

Junius Henderson
Field Notebook
No. 11
1923 - 1927

Junius Henderson
Boulder, Colo.

HANDY
NOTE BOOK

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No. 11

1923 - 1927

Fowler, Colo., Friday
Sept. 7, 1923.

Broke camp and drove W. 10 mi. then S.
3 or 4 mi. to

Well. Sta. 507, Cotton Lake, enlarged by
water from Huerfano River about 20 years ago.
Small *Planorbis trivialis* and *Physa* sp.
abundant.

Drove W. & N. & camped near a bluff
about 3 or 4 mi. N. of Colorado Springs
city limits.

The Laramie just N. of the bluff
includes a thick stratum of bog iron
filled with leaves, but would not split
evenly, so we obtained no good ones.
Above this clays extend up to the foot
of the bluff which bluff is composed
of Dawson arkose. The sandy portions
of the Dawson contain leaf fragments,
but are massive, so we could not
split them so as to obtain specimens.

~~Fowler, Colo., Aug.~~ Sept. 7.

Colo. Spr., (Aug) 8, 1923.

Drove to Boulder.

Mileage for trip 2967, 15.3 gal. gas.
or nearly 19 mi. to gal. 27 1/2 qt. oil or
about 110 mi. to qt.

Boulder, Colo. Wednesday,
Sept. 12, 1923.

Started in flims with John P. Ryan and
camp outfit, drove through Loveland and
Greeley and camped at Cornish, 87 miles.

Cornish, Colo. Sept. 18

Having filled our boxes with prairie dog
and other skins, returned to Boulder
today.

Biggsdale, Colo. Sept. 5, 1924

Reached here last evening with Framan, No. C,
Taefelmann and W. E. Bohn. Drove up creek
& found *Lanius* everywhere. Numerous boxes
in G-2 Sec. 9 T 8 N. R. 62 W., E. of Big Crow

brook.

up hill, north occurs ^{Tertiary} conglomerate, etc., following along around heads of gulches up creek and ~~far~~ ^{far} ~~west~~ ^{west} N. Sec. 3, 9 N. R. 62 ^{W.}, turning ^{S.} up hill out of valley, found Loranine most of way to Biggsdale.

Back to Biggsdale for lunch, then E. ^{1.2} middle of Sec. 23, T. 8 N. R. 62 W., *Ostrea glabra*, in well dump.

Further east, about Sec. ²⁵ 7, T. 8, 62 W. bed of *O. glabra* in well dump.

Thence east & N. to point $4\frac{1}{2}$ mi. E. & 2 mi. N. of Biggsdale, small outcrops and well dumps show Loranine.

N. E. 4 sec. 1, T. 8 N., R. 62 W., *O. glabra* valves together abundant, underlain by pink clay, which in turn is underlain by white quartz ss. One large conglomerate block apparently let down from above in weathering.

S. W. cor. sec. 36, T. 9 N., R. 62 W., conglomerate with pebbles of Mt. debris up to $\frac{1}{2}$ inch diameter, hard, 5 ft. above coals unlike Tertiary congl. at first sta. which contained many clay pebbles.

The ~~is~~ white to yellow cross-bedded ss. 30 to 40 ft. thick S. W. of Briggdale in the E. bank of Crow creek is probably the same as the one S. of Cornish. If it were higher it would be found in the slopes between Briggdale and Cornish. It occurs well exposed at various points along Big Crow Creek above Briggdale.

West of Briggdale are beds of *Borbicula* as well as oysters and *Monia*. East and N. E. we found only *Ostrea* and *Monia*. At Cornish *Ostrea* and *Borbicula* horizons occur within a few feet above the white sandstone. Usually the oyster beds do not contain *Borbicula*.

Wellsville Hot Springs, Colo.

Sept. 20, 1924

Left Boulder with P. G. Worcester yesterday after 7:15 a.m. Camped about 10 or 15 mi. below here.

Sta. 500. Found *Physa cupracornutus* G. Ill. abundant in the warm water. *Laguncula* in a few cold pools above. Name of man in charge is J. T. Riggan, Box 367, Salida, Colo.
Found no snails in Pouchos Spring.

Water much warmer than at Wellsville.

Crossed Pouché Pass into San Luis Valley and drove up into Steele Canyon on E. side of the Valley, in Blake Mining District, ~~1/2~~ 8 mi. E. of Villa Grove.

Here they are quarrying metamorphosed Mississippian limestone and crushing it, probably for manufacture of artificial stone. Many colors, especially red and yellowish. ^{Also} 509 found *Oroidix* sp. depressa small but common. alt. 9000 ft.

T. 46 N. of N. Mex. P. M., R. 10 E. Property of the Colorado Decorative Marble Co. O. L. Merrill, general manager, Mrs. Merrill secy. & Treas., Villa Grove, Colo.

Very high wind all day, & cloudy evening. Cold.

Sept. 21, 1924.

Very cold, clear morning, warmer afternoon.

Metamorphosed l. s. = marble, blue, gray, yellow, red, brecciated in places, abrupt anticline, some faulting and slumping.

moll. Sta. 5-10

Sept. 22, 1924

hit Princeton Hot spring (formerly Hortense) near Nathrop, large Physas. Water much hotter than at Wellsville. Physas not found in hottest water, but above bathhouse in a rivulet flowing from a hot spring, where water has cooled somewhat, but still warmer than at Wellsville. None in rivulet issuing from bathpool, which is quite hot.

~~Sept~~ Oct. 22, 1924

Went to Denver in morning, then out to a place near Morrison by auto with Benj. Ritter, G. J. Kuller and James Duce, to a spring where mammoth remains have been found. Obtained two teeth from a rancher.

the Oregon and Washington Localities

Washington:-

Kelso - Coal Creek, small branch of
Cowlitz River, 10 mi. S. of Kelso, Cowlitz

Co. - Type loc. *Polypogon columbianus* Brunnea

Vader, Lewis Co., Cowlitz River. Eocene.

Lake Whatcom, type loc.

Lycopodium staquahii occidentale

Whitby Island. *Planorbis planulatus* Cooper

Fraxford, Type loc. " " "

Lake Washington. Type loc. "*Calliglyptus*

Bremerton, Kitsap Co. a lake near

Vader. Eocene. auto road over hill $\frac{1}{4}$

$1\frac{1}{4}$ mi. E., bluff on bank Cowlitz River,
on Nichols Ranch. Good collecting at
low water

Oligocene, Greece Ranch.

Lincoln Creek station. Oligocene

Spokane. *Oreohelix* s. *parva*, type loc.?

Fossil. Large & beautifully preserved
flora, Deep Creek Canyon, near Spokane.

See C.O. Fernquist, of Spokane

Ashford, Pierce Co. - *Lycopodium ferrugineum*

Seattle, Green Lake. " *tryoni*

Vancouver, Columbia River.

3 *Lym. galbana*, *L. babinoides*
Nygmæa obrussa - Wash. Ore. & Brit. Col.

British Columbia Localities.

Victoria, Vancouver Is. *Lym. babinoides*

Vancouver Is. *Lym. tryoni*. *Valvata viscus*
S. end, Sooke formation, ~~not~~ Obj. or Essau
Mouth John's River. Fossils
Carmichael Point " S. end island

Sumas Prairie, Fraser River.

Type loc. *Physa lordi*

found also *Lym. propinqua rowelli*
Lym. sumassi, type loc.

Osoyoos Lake

Type loc. *Physa lordi*

found also: *Lym. propinqua rowelli*

Oregon Localities.

Mist, Columbia Co., Nehalem - Miocene.

Roseburg Quad. - Eocene

Portland - Johnson's Ranch - *Lym. babinoides*

Cook Bay - Pliocene (Miocene, per shell)

Yaguna Bay. Miocene. 1/2 mi. N. of

Warner's Lake, E. Ore. - freshwater Pliocene

John Day Basin Tertiary freshwater
fauna. Tert. & Cret. noires

Boulder, Colo. June 16, 1925-
Left at 7:13 p.m. on D. & F. Ry.
for Paet Sound and Alaska

Wednesday, June 17, 1925-

Hot, dry, brown and dusty until well
into Montana, then greener & cloudy.

Reached Billings at 8:20 p.m., 1 1/2 hours
late. Changed to Northern Pacific 10 p.m.

Thursday, June 18, 1925-

Cool and green at first, but hot and
dry in Idaho in afternoon. Western
Montana, but got cooler and greener,
with much more vegetation before
we reached Idaho.

Friday, June 19, 1925-

Reached Seattle 9 a.m. Got out on
Great Northern for Mt. Vernon 3:30 p.m.
Mt. Vernon at 6:40. Went to Windsor
Hotel.

La Bouver, Wash.

Saturday, June 20, 1925

Came over to La Bouver on 8 a.m.
auto stage. In evening drove over to
Mt. Vernon and back.

La Bouver, Wash.,

Monday, June 22, 1925

In forenoon I walked to Pioneer Park.

Rock on both hills fine grained gneiss.

In afternoon Nellie Carter and I walked
to Snee-oosh; on N. end of Fidalgo Island.
Sta. (mollusk) 5-11, several species of both
pelecypods and gastropods on rock-
strewn beach.

La Bouver, Wash.

Tuesday, June 23, 1925

Nellie Carter and Mrs. Packard, a
baker, and I went again to Snee-oosh,
Sta. 5-11, again.

La Bouver, Wash.,

Wednesday, June 24

Drove to Silver Lake, about 5 miles S.

of Everett, shallow and pebbly all along
the shore, No mollusks found.

La Bouver, Wash.

Thursday, June 25, 1925.

Walked to Martha's Bay, then followed
the Beach to Suce-ooch, Sta. 511.

Found Mya alive, very badly dis-
colored (black) by the organic material
in the mud.

La Bouver, Wash.

Friday, June 26, 1925.

Went to Hikoi (is it spelled correctly)
Island with Durwood Gladwin, & collected
clams - larger than at Suceooch, but,
like them, discolored by organic matter
in the mud.

Mollusk sta. 512.

La Bouver, Wash., Saturday,

June 27, 1925 -

Started with Mr. Brandt in Everuck
motor boat for Big Hope Island, but when
we got outside Hole-in-the-Wall a
heavy sea was running. He decided that

It was too rough to go on, so we returned.

La Bouver, Wash.

Monday, June 29, 1925.

Went to Big Hope Island in Victor Brant's motor boat.

At N. E. end of island collected Pleistocene fossils in hard conglomerate, from high tide line to about 15 feet above tide, ~~the~~ dipping about 15° in S.W. direction.

At N. end of island we found the Pleistocene fossils in ^{fine} loose material containing few pebbles & unconsolidated, from 5 to 25 ft. above the tide.

Mollusk Sta. 513, Big Hope Island.

La Bouver, Wash., Tuesday.

June 30, 1925.

Took stage for Mt. Vernon at 6:45 a.m., Great Northern at 8:02 a.m., Seattle at 10:45 a.m. Stage for Duwall at 5:15 p.m., change for Barnation Farm at 6:30.

Barnation Stock Farm, Wash.

Wednesday, July 1, 1925-

Mollusk sta. 514, slough - old ox-bow - at the Farm. *Pisidium*, *Sphaerium*, *Physa*, *Lymnaea* and *Planorbis*. Anatomy of all but *Planorbis* saved.

Mt. Vernon, Wash., Sunday

July 5, 1925-

Moll. sta. 515. ~~and~~ a spring brook at Nookachamps Creek, about 1 mi. S.W. of Clear Lake Village. *Physa*, *Planorbis*, *Pisidium*, *Musculium*? and etc.

Sta. 516, Mud Lake, at Clear Lake Village. *Pisidium*, *Musculium*, *Sphaerium*, *Lymnaea*, *Planorbis*, *Physa*, *Lymnaea*, *Planorbis*, ~~and~~ *Physa* sp. *Physa*

Sta. 517, Clear Lake, at at Clear Lake. *Pisidium* and *Musculium*

Sta. 518, Beaver Lake, at Clear Lake. *Lymnaea*, *Physa*, *Planorbis* and *Anodonta*. *Anodonta* abundant, much eroded and more or less diseased, some eroded through. Same ~~as~~ clams reported in Mud & Clear Lakes.

Judge J. M. Shields took me in his car.

Mt. Vernon, Wash., Monday
July 6, 1925-

Shields took me out again in his car
Sta. 519, Lake fifteen - Sec. 16, T. 33, R. 4
4 1/2 mi. S.E. of Mt. Vernon. Planorbis cf.
trivialis, Physa (dead shell), Pisidium and
Sphaerium.

Sta. 520, Lake McMurray, at
McMurray P.O. Planorbis & Sphaerium
+ dead Anodonta sp.

La Bouver, Wash.

Tuesday, July 7, 1925-

Came over to La Bouver at noon

La Bouver, Wash., Wednesday,

July 8, 1925-

Walked to Martha's Bay, thence to
Snee-ooak. Found several slugs and 3
Bircinaria.

The flats are filling rapidly & all the
mussels are covered by a film of mud,
and nearly all covered by small barnacles.

La Bouver, Wash., Thursday,
July 9, 1925

Went to Rosario Beach, on Fidalgo,
just outside Deception Pass.

Moll. Sta. 521, Rosario. Many species
of marine shells, + small starfishes,
sea urchins, etc.

La Bouver, Wash., Friday
July 10, 1925

Finished preparing, cleaning and
packing all material on hand. Have 3
boxes ready for shipment.

La Bouver, Wash., Sat.
July 11, 1925

Went with Brant again in boat to
Big Hope Island. Found fossil bed
extending around on west side, conglomerate
beneath. One species ~~was~~ resembling a large,
heavy, thin short, high *Tresus metallii*, I
have not found alive, but thinner, smaller
valves on the beach near by are probably
recent. Then went to Deception Pass.
Moll. Sta. 522, Ben Ure's Island.

just within Deepwater Pass. Mollusks & starfishes and sea urchins.

La Bouver, Wash., Monday,
July 13, 1925-

W. S. Packard took me in auto to
Fidalgo Island.

~~to Smith~~

Sta. 523, Smith Bay. Valves of the
big ~~Tresant~~ ^{Levin's} ~~such~~ ^{traces} such as one found fossil
on Big Hope Island. Also *Hapidornis*?
sp. saw *Paphia staminea*? and *Cordium*
in poor condition, & did not take any.

Sta. 524, Lake Campbell. *Anodonta*
(dead shells), *Planorbis*, *Physa*, *Valvata*,
Ferrissia, *Pisidium*, *Musculium*.

On bluff at Smith Bay found what
appear to be ancient kitchen middens
containing ~~La Bouver~~ *Paphia staminea*? in
abundance and some *Ostrea* sp.

La Bouver, Wash., Friday,

July 17, 1925-

Walked up to Snee-ooch, thence along
~~to~~ beach to Lone Tree Point, where
reef was exposed by low tide.

Moll. Sta. 5-25, Lone Tree Point, S. end
Fidalgo Island, near Similk Bay - opposite
Big Hope Island. Several species of mollusks.
Many of the limpets were picked up at ~~west~~
joint toward tree-cock.

La Bouver, Wash., Saturday
July 18, 1925

Went in motor boat to Flagstaff Is.
Point, at edge of Similk Bay, opposite
Little Hope Island, S. end of Fidalgo
Island.

Moll. Sta. 5-26, horse clams, cockles,
etc. Flagstaff is connected with Fidalgo
by a sand spit which is covered dry only
the highest tides.

La Bouver, Wash., Thursday
July 23, 1925

Went to Rosario with the barbers for the
day. Got some more mollusks and another
species of starfish.

The most common birds here appear to
be white-crowned sparrows. Junco are
common on Fidalgo Island. Am surprised
to see these two species here at this time

of the year. Crows are common, singly and in pairs. They ^{and} ~~perhaps~~ ^{perhaps} also the ~~latter~~ ^{latter} carry scallop ~~and~~ bivalve up up and drop them on the rocks to break them open. Have seen no evidence that they do so with any other species. The "horse clam" is as brittle as the cockle, but can probably be opened without breaking, as one end of the shell is open to accommodate the large siphon.

Seattle, Wash. Saturday
July 25, 1925.

Came ~~down~~ up to Seattle today via Mt. Vernon and the Great Northern R.R. Put up at New Arlington Hotel, 1st ave.

Seattle, Sunday, July 26.

Went to Tacoma with the barter to visit Alf Stacey.

Seattle, Monday, July 27.

Frank G. and Bartlett Henderson came in from San Francisco on steamer H. F. Alexander. In afternoon we inspect Lake Washington locks.

Seattle, Tuesday, July 28

Frank, Battlett and I went to Seiwall on auto bus, starting from station near 3d Ave. & Pine. Katherine Andrews met us with sedan and took us to Barnation Stock Farm. In evening John Andrews brought us back to Seattle in the sedan.

Seattle, Wednesday, July 29.

Left at 10 a.m. on Pacific Steamship Company steamer Admiral Rogers, stateroom 5 on A deck. Clear & warm day.

On board S. S. Admiral Rogers
Thursday, July 30.

waited for tide from midnight until 3 a.m. to go through Seymour Narrows, where the tide is very swift.

cool, foggy morning. cleared in afternoon a little rough in ^{Queen} Charlotte Sound.

Friday, July 31.

cloudy morning, soon running into mist and fog. Sirbu Entrance not very rough. Rained in afternoon at Wrangell.

On Board U.S. Admiral Rogers,
Saturday, Aug. 1, 1925.

Yesterday small porpoises swam ⁱⁿ beside the vessel for a long distance. They were 3 or 4 ft. long, tail horizontal, & tipped with a broad white band, back very dark, belly and lower part of sides white, the dividing line between white and dark along the sides apparently bow-shaped.

Cloudy and foggy this morning, raining at noon, at Petersburg. Gulls and black-headed terns? exceedingly abundant here. The latter usually seen ^{flying} ~~swimming~~ low over the water, the gulls flying higher. Lots of snow and ice on the mountains here.

The black-headed birds may be the long-tailed Jaeger.

Narrow between Wrangell and Petersburg very fine, tortuous channel well marked by buoys & lights.

Woll. Sta. 527, Kake, Alaska, 5:15 to 6 p.m. *Littorina lithana*, mussels, clams & limpets & a sea urchin.

Rained at intervals in afternoon

Sunday, Aug. 2, 1925

Missed Taku Glacier because of the fog. Reached Juneau at 3 a.m.

Foggy morning + sprinkling at intervals
Precipitation ^{at Juneau} for July, 1925: 7.61 ^{inches} = 2.34 inches
above normal. Temperature 55.90 - 1.40
below normal.

Highest known ^{mean} July temperature here was
in 1907 + 1915 (63.2), lowest in 1908 (50.0).

Wettest July here was 1917 (10.5 inches),
driest in 1915 (0.25).

1925, July, 6 clear days, 3 partly cloudy
and 22 cloudy. Measurable precipitation on
17 days. Sunshining only 28% of possible amount.

Left at noon and ran back to Taku,
where we had a fine view of it.

Shagway, Alaska Monday

Aug. 3, 1925

Reached here shortly after midnight.
after breakfast went to Pullen Hotel.

Timber line low on mountains, trees
small.

Rocks granite, with igneous intrusions.

Found no snails, though cover was good, across the stream from the town. The main stream is heavily laden with glacial rock flour.

Weather still raw, cloudy, sprinkling most of the time. Temperature at 4 p.m. 58° F.

Shagway, Alaska, Tuesday
Aug. 4, 1925.

Still, warmer morning, clearing up early in forenoon.

Moll. Sta. 528, no mollusks except Mytilus & no barnacles. Water probably rather fresh, as this is about the head of the inlet, narrow inlet, with streams constantly bringing in fresh water.

Moll. Sta. 529, Lake Dewey, on first bench, east of town, perhaps 500 ft. above the town & not plentiful. Pseudium, not plentiful. A few small land snails. Evidence of glaciation everywhere.

Barcross, Yukon Territory.

Wednesday, Aug. 5, 1925.

Left Shagway by railroad at 10:30.

Hotel bill at Shagway \$10.00

Timber line from 2500 to 2900 ft. alt., but straggling, dwarf conifers up to the summit of the divide, ^{about} 2900 ft. No indications of effect of wind on trees at timber line, such as seen in Colorado. Trees 3 or 4 ft. high, a few taller. Even at Shagway they are small.

All streams except smallest rivulets laden with glacial rock flour.

Excellent dinner at Bennett, head of Lake Bennett, at 1:30 p. m. - \$1.00, blowing up.

Followed lake 26 miles to Barcross, at lower end of lake. Lake water much discolored at upper end, but ^{nearly} quite clear at lower end.

At least three well-marked terraces (probably more), show former much higher water level.

At Barcross there are large sand dunes, the sand probably derived from the portion of the lake now dry. Trees of fair size, considering the latitude, are growing on portions of the dunes, while sand is drifting on other portions.

Warm and windy in afternoon here.

Barcross, Y.T. Thursday
Aug. 6, 1925

Formerly Baribou Crossing, now shortened
as above.

Bright morning, warm in sun, cool S.W.
breeze.

Moll. Sta. 530, along lake shore N. of
town. *Lygumaea*, a few dead shells,
2 species.

Stayed at Baribou Hotel.

at 1 p.m. we boarded steamer Tatchi,
a steamer whaler scheduled to leave for
Lake Athin at 2 p.m. Crossed the
isthmus ^{2 or 3 miles} by train at 9 p.m., then by
steamer Tarahne to Athin 6 miles, reaching
Athin Inn at 9:40 p.m. - a cold trip, warm
in sun, but a raw wind.

Athin, B.C. (or Y.T.?) Friday
Aug. 7, 1925.

cloudy all day, + breezy - cool. ^{east}
Moll. Sta. 531, pond at sawmill in west
edge of ~~town~~ the village, near lake shore.
Lygumaea, perhaps 2 species. *Planorbis*,

a small species like *P. parvus*. One or two young Physas.

Moll. Sta. 532, grassgrown lagoon near lake shore $\frac{1}{2}$ mile or 1 mile ~~out~~ ^{west} of town (possibly ~~at~~ ^{at} W.).

Athol, B. C., Saturday,
Aug. 8, 1925

Raining at daybreak, stopped about 8 a.m. Partly clear at 10 a.m. started on foot for Lake Bomo, $3\frac{1}{2}$ mi. N. E. or N. of town.

Moll. Sta. 533, pool, very shallow, charged with magnesian, about $2\frac{1}{2}$ or 3 mi. out. Lymnaea abundant.

Moll. Sta. 534, around Bomo Lake, land snails common, small species.

Sta. 535, Sphagnum swamps, close to the Lake Bomo. Pisidium, Planorbis and Lymnaea. Water heavily charged with magnesia or some other mineral.

The water of Lake Bomo ~~is~~ is mineralized, and forms foam ^{like soap suds} where the waves act upon the shore. No mollusks found. Along the shore we obtained Agriolimax, Gonyodiscus, Succinea, Lymnaea, Encourus, Pupilla and either Vertigo or Bipidaria.

Athol, B. C., Sunday,
Aug. 9, 1925-

Partly cloudy, warmer.

Visited the places near town where
Magnesite is oozing from the ground
in the edge of the camp.

AS

Athol, B. C., Monday,
Aug. 10, 1925-

Bright, warm day.

Visited the Indian cemetery near
the lake shore $1\frac{1}{2}$ or 2 miles east of
town.

Moll. Sta. 536, lagoon cut from lake
by a narrow barrier beach perhaps
 $\frac{1}{4}$ mi. or more toward town from the
cemetery, between cemetery and sta. 532.
Lymnaea stagnalis cf. *appressa*, *Lymnaea*
sp., *Valvata* *sp.*, *Planorbis* *sp.*, *Physa* *sp.*,
Pisidium 2 (?) spp.

Athol, B. C., Tuesday,
Aug. 11, 1925-

Rainy morning, cloudy & showery
afternoon. Took lake trip on steamer
Parahue, saw Lowellan Glacier.

Left for ~~the~~ Carcross at 8 p.m.

Carcross, Yukon Territory

Wednesday, Aug. 12, 1925.

Arrived in early morning on steamer
(~~not~~ sternwheel) Tutshi. Breakfast on board
at 7:30 a.m. Bright morning, cool in
shade, ~~quiet~~ calm.

Met Otto H. Partridge, of Ben-My-
~~free~~ Lake (a many name), via Athol, D. C.,
well informed and interesting man, friend of
John Muir, Theodore Roosevelt and other
notables. Says Moose and caribou in-
creasing, owing to obstruction of wolves,
which formerly destroyed the calves and
fawns. Says coyotes arrived since
he came to the country.

Lunch at hotel at noon.

White Pass & Yukon R.R. train for White
Horse at ~~3:40~~⁴ p.m., reached White Horse at
6 p.m., started down river on steamer basea
at 7:30, stern wheel.

Fine day, calm, clear, not hot.

Yukon River,

Thursday, Aug. 13, 1925

Foggy night, clearing during forenoon,
cloudy again in evening.

Aground 3 times. Got off by use of
"artificial leg" twice. The other time spent
4 or 5 hours with long cable ashore to
pull it off.

Yukon River, Friday

Aug. 14, 1925

Began raining before dawn. Continued
cloudy, sprinkling at intervals.

Saw 3 black bears and a number of
small bands of caribou during the day, especially
early in the afternoon. One drove of
40 or more.

Reached Dawson at 2:30 p.m.

Went to Hotel Alexandria.

Visited cabin of Robert Service, the poet.
25¢ admission.

No money of denomination less than
25¢ accepted here, except at postoffice.

Fine flowers and vegetables growing

out of doors. Tomatoes raised in greenhouse
at 5 lbs. for \$1.00.

Twilight all night. Reported that first
stars of season seen only a few nights
ago. 93° F. in shade a few days ago.

Have had head (north) wind all the
way down the river.

Sawson, Y. T., Saturday,
Aug. 15, 1925.

Rained and sprinkled most of the day.
Started on return up river on steamer
basea at 6 p. m.

Saw several bears

Yukon River, Y. T. Sunday,
Aug. 16, 1925.

Mostly clear, with cool breeze, warm in sun.
Saw several bears and 4 large flocks of geese.

Yukon River, Monday,
Aug. 17, 1925.

Warmer, partly clear.
No game except ducks.

Yukon River, ^{Tuesday} ~~Wednesday~~
Aug. 18, 1925.

Warm, bright day.

All along the river a layer of white volcanic ash several inches thick is visible in the banks of the river, covered by from 1 to 4 ft. of soil on which trees are growing. It follows the contours of the bluffs closely & is said to be 1000 years old.

White Horse, Y. T.

Wednesday, Aug. 19, 1925.

Reached here 7 a.m.

Fine, bright, warm day.

Walked up to White Horse Rapids $1\frac{1}{2}$ miles.

Molt. Sta. 539, $\frac{1}{2}$ mi. above rapids, aspen grove; black *Agrioninae*, *Pyramidula*, *Eucorula* & *Pupillidae*.

Sta. 538, 1 mi. above town, marsh beside railroad. *Lymnaea*, *Succinea*, *Pisidium*.

Sta. 539, about 1 or $1\frac{1}{2}$ mile below town, slough opening into river. *Lymnaea*, *Valvata*, *Planorbis*, *Pisidium*.

White Horse, Y.T., Thursday,
Aug. 20, 1925-

Rained hard for several hours in early morning and sprinkled at intervals through the day, cool. Fresh snow on the mountains.

Molt. sta. 540, Ice Lake, 2 mi. W. of town. *Luzula stagnalis* var., Small Planoski, *Pisidium*,

White Horse, Y.T., Friday,
Aug. 21, 1925-

Cloudy morning.

Our rooms have been at White Pass Hotel (Mrs. A. K. Viary) and we ate at City Cafe, both places good, latter excellent. Prices reasonable. Took train at 9:30 a.m.

Partly cleared up, affording a fine view of the mountains across White Pass. Numbers of small glaciers, streams laden with glacial rock flour, glacial polish on rocks, mountains shining brightly in sunshine.

Reached Shagway at 4:30 & went to Puller Hotel.

Had lunch at 1:30 p.m. at Bennett's

Skagway, Alaska, Saturday
Aug. 22, 1925

cloudy, cool forenoon, partly clear afternoon.
It is said that 25 glaciers may be seen from the top of A B Mountain on a clear day. It is across the bay from here & is so named because snow banks are said to form the ~~two~~ first two letters of the alphabet on the mt.

Skagway, Alaska, Sunday
cloudy day, with rain at intervals. ^{Aug. 23}

Skagway, Alaska, Monday,
Aug. 24, 1925

Partly cloudy. Warm afternoon.
Left at 7 p.m. on Steamship Queen.

Sitka, Alaska, Tuesday,
Aug. 25, 1925

Bright morning, partly cloudy afternoon.
Warm in sun.

Moll. Sta. 541, beach (rocky) at Sitka,
tide too high for good collecting.

Very numerous small islands about
Kitha. Very beautiful as we pulled out,
with the sun partly obscured, giving the
clouds fleecy fringes, with a line of light
on the water, the dark, small, tree-clad
islands in the foreground outlined against
the haze of large islands in the background.
Fine ethnological museum here.

On board Queen, Wednesday.

Aug. 26, 1925

Bright, cool morning, brisk north wind.
Reached Juneau at 7:30 a.m., left at 8:30 a.m.
Kahe in afternoon, short stop.

On board

On board Queen, Thursday.

Aug. 27, 1925 -

Cloudy, calm morning
Reached Petersburg 5 a.m., remained
until 4:30 p.m., loading salmon and
waiting for truck.
Sta. 542, beach at Petersburg.

Ketchikan, Alaska,
Friday, Aug. 28, 1925.

Foggy & cloudy morning, clearing
by noon, overcast.

Reached here at 8 a. m.

Moll. Sta. 5-43, rocky beach N. of
town, marine snails numerous.

Nyctelia abundant, small, took only one.
Saw the common large clam shells under
wharfs, took none.

The rocks are shistose gneiss,
almost slaty in places. Saw same
sort at Kake, I believe. Evidence of
great movement along laminations.

Raining in evening.

Sailed at 10 p. m.

On board Queen, Saturday
Aug. 29, 1925.

Rained all night. Still raining in morning.
Stopped at Hidden Inlet for more
fish at 7 a. m., for 2 or 3 hours.
Continued raining all day, cold, hard
wind in evening.

On board Queen, Sunday,
Aug. 30, 1925

Raining in morning & at times later,
cloudy all day.

On board Queen, Monday,
Aug. 31, 1925

Partly foggy day.
Reached Seattle at 1 p. m. Went to
New Arlington Hotel.

Seattle, Wash., Tuesday,
~~Aug~~ Sept. 1, 1925

Foggy forenoon, clear afternoon.
Frank & Bartlett left for California at
6 p. m. by S. H. H. F. Alexander.

Seattle, Wash., Wednesday
Sept. 2, 1925

~~was~~ Foggy morning, cool.
Went to Barnation stock Farm for the day.

Seattle, Wash., Thursday
Sept. 3, 1925

Foggy morning, then clear & warmer.
Left Seattle by Great Northern R. R.

at 8 a.m., Mt. Vernon at 10:45. Took
stage for La Bower at 11 a.m.

La Bower, Wash., Friday
Sept. 4, 1925

Cloudy, foggy morning. Warm, clear
afternoon

La Bower, Wash., Saturday,
Sept. 5, 1925

Good, cloudy forenoon, clear afternoon.
Drove to Anacortes and back in
the afternoon.

La Bower, Wash., Sunday,
Bright, warm day. Sept. 6, 1925

La Bower, Wash., Monday,
Sept. 7, 1925

Cloudy day most of the time.

Drove to Fishalga Island with George Saffers.
Moll. Sta. 544, Pass Lake, near reception
Pass. Hard bottom, very shallow along shore,
no favorable conditions found for Pisidium,
etc. Large Lymnaea abundant, some
Planorbis and Physa.

Sta. 545, Lake Erie, almost bottomless
much at the bottom of it, decomposed

vegetation of about the consistency of liquid glue, covered by a little (1 to a few feet) of clear water. Could not thrust an oar ~~to~~ to hard bottom a short distance from shore, Anodonta valves carried up onto logs by muskrats. Planorbis, large species on logs. Small Planorbis and Ferrissia? plentiful on under side of water lily pads.

Sta. 546, Lost Lake, half mile off Erie Lake - Rosario road at school-house on ^{the} hill. Shallow around edges, no boat. Musculinum, Pisidium, Planorbis and ~~decayed~~ decayed Physa.

Sta. 547, Hart (or Heart) Lake, shallow margins. Physa abundant.

La Bouver, Wash., Tuesday,
Sept. 8, 1925.

George Sapp and I drove to Fidalgo Island, crossed ferry to Whidbey Island.

Wald. Sta. 548, Strawberry Lake, near Reception Pass, a large lake. Musculinum, Pisidium + Planorbis. Shells on shore.

Hasty Lake very shallow, much 2 to 4 ft deep in bottom. yielded nothing.

Sta. 549, near West Beach about
opposite Carpenter. *Pisidium*, ~~large and~~
~~small~~ *musculinum*, *Pisidium* large and small,
and *Physa*. *Pondilla* Lake.

Sta. 550, West Beach near Sta 549
Limpeta & *Littorina* *sithana*

Pondilla Lake is separated from the ocean
by a high, ~~the~~ narrow ridge, probably a
glacial moraine. The seaward side of it is
a 100-foot cliff of coarse gravel and sand.
Probably the barrier of Gravelly is also a
moraine. It is very narrow

Sta. 551, beach of Whidby Isl., at
Deception Pass Ferry. *Limpeta*,
Bloody day.

La Bouver, Wash., Wednesday,
Sept. 9, 1925

Bloody days

Moll. Sta. 552. Samish, Wash. Bought
4 doz. Japanese oysters from the beds
planted there at 40¢ per dozen. Rock Point
Oyster Co., John C. Barnes, in charge. Found
Chitons on many of them.

La Bouver, Wash., Thursday,
Sept. 10, 1925

Misty cloudy

sent 7 boxes of specimens over to Mt. Vernon by W. C. Wiggins' truck & in afternoon went over and shipped them by Great Northern R.R. Then took my baggage to home of Judge J. M. Shields.

^{Wash.,}
Mt. Vernon, Friday, Sept. 11, 1925

Cloudy, hazy morning.

In afternoon we drove W. or S.W. from town.

* Moll. sta. 553, Lake Ten, in sec. 10, ~~of~~
S 4 N. R. 4 E. Bottom full of sticks, could not get through sticks to bottom with strainer. Got one large Planorbis, several small ones, one or two Physa & Lymnaea. On under side of lily pads I got limpet - Ferrissia? sp.

Sta. 554, Mt. Vernon. Small slugs.

Mt. Vernon, Wash., Saturday,
Sept. 12, 1925

Shields & I drove north.

Moll. sta. 555, small lake 3 1/2 mi. N. E. of Alger, Skagit Co. ^{Cain Lake} Home Lake
Ferrissia? on lily pads. Small Planorbis.

Sphaerium 1 specimen, Anodonta valves
brought ashore by muskrats.

Sta. 556, another small lake about
1 mi. N. of last. Anodonta alive.
~~Ridge Lake~~ Reed Lake.

Sta. 557, Lake Whatcom, $\frac{1}{2}$ or 1 mi.
beyond last sta. Anodonta and large
Planorbis common. Large Physa, 1 specimen.
Lymnaea of stagnalis group, a few dead
shells. Searched at various places for more,
without success. Ferrissia abundant on
lower side of lily pads.

Sta. 558, pond 3 or 4 mi. S.E. of
Lake Whatcom, Musculium, etc. $1\frac{1}{2}$ mi.
N.W. of Wickersham, Whatcom Co.

Mt. Vernon, Sunday.

Sept. 13, 1925.

Fine, clear, warm day.

Left Mt. Vernon at 12:15, reached
Seattle at 3:15. Went to New Arlington
Hotel.

Seattle, Wash., Monday.

Sept. 14, 1925.

Clear, warm forenoon, sprinkled

late in afternoon

Seattle, Wash., Tuesday,
Sept. 15, 1925

Left Seattle at 9 a.m. cloudy.
" Portland U. P. Ry. 4 p.m.

Boulder, Colo. Thursday.

Sept. 17, 1924

In Cheyenne 1:15 p.m. - 1 hour late
On in C & N Ry. at 1:45 p.m.

Boulder, Colo., Tuesday.

Mich. 23, 1926

Bright, warm. Left at 9:30 p.m.
Left Denver at noon for Dallas, Tex.
for meeting of American Assn. of Petroleum
Geologists.

Dallas, Tex., Wednesday

Arrived at 5 p.m. Got room 1068
at Adolphus Hotel. Registered at convention
headquarters, Baker Hotel.

Dallas, Tex. Thursday
Mch. 25, 1926

Attended dinner by Mr. Plummer to discuss
organization of Paleontological section

Dallas, Tex. Sat.,
Mch. 27

Completed organization of Pal. section

Dallas, Tex., Monday
Mch. 29, 1926

Miss Eunice Adam and Rebecca Masters
son took me to Top of Hill, ~~from~~ 12 mi.
E. of Fort Worth, where we got a couple
of *Modiolas* in Woodbine crest.

Fine mi. ^{W.} E. of Dallas, shark teeth in
Eagle Ford shale

Chalk Hill, at W. edge of Dallas, a small
Nautilus.

Rainy day. Has been cold, cloudy and
rainy most of time since Thursday.

In evening we all went to Little
Theater with Mrs. McMillan.

Fort Worth, Tex.

Tuesday, March 30, 1926

Miss Garrison ~~Adams~~
Miss Masterson & Miss Aden brought
me to Fort Worth in their car in a
driving snowstorm in forenoon, after
lunch we visited ^{Texas Christian} ~~Southern Methodist~~
University and Prof. Winton, then
collected a few cephalopods, gryphae
and urchins from Fort Worth Lower
brst. limestone in a park in the
edge of the city. Very cold, raw, strong
wind all day.

Got rooms at Hotel Texas for night.
Strong wind all evening

Fort Worth, Wednesday,

March 31, 1926

Bright, cool, breezy morning.

Miss Helen Aden & Miss Masterson
took me out in morning

Upper Duck Creek formation (marl)
3/4 mile N. of Tex. Ch. Riv. small species
Lower Duck Creek (l.s.), Duck Creek,
Wolf Creek, S.W. of city. Large cephalopods
Goodland crest, 1/2 mi. N.W. of
Fort Worth, very fossiliferous.

Lunched at hotel, then with Eunice
Aden started west

Goodland crest, 9 mi. W. of Fort
Worth on weatherford road. fossils

Goodland crest. ^(and higher) 11 mi. W. of Ft Worth.

crest, limestone 5 or 6 miles
E. of Weatherford, Gryphaea, + Doggert, etc.

Drove to Weatherford and stopped for
the night at Parker Hotel

Weatherford, Texas, Thursday
Apr. 1, 1926

Bright, cool, breezy morning.

Shipped a 175 box of fossils.

Helen Aden left on morning train for
Ft. Worth. Her aunt, ^{with} Miss Wastmore + I drove ^{with}

Louise Glen Rose (Gryphaea bed), 1
mi. S.W. of Weatherford. Two beds, fossils
kept separate

Dennis, on Brazos River, Parker Co.,
Fusulina l. s., called "Millsap", below stream
ss., at bridge. also Composita subtilita

Rayville, 18 mi. S. by W. from Weatherford,
Squamularia horizon, "Millsap" l. s. ^{at} Fusulina
Grove 3 or 4 miles farther, to
Kickapoo Falls & found a l. s. like

the last, but obtained no fossils.

Then drove back to Weatherford for lunch.

Afternoon we drove west.

Basal Strawn, Pennsylvanian, Acme Brick Plant, 3 mi. W. of Millsap, Tex. *Clonotetes* 2 sp., *Productus*, *Spizifer*, scarce

Mineral Wells shale, Upper Strawn. E. edge of Mineral Wells, Texas. Many small fossils - a dwarf fauna.

Same fauna just west of town.

Drove to Ranger and put up at Holson Hotel.

a few recent snails at Acme.

Ranger, Tex., Friday,
Apr. 2, 1926

Cloudy, cool morning.

Drove S. of W.

Fusulina l. s., Ranney, Tex.

Fusulina, *Campophyllum torquatum*,
Campophyllum propinqua, & crinoid stems
& *Hyriogopora*, in Gussight l. s., at
Gray's Gin, 5 mi. N. of Rising Star, Tex.

Got lunch at Rising Star & were
joined by Mr. ^{W. A.} Foster.

Lower Bangor Pennsylvania, 3
mi. S.W. of Pipe Springs, Tex. Many
fossils, including *Porphophylloids* *Proquadrus*
radiatus (small, spiny), *Archaeoidia*? plates
& spines and many others.

Same formation, about 1 mi. farther
S.W. same fauna, but fewer species, and
with crinoid stems enormously abundant.

Same formation, but not same horizon,
on Holdrege - Brownwood road, about 10
mi. N. of Brownwood. Eviscated *Fusulina*.

Clear & much warmer in afternoon.
Drove in to Brownwood and put up
at Southern Hotel.

Brownwood, Tex., Saturday
Apr. 3, 1926

Bright, cool morning.

Miss Adam, Miss Masterson and Carrie
Rosen drove N.W. ^{Brownwood shale, Grayson}
^{Pennsylvania} Hill on Taber Ranch, about 5 mi. N.W.
of town. Many fossils.

Above Adams Branch in Bangor Pennsyl-
vanian - Drinkard's ranch about 6 mi.
S.W. of Brownwood. *Argozoa* & *Brachiopods*.
L. opp's L.A. ^{series} Lower Brownwood ss.,

Pennsylvanian, 5 mi. S. E. ^{of Brownwood} on Lefkary ^{2 feet} road. Immense corals up to ~~2~~ 2 feet in diameter and several feet long. Marginifera, Bouparia and very large crinoid stems.

Brownwood, Sunday, Apr. 4
Warmer. Dinner party in evening at Country Club.

Brownwood, Monday, Apr. 5
Cloudy morning, then clear and hot.
Drove through Crosscut.
Harpersville formation, ^{middle} upper Cisco
Pennsylvanian. Dickens Ranch, 2 mi.
N. E. of crosscut, Tex. Especially fine
Fusulines.

Pennsylvanian, probably Thrifty ss. (mapped
as Cretaceous, 1/2 mi. S. of Pioneer, Texas.
Large Fusulines. One fine slab + loose specimens
Base of Graham (Cisco Penn.) 1/2 or
Blake, Tex. Fusulina

Thrifty (Cisco) Penn., ~~at~~ N. W. end
Graham Ranch, ^{3 mi.} S. of Blake, Fusulina
Mayland shale ^{about} 1/2 mi. S. E. of last
just beneath. Many small fossils.

Base of Thrifty Pennsylvanian, west of
last west to last station. *Syringopora* beds
all localities today in Lower Cisco
Pennsylvanian.

Brownwood, Tuesday

Apr. 6, 1926

Thrifty Pennsylvanian (lower) near
Water Schoolhouse, 3 mi. W. of Range
13 mi. W. of Brownwood. Peculiar
Bryozoa, with *Fusulina*

Upper Thrifty, Ferguson Ranch
4 mi. E. of Santa Anna, Bolman Co.
Newly formed in small iron concretions.

Upper Harperville Pennsylvanian, Cedar
Mt. escarpment, 7 mi. S. E. of Santa Anna,
Nyctelia slabs.

Moran l.s., Upper Cisco, Pecan Bayou
asa Wickson survey, 2 mi. N.W. of Burkett.
Bolman Co., Tex. *Nyctelia* abundant.

Moran? l.s., 2 mi. S.W. of Burkett,
Nyctelia abundant. Chris Parsons place.

Pueblo (Upper Cisco) Pennsylvanian.
1 mi. E. of Santa Anna. *Chonetes*, etc.
Rain & hail

Apr. 7, 1926
Hog Brownwood, Tuesday
Bluff Creek ls., base of Graham
(Cincinnati) Pennsylvania. 1 1/2 mi. S.E. of
Bangs. Upper canyon formation
(specimens labelled Bluff Creek ls.)

Harperville Pennsylvanian, S.E.
Scott farm, 2 1/4 mi. S. of Grosvonor,
many species, 1 trilobite. Miss Aden
& Miss Reeves also each found ~~one~~ several
same bed 1 1/2 mi. S.E. of Grosvonor.
Many species, Misses Aden and Reeves
found several trilobites.

Gunsight limestone, Graham formation,
Weedon schoolhouse, S. of Byrd oil
field. *Lampophylax torquatus*.

mapped as Wayland shale, but beneath
Gunsight, hence probably Bluff Creek shale,
1/2 mi. N. of Weedon school.

Cold, raw wind all day.

Brownwood, Tex. Thursday.

Apr. 8, 1926

Bright, warmer morning

Canyon Pennsylvanian, Flatrock crossing,
Jim Ned Creek, 7 1/2 mi. N.W. of town
many small species.

At a higher horizon, very fine
productus.

Harperville E. Pennsylvania, Turner's
Ranch, Mahala Duran survey, about
8 mi. S. of Brasscut. Altesian
Warm afternoon

Brownwood, Friday
Apr. 9, 1926

Drove S.W. of Comanche.

Bought of ~~W.~~ L. C. Boynton 2 pieces
of Pennsylvanian tree trunk, said to have
come from Copperas Creek, Beaty,
Comanche Co., Tex.

Base of Canyon or top of stratum,
4-5 mi. S. of Brownwood, 1 mi. S.E.
of country club. *Kucula* sp. and *Leda*
~~clonata~~ very abundant, with some *Leda* and
other species.

Rained hard all afternoon and
evening, with some hail and wind.

Brownwood, Texas, Saturday
Apr. 10, 1926

Cloudy, drizzly forenoon, cool, partly
clear, windy afternoon.

Shipped 3 boxes fossils, 380 pounds

Round Mt., 1 mi. W. of town, Brown-
wood shale, many small fossils.

Brownwood, Sunday
Apr. 11

Partly cloudy. In town all day.

Brownwood, Tex., Monday,
Apr. 12, 1926

Cloudy, calm morning.

Left for San Antonio by auto with
Misses Adair and Masterson at 7 a.m.

Glenrose (Fredericksburg) Bonavillian
3 mi. W. of Fredericksburg. Oysters, etc.

Glenrose Bonavillian 4 or 5 mi. W. of
Boerne. Large Trilobites & Gastropods.

Clear afternoon. Drove to San Antonio
and got rooms at Menger Hotel.

San Antonio, Tuesday
Apr. 13

Pleasant day.

Drove to Medina Lake in afternoon

Medina Lake, Texas

apl. 14, 1926

Misty morning, + went up lake
by motor boat.

Edwards ls., 7 mi. above dam, 1
mi. W. of Vettison's on same side of
lake. fossils + recent turtles.

Escondido Cret., Rosses Redus place,
8 mi. above dam and across lake at
stairharts. Many fossils.

sprinkled much of day

Medina Lake, Texas

Thursday, apl. 15, 1926

Bright, cool, windy morning.

Austin chalk, Red Wing, Medina Co,
7 mi. S. of lake. Gryphaea abundant.
Eryozoa porobrosa above. ^{ancilla}

Escondido ls. 1 mi. N. of Noonan.

Lower Midway Eocene, near contact
with Cretaceous, 1/2 mi. S.E. of Noonan.
One fine oyster + poor specimens of
other species.

Escondido ls. 1 mi.
N. of W. from D'Hanis,

shark teeth & anomia

Anacacho, ^{L.S.} below the Escudido,
also creek, 2 mi. above D'Havis.

Gryphos vesicularis and *Exogyra*
pudorosa - a few *Duoceramus*

Virginia vesicularis & *Exogyra*

horizon is 22 ft above

Anacacho lime - See Bulletin
on Medina Co. page 62. all of
the collection were from this horizon
though some are labeled anacacholim.

Medina Co., Friday
apl. 16

Austin Chalk, Cliff schoolhouse,
Medina - San Antonio Road.

Escudido Cr., hill on San Antonio
road back of schoolhouse (Rio Medina
Austin? Chalk 3 mi. E. of Rio Medina
E. of Alta Loma, on Rio Medina - San Antonio
road, possibly Anacacho L.S.

Escudido ss. bridge between Rio Medina
and Castorville, *Platystrophia* like cephalopod

Navarro Cr., 11 mi. N. of E. from
Castorville, *Exogyra* rather *Gryph.* *vesicularis*

Drove in to ~~San Antonio~~ ~~Menger Hotel~~ and got
room at Menger Hotel.

San Antonio, Texas,
Saturday, Apr. 17, 1926

Rainy morning. Packed and shipped
1 express box and 3 freight boxes.

Houston, Tex. Monday
Apr. 19, 1926

Left ~~Houston~~ San Antonio at 11:30 last
evening, arrived here 6:50 this morning.
Went to Rice Hotel. Spent most of
day with John Meyers and wife.

Foggy, sultry morning, hot afternoon.
Yesterday afternoon I spent with
Roy Butters and wife.

Hawaiian Islands.

Bryan's Natural History of Hawaii.

2000 miles to Samoan Islands

2100 San Francisco

Most isolated islands in world. -

Group 1700 ~~of~~ miles long.

Chain of mts. surrounded by ocean
basins 12,000 to 18,000 ft. deep.

Peopled from Southern Islands - Polynesians
same as Samoans, Marquesians, etc.

Probably came in large double canoes.

Canoes 70 ft. long and 3 ft. wide known
there a century ago. Two bound together
with platform would make large boat.

Long journey (2000 miles from nearest land).

Legends show frequent journeys, guided
by stars.

Food on journey - ^{breadfruit} coconut, fresh or dried;
taro, yam (sweet potato), seaweed
and fish, both often eaten raw.

Water carried in calabashes & caught
from rain in open vessels.

Breadfruit & bananas brought as cuttings.

Temperature 60 to 90°; average 75°
10 degree difference between average of
midwinter and midsummer.

N.E. (windward) sides of islands cooler and
more rainy. Honolulu 38 inches rain
annually, Hilo 12 ft. (144 inches); daily
rain at Hilo.

Volcanoes ~~only~~ active only on Hawaii - other
islands have extinct volcanoes.

Oahu (Oland), on which Honolulu is situated.

54 x 23 miles. Highest point 4,030 ft.

Raised coral reefs, beds of large oysters
(*Ostrea retusa*) for inland; Pliocene
rocks, with 4 extinct species of mollusks.

Hawaii Id. (Hilo principal port), largest of the
group, slightly smaller than Connecticut.

Composed of 5 mountains.

Highest point Mauna Kea, highest island
mountain in world, 13,825 ft. high, but
less massive than Mauna Loa, 15° ft.

Lower Mauna Kea extinct for centuries, often covered
with snow; ascended on horseback
Possesses 3 active volcanoes.

Mauna Kea, active volcano, 8,269 ft. high.

Mauna Loa, next to largest active volcano
in world, 74 x 53 miles at base.

Summit crater, ^{not active} only 3 3/4 by 3/4 miles,
very perfect. 12 eruptions in 100 years.

Hilanea, mountain on slope of Mauna Loa,
4,040 ft. high, independent of Mauna Loa;
reached by auto or train from Hilo Bay;
take wraps.

Largest actual crater in world, 2.93 X
1.95 mile, 484 ft. deep to floor. To
reach active part, descend on foot or
horseback to floor and travel 2 miles
to rim of pit, 150 ft. deep to boiling
lava. It was here that Kapiolani,
daughter of great chief Hilo, having accepted
Christianity, 4 years after arrival of
the missionaries, broke the spell of
the legendary Goddess Pele over her
people, by descending to the rim, camp-
ing on the rim, then descending to the
pit, contrary to warnings of friends
eating the sacred berries consecrated to
Pele and hence tabu, hurling stones
into the fiery sea of lava and saying:
"Jehovah is my God! He kindled these
fires. I fear not Pele. If I perish by
her anger then you may fear Pele, but
if I trust in Jehovah and He preserves
me when I am breaking Pele's tabu, then

you must fear and serve Him only." Her courage was rewarded and the spell of Pele broken, thus freeing her people from their superstitious dread. It has been declared "one of the greatest acts of moral courage ever performed."

Plants: - Over 1200 species known from the islands, 1000 of which are flowering species; 860 considered native, more than in any other region of like area in the world, according to Bryan.

Naupaka (*Scaevola*), white, blue or yellow flowers, corolla split to base. Leaves quarreled & maiden tore flower down side as token of unhappy event; she would not be reconciled unless he brought her a perfect one. This he could not do, so died of broken heart; Naupaka all torn to this day.

Sea morning glory, on shore, thick bright green leaves, lobed at tip, dusky pink flowers

Native island morning glory on sand beaches; heart-shaped flowers leaves azure blue flowers fading to reddish. Root used as cathartic.

Morning glory (*Cynochloa*), dry rocky soil near shore leaves 5-lobed, flowers purplish-red. 200
Roots used for food - related to sweet

Potato.

Heliotrope, on dry coral rock or lava; white flowers
on prostrate, wiry stem; leaves smooth

Another with rosettes of thick, silky leaves.

Pickle weed in brackish marshes.

Hoku, or Mahukoua Violet, trailing vine, 8
leaflets to the leaf. Horny seed pods with
twin spines.

Polinahua, leaves & flowers white beneath.

Nehe, prostrate, with small, thick, veinless, ^{hairy} silky leaves.

Beach Sandalwood, low shrub, thick, fleshy pale-
green leaves.

Maiapilo, shrub, smooth leaves, large, showy
many-stamined white flowers.

Native cotton, low shrub, white, 3-5 lobed leaves,
yellow hibiscus-like flowers.

Dodder.

(All above near shore).

Birds - English sparrow

House finch - "rice bird"

Chinese sparrow - also "rice bird"; 2/3 size of
House finch, chocolate brown

Chinese Turtle-dove

~~Falco~~
Mynah-bird; imported to eat cutworms, but
spreads seeds of lantana.

English skylark

Birds - continued:

Shearwater & Quail introduced.

Tropic-Bird - white tailed - beautiful white bird.

Petrel & Shearwater, small, dark, beak hooked.

Hawaiian Tern, black, with silver gray crown. ^{small}

Noddy similar

~~Albatross~~
Albatross - blackfooted sooty brown all over.

- - Laysan, abdomen white

Man-o'-War Bird, black & majestic.

Golden Plover

Stilt - Hawaiian, long neck, black back, white breast.

Night Heron - black-crowned

Boat - Hawaiian

Gallinule

Hawaiian duck - now rare

Apapane - blood red, 5 1/2 inches long, bill & feet ^{black}.

Scarlet Ibis, larger, more brilliant bill resembles

Extinct birds - Oahu has more extinct birds than
any other like region in world.

Moho (flightless rail) destroyed by cats
running wild.

Mamo - rump feathers ^{golden yellow}, used for robes, etc

O-o same

Fishes of many colors and shapes

Boulder, Colo., June 12, 1926

W. C. Toepelman and I drove to Briggsdale and camped. Then drove north to where we found the dinosaur horn core nearly 2 years ago. Found very impure lignite about 15 to 20 ft. below the horn core horizon. Coal dips S.W.
Very very hard rain in evening.

Briggsdale, Colo., June 13, 1926.

Shy along creek, white & yellow quartz ss., soft, with large hard concretionary zones, partly clearly sand dune, very irregularly crossbedded.

W. of creek, N. of W. from Briggsdale, thin coal seam about 50 ft. above creek, *Corbicula* ^{subelliptical} & *O. yster* about 30 ft. higher about 1/2 mi. N. coal has been mined and perhaps 5 or 6 ft. below is another *Corbicula* horizon of a larger species. This ~~is~~ coal is below that to the south. There is another thin seam above the first one, to the westward.

2 1/2 mi. N. & 3/4 mi. W. of town, a thin ss., just below the upper coal, filled

With *Bampfelmia*.

Rained again afternoon and evening.

Biggsdale, June 14, 1926

Cloudy.

Drove north several miles to a small stream probably Little Crow creek.

Then drove east on first road to S. of the creek & S. on next N. S. road.

Granite, with coal, overlaid by variegated Tertiary (White River), with conglomerate at top.

Boulder, Colo., Monday.

June 21, 1926

Left Denver 6:30 p. m.

Arrived Los Angeles Wednesday, June 23,
2:05 p. m. Very hot trip.

~~Hot~~

Balboa, Calif., Thursday.

July 1, 1926.

Mollusk sta. 559. *Brepidula*, *Ostrea*, etc.
on small rocks, etc., on S. side of Balboa
Island. One starfish on pier on

ocean side, found by Bartlett

Wilmington, Calif., Saturday,
July 3, 1926

Left for Honolulu at noon on ss. Calawai, which was the transport Sherman on which Frank G. H. returned from the Philippines in 1898. Sea quite smooth.

Honolulu, H. I., Saturday,
July 10, 1926

arrived at 2 p.m., + registered at Seaside "Hotel", really a group of cottages and dining hall, close to Moana Hotel.

First 2 days, cold wind and rough. Most passengers sick. I never missed nor lost a meal. Last few days very hot, sea fairly smooth.

at 3:15 we took in the aquarium and then made the beautiful Mt. Tantalus auto trip. Wonderful rainbows in Moana Valley - the "Valley of Rainbows", with very fine mist ("liquid sunshine"). The beautiful trees of many kinds, as well as shrubs, are in blossom. Especially fine are the Royal Poinciana (red), pink shower, yellow shower,

rainbow shower, and many kinds of
For dinner had fresh pineapple
cocktail, ~~of~~ Apakapaka (fish - very fine)
alligator pear salad (no like), papaya
(melons from tree, excellent with lemon juice
and salt).

Driver on Tantalus trip ^{George} Mr. Howard
^{Kealey, taxi driver}
of ~~Sacramento~~ ^{Auto Co.}, Mr. Miles, manager.
He was a fine driver, familiar with the
island, its history, the trees fruits, etc.

Honolulu, Sunday, July 11.

Same driver took us on auto trip
around the island. Fine day, with cool
breeze, no mist except in morning.
started 8 a.m., returned 5:15 p.m.

Then went swimming before dinner at
~~Waikiki~~ Waikiki Beach.

Took pictures of crowd at Poli Presi-
pice, where native Oahuian army was
driven over the cliff. also of Ruth at a
banana grove, & near a Kamani tree.
also one of Norfolk Island pine on
Morsean Temple grounds, and the
Temple and pineapple fields, etc.

Tried poi for breakfast, could not
eat it. Mango fair.

Honolulu, Monday, July 12.

Left on Calawai at 9 a.m. Strong gale & rough sea. Passed leper colony on Molokai in afternoon, reached Maui at 5 p.m., 2 hours late.

Cool wind, delightful.

Hawaii, H. I.
Hilo, Tuesday, July 13, 1926

Arrived 8 a.m. Took R. R. trip N. along coast. Rained most of time. Sugar cane fields all along, with cane sluices for carrying cane to mills at coast. Photo of big banyan tree.

Back to Hilo for lunch at Hotel.

afternoon, auto ride to Volcano House & down to tree casts.

Dinner in evening at Hotel. Mango pie very fine.

Tree ferns, some 30 ft high, along road to Hotel.

Hilo Hawaii, Wednesday,
July 14, 1926.

Walked down into crater over lava flow of 1919 in morning - 3 miles. Pit without lime lava - very little steam.

Back to Hilo in afternoon
Took picture of a coconut island palm
island & coconut palms on mainland.

Also photos of 6-masted schooner
Fort Saranise, lumber laker, Capt. N. M.
Nelson, Route 3, Box 739, Sebastopol, Calif.
Mostly cleared today.
Sailed at 5 p.m.

Honolulu, Thursday,

July 15, 1926

Reached here at 8 a.m. after a hot
passage.

Honolulu, Saturday,

July 17, 1926

Alice and Ruth left for Los
Angeles at 10:30 a.m. Frank, Bartlett
& I rented and moved into an apartment,
3 blocks from Moana Hotel.

Honolulu, Tuesday,

July 20, 1926

moll. sta. 560
Frank and I collected mollusks
~~at~~ on rocky shore and sand beach
off Diamond Head. Small limpets,
Littorina and *Heritina*

Honolulu, Sunday

moll. Sta. 561

July 25, 1926

Collected mollusks ^{from} rocks on beach S.E. of Waikiki Beach.

Honolulu, Monday,

Sta. 562

July 26, 1926

Collected mollusks from small cavities in the old coral rock on the beach at the E.H.'s Club, including *Cypraea*.

Honolulu, Tuesday,

Sta. 563

July 27

Collected mollusks a mile or two up beach N.W. of Moana Hotel. Five, large, flaring *Xeritina* (or *Xeritina*) thrown out with swast on beach. Small black *Xeritina*s abundant in shallow water at mouth of slough, with rock oysters (3). *Mulinia* abundant, also in shallow water of slough.

TIDES, SUN .) MOON AT HONOLULU HARBOR

—TIDES—

DATE	Time		Time		Time		Time	
	A.M.		P.M.		P.M.		P.M.	
August	Low	Ft.	High	Ft.	Low	Ft.	High	Ft.
Monday 2nd.....	4:30	0.1	12:10PM	1.8	7:41	0.7	10:58	0.8
Tuesday 3rd	5:15	0.1	12:58PM	1.9	8:38	0.5
	High		Low		High		Low	
Wednesday 4th .	0:03	0.7	6:00AM	0.1	1:39	2.0	9:16	0.5
Thursday 5th ...	1.01	0.7	6:46AM	0.1	2:18	2.1	9:46	0.4
Friday 6th	1:50	0.8	7:30AM	0.1	2:52	2.1	10:15	0.4
Saturday 7th ...	2:35	0.8	8:13AM	0.1	3:26	2.2	10:44	0.3
Sunday 8th	3:18	0.9	8:55AM	0.1	4:00	2.1	11:13	0.3
Monday 9th	4:00	1.0	9:35AM	0.2	4:33	2.1	11:43	0.3

The columns of heights give the elevation at each tide above and below the plane of chart surroundings. The numbers are always additive to the chart depths unless preceded by the minus sign (—), when the numbers are subtractive from depths given on the chart.

DATE	SUN				MOON				MOON PHASES
	Rises	Sets	Rises	Sets	Rises	Sets	Rises	Sets	
August									New Moon, Sunday, 8 August.
Mon. 2nd	5:34	6:41	0:49	2:11					First Quarter, Monday, 16 August.
Tues. 3rd	5:35	6:40	1:34	3:06					Full Moon, Monday, 23 August.
Wed. 4th	5:35	6:40	2:21	4:01					Last Quarter, Sunday, 29 August,
Thurs. 5th	5:35	6:39	3:10	4:52					
Fri. 6th	5:35	6:38	4:01	5:40					
Sat. 7th	5:36	6:37	4:52	6:24					
Sun. 8th	5:36	6:37	5:45	7:06					
Mon. 9th	5:37	6:36	6:36	7:44					

U. S. NAVY HYDROGRAPHIC
INFORMATION OFFICE,

H. J. RAY,
Lieutenant Commander, U. S. Navy.
Officer in Charge.

and Lari via, opposing nuriar, were even. Vida fanned four and allowed three free passes.

"Lefty" Chow's shoe string catch of White's sizzling drive to right field in the seventh gave him the most beautiful play of the day. On that same play, Chow threw to Kualii and caught Anahu off first for a double. Kualii and White demonstrated their speed when they stole home in the fifth and sixth, respectively.

GOBS TRIM INJUNS

At no time during the whole nine innings could the Braves even threaten the sailors, in the morning game. The Indians' only run came in the sixth, when Santos reached home on Camacho's double. The Navy had two big innings, the second and third, in which they got eight hits, resulting in seven runs. That was more than enough to win, but they added another in the fourth. Starting Oana in the box proved fatal for the Braves, for in three innings, 18 batters came up, and the seven runs came off Oana during those first frames. Costa relieved him, and was later substituted by Sam Guerrere. The Navy failed to score when Guerrere was in the box. Besides hitting frequently, the Sailors played errorless ball behind Kelly, the winning pitcher.

Dilla	4	2	1	-	-
O'Har	2	3	2	1	1
Zajac	4	1	3	2	1
Tollick	3	0	0	0	3
Lenski	4	0	0	2	0
Jarrett	4	0	2	14	0
Towasend	4	0	2	2	1

Totals 35 7 13 27 11

13TH FIELD ARTILLERY

	A	B	R	H	P	O	A	E
Abrams, 2b	5	1	1	3	1	0		
Good, ss	5	1	2	1	0	0		
R. Van Ham, cf	2	1	1	1	0	0		
Drawdy, lf	4	1	1	0	0	0		
Peterson, c	3	1	0	8	0	1		
Rayman, rf	3	1	2	4	1	0		
Cofer, p	2	0	0	1	1	1		
Cusic, 1b	4	0	0	7	0	0		
Simko, 3b	4	0	1	1	3	0		

Totals	35	6	8	27	6	2		
27th Infantry	10	3	0	0	0	1	0	2-7
13th F. A.	0	1	2	1	2	0	0	0-6

Three-base hits: O'Harry, Abrams. Two-base hits: R. Van Ham. Sacrifice hits: Zajac, Rayman, Cofer, Lenski. Van Ham 2. Drawdy, Peterson. Stolen bases: Dillard, Lenski, Drawdy. Hit by pitcher: O'Harry. Bases on balls: off Tollick, 1; off Cofer, 3. Struck out: by Tollick, 1; by Cofer, 8. Wild pitch: Scorer: Donnewald.

MOST BEAUTIFUL LINKS

The Kishwauketoe Country Club on the shore of Lake Geneva will be the most beautiful golf course in the country when completed. It was built originally as a home for the late James Hobert Moore at a cost of more than \$2,000,000.

Honolulu, Thursday.

July 29, 1926.

climbed mountainside N.E. of town to get photos of large prickly pear cactus. 5-6⁴ collected *Melania* and *Melampus* in slough on N.W. end of Kapiolani Park, very muddy, shallow, choked with vegetation.

Honolulu, ~~the~~ Friday,

July 30, 1926

Took train at 9:15 a.m., reached Halaiva

11:45⁵ 12:05⁵

At ⁵collected 3 spp. *Meritina*, 1 *Littorina*, etc in slough near Hotel; also *Melania*

at point E. of village *Melania* on clear sandy bottom. *Littorina* at mouth of slough. Others on rocks at footbridge

At ⁵ On rocky ocean shore W. of village obtained *Littorina* (2 spp.) *Meritina*, etc

At ⁵ At Honoiki in small ditch, *Melania*,

Honolulu, Monday May 2, 1926

Took train for Waimea.

St. 568 Collected mollusks on exposed rocky point just before reaching Waimea, and 569 small *Melania* in great abundance in a slough $\frac{1}{4}$ mi. this side at a railroad bridge.

St. 570 Sand mounds in stone wall covered with vines, near bridge.

The surf was very heavy on the rocks where most of the marine shells were found. The flat urchins, with a fringe of heavy spines, were clinging flat to rocks, usually in crevices, hard to get out. The inflated ones were hard and fast in holes, so that we only got only 2 or 3.

The Pecten valves were in the sand at the mouth of the slough. The slough is very shallow and minute *Melania* very abundant along the shore.

Waimea is incorrectly located on the Oahu topographic sheet. It should be north of the slough that enters Waimea Bay, in which we found the *Melania*.

Thursday
Honolulu, Aug. 4, 1926

Bought colored lantern slides from R. J. Baker, 1911 Kalakaua Ave., who was with Prof. Lockwell on camping trip 2 years ago and also who made lantern slides for President Hoshi.

Honolulu, Friday, Aug. 6:

went to Waipahu on morning train.

Walked back to Pearl City. Found many fossil shells in coral rock used for ballast along the railroad. *Ostrea* compose one thick stratum in cut just this side of Waipio. ^{Sta. 5-71} Just this side of cut we found *Melania*, *Melampus*, etc. on beach and large *Melania* in a ditch. *Ostrea* 10 to 15 ft. above sea level.

Honolulu, Saturday Aug. 7.

Collected fossil shells from dredgings of coral rock ^{port canal} N.W. of Seaside Hotel. Said to have come from about 20 ft. deep in the coral, about 300 to 500 yds from present beach.

Honolulu, Tuesday,

Aug. 10, 1926.

Went to Mak^{ua} on morning.
Sta⁵⁻⁷⁴ On surf-beaten rocks found about
same fauna as at Waiuea.

Conductor told us that the coral
rock from which we got the fossils
between Waipio and Pearl City is from
excavations for a canal at Honolulu
Harbor (not the Waikiki canal).

Comments.

The literature sent out by transporta-
tion companies and tourist bureaus leads
visitors to expect to see live molten lava
in the craters and to see the clouds
lighted by its glow at night. In this
they are usually disappointed, ^{it is only occasionally possible.} During
the present season there is not only no
live lava in the crater of Kilauea (the
present pit of which is Halemau mau),
but no smoke is visible and at the
time of our visit but little steam is
visible from either the Volcano House
or the rim of Halemau mau. Mr. Finch,

of the volcano observatory, says there has been no lava or live lava in the crater for two years, and that then it was present for only 12 days. On the other hand, live lava was present almost continuously from February 1918, to August, 1920. However, there had been one 13 year period, from 1894 to 1907, when live lava was almost altogether absent.

The lava flow heralded in press dispatches last spring, that blotted out a large section of the auto road and interrupted travel around the Island of Hawaii, was not from the crater usually visited by tourists, but from the other side of Mauna Loa. The surface of that flow has cooled and solidified and the road has been rebuilt and opened to traffic across what only a few weeks ago months ago was a seething mass of molten lava.

The Hawaiian Islands are all of volcanic origin. The mountains, some of them nearly as far above sea level as the highest Colorado peaks

(Mauna ~~Loa~~^{Kea} is 13,835 feet high) are composed of lava, deeply gashed by canyons cut by streams. Many ^{old} craters ~~are~~ may be seen, but ^{there are none} no active on the islands except on the Hawaii, the largest island of the group, Hilo being its principal port. There are several extinct craters in and near Honolulu on the Island of ~~the~~ Oahu. The Punch Bowl is near the business center of the city, Diamond Head, just beyond the southeast city limits has been transformed into a powerful fortress, to which visitors are not admitted. The structures are within the bowl of the crater, invisible from the surrounding region, nothing suggestive of military operations apparent except ~~low sentries~~ a few sentries at the rim.

The ^{delicate needle of the} seismograph at the volcano observatory at Kilauea records very numerous slight earthquakes, most of which cannot be felt by visitors - 22 during one week recently. The instruments also record constant tilting

of the region about the volcano, first in one direction, then another, so that familiar old term, "solid earth, ground," doesn't mean very much there.

The islands are well-buttressed by extensive coral reefs, affording, in many places, water only a few feet in depth far from shore, where the jagged coral-heads are covered with sand, there are very fine bathing beaches. The best known and show most easily accessible, though not the best, is Waikiki, Honolulu, where one may wade out for hundreds of feet without getting into water over one's head except at the highest tides.

The tides here are insignificant as compared with those of Puget Sound, British Columbia, Alaska or even California. During the past ~~week~~ week the difference between the highest and lowest tides at Honolulu was scarcely two feet. The surf breaks at the outer edge of the reef, and is at most times com-

partly smooth nearer shore, with
always swell and
only occasional breakers. The tem-
perature of the water during the past
month has run from 78 to 84 degrees,
the air temperatures about one or two
degrees higher. Hence one may remain
in the water for hours without dis-
comfort, by swimming enough to keep
up good circulation.

The wonderful flowering trees and
shrubs were in full blossom in July,
and the trip around the island of
Oahu, and especially the city of
Honolulu, was beautiful beyond de-
scription. Among the trees especially
noteworthy ~~is~~ are the royal poin-
ciana, a perfect blaze of red
flowers, and the pink showers and
yellow or golden showers, covered
with pink flowers, the other with
yellow.

The most universal and character-
istic shrub is the hibiscus, of which
there are said to be ¹³⁰⁰ hundreds of
varieties on the island, with flowers
several inches in diameter, forming.

hedges from 6 to 10 feet high. Some of the large oleanders are 15 feet high and covered with flowers. Large Bougainvillea vines are also in blossom everywhere. ^{Right-blossoming cereus common but not in blossom.} Palms are very abundant and of many species. The most striking and picturesque, as well as most abundant, is the coconut palm, pictures of which have always seemed to bring to my mind cannibal islands and pirates. Their 60-foot ~~trunks~~ (or more) trunks, slender, ^{deeply notched with leaf scars,} devoid of branches, usually more or less crooked and leaning far from the perpendicular, ^{each} crowned by a great tuft of leaves from 6 to 8 ft. long, suggest a gigantic feather duster. The royal palms are the aristocrats of the group - straight, smooth, perpendicular, stately, with very smooth, shapely trunks, scarcely marked by the old leaf scars. The date palms, also straight and erect, have their

trunks roughened by the bases of the former leaves, the midribs of which have broken instead of the whole leaves coming away at the base. Then there are sago palms, various species of fan-leaved palms, and so on.

It is interesting to find many mesquite trees here, said to have been introduced from Mexico by early priests. Another invader is the ironwood pine from Australia, with very small, peculiar cones and long, slender leaflets which are used in weaving baskets.

Banana trees are abundant everywhere and large groves of them may be seen. There are ⁴⁰ many varieties, most of them small. In 1913 240,000 bunches of bananas were exported, in addition to great quantities consumed locally.

Among the most interesting Hawaiian plants is the tree fern. Along the road from Hilo to the volcano some of them are from 15 to 25 feet high, with stems

a foot or two thick.

The two most important crops are sugar cane and pineapples. The sugar exported in 1914, the last year for which I have statistics at hand, was valued at ~~\$35,2~~ over \$43,000,000. In 1922, 3,646,011 cases of pineapples were canned. A few days ago one cannery put up 74,867 cans of pineapple in 24 hours. ^{Tree pineapple} ~~Tree pineapple~~ ^{peculiar tree with broad rough leaves} considerable rice is raised, chiefly ^{grown} for home consumption. The Koua coffee is exported to some extent.

All visitors are expected to call for papaya and poi ^{first} the first for breakfast the first day at Honolulu. The former grows on a tree, resembles a long, irregularly formed watermelon, and if well flavored with banana juice, is quite palatable, though many people do not like it.

Poi is made from the roots of a swamp plant with large leaves like those of the elephant ear plant. It is fermented and served as a breakfast food. I have never tasted any sibs from farmers' sibs in Colorado, but poi tastes just as I imagine sibs

does, yet a few people - very few - convince themselves that they like it.

Many good fishes are served on Hawaiian tables, and a visit to the fish markets is very interesting. There are also many extraordinary fishes not seen in the market, but on exhibition alive at the Aquarium in Kapiolani Park and mounted at the Bishop Museum. They present almost unbelievable shapes and color patterns and almost justify the remark: "There aint no such fish."

The Japanese and Chinese, as well as the native Hawaiians, eat many kinds of mollusks, including, besides ~~soft~~ clams, many kinds of marine snails, squids, etc. They even eat sea urchins, than which nothing living could seem less edible.

Tourists frequently comment upon the comparative scarcity of shells on the beaches, usually only very small species being found and not many of them. In a search of over 60 miles of the coast of Oahu we have found less

than 50 species of marine ~~shells~~
clams and snails alive. On Puget Sound
I have found about as many in a space
of a few square rods at a single ebb
of the tide and ^{at Portuguese Bend,} California, have I
found twice as many in one place
at one ebb.

Los Angeles, Aug. 21, 1926

Left Honolulu on the S. S. Salawati on
Aug. 14, arrived here this noon after
cruise voyage.

Large school of porpoises just
off Point Firman.

Catalina Id., Aug. 27

Made 1-day trip here.

Monterey, Aug. 30.

Left L.A. 8 a.m., reached here
8:20 p.m.

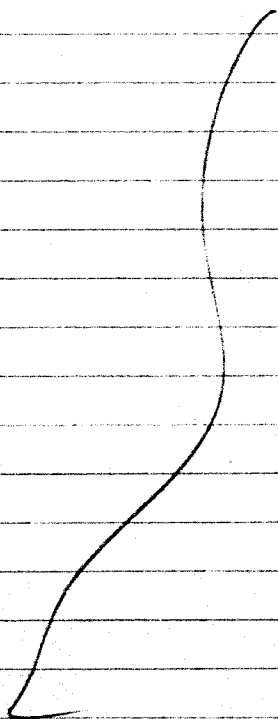
Went to Monterey Hotel.

Monterey, Calif.

Aug 31, 1926.

Went to Stanford Hopkins Marine
Biological Station, Stanford University.

Between Monterey and Pacific Grove
+ collected from there around Gabriel's
Point to (Mussel Point) to the subma-
rine gardens + bathhouse (P. area).
Sea urchins being in the open in tide
pools, not in holes or crevices.



Notes for Oregon trip, 1927

"Helix" oregonensis Lee, lost species, Wahlamette
River near junction with Columbia

Cardium nuttallii, muddy salt marshes a few
miles from the estuary of Columbia River

Sanguinolonia californica, muddy marshes
near limit of salt water, Columbia
River estuary.

Anadonta oregonensis) Type loc. Wahlamette
" wahlametensis } River near junction
" nuttalliana } with the Columbia

Fossils

Coos Bay, Ore. ^{Foot} Foraminifera in massive
ss. at Coos Head Folio 73

Eocene at Cape Gregory

Marine faunas at Cape Gregory, non-
marine (Byrena and Goniobasis) at some
localities

Base of marine just E. of Goldenshies Gulch, 9 pp.
Oligocene to the West

Empire Pliocene, per Howe

Miocene fossils along Coos Bay between
South Slough and Empire (Wall).

Narrow tract about South Slough and
along coast S. of Seven Devils - many fossils.

Shells well exposed near mouth of Coos Bay at Orago's Cape Orago.

Microscopic fossils in white shale on bank of South Slough near ferry; also in boulders, sec. 3, T. 25 S., R. 12 W. on E. fork Kentucky Slough, and sec. 13, T. 25 S., R. 12, & sec. 27, Denton creek.

Some conglomerate, called Pleistocene, called "Fossil Rock" because of fossil shells, E. side of mouth of South Slough (18th Ann. Rept. U.S.G.S., pt. 2, p. 336, 1898); some living ~~species~~, but mostly derived from Empire Miocene; Pliocene according to Howe Folio 73

Roseburg, Ore. Eocene fossils near mouth of Sawitt creek and along Little River 3 1/2 miles from mouth; also Basket Point. Cretaceous, Myrtle creek area and along Sage's creek & near Dillard's.

Jurassic? leaves at Buck's Peak, 5 miles S.W. of Big Baldy Mt.

Astoria, Ore (Wash.?) Miocene & Oligocene both sides of river. Thin fossiliferous stratum

near base of bluffs with cephalopods.
Miocene higher up slides down and
mingles.

Port Blakely, Wash. Oligocene fossils

Eugene, Ore. Dr. A. R. Moore

Blaine, Ore. - see Alex Walker

Cowalla " " see C. Mote, Entomologist.

Coos Bay - Dr. Yocum.

Idaho - Caldwell.

H. M. Tucker, High school 1919 Standard
Prof. Smith, College.

Oregon - good road from Roseburg to
Marshfield on Coos Bay + road from
there down coast. Leaven highway
just s. of Roseburg?

Pilsbry wishes barnacles, dried after
killing in alcohol.

slugs should be in water 12 hours
before preserving.

Idaho: Fossils - Castle Creek, Owyhee Co. -
mouth of King Hill creek, near Glenn's
Ferry, in Snake River canyon.

50 miles below Salmon Falls, Snake River
"shell pit," near Glenn's Ferry

Mollusks - *Lymnaea hialezi*, Shoshone River
" jacksonensis "

crebelij idahoensis baileyi, Seven
Sinks Mts.; also Snake River canyon,
8 mi. below mouth of Salmon River.

Boulder, Colo., Tuesday

June 14, 1927.

Left Boulder about 9 a.m., in place, with
Herman Manning. Speedometer 9634. Has been
raining since Saturday afternoon roads ^{somewhat} slippery.
Ft. Collins, speedometer 9684, for lunch, then
Went through La Porte, road, after leaving
getting into the foothills, bad (rough & muddy)
all the way to "The Forks, speedometer ⁹⁶⁹³, bumped
a little way below Virginia Dale, speedometer
9717, bold night. Good roads from The
Forks to the Dale

Virginia Dale, Colo.,

Wednesday, June 15, 1927

Cloudy, foggy, rainy, cold morning,
with a strong northwest wind.

Started on at 8 a.m. At edge of Laraine
Basin, speedometer 9628; Laraine 9747;
Rock River 9787 at noon for lunch;
Medicine Bow 9804; Ft. Steele 9848 about
(speedometer slipped off just before reaching
there); Rawline 9864. Roads mostly
gravelled and good; but in several places
slay, and soft & slippery

bleared about middle of afternoon
and warmer this evening in camp at Rawline
Gasoline, Boulder 10 gal.

" Ft. Collins 3 "

" Laraine 4 "

" Ft. Steele 5 "

" Rock Springs 6 " oil 1 qt. 350 mi

Tank full, 350 mi. on 18 gals.

19)350 (18.95 - (19 mi per gal)

19
160
152
180
178
100
46
95

Rock Springs, Wyo.

Thursday, June 16, 1927

~~Very~~ Partly cloudy, with cool wind.
Sprinkled a little in afternoon.

Left Rawlins 9 a.m., reached here at
5 p.m., Speedometer #44 9974

Collected fossils in Tertiary 3 mi. E. of
Tipton, just west of locality about
5 years ago.

Had speedometer fixed.

Rock Springs, Wyo.

Friday, June 17, 1927

Rained during night. Good roads most
of way to Evanston

Mollusk sta. 574

~~Lynn~~ ^{Granger River} Speedometer 9989.

Mollusk sta. 574, slough beside road,
at 10091.8; *Physa*, *Lymnaea* & 1 *Pisidium*
Oregon trail branched off at 10013,
near Grainger, main trail ~~not~~ (Lincoln
Highway) ~~not~~ touching Grainger, Church's
Butte, 10026; took 3 pictures, *Lymnaea*,
10043; Evanston, 10083; 5 gal

Gasoline 5-gal., oil 1 qt.

Wyoming - total mile, 10088.

Echo, Utah, 10119, speedometer slipped off here, but distancer said to be about 20 mi. to Morgan, where we camped.

Morgan, Utah, Saturday,
June 18, 1927.

Bright, hot morning. Had speedometer fixed before starting. Started at 10119.

Ogden, 10148.

Gasoline, 3 gal., oil 1 qt. at Ogden.

Brigham, 10169.

Mollusk Sta. 5.75 at 10171, on road to Tremonton. *Lymnaea*, *Physa* and small *Planorbis*.

Tremonton, 10189; Utah-Idaho line 10208; Malad City, 10222;

Souray 10,243, where we camped. Hard shower just after we camped.

Souray

Downey, Idaho.

Sunday, June 19, 1927

Cloudy morning. Marsh creek,

Sta. 5-76, Rabbit River, west of town

Large Planorbis, some Aphaerium, etc., mostly
dead shells.

Sta. 5-77, about 1/2 or 2 mi. above
(south) of 5-76. Lymnaea, Physa and
succinea.

Bright and hot most of day.

Gasoline 4 gal., oil 1 qt.

Downey, Idaho.

Monday, June 20, 1927

Bright morning

Sta. 5-78, McBarrow, banks of river,
succinea. speedometer 10270

Sta 5-79 " 10274 Oreboly capsa
under rose bushes on river bluff

Sta. 5-80, speed. 10275, Fluminicola in river

" 5-8 Pocatella 10295

Sta. 5-81, at bridge W. of Pocatella,
speed. 10298; Lymnaea.

Sta. 5-82, slough at 10305, apleid
& 1 Lymnaea

moll. sta. 583, slough at Yale,
10,349; dead Planorbis ~~here~~

Camped at Burley at 10,376 sporometer.
very fine public camp ground.

Burley, Ida., Tuesday,

June 21, 1927

Bright morning after cool night.
Ran back a couple of miles and
examined 2 sloughs, found nothing.
Left Burley at 10381, at 11 a.m.

~~moll. sta. 10400, Lymnaea & Physa.~~
moll. sta 584, creek at 10,400; Physa
& Lymnaea.

Gasoline at Burley 7 gal; new oil 1 gal.

Sta. 585, N.W. of Buhl, at 10455; a
few small Planorbis (2 spp.) Lymnaea &
Physa in slough.

Took pictures of Snake River canon
and crevices in the lava at 10405

Twin falls 10421.

Camped at Glenn's Ferry, at 10491.
very hot day.

~~Gasoline, see~~

Gasoline

Boulder, 10 gal. tank full

Ft. Collins 3 "

Laramie 4 "

Ft. St. 5 "

Rock Springs 6 " oil, 1 qt.

Evansville 5 " — 1 "

Ogden 3 " — 1 " 2 gal

Souney 4 " — 1 " 5 1/2 gal

Burley 7 " — new oil 1 gal.

47 but tank still full

47
60
107

Boulder speedometer 9634

3774 1/2
74
20

Burley "

10376
742

Glenn's Ferry gas, 5 gal., oil 1 qt.

New Plymouth " 6 " " 1 "

Weiser " 6 " " 1 "

Huntington " 3 " " 1 "

Lagrange " 4 " " 1 "

Arlington " 5 " " 1 "

Harrisburg
Gal. always " 6 " " 1 "

Sutherland " 2 " " 1 "

Marshall " 1 gal.

Empire " 6 " " 1 "

Bandon " 9 " " 1 qt.

Drain " 4 " " 1 "

Harrisburg " 1 " " 1 "

(60)

see page 2

Glenn's Ferry, Idaho

Tuesday, June 22, 1927

Partly cloudy cooler morning.

Gasoline 5 gal., oil 1 qt.

Moll. Sta. 5-86, at 10543, shallow lake,
probably artificial, on basalt plateau.
Dead Planorbis on shore.

Boise 10564

New Plymouth 10615

Gasoline 6 gal., oil 1 qt.

Emiland, 10622

Moll. Sta. 5-87, at 10626

" " 5-88 .. 10643, pool

S.E. of Weiser; Lymnaea & Physa
Bumped at Weiser auto camp, 10,643.

Weiser, Ida., Thursday

June 23, 1927

Hot + bright morning

Huntington, 10669,

Gasoline 3 gal., oil 1 qt.

Sta 5-89, at 10675, above Portland
cement plant, shallow pond, 2 spp.

Platanus + 1 Physa

Sta. 590, across creek from
589; 2 dead Polygona,
Baker, at 10714

camped at La Grande, at 10762

Gasoline, 4 gal, oil 1 qt

Terrific wind & rain storm last
15-miles

La Grande, Ore, Friday

June 24, 1927

Cold, bright morning.

coll. sta. 591, shrubbery on slope
by roadside at 10804, edge of broad
valley. ^{Juniperus} Sordletan 10817

Sta. 592, at 10822 below; Platanus
& Physa.

Camped at village of Arlington, Oregon
at 10898,

Gasoline 5 gal., oil 1 qt.

Arlington, Oregon, Saturday

June 25, 1927

Bright, windy.

Lava photos 18 mi. below Arlington
coll. sta. 593, at 10933, 1 mi. E. of

Müller, in pool ~~below~~ between auto road
and railroad.

Dalles, at 10952. Then began big
climb up hill to a high terrace.

Moll. sta. 594, on terrace in a
natural shallow lagoon in the basalt,
landlocked, vegetation choked, at
10965; *Musculinus* and *Planorbis* sp.
Moxier at 10968.

Moll. sta. 595; landlocked though
in basalt. *Planorbis* like *P. trivolvis*,
at 10973.

at Portland turned off on E. 82nd
st. at edge of city and struck
~~road~~ main N.W. highway. Camped
at auto camp ground at 11040.

Gas at Arlington 5 gal.; oil, 1 qt.

Portland, Ore., Sunday,

June 26, 1927

Bright day, with a refreshing
west breeze.

Portland, Monday

June 27, 1927

Cloudy morning, Salem, 11,090.

Stg. Moll. Sta. 596, S. of
Salem, small pool. Anodonta, Physa,
Planorbis, Ferrissia + Lymnaea
Spedonata 11106

Sta 597, pool at 11111; Lymnaea
& small Planorbis + Physa, a few,
Albany 11113

Camped at 11,220, Sutherland, near Oakland
Rained at intervals all day.

Gasoline 6 gal., oil 1 qt. at Harrisburg.

Sutherland, Ore., Tuesday

June 28, 1927

Cloudy morning, clear, windy afternoon
collected &

Moll. Sta. 598, 2 mi. N. of Boguille, in
artificial slough. Planorbis and Lymnaea

Left main highway 7 mi. S. of Roseburg,
Good oil and gravel + partly paved road
to Empire, where we camped at 11,327.

Oil, 1 gal. at Myrtle Point

" 1 gal. (changed oil) at Marshfield

Gas, 2 gal at Roseburg Sutherland

Empire, Coos Bay, Ore.,
Wednesday, June 29, 1927

Bright, breezy day.

Moll. Sta. 599; *Thais* on rocks at
Empire, collected last night. 6 found on beach.

Moll. Sta. 600; Fossil Point, about 6 or 7
mi. S. of Empire; *Cardium*, *Acanthina*
& *Pittorina*.

Collected Tertiary fossils at Fossil
Point in Conglomerate.

Met Dr. Gocum of Univ. of Oregon,
on the beach, and went with him to the
Marine Biological Station 5 or 6 miles
farther down the coast.

Empire, Thursday,
June 30, 1927

Collected fossil *Pecten*, etc., in
fine sandstone about 1/2 mile to 1 mile
N. of Fossil Point. Also starfishes.
Bright, breezy day.

Empire, Friday,
July 1, 1927

Cloudy, soon clearing.

Drove to Sunset Bay, beyond light house
Moll. Sta. 601; rocks S. side
of Bay.

A few fossils in rocks on N. side;
tilted to high angle.

Gasoline, 6 gal.

Empire, Saturday,
July 2, 1927.

Partly cloudy day. Collected more
clams (Macoma, Bordinum, etc.) at Sta. 599,
along the beach near camp.

Moll. Sta. 602, Woods near camp.
Land snails.

Empire, Ore., Sunday,
July 3, 1927.

Rained at intervals during night and
this forenoon. Clear afternoon. Stayed in
camp all day taking care of material
collected during the week.

Monday.

Empire, Ore., July 4, 1927.

Rained hard last night. Cleared
this forenoon, bright afternoon, stayed
in camp all day, dried & packed
shells and starfishes & urchins.

Empire, Ore., Tuesday,
July 5, 1927

Bright day.

Moll. Sta. 603, Square Island, at
lighthouse, N. of Sta. 602.
also a few fossils there.

Empire, Ore., Wednesday,
July 6, 1927

Mostly clear.

Moll. Sta. 604, at mouth of Boos
Bay - Boos Head, bet. Charleston and
Tunnel Point.

Empire, Ore., Thursday,
July 7, 1927

Partly cloudy, cool breeze, warm in

sun, drove to Lakeside.

Moll. Sta. 605, Ten Mile Creek, about
12 mi. ^{by road} N. of Ferry landing, in very deep
pool.

Moll. Sta. 606, Ten Mile Lake at
Lakeside.

Gasoline 9 gal.

Empire, Ore., Friday,

July 8, 1927

Bright day, hot in sun, cool breeze.

Packed 4 boxes of material and shipped
from North Bend by rail.

Empire, Ore., Saturday,

July 9, 1927

Left Empire at 8:35, speedometer
at 115-03.

Boquille 115-28

Moll. Sta. 607, ditch by road just
out of Boquille on road to Barden.

Quodonta, Sphaerium, Plavorbis, Physa

Sta. 608, vegetation choked ditch
at 115-32

camped at city auto camp in

Bandon

Moll. sta. 609, beach at Bandon.

Here the country is much more open than at Coos Bay, very little timber along the sea cliffs, trees small with less undergrowth. There is continuous broad gently sloping beach for many miles, with steep sided islands and sharp points, but not many ~~new~~ species of mollusks thus far. Tides not very low now.

at Coos Bay trees were large, especially cedars + undergrowth dense. Beaches mostly short, cliffs abrupt. Mollusks much more numerous.

✶

Bandon Ore., Sunday,

July 10, 1927

July 10, 1927.

Walked beach many miles to the south. Took some pictures and collected a few mollusks and starfishes. Saw dozens of starfishes at one place ~~on~~ at base of rocks,

exposed at low tide, at edge of sand
are partly buried. Bright, cool,
breezy

Bandon, Ore., Monday,
July 11, 1927.

Bright & warm.

Took some pictures & dried material
~~so~~ to get it ready to be packed.

Bandon, Tues., July 12, 1927

cloudy morning.

coll. Sta. 610, small rivulet 5 mi.
S. of Bandon on Fort Orford road. *Goniobasis*
and 1 land snail.

Sta. 611, Four Mile creek, 7 1/2 mi.
S. of Bandon; *Goniobasis*

Sta. 612, Flores creek, 50 ft. wide,
14 mi. S. of Bandon; *Goniobasis*.

Sta. 613, Flores Lake near beach,
3 mi. W. of main road, 15 mi. S. of
Bandon; *Anadonta*, *Planorbis*, *Goniobasis*,
Ferussia & *Pisidium*. Lake formed by
sand dune across mouth of small
rivulet.

Camped at Port Orford 11-5-82.
Moll. Sta. 614, Port Orford, beach
& rocks - Agate Beach, N. of Port Orford Bay.
Big storm on coast; surf very
high and tides unfavorable for
collecting. Clear afternoon.

Port Orford, Oregon
Wednesday, July 13, 1925
Clear, bright, windy. Surf still heavy.
Moll. Sta. 615; ~~Bo~~ Rocks at Port Orford
Bay.

Agate Beach, north of Port Orford
Bay, is very steep, extending northward
to Cape Blanco, which is said by the
natives to be the most westerly land
in the United States. Lake Flores is
said to be the most westerly lake in the
United States.

Port Orford, Oregon.
Thursday, July 14, 1925
Started for Cape Blanco at 5:35 a. m.

† about 3 mi. up coast came to a wide stream, could have waded it, as the tide was low but could not after the tide had been running in, by the time we would have gotten back to it, so we turned back. Wind has been not bad mornings, but freshens toward noon and has blown a gale in afternoon for six days, they say here.

In the afternoon we examined Garrison Lake, but found no mollusks. Hard rowing in the gale.

Port Orford, Ore., Friday
July 15, 1927

Bright, breezy. Speedousta 115-85-
Moll. sta. 616, Logville River at
Riverston; *Louisiana* & *Sphaerium*.

amped at Roseburg, at 11700
sent in box of fossils & the boxes
Bay and Roseburg geological folios to
Boulder by express.

Next ^{to} Moll. Sta. 618, Elk creek, at 11725;
just above Drain.

Moll. sta. 619, Willamette River two
or 3 mi. above Eugene; *Louisiana*

~~Post~~ Roseburg, Ore., Saturday

July 16, 1927

Bright, hot.

Moll. Sta. 617, sloughs along South
Umpqua River at edge of town; *Goniobasis*,
Quadrata, *Aphaerium*, *Physa*, *Ancylus*, etc.

618-619 see preceding page

Sta. 620, Long Tom (?) creek, about
2 mi. below Monroe; *Goniobasis*
sampled at Corvallis.

Corvallis, Ore., Sunday

July 17, 1927

cloudy & cool most of day.

Remained in camp

Corvallis, Ore., Monday

July 18, 1927

cloudy morning. Started for
Newport.

Moll. Sta. 621, Willamette River in
edge of Corvallis; *Goniobasis* & *Fluminicola*

Sta. 622, creek 11 mi. W. of
Corvallis; same spp.

Sta. 623, Yaquina River, Edleyville,
32 mi. W. of Corvallis, Louisiana,
Fluminicola & Sphaerium.

Sta. 624, Key Beach, Newport.
Fossils at base of sea cliff. Pholias
and other pelecypods have bored
into the fossiliferous rocks after
consolidation, probably within recent
times comparatively. Most common
fossil species are Arca and Leda.

Newport, Ore., July

Tuesday, July 19, 1927

Bright, calm morning, soon breezing up,
as usual.

Moll. Sta. 625, snails & starfishes on
jetty at mouth of bay, & boring bivalves
at low tide on beach just within jetty.

Fossils at latter locality, at low
tide, lower horizon than yesterday's,
with only one Arca and no Leda. Fossil
bearing rocks contained living pelecypods.

Newport, Ore., Wednesday
July 20, 1927. ✓

Bright & windy.

Moll. sta. 626, tide pools at
Yaquina Head lighthouse, N. of Newport.

Newport, Ore., Thursday
July 21, 1927

Bright windy.

Moll. sta. 627, beaches 5 or 6 mi.
up Yaquina Bay; clams.
Gasoline 7 gal., oil 1 qt.

Newport, Ore., Friday,
July 22, 1927.

Cloudy, windy, cold. Left for seaside.

Speedometer 18885.

Moll. sta. 628, Salmon River, at Ote's
P.O., about 33 mi. N. of Newport; *Louibasis*
& *Fluminicola*.

Moll. sta. 629, Nestucca River, above
Cloverdale. Same spp.

Moll. sta. 630, Foley Creek, about 10 or
12 mi. N. of Bay city, *Louibasis*

Moll. Sta. 631; Necanicum River,
10 mi. S. of Seaside

Camped at Seaside, 12018.

Gasoline 5-gal., oil 1 qt.

20.03 mi. ¹/₂ per gal.
132 mi. oil ¹/₂ qt.
Gas. 9 Oil

Nike Boulder speedometer 9634

Forward from June 21 gas 107 gal oil ¹⁹/₂ qt.

Keenport	"	7	"	"	1 qt.
Seaside	"	16	"	"	1 "
Portland	"	4	"	"	1 "
Toledo	"	7	"	"	1 "
"	"	4	"	"	1 "
Pacific Beach Hoade Canal.	"	6	"	"	1 gal.
Port Angeles	"	7	"	"	1 qt.
Sequim	"	5	"	"	1 "
Hispolly	"	4	"	"	1 "
Naselle	"	7	"	"	1 "
Nike Fernon	"	2	"	"	1 "
Naselle	"	6	"	"	1 "
Ellensburg	"	6	"	"	1 "
Adrian	"	6	"	"	1 "
Spokane	"	5	"	"	1 "
De Borgia	"	6	"	"	1 "
Missoula	"	4	"	"	1 "
Helena	"	7	"	"	1 "
Livingston	"	6	"	"	1 "
Mammoth	"	5	"	"	1 "
Moran	"	3	"	"	1 "
West Thumb	"	4	"	"	1 "
Livingston	"	3	"	"	1 gal
Billings	"	7	"	"	1 qt
Hardin	"	2	"	"	1 "
Sheridan	"	4	"	"	1 gal
"	"	7	"	"	2 qt.
Triangle	"		"	"	1 qt.
Lusk	"	5	"	"	1 "
Torrington	"	3	"	"	1 "
Cheyenne	"	3	"	"	1 "
		259			13 1/2 gal.

Seaside, Ore., Saturday

July 23, 1927

Foggy yesterday afternoon and last night. Bright & calm today.

Moll. Sta. 632, sandhill slough, not far from ocean about 10 mi. N. of Seaside; *Goniodosis*; *Ferrissia* & small *Planorbis* on under side of lily pads; *Succinea* on bank.

Shipped a box of specimens and a big package of specimens by express from here today.

Drove to Astoria for our mail.

Seaside, Ore., Sunday,

July 24, 1927

Foggy, calm day. Was sick all day & stayed in camp.

Seaside, Ore., Monday,

June 25, 1927

Foggy, calm. Started for Portland. Moll. Sta. 633, *Goniodosis* in small creek, *Polygona*, etc., in woods, 14 mi.

above Astoria on Portland road
Columbia River Highway.

Moll. Sta. 634, Beaver Creek, 38
mi. from Astoria.

Sta. 635, ^{overflow} Slough along Columbia River
on Astoria - Portland Road about 35 mi.
from Portland, 1 mi. below Deer Island;

Physa & *Planorbis*

Camped at Portland auto camp,
near St. Johns, ferrying across river
at Linton. Camp at edge of Portland.

Bright, warm afternoon

Gasoline 5 gal., 0

Portland
St. Johns, Oregon.

Tues. June 26, 1927

Bright morning.

Moll. Sta. 636, stagnated drainage
ditch near camp.

Sta. 637, near Sandy River, on base
line road, ~~is~~ about 15 mi. E. of Portland.

Gasoline 4 gal., oil 1 qt.

Water in streams too high to get any
mollusks here. Willamette River 12 ft. above
lowwater mark.

Portland, Ore., Wednesday,
July 27, 1927

Bright + hot.

In camp sick all day.

Portland, Thursday,
July 28, 1927

Bright morning.

Started north through Vancouver
into Washington.

Moll. Sta. 638, Salmon Creek, 7 mi. N. of
Vancouver; *Lewisistis* & *Flemingia*; shallow
& pebbly.

Moll. Sta. 639, overflow pools along
Kalama River, at Kalama, Wash.; *Ferrissia*
on lily pads; *Physa* & *R. lamorbis*.

Moll. Sta. 640, stagnant pool at ~~the~~ N. of
Kelso, ~~4~~ 5.2 mi. from Vancouver; *Ameghin*
on lily leaves.

Moll. Sta. 641, slough, stagnant, at
Nickle(?) ranch 1 1/2 mi. E. of Vader,
E. of river.

I examined the ~~ear~~ Eocene fossil
locality there, but the water was too

high to get any fossils.

Moll. sta. 642, Salmon River,
1 mi. from Toledo; *Goniobasis* and
Fluminicola; a pebbly bottom, as usual.
Bumped at Toledo

Toledo, Wash.
Friday
July 29, 1927

Foggy, soon clearing & then warm.

Moll. sta. 643, Newaukum River, 13 mi.
N. of Toledo; bottom large pebbles; mussels
among pebbles; *Ferussia* on rocks; also
Goniobasis & *Fluminicola*.

Moll. sta. 644, Skookumchuck River
at edge of *Phacelia centralia*; mussels,
Sphaerium, *Goniobasis* & *Fluminicola*.

Moll. sta. 645, Scatter Creek, Tenino
creek, Tenino, Wash.

Moll. sta. 646, pond on Aberdeen road
20 mi. W. of Olympia, near 5 mi. E. of Elma.

Bumped at Pacific Beach, south of
Gray's Harbor.

Gasoline 4 gal., oil 1 qt.

" 7 " " 1 "

Pacific Beach, Saturday

July 30, 1927

Misty night, calm, foggy morning.

Moll. Sta. 647, beach to rocky point
3 miles south.

On bluff at point found hitcher midden
composed mostly of razor clams about 1 1/2
ft. thick covering several square rods.

Fog continued all afternoon & evening.

Pacific Beach, ^{Wash.} Sunday,

July 31, 1927

Very foggy forenoon, sunshine part of
afternoon.

Moll. Sta. 648, Rocky Point about 4 mi.
^{N. of nose} on beach; rocks filled around with
sand, collecting poor.

Pacific Beach, Wash.,

Monday, Aug. 1, 1927

Foggy morning, started east. Beach at
Aberdeen.

Moll. Sta. 649, Wyrooche River, 9 mi.

E. of Aberdeen; *Loricobasis* & *Fluminicola*
1 mi. W. of Montsana

Moll. Sta. 650, E. of Elma, 2.2 mi. E. of
Montsana; Sloggaldun River.

Moll. Sta. 651, Mill Creek, just S. of
Shelton, close to tidewater; *Loricobasis*
and *muscade*.

Camped 1 mi. N. of Shelton.

Shelton, Wash., Tues.,
Aug. 2, 1927.

Cloudy, soon clearing

Moll. Sta. 652, slough at Skykomish
river, 2 mi. N. of camp.

Moll. Sta. 653, Stagnant slough
& 5 mi. N.W. of Quince

No *Loricobasis* or *Fluminicola* today.
Camped at Port Angeles.

Gasoline 6 gal., oil 1 gal. Hoode card.

Port Angeles, Wash., Wednes.,
Aug. 3, 1927

Bright morning, started on West.

Gas, 7 gal., oil 1 qt.

Moll. Sta. 654, Lake Crescent; *Aradonta*
& *Margaritana*

Camped at La Push on the coast.
Moll. sta. 655, point on coast
just S. of village.
Very foggy afternoon

La Push, Wash., Thurs.
Aug. 4, 1927.

Foggy, calm day. Collected again
at sta. 655, not much of interest.
Clear afternoon, warmer.

La Push, Wash., Friday,
Aug. 5, 1927

Foggy morning. Started back
Moll. sta. 656, forest 10 mi. from
Clallam Bay on Port Angeles road;
1 dead land shell.

Sta. 657, Piedmont, Lake Crescent,
mussels & Physa.

Camped at Sequim Clallam Bay
Gas, 4 gal., oil 1 qt. Sequim, Saturday.
Aug. 6, 1927

Bright day
Sta. 658, Lake Selkirk, 27 mi. from
camp on road to Olympia.

drove through Olympia and
camped about 2 miles east at Lacey.
blaken. gas 5 gal., oil 1 qt. at sequim.

Lacey, Sunday,
Aug. 7, 1927

Cold, foggy morning, bright warm
afternoon. Stayed in camp.

Lacey, Wash., Monday,
Aug. 8, 1927.

Foggy morning. Started north
Mall. Sta. to a shallow lake 4 mi. N.
E. of Nisqually, at Camp Lewis R. R. sta.
Sta. 660, Murray Creek at Camp
Murray.

Sta. 661, White River, about 20 mi. S. of
Seattle; f. w. musk.

Camped at Woodland Park, Seattle.
Gas. 4 gal. oil. 1 qt. at Nisqually.

Seattle, Tuesday, Aug. 9

Foggy morning, smoky, warm afternoon.
drove to Mt. Vernon and camped.

Gas at Monroe 7 gal., oil

Mt. Vernon, Wash., Wednesday

Aug. 10, 1927

Foggy morning, soon clearing.

Moll. Sta. 662, ~~to~~ ^{at} Sarnish Lake.

" " 663, N. end of Lake Whatcom.

Gas. 2 gal., oil 1 qt.

Mt. Vernon, Wash., Thurs.,

Aug. 11, 1927

Rainy day. Drove to La Bower
and back.

Mt. Vernon, Wash., Friday,

Aug. 12, 1927.

Rained all night and this forenoon -
cloudy, cold afternoon. Drove over Suo-
qualmie Pass (alt. about 3,000 ft.) and
camped at lake a few miles down
east slope.

Suqualmie Pass, Wash., Saturday,

Aug. 13, 1927

bold night. clear morning.

Moll. Sta. 664, slough along Yakima River, below Easton, at 13376.

Moll. Sta. 665 slough, about 2 mi. E. of Cle Elum.

Sta. 666 small reservoir, 4 mi. E. of Cle Elum.

Sta. 667, Vantage Ferry, on Columbia River; old mussel shells on bank washed from sands up to high water mark; none alive, small kitchen middens of them.

Camped at Soap Lake, Good road from Ellensburg, but mostly over a dry, sage-covered lava desert. Hot afternoon
Gas. at 6 gals. at Ellensburg, oil 1 qt.

Soap Lake, Wash., Sunday,
Aug. 14, 1927

Hot day, Walked down the lake (with) and to left dry below.

Moll. Sta. 668, flat in Valley below Soap Lake; fossil *Lymnaea*, *Valvata*, etc. The lakes formerly were filled to a much higher level and connected, and at that time

doubtless established an outlet below, which freshened the water, as the shells are abundant in the intervening flats. The waters of both lakes are now very strongly saline or alkaline, leaving a white coating on cooking utensils, and contain no mollusks. Surrounded by lava cliffs. Many mineral springs about the borders. Lower Lake is alkali lake

Soap Lake, Monday
Aug. 15, 1927

Bright, hot morning.

Sta. 669, Lake 2 mi. E. of Adrian,
dead shells on shore.

Sta. 670, water hole in Coal Creek
channel, Lamona

Sta. 671, Deep creek, 15 mi. W. of
Spokane.

Gas. 6 gal., oil 1 qt. at Adrian

" 5 " " " " " Spokane
Camped at Lake Coeur d'Alene.

^{Idaho}
Coeur d'Alene, Tuesday
Aug. 16, 1927

Bright, hot morning

Sta. 672, dry slope 6 1/2 mi.
E. of town, dead *Polygna*,

Sta. 673, E. end Lake B. d'Almeida.

" 674, 3 mi. E. of boomer d'Almeida Lake
small ditch. 4 mi. W. of Catalpa

Sta. 675, slough on Randolph creek,
about 3 or 4 mi. E. of summit of Bitter
Root Mts. E. of Wallace, Ida., but in Montana.
Lymnaea & small clam in water, land
snails in grass at edge of water.

4 mi. W. of Salt Lake

Sta. 676 ^{slough} creek with *Pisidium*
large snails in moist thicket on banks.
about 2 mi. W. of DeBorgia

Camped near De Borgia

De Borgia, Mont.,
Wednesday Aug. 17

Rainy morning.

Sta. 677 grass slide 16 mi. E. of
St. Regis, *Polygna* & *Microphysa*

Sta. 678 creek on irrigation ditch
at Frenchtown

Camped at Missoula

Gas. 6 gal., oil 1 qt. at Adrian

" 6 " " 1 " " De Borgia

" 4 " " 1 " " Missoula

Missoula, Mont., Thurs.
Aug. 16, 1927

Clear, cool morning.

coll. sta. 679, 2 mi. E. of Milltown,
dead apleas in ^{ditch} ~~swale~~

sta. 680 small ditch 4 mi. E.
of Milltown

sta. 681, slough 5 mi. E. of Milltown

" 682 " 15 " " " "

" 683 " 4 " W. of Drummond

" 684 small creek ^{6 W. of Avon} above Avon on
road from Drummond to Helena

sampled just W. of Helena.

sta. 685, at camp.

