I boiled and
washed a large number of dish cloths
and towels in the afternoon. Have had
wet boots all afternoon from wading
in the weeds in search of dry wood.
Cut down 2 dead trees. At six p.m.
Felger and I set 8 traps. I found
a number of *Succinea* sp. on logs
at the water's edge, and a single
Aplexa hypnorum in the water of
a small lateral channel of the

river. The river here, as below,
forms numerous islands. After
dark it cleared rapidly from the
mist and at 8 p.m. there was only a
small cloud up river.

Byford, Colo., Sunday.

Aug. 22, 1909.

Bright morning. Two mice in traps,
and tail of another. One was in the
wet grass by the river side, the other under
some bushes as the two yesterday, in a
sage brush patch in the alfalfa field.
Growth of vegetation on north slopes and
irrigated meadows here is rank and pro-
fuse. I collected a lot of Pupillidae, one
Gallowia and some Archebi cooperi
in aspens, having lost the bottle collected
Friday. On return to camp found Joseph
Hatzfield, a prospector, a friend of Mr. Reland,
waiting to see me. Mr. Collins, foreman
of the K-T summer camp, also called.

In afternoon I collected a lot of Pyramischia,
~~and~~ a few Vallonia, and Encornulus, and Zonitoides in a narrow-leaved cottonwood
grove along the river bottom opposite camp,
then spent balance of afternoon lounging
around and writing postal cards. Perfect-
ly clear and quite chilly this evening.
Cumulus clouds were hanging
about all day.

Buford, Colo., Aug. 23, 1909.

a bright morning. I went down
stream with Felger and took three
pictures - one looking up North Fork
over the pasture, one looking across
the river and up South Fork, the
third looking down the gulch at the
forks of the stream. Felger shot at
a red tailed hawk and he ^{hit} dropped a
Big chipmunk, which I secured and

skinned. I also prepared 5 skins of mice - two species. It sprinkled at times during the afternoon and as we are finishing our evening's work (except cleaning guns and loading plateholders) at 10:45 p.m., it is very dark and cloudy.

Ruford, Col., Aug. 24, 1909.

It rained and sprinkled at intervals through the night. Partly clear at daylight. Arose at 6:30. We left all our specimens except some plants not yet dry at the postoffice, and forded the ^{north fork of} river at 10 a.m. and started up stream. Road good, but very hilly. Kept north side of river to Patterson's ranch, about seven miles above Ruford, where we crossed Frown Creek and camped ^{at 12:15} for lunch and to feed horses, ^{at 1:15} continued about half mile up on north side and crossed to south side. at Fitzgerald's we left the river and turned

southeast up Marvine Creek, calling on
^{John} Fitzgerald. Simpson lives just below on
the river. Continued up south side of Mar-
vine Creek to Marvine Lodge and camped
just above the lodge, ^{at 3:50} Rube Ball, who has
it leased ^(the lodge) as a fish hatchery, had just
left yesterday and Mr. ^{Bell} Green was in
charge. The narrow-leaved cottonwood
continued ~~to~~ nearly to Fitzgerald's, I believe.
Silver and Douglas spruces were common
for some distance below, increasing in
numbers along the river bottoms and
mingled with aspens on the north slopes
(south side). Aspens abundant all along
on north slopes and for last few miles
abundant on north slopes. Several holes
look like glacial topography, but saw no
other evidence. Developed Robbins' negatives
in evening. Got to bed at 9:45. Clear most
of day and tonight.

W.

White River

make

White River

Shepherd's Ranch

A. Fork

Bojard Postojie (Bastlett's)
our camp Aug 19-24

Patterson's

Fawn Creek

St. Merwin Creek

Merwin Creek

Last Creek

Merwin Lakes

Merwin Lodge - our camp Aug 24-

White Pine

Marvine Lodge, Colo.

Aug 25, 1909.

Lost my fountain pen, so must use lead pencil for balance of trip. A beautiful morning. We got saddles for our horses and an extra saddlehorse at the lodge and started up the creek at 9:35. Just above camp ~~is~~ ^{are} two depressions which must be of glacial origin. The larger is about 50 feet wide and 20 feet deep, nearly circular. Proceeding up gulch such depressions become more common and soon the typical hummocky topography of glaciated regions is found. Most of the depressions are dry. The stream and glacial debris is all volcanic, a dark colored lava, weathering gray, containing many geolites, surface of many boulders pitted by the solution of the geolites. The road ends about a mile up

the gulch, and a well travelled trail continues, passing in places over fallen timber. A mile and a half or two miles up above camp we found an ^{exposed} unlabeled about 150 feet long and 100 feet wide. Collected Lymnaea palustris, Belostomatidae sp., 2 Planorbis cf. trivialis, and water bugs. At Slide Lake, about five miles up above camp we found trout and water snakes of the species collected down stream. That must be about 8000 feet above sea level. This lake is distinctly morainal. Lower Marvine Lake is three miles further up and much larger. We did not visit the upper lake. These lakes are situated between cliffs of lava probably 700 or 800 feet high. Felger and Terry fished. I started down stream, collected land snails under aspens. Just below Slide Lake I found a lot of dead Oreohelix cooperi and one live one. Reached camp at 6 p. m. Felger and Terry

came in at 7 p. m. with 7 good sized trout, which we had for supper. I set 10 traps - 6 snice traps and 4 steel traps. It has been a delightful day. Cold evening.

Marvin Lodge, Col.

Thursday, Aug. 26, 1909.

A beautiful morning. Caught two snice and a Little Chipmunk. G. W. Smart, an old trapper, who has charge of the fish hatchery, called at camp this morning. Felger collected several caddis larvae cases made of Valvate shells in the pond where we collected Valvate yesterday. About 11 a. m. found a shrew in one ^{mouse} trap and a Big Chipmunk in a steel trap. I mounted the latter and a pine squirrel taken by Felger and Felger prepared the others. In evening Green

gave me 11 fine trout, which we had for supper, and used the heads for bait for four mink traps which Felger set. Fine day. Not so cool this evening.

Friday
Marvine Lodge, Colo., Aug 27, 1909

A mink in fine pelage in one trap, a shrew and three mice in the mouse traps. Cloudy morning. Felger and Green left at 11 a.m. on horseback with pack horses for a three day elk hunt. I prepared the mink and Shrew skins. At noon it began to rain and rained considerably throughout the afternoon, cloudy and threatening at bedtime.

Marvine Lodge, Colo., Saturday
Aug. 28, 1909

Fine, bright morning. One steel trap sprung and dragged, but nothing in it. Bait gone from all of them.

Only one large-eared mouse and a chipmunk in the mice traps. Terry shot two chipmunks. I skinned one and we made rough skeletons of the other and the mouse and placed them on an out-hill for the ants to clean. Terry caught a trout and rebaited one sink trap and I rebaited the mouse traps with corn meal mush except one, which I baited with ~~some~~ chipmunk meat. Tried to find the woodchuck which Terry saw yesterday, but failed. Sweet also reported one below the cabins. Telfer came into camp at 6:45 and left again at once. Brought Oreohelix, Vitrea zonitoides, Pyramidula and Thyrea ophora. Partly cloudy afternoon and evening.

Topography glacial. At mouth of
Merwin creek we found the red
sandstone which continued their
appearance for 10 or 12 miles up
river on south bank. Reached
dense pine forests on south
side of river about one or two
miles below Hines' place, but
quaking aspens, etc. principal
trees on north side. The last
three miles or so we have seen
no more sandstone and the
glacial debris is all lava as
in Merwin creek. Reached Hines
place at 4:05 p. m. about 15
miles above Fitzgerald's, it
is said. Dense pine timber comes
down on south side of canyon to the
bottom of the slope and ends abruptly.
Scant tree growth on north
side. Vegetation indicates about

9000 ft. I should say. Includes
the bluegentians so common at
Silver Lake, yarrow, bright light
red elder berries, dwarf willows, etc.
Himes says altitude is 8,500. met a
Mr. Buckingham and father, of Tenness-
see, who comes here often. I collected
a few *Orchelimum cooperi* ~~at~~ in aspens
back of our tent, all dead - one
so recently dead as to smell bad
and containing a lot of dead young
shells. Got accommodations for the
night in a tent house and meals at
Himes' boarding house. Saw a few
^{red} sandstone fragments in the debris on
the north side of the river. The lava
above here, as at Marine Lakes, is
distinctly stratified, with variously
colored strata in the walls, red pre-
dominating.

Tropper's Lake, Col.

Aug. 31, 1909

Up at 6 a.m. Breakfasted at Sam Hines boarding house. Took picture of lodge. Partly cloudy, rained during night, started for the lake, six miles up, at 8:15 a.m. Trail good for a mile or two, then steep, rocky and muddy, showing rains of last night. Glaciation more prominent as we advanced. Lava walls of canyon same as at Lake Marvick. About a mile or two below the lake we found a swamp containing great quantities of dead Pisidium sp. and Lymnaea helminoides, Planorbis parvus and a larger Lymnaea but found none alive except a very few Pisidium. Further up a small lakelet contained a Lymnaea resembling L. palustris, but much

shorter spire and Pisidium, the latter largely composing a few caddis larvae cases. Oreohelis cooperi we found all the way up, including lower in patches of pure pine forests. Reached the lake at about 11 a.m., took some pictures and collected plants and cones. It began to rain as we were ready to start back. There were snow banks in sight at various places. Reached Sam Hines' at 11:50 and reached our camp at Fitzgerald's at about 5 p.m., very tired and wet. Rained all afternoon until we were nearly in camp. Col. Montgomery, of Meeker, called at camp. He was up after fish from the hatchery. Partly clear at bed time. Just above camp the aspens come to the base of the slope on the south side of the river and end abruptly, giving way to the sage brush terrace just as the

pine forests do up the river, that
feature characterizes the river
from Marvine Creek to Hines.

Fitzgerald's, Wednesday,

Sept. 1, 1909

arose at 5:30 and got breakfast for
Terry, who started at 6:40 with Daniel
Frost, for deer. Cloudy. After getting my
own breakfast I began skinning
mammals and worked at it steadily
from 8 a.m. to 8 p.m. stopping
only to eat dinner at 1 p.m. I
prepared 5 coon skins and one
rat. The latter was caught by
Belly Green at Marvine Lodge.
Terry put up a big field mouse
caught by a cat near camp. She
also caught a shrew but it was
too badly mutilated to keep.

At dark it was clear. ~~Mr. Frost~~
~~Frank~~ Hayer a Glenwood Springs taxidermer,
and Mr. Thatcher, a former student
under me in the law school, called
at the camp just before dark.
At 10 o'clock Felger and Frost had not
returned, so Terry and I went to bed.

Fitzgerald's, Sept. 2, 1909.

Cloudy morning. Felger and Frost
reached camp at ^{12:30} midnight, having killed
an elk cow and her calf. They brought in
the hides, skulls and part of the meat,
making and packing the stuff on the
horses. I got up ~~at~~ and made coffee
and fried some potatoes. Got to bed
again at 2 a.m. Arose at 6 and got
breakfast of elk liver, pancakes and
coffee. Felger and Frost started at
8:15 horseback with two pack horses
after the elk meat, accompanied by
Mr. Thatcher. I employed Mr. Hayer

to clean and prepare the skins, while I put up two rodent skins which Felger had skinned out at Marvine Lodge, and then, after taking pictures, began repacking our loads. Felger and Frost arrived at 4:30 p. m. with the meat. We got supper, packed the meat and at 6 p. m. we started for Buford with a heavy load. It was slow travelling, particularly after dark. Camped just across river from Buford P. O. at 9:20 and Felger at once began to bone the elk meats. It has been a warm, sunny day and is not very cold tonight.

Buford, Id., Friday
Sept 3, 1909

Up at 6:46, I retired last night at 10:30, Felger at 12:30, and a warm, bright morning. Started down river

at about 11 a.m. Before we reached the Mud Springs road bridge it began to rain and continued most of the time through the early afternoon. We reached the bridge at about 12:20 and fed the horses. Then got Henry ^{La} Camp, a boy about a mile up the river, to put on an extra team and help us up the big hill where the Mud Springs road leaves the river canyon. The road, always steep and rocky, was also muddy and slippery because of the rain. We had a terrible time. Horses would not pull together well at first. We all helped a great deal, and were much exhausted when we reached the top at dusk and were hitched about 4 miles from the bridge. We left the elk meat, bedding and tent about half way up hill. Felyer and Henry returned to the camp ranch horseback for a light rig to bring up the rest of the load. I provided Terry with a cracker and canned

pack lunch and sent him back to
open up the meat to cool and stay
with it. I ate a similar lunch,
after feeding the horses and finding
a pool from which they could drink.
Then I worked at repacking our load
and got the portion that is here in
much better shape. At 9:30 I built
a fire to take off the growing chill
of a September night at 8000 feet
above sea level and prepared to
spend the night without bedding,
shelter, or water to drink. The first
task now is to get my boots dry,
as they are wringing wet. It is
now (10 p. m.) clear and beautiful, as
the moon is arising above the
tree tops. This has certainly been a
streamline afternoon. At 11 o'clock
I crawled under the wagon with
the slickers about me and laid

down to rest.

Mud Spring Road, Col.
Sept 4, 1909.

at 2 p.m. it got too cold for me under the wagon, so I got up, replenished the fire and laid down before it the balance of the night. An old bull kept rumbling around all night and toward morning the coyotes were noisy. At 4 a.m. it clouded up and rained gently until after daylight. I arose at 6 a.m. fried some home baked potatoes in the ashes and ate my breakfast. Finished packing the part of the load that is at the wagon. Har-
nessed the horses and collected Ancistrus Chitrus and Pupillidae and saw Onychia cooperi. Felger arrived at about 9 a.m. with A. J. Lee Kamp and son Henry, who brought up the part of the load "ditched" yesterday, with a

light wagon, team and saddle horse. We got all the load to the top of the hill at 11:30, then put it on our wagon and proceeded with our own team only. About 1 p. m. we fed the horses at Mud Spring. The water was cold and good. Road quite hilly from there south until we started into a gulch leading into Dry Elk Creek, after which it is down grade to Newcastle Reach. Newcastle - Rifle Gap road about seven miles above Newcastle. It began to rain just before starting down grade and continued until we reached town at about 9 p. m. Road was slippery, badly washed and the latter part of the trip so dark that Terry walked ahead with the lantern for safety.

still storming when we had
gotten a bath, supper at a restau-
rant and to bed, at midnight.

Newcastle, Colo.

Sept. 5, 1909.

Still raining, continued all day.
Folger left at about 10 a. m.
Terry and I packed our outfit,
consisting of ~~26~~ 23 boxes and
bundles, finishing at about 3
p. m. Then I wrote letters. Terry
left for Boulder at 5 p. m. In
evening it was still cloudy, but
not raining. I retired at 7:45,
very tired.

Prot Jrd ----- 308.22

Expense N. W. Col. cont. from 715-

Sept 2 ^{Fitzgerald} Shade + pack horses, etc. -----	12.52
" 2 ^{Frank} Nayer, preparing skins -----	3.00
" 3 Clifford Bartlett, supplies -----	8.75
" 4 A. G. Lea Kamp hauling -----	7.25
	<hr/>
Filger's expense home -----	339.72
Ferry's " " -----	
Hotel Albany - Newcastle -----	5.00
Bal. on team -----	31.00
Robbins expense home -----	
Filger's Ammunition, etc. -----	

Newcastle, Cal.

Sept 6, 1909

Raining this morning. I arose at 6:15, got breakfast. By 8 a.m. I had gotten all of our material down to the depot and shipped it - 19 boxes and bundles ^{by freight} and seven by express. It quit raining about

10 a.m. All trains on both roads are far behind time, so I have put in the time figuring up the expense of the trip, reading the papers and strolling about town. Total shipments of expedition, including camp or camp outfit but excluding personal baggage in shape of suit cases 36 boxes and bundles. Left Newcastle at ~~4:25~~ 4:25 on Colorado Midland R.R. At Newcastle the Grand River cuts through into the Mesa Verde formation. Above Newcastle it occupies the Kansas, which is largely covered by the debris of the broad river valley, but well exposed by a ridge a few miles up on south side of river. The south canyon wall is Mesa Verde with coal miners. North wall shows red beds, into which we soon passed so that both walls were of sandstone, probably barlow formation. Toward Glenwood canyon swung around and formations changed, but I do not

know what they are. Reached Glenwood
springs at 4:55. Raining when we left
Newcastle, still raining. I walked up
to schoolhouse in N.E. part of town. Turned
and climbed east wall of canyon. Found
Oreohelix gabbiana abundant and probably
O. cooperi, but no haydeni. Walked
north along foot of canyon wall to
N.E. part of town, about east of the
Grand depot and found O. haydeni, O.
~~gabbiana~~ and probably O. cooperi. ~~It~~
mixed together. did not look for
live shells and did not climb steep
slope here. Vegetation mostly
mt. meadow and scrub oak below
conifers above. No pictures on account
of rain. Left Glenwood at 6:45. No
sleeper accommodations and no
seats except in smoker, on account
of all trains being delayed and pas-
sengers thereby accumulated on this one.