U.
S.

Hall

1895-1

Alaska Coal fields

Bogosloff Volcano

Corral Hollow

Cal

SURVEY

Notebook no 1

1895

Wm H. Dall
U.S. Geol. Survey.

Sunday June 2/95

U.S.S. Pinta, Sitka, Alaska.

About 9 A.M. take the launch for St. John Baptist Bay about 15 miles north of Sitka opposite Salisbury Sound. Coal has been reported here at various times but only in float pieces. A careful examination of the material brought down by streams shows only granitic and metamorphic rocks and occasional bands of graphitic slates. The latter have sometimes the look of anthracite and are probably what has been mistaken for coal by inexperienced persons. Return about 5 P.M.

Coal at N. side Yakutat Bay near the shore, seam about five feet, some taken to Sitka by De Groff & Emmons. Russell's Camp No 2 is at the site of the mine.

Coal at Pt. Gardner, several thousand dollars spent in development by Capt. Jas. Carroll and others but work ceased on account of faulting which cut off the vein.

Sunday June 9/95
Kootznahos lagoon southeast arm - Sepphagen mine. shaft 8 ft deep full of water, Hoisting apparatus & small car. A few tons of coal taken out (specimen bag No. 115.) about 3 years previous to our visit now reduced by slacking to small flakes. Appears to have been a small pocket soon exhausted. Seam in friable sandstones and soft shales dipping about 30° NW. only a short distance from the water's edge.

Sunday June 9/95 - 115a
Arm of Kootznahoo lagoon
where signs of coal were dis-
covered by prospectors
on a reef covered at high
water. Shales & sandstones
^{mostly higher} dipping about 35° NW. The
shales very friable with broken
fragments of leaves & stems
but no good plant remains
A few specimens (marked 115A)
were collected. The thickness
of the coarse grained but rather
uniform soft sandstones
appeared to be several hun-
dred feet, with occasional
concretionary nodules of
harder & finer material. The
strata showed waves in several
places with a general NW dip.
The layers showed wave action
by crossbedding very distinctly.
The shales were variable in
hardness usually soft and
in thin layers, very friable.

with occasional lignitic nodules but no well defined coal seams. The surface of the land covered with vegetation. The only exposures between the trees & low water mark.

At another point on a small islet between two arms from Favorite Bay, Mr. Brightman pointed out a six or eight inch seam of lignite much decomposed at the surface. This was traceable from low water mark to the base of the bluff. The sandstones appeared much broken up wavelike, and every where low, the topography apparently every where less than 100 feet. The arm (S + SE) in which these exposures are shown is the 2nd from the entrance, rocky and with strong tides, only accessible at slack water. Dip, 30° - 45° NWly.

117 Meatestun

118 Brighton & S. G. 1182 leaves

Monday June 10/95

At Pt. Sullivan a shaft 120 ft was made by McCloskey & others with poor results. The outcrop is about 8 inches thick of much crushed shaly lignite with polished surfaces. In the shaft according to McCloskey there are two seams separated by about 6-8 inches of hard slate. Dip NE 60°. Strike 60° NW. The coal taken out of this shaft does not appear to have been utilized except in the dwelling adjacent to the mine. (Specimen no 116) The adjacent shales show numerous leaf impressions.

Monday June 10/95.
Mitchells Bay, Kootznahoo
Lagoon Alaska. opp. camp
of C.S. party on bluff not
far from entrance into
McCluskeys arm.

a small seam not exceeding
five inches of coal with twice
as much slate & shale in
hard sandstone dipping at
a steep angle (Strike E + W.
Dip 45° N.) a tunnel run in

about 30 feet probably ten
years ago and abandoned
There are one or two similar
seams, one of four inches &
another a little thicker, reported
upon the SE shore of the
bay opened by prospect holes.

x Brightman
o Meade Two-
xx Mitchells Bay

Monday June 10/95

Meade & Mitchell's seams
on arm of Mitchell Bay
1st tunnel, where coal was
taken out for the Saginaw
timbered but filled with water
and crushed by land slide
(Specimen of coal in bag 117)
visible seam averaging about
a foot, near high water mark
much contorted and 100 ft
west turns vertical and bi-
furcates, then runs out.

Strike 25 N E Dip SE flat variable
A second short tunnel in sim-
ilar coal a short distance
further up the arm.

Rock sandstones chiefly above
without fossils, below shales
with leaves, like the others.

Continuing up the arm on
a small point is a tunnel
put in by Brightman, de Goff
and others for 100 ft or less
now abandoned. Seam of

Shaly lignite not over 14 inches in closed in shale out side of which is a harder sandstone. (Specimen of coal in bag 118.)

Many leaves in the shale a few specimens (1183) collected. Several thousand dollars spent on this mine quite worthless.

In a small cove at the head of the left hand arm is the only coal seam now worked on which Mr. ^{2nd} McClaskey has done a good deal of work and taken out nearly 100 tons of coal. Dip ~~25~~ 25 S.E. strike ~~25~~ 40 N.E.

The rocks here are a low bluff of coarse sandstone under which, dipping nearly at the angle of the beach

and visible from L. W. to
somewhat above high
water mark about level
with the surface of the
beach is a seam of
shale & coal (18 inches)
and which has been dug
out for a distance (along
its face) of about 100
feet to a depth of
a couple of feet. In the
beach and normally cov-
ered by the sand are sever-
al seams of coal separated
by variably thick beds of
shale & slaty sandstone.
The upper (specimen of coal
in bag No. 114) is the best
& clearest and not over a
foot thick. Coal from
this seam tried in the
Patterson Steam launch 18
coiled tubular boilers, burned
well and developed about
 $\frac{3}{4}$ the steaming value of

Wellington (B.C.) coal
usually used, was decided
ly better than Comox coal.

Below this seam is a
yard or two of shale and
then a parallel seam of
brown lignite mixed with
bright coal and thin leaves
of shale. This contains many
particles of fossil resin
and impressions resembling
wood fibre. Owing to the
wash over it the full ex-
tent and uniformity of
this seam could not
be distinctly defined but
it appeared to include
about three feet with the
central portion somewhat
more shaly than the rest.

Whether this mass was a
local thickening of a
seam elsewhere thinner
or part of a uniform bed
can only be determined

by more extensive exploration.
The rocks about this
mine are less disturbed
than at other localities
visited and the prospect
of continuity in the seams
corresponding by better

Woody Id. - Kadiak Id.
July 11/95-

On the shore of the island facing Chirikof Bay there are numerous beds of blackish slate, the schistosity nearly vertical and in large part coinciding with the bedding. The dip and strike are ^{locally} multifarious even in the extent of a few rods. These slates alternate with thin sandy layers and form very thin leaves in many places, but are faulted and broken up in a remarkable manner with numerous dykes of grayish hard diorite intersecting them and often greatly fissured with small cracks which are mostly filled with quartz & calcite. Fossils are very rare in these slates but careful search revealed a few (No. 90). The average strike is N + S. magnetic, the dip 80° - 85° ~~Eastward~~ ^{Westerly}. The beds

form successive ridges
between which
are fresh water lakes - long &
narrow, or swamps
The fossils (to July 16) were all
found in the westernmost
layers - These are somewhat
less crushed than those above
them and the latter become
lighter colored and more greasy
looking toward the top. The
thickness visible above the
sea is about 200 ft at the
thickest section. The dioritic
intrusions are usually more
or less transverse to the strata
beds. I could find no boulders
on the surface, but one or
two scratched wratics of a
sandstone like that of the
lighthouses of the peninsula
were noticed near the high
water mark on the beach (91)
Late found one erratic on the
Mission grounds

As we leave Chiniak Bay and
work NW. through the strait be-
tween Kodiak & Afognak &
Spruce Ids, the base levelling of the
lowlands is seen to be less & less
elevated and no base levelled
bench is visible on the NW shores
of Kodiak or Afognak.

Bight W of Cape Douglas Cooks
Inlet July 21, 1895.

This bight has anchor
age in 2-5 fms. se-
cure against wind & sea
except from N. & NE.

The cape is low with rocks about it
and the E and S. parts of the bay
appear to be foul. The west shore
is bold and should be kept aboard
in entering.

The East peninsula is composed
of andesitic flows mostly horizontal
and more or less interstratified with
ash beds containing carbonaceous
matter and remains of plants.

They are somewhat faulted and the ash beds are often stream-waved and sometimes contain pebbly layers. The plants ^(No 72) are mostly reeds, grasses &c as if the deposit was a marsh flora. To the south three glaciers are visible in the range. Two come down south of Cape Douglas and one ends in a stream discharging into the light. The southernmost is the largest. The peninsula west of the light is composed of a very level layer of columnar andesite about 40 ft thick with a talus of broken material of the same, and indications of leaf beds below. The top of this bed has been moderately glaciated (as also the eastern peninsula) and shows a few erratics. The agency might have been an extension of the glacier whose stream now discharges into the light as the grooving points toward it. The rocks are a good deal de-

composed on the surface but the glaciation was rather a smoothing off than scoring.

Leaving the Cape and making a course NW $\frac{1}{4}$ W for Augustin Id the back or northern side of the Douglas massif is well seen, snow covered and with three very large snowy glaciers descending to the vicinity of the sea. That to the east appears to be the largest and showed an even snowy surface without lateral moraines. Northwest of the group of mountains is a space of comparatively low land behind the shoal Kamishak Bay. Here caribou are reported plentiful.

On the way to Augustin Id, and 6 or 8 miles from it are the sea otter rocks (— 1 —) which are said to lie SE mag. from the peak of Augustin. We saw

them in one with a high bluff
on east side of inlet (probable
Pt. Bede bearing N E by E while
the peak bore from us N W. $\frac{1}{2}$ W.
mag. Later they bore N 50° E and
the peak N 50° W. At low water
there were two low flat rocks
and a smaller pointed one
visible two miles off. They
are said to be awash at $\frac{1}{2}$
tide.

July 22nd 1895
Augustin Id - volcano.

Anchor in $3\frac{1}{2}$ fms, sand with
the S. Pt bearing SE. by S. the
west Pt. NW. the peak N E. by E
 $\frac{1}{2}$ E. about a mile from the beach.
The S. pt is sandy and low but
the boat landing is best here
the beach running off very shoal
north of it. The west point is
composed of ashes and volcanic
stones forming low bluff banks

and running off in flats upon which the boulders, sometimes very large, are irregularly scattered. There was formerly an excellent harbor for small craft here, and the inner harbor still exists, but the entrance is now dry at low water. This change was brought about in the last eruption (about 1888?) and that it was due to an elevation of the bottom and not to filling up by the fall of ejected material is evident from the presence of a number of more or less stunted spruce trees near the shore which are evidently older than the eruption and would have been killed by the fall of material sufficient to choke the harbor.

The peak has the regular volcanic form, the apex being broken away to the west and

NE 1/2 mag

North, the south edge of the original crater being highest and apparently overhanging to the north. Steam issues from fissured black rocks at the edge of the crater in intermittent puffs. On the south slope arched beds of ejected material crop out on the upper third of the mountain. The south slope from the crest is about 42° , the northern slope about 35° . The upper two thirds of the peak are largely snow covered, below much is bare ashes and scattered lava blocks, then more or less herbage with stunted spruce sparsely scattered and low creeping alders. The borders of the island to the S & West are low hummocky and with bogs and small pools. The South shore has bluffs of variable height, none very high. The lava is andesitic.

About 5 P.M. leave anchorage and start northward for Chisik Id anchorage

July 23rd, 1895 About six A.M. run into Chisik Id ^(Cookson) Harbor and anchor under the island shore. Bark Highland Light at anchor, waiting for salmon from Kassiloff cannery. Go aboard and consult Capt. Hughes about the locality. He is anchored in 18 fms. Lowest spring tide in June was 36 ft. about 24 ft. at ordinary times. Go to Point at NW head of North entrance (blocked by foul ground) about 57 ft high. Reddish gravel 4 ft., ^{below it} brown yellowish sandstone coarse quartz grains about 15 ft., then dark grey to pale limestone in successive thin beds, lowest is a light gray barren shale. The limestone is rather plentifully supplied with fossils (D. 94)

of Cretaceous age. *Moreramus* is the most common. *Baculites*, *Ancella*, *Ammonites*, *Trigonia*, *Pecten*, *Leopistha*? and others occur also remains of a crab. In some of the layers near the beach were rounded whitish pebbles containing the same fossils as the matrix. These strata are moderately inclined (Dip Strike) and the beach is largely composed of the flattish mud-cracked surfaces of some of them which run out at low water a long distance. The NE head of the entrance shows bluffs of limestone sandstone & conglomerate containing rolled pebbles, both pebbles & matrix containing the same fossils. These bluffs are much higher than those on the mainland side and above the NE end of Chisik Id rises to a magnificent castellated summit of curiously eroded

beds conformable in every respect and apparently homogeneous with the various beds actually reached. This end rises to 1500 feet or possibly 2000 the island gradually declines to the SW end with the dip of the gently curved strata. Just at the extreme end of the island the beds are for a short distance more steeply inclined. The weathering is more or less rectangular giving castellated forms and, near the beach, undercut by the sea into caves and natural arches. The bluffs on the mainland side appeared similar and also rise very high and continue high past the SE entrance. off the SE head there were no visible rocks or breakers and we were informed there is no bar but a clear channel in, but on entering and leaving a well

marked tide rip was encountered both times, which might lead to the supposition that obstructions exist. On the island side the water is bold to; on the main, shallow near the head of the harbor for a long distance from the beach. There seemed to be no hidden dangers and the holding ground is good. The wind is often stronger inside the harbor than out in the inlet at the same time owing to the high land and funnel shaped valleys. The harbor opens to the S.E. but the entrance is so narrow and the channel so long that the winds probably do not blow home with severity enough to endanger vessels at anchor. There is probably a narrow channel out at the NW end of the harbor but the ground is too foul to render any attempt to use it advisable.

small rocky island on outside of Chisik

antecedent to a survey.

Left the harbor about 3 P.M., and started a little before the flood tide for West and North Foreland. P.M. foggy with a fresh breeze and tendency to rain. Touch the shoal east of Kalgin Id. while at supper, but with no bad results.

July 24/95. Anchor off West Foreland about 4 A.M. to wait for the flood tide. A small village of Kootena Indians here some of them come off to the ship. Bluffs about 50 ft high of gravel & sand, wooded above, with some high mountains in the interior. Leave at the slack about 10 A.M. for North Foreland. There is a wide bay between the two with shoal water and foul ground in much of it. The land behind it is partly very low, all wooded and a river

comes in with very muddy water. Near the North Foreland is a series of whitish gravel bluffs of very regular height with a broad beach and shallow water for a mile off it with sparsely scattered boulders lying on it. Some of them very large and squarish, mostly of a whitish color. There are Indian houses in the principal gap in this series of bluffs. The largest settlement, Tyonek, is near the point of the Foreland where a small gravel flat exists, the water off the beach for half a mile is rather shoal but not foul. The spot enclosed by a dotted line South of North Foreland in chart with Notice to Mariners No. 4. 1895 at low water shows large bare sandbanks 6-10 feet high. East of North Foreland between it and Pt Bar

session is a flat or shoal not shown in the charts and of considerable extent forming a serious danger. Fire Id is nearer Pt Campbell and more southerly than on the chart and there is no channel south of it between it and the foul ground. The shoal in Farnagain Bay is more elongated than shown on the chart. There is an islet near the point east of Pt Possession north of which anchorage may be had. East of this the Bay is almost dry at low water. Around the N. Foreland to the north and about two miles distant is Saddy's fishery & trading post. Anchored here about 4 P.M. and landed. The water has $3\frac{1}{2}$ fms half a mile off the beach at $\frac{3}{4}$ flood. Tides 25 to 30 ft. The formation is gravel &

a small river comes in.
The ground is low here for a short distance with low bluffs on either side. About N. magnetic is seen Aushitna Mt a high peak near the Shshitna river. The land on both sides of Furnagain Arm as seen from here is high & mountainous. Anchor here for the next flood tide.

July 25/95-

Leave about 2 A.M. with miners boat in tow. Thick & foggy. arrive off Fire Id about 4 A.M. and stand over to Pt. Camp Possession then along the shore at 2 miles distance to a small rocky point with a lump at the end, wooded and with a small flat rock off its end. Anchor here (in 7 fms less one foot) at high water about 8 A.M. The point turns the strength of the ebb a little outside

of the anchoring place whence
by the azimuth compass Pt. Camp
bell bears West ^{40° N} the edge of Pt
Possession ~~W~~ by ^{N. 80° W} the SW edge
of Fire Id NW by ^{N. 60° W} and the small
rocky point East a cable and a
half by compass.

Pt. Possession is long, low, wooded
with small bluffs at the shore
Pt Campbell is similar.

At the bottom of the bight east of
Pt. Possession (which is shoal the land
rises to 2000 ft mountains (and
also the opposite shore) both are
rocky and come down to the water
in rocky bluffs with no beaches
at high water. Off the high land
on the south shore is a small
dome shaped low island around
which the ~~bluffs~~ flats dry at
low water. It is called Haystack
by the miners. At the anchorage
the following readings were
taken of the ebb by patent log
from the vessel

9.15 A.M.	log put over	100 miles
10.15 "	reads	103 $\frac{1}{4}$ "
11.15 "	"	106 $\frac{1}{2}$ "
12.15 "	"	110
1.15 P.M.	"	112 $\frac{3}{4}$
2.15 "	"	114
2.50 "	"	114 $\frac{1}{4}$

3.30 Black water

About 7.30 A.M. Dr B. & P. leave in small boat for the placer mines on Resurrection & Bear Creek

At 8.30 A.M.	41 ft water	} = tide 39 feet
" 3.30 P.M.	2 " "	

Mt. Sushitna bears NW. $\frac{1}{2}$ W mag.

Flood tide runs seven knots, and at first rises 6 ft in 10 minutes.

N.

July 28 1895.

N. Pac. Mining & Transportation Co.
Jos. Rosenthal 19 Montgomery St. S.F.
Agent in San Francisco.

Explorations begun in 1894 Dec.
near Eastland Creek, Kachekmak R.
Supt. ^{F. H. Curtis} M. B. Curtis, Eastland Cañon.
270 ft above tide, 2 ft 4 in clear coal
remainder alternate seams of coal
& clay or "bone" total 6 ft. 3 tunnels
total length about 400 ft. 300 tons
sent to S. F. 1895 and another cargo
to be sent later in the season.

23 ^{3/8} oz Specimen (218) main vein in place
with bag weighs 13 oz assorted pieces
Specimen (219) main vein dump
with bag 13 ³/₄ oz. (25 ⁷/₈ oz)
Specimen (220) main vein in place
with bag 13 ¹/₄ oz. (24 ¹/₂ oz)

Strata of sandstone, whitish
clay containing large water-
worn boulders, shales and
lignite, the upper part cov-
ered by some 5-10 ft of red-
dish gravel. bluffs 600-800 ft
land rising behind 1800 ft.

Mr. Curtis is employing only a few men and the work he is doing is of the nature of exploration. The development of the property will depend on the results of the experiments with the coal.

The Alaska Coal Co. which owns all the other claims within the spit on the bay. They have put in two tunnels which are reported caved in and the station is not now occupied. A Mr. Cooper living at Nenilchik is the agent but only occasionally visits the buildings here. ^{New York parties} The ~~Central Pacific~~ Co. sent an Expedition under Lieut Schwerin U.S.A. to explore & test the coal for locomotive purposes (in 1891?) but did not find it advisable for such use. Their coal was taken from McNeil cañon. next beyond Cottonwood next below Eastland.

The coal does not want to be too frequently stirred in firing, has little smoke and light ash.

P.M. go ashore a little south of McNeil cañon and examine seam of coal there which has been prospected with two short tunnels by Mr. Curtis. One seam about 45 ft above the beach is 4 ft 7 inches thick clear coal ²²² ~~(224)~~ with about six inches iron stained sandstone above and a thick gray clay below. Above this are three seams separated by thick beds of clay or sandstone one of which, below, is nearly four feet, the others thinner, the coal fairly compact with a dull fracture, occasional thin lenses of sand or shale and a tendency to break up cubically. Lay along side the Marion all night.

Monday July 28, 1895

Run over to glacier spit and go ashore in the boat with Mr. Curtis while the Kodak goes after coal. Go up to the Breaching glacier which has receded since 1880 about 250 ft. leaving a moraine of gravel and mud about 15-20 ft. high. The ground now same in front much torn up by torrents. Come off about 2 P.M. and go aboard the Marion at 4.30. Have some supper here but the Kodak which has been coaling and filling water does not come up till 10 P.M.

Tuesday July ~~29~~³⁰

Morning westerly wind, fair. Tow the Marion to a new anchorage then proceed to the coaling place which is on the beach a little south of a small river which empties into Coal Bay north of the spit. This is said to be the same ledge upon

which the Alaska Coal Co's.
entry was founded, and a tun-
nel (now caved in) run by
Mr. Bradley. There are several
seams close to one another, of
which the lower is the thicker
and better coal and about
18 in thick. This is nearly
the lowest seam in the
2000 ft series visible above
tide marks and is more
compact, glossy in fracture
and disposed to cubical
fracture than the beds more
north on the same side of
the bay and higher in the
series. (Specimen bag No. 213)
Buy a bear's skull from the
mate of the Marion for Dr.
Merriam and pay \$2.00
About 4 P.M. take the skiffs
back to the Marion & tow out her
lighter. At 6 P.M. sail for
Saldovia Harbor, arriving at
11 P.M.

Wednesday July 31 '95
Morning cold, foggy, later
clears. Go ashore and inter-
view Bloch (A.C.Co) and Smith
(N.H.C.Co). Take on some water.
Examine the rocks which
are schistose and much con-
torted. In some of the gaps
between the projecting points
NW and SE of the harbor are
patches of what appear to be
tertiary beds which lie nearly
horizontally abutting uncon-
formably upon the schists.
One such patch SE from
the entrance to the harbor
shows a dark streak like
coal. Above the harbor a
coal seam is reported about
five inches thick and a piece
of coal supposed to be from
this seam picked up on the
beach is compact, glossy &
breaks conchoidally. (No.).
The bluff at SE head of the

harbor is composed of two small rocky bluff islets united by a low spit not continuously high as on the chart. The entrance has rocky bottom clear across with kelp in $5\frac{1}{2}$ fathoms. Most of it is clear but there is a rounded boulder off the NW small whitish bluff pt. visible at low water. There are also rocks above & below water around the S.E. head. Inside there are 7 & 8 fms. water sandy bottom off the village in mid harbor. Protection in the outer harbor from all but NW winds and at the head of the bay from all. Sail about noon for Fakhli Id. Shelikoff Spits. weather overcast with light airs.

Thursday Aug 1, 1895
Reach Amalik Harbor behind
Takhli Id about 5.30 A.M.
Find the cove well sheltered
from all winds, anchorage
in 10 fms. sand.
The rocks are chiefly coarse
sandstones (Dip Strike
) resting conformably
on an andesitic agglomer-
ate and containing andesite
pebbles. Thickness about
250 ft or more. Strata
of streambedded sharp
gravel in layers five feet
thick or more with
three seams about 18 in-
ches thick of impure
coal of which about four
inches are pure coal of
a glossy texture, siding
the hands and good for
blacksmith work (Speci-
men 214) These beds are
broken off by a granitic

dyke weathering red dish
to the east and were prob-
ably once covered by a
more recent basalt which
forms the mass of the
adjacent hills but is
erupted into the sand-
stones in some places
enclosing blackened masses
of sandstone. The sand-
stones show carbonized
bits of lignite and im-
pressions of reeds and
stems much like those
of Cape Douglas.

Leave the cove for
Cold Bay about 11.30
and run before an in-
creasing NE gale until
6 P.M. when we enter
the bay which has reefs
extending nearly halfway
across the entrance from
the northern headland.
Anchored in a cove well

up in the NE part of the bay about 7 P.M. Go ashore and look at the rocks which are very peculiar.

They comprise chiefly calcareous sandstones or sandy limestones containing numerous isolated concretionary nodules and some pebbles, (over)

Fossil wood SW head of harbor (Specimen No. 150)

Invertebrate fossils from first bench of mountain west of stream near anchorage

NE side Cold Bay (bag No 149 + 148) Purington

Invertebrate fossils from about middle of series at high water mark west of stream &

Fossil vegetation NE Head of bay (148 bag) Purington

Fossil wood from W of stream at J (bag 147) Dall

Vegetable impressions from
slates below conglomerate below
granite N W part of harbor
Cold Bay - (tag 147)
Sandstone from above eruptive
basalt Takli Id Harbor (146)

In this limestone we found a
small seam of carbonaceous
shale with occasional thin
laminæ of clear coal, the whole
only a few inches thick. Above
the limestones was a moderate
thickness of crumbling shale
without fossils much mud-
cracked. In shaly streaks of
the limestones were impressions
of reed like plants, like those
seen at Cape Douglas. NW
of these low bluffs, which
rise behind to a ^{high} squarish
hill, the beds descend gradu-
ally toward a small
stream off which we an-
chored. Here a considerable

bed of conglomerate of small pebbles was superposed on the limestones. Aug 2/95

West of the stream the limestones and shales are again seen forming a low arch, westward from which they are surmounted by a regular series of beds which have a purplish or reddish gray tint from a distance and being of varying hardness rise in a series of benches to a summit about 2000 ft high. The harder beds are limestone without fossils, the softer ones a calcareous shale which crumbles into small angular fragments making long uniform talus slopes. The limestones contain many mostly lenticular or spheroidal whitish concretions which affect per

upper beds NW of $\pm$
Str 40° E of N
Dip 30° NW

ticular horizons more than
others. There are also thin
variable beds of conglomer-
ate. About the middle of
the series NW from the
anchorage was a bed of
conglomerate of small
rounded pebbles in a
limestone matrix which
also contained fragments
of organic remains, among
which were ammonites
Belemnites, *Astrea*, and another bivalve
or two.

At the outcrop of the first
high bench of the same
mountain mass dipping 30°
NW. Purinton found am-
monites, a brachiopod like
Rhynchonella, Belemnites and
a bivalve or two. The dip
of the strata became more
steep near the valley of
the stream. In the shaly
streaks of the limestone

found pieces of fossil and
also carbonized wood and
obscure stems or reedlike
impressions of plants.

Later in the morning we
crossed to the light at the NE
part of the harbor at the head
of which is a flat with a
large lagoon dry at l. w.
into which a stream runs.
Ascented here a gully of erosion
to the rocks pitting barren
shales and limestones like
those of the eastern side of
the bay. Well up I found a
calcareous shale with
a few plant impressions
above which was a heavy
bed of conglomerate above
which was a hard perhaps
Andesitic volcanic rock
which from fragments
fallen from above seemed
to be more coarse grained
and friable higher up. The

beds of this rock seemed to lie conformably on the other rocks. The southern end of the point was relatively low and the beds very massive and horizontal, a fault concealed by a ravine at the junction probably separates these beds from those to the north of them which dip more steeply to the northward. The face of the cliff much eroded into crevices gave nesting places to thousands of seabirds, mostly murre & gulls. On the limestones near the point fossil wood and numerous reeds were found, the latter often carbonized.

Went aboard the steamer crossed the bay to pick up Purington & dine and then went to the SW. head where

we searched in vain for the ammonites mentioned by Fisher. The rocks were the same as those described for the NE part of the bay and the only fossils found were silicified wood and obscure plant remains + fossil reeds. The bed containing the ammonites may exist hereabouts but at all events is not conspicuous. Rained most of the P.M., with fresh wind & fog from the eastward. Pack fossils + return to anchorage

Aug. 3, 1895

Leave about 4 A.M. for Kialagvit Bay, weather fair fresh breezes. Arrive about 11.30. A bidarka boards us + pilots us behind the islands land about 11 A.M., north east of the river which comes in from the portage to Uqashik

Aug 3, 1895, Kialagvit Bay
Alaska - specimens from
locality near Ugashik por-
tage in bags 212, 215-
216, 217, 221, 223 -

The bank is less than 100 ft
high and mostly grassy
some small exposures of
sand stone and coarse shale
afford plenty of ammonites
and other Cretaceous fossils

The charts of this vicinity
are poor, the bay leading to
the Betcheroff village is clear
except near the point of
entrance where the foul
ground extends well off

The upper part of the bay
is shoal for a couple of
miles off the beach. There
is no conspicuous mountain
recognizable as the one on
the chart near the village
the mountains appear to

be formed of rocks similar
to those near Cold Bay.

The entrance to the inner
bay is rather close to the
outer islets with 2 or 3 fms
over a bar, within is
plenty of water & no dangers.

There is a second entrance
west of the first bunch of
islets with deep water in
it. There are various
visible rocks in this but
no hidden dangers.

Mt. Olai is at the west end
of the bay not, as on the
chart, north of it. There is
a large glacier on its east
flank and on the seaward
face two others descend
from the same mass.

Leave the bay about 1.30
for Chignik Bay where
we arrive next morning.

Sunday Aug 4/95

Day fair with westerly wind.
Arrive in Chignik Bay about
6 A.M. and enter the lagoon
and run up to the cannery
which is on the SW shore
2 fms least water on the bar
and 22 ft at high water
Within the channel is mod-
erately wide with 3-5 fms
water sandy bottom up
to the cannery, beyond which
it shoals.

Capt. Muller + Supt. Smith
of the cannery come aboard.
We go ashore, inspect the
cannery, dine with Mr.
Wm. D. Smith, and about 1.30
go on a small stern wheeler
up to the head of the bay and
about a mile up the river
to the coal mine. The river
is not very deep and runs
between perpendicular low
bluffs of Tertiary rock to

a lake 2-3 miles further up
which is 6-8 miles long then
connects by 5-6 miles of river
with another lake said to
be as long as the first.

The coal was discovered
by one Henderson about 1885
but he did not maintain
his rights and a Mr. Robert
Lee who did some exploration
during four years and took
out several hundred tons of
coal. He sold his rights to
the Alaska Packers association
for \$1765.00 and they proceeded
1893 to develop the mine in a
crude fashion using the
coal for the canneries. Dur-
ing the summer three men
are employed who take out
about two and a half tons
per day at a cost of \$3.00
per ton. About 350 tons or
year or 1000 tons in all have
so far been mined here

During the winter two men are employed and paid at the rate of 25¢ an hour working as much or as little as they please. There is no machinery and the work is done by blasting & the rock & coal run out in wheelbarrows. There are two tunnels about 40 ft apart, ⁵⁴6 ft high and 240 feet long. The only timbers are uprights which have been put in to support the roof which is good but shows signs of weakness in spots. The upper tunnel has been robbed to a width of 40 ft in some places with a single cross cut to the lower tunnel. The strata dip N 25° E and the strike N. 15°-20° W. The bedding is very regular on the whole with a few small

ships. The coal consists of
one seam about 16 inches
in average thickness of
which one inch is a streak
of sandstone more or less
regular. above this 11 inches
stone and about six inches
of coal - about six feet
above is another small
seam 6-8 inches in thick-
ness, very adhesive to the
roof which is of a firm
sandstone.

There are few fossils, all
stems or reeds with an excep-
tional leaf. Sequoyia was
noticed among them (bag 144)
The coal is solid, bright
clean, with little visible
silica and no sulphur
(bag 141). Experiments in
burning at the canneries
give as a result 118 lbs
equal 100 lbs of Wellington
coal - It does not clinker

The ash is granular and of a reddish gray. The coal gives little smoke - and is a satisfactory steaming coal. The vein comes to the surface about 30 ft higher than the upper tunnel in a ravine and has been traced inland for more than half a mile.

Leave Chignik lagoon about 6 P.M. for the Shumagins with a quiet sea & cloudy sky. The Tertiary beds of the west side of the Bay appear gently waved, nearly horizontal and abut against the mountain rocks apparently unconformably -

Monday Aug 5/95 -
Morning, see Cape Kupre-
anoff about 7 A.M., day
cloudy with moderate
sea & head wind. Sail N.
of Korovin and anchor at
Sand Point, off the buildings
about 2 P.M. Go ashore for
news & find every body gone
to Delaroff Harbor where the
steamer Portland has just ar-
rived with coal from Nan-
aimo. Steam down there &
anchor in the outer harbor ar-
riving by 6.30 P.M. After dinner
go ashore and see Thomas the
deputy collector, Dr. Call and
the cashier, Habbley, Mr. Bugbee
and others and get some late
papers. Then aboard for the
night, a SE storm setting
in.

Tuesday Aug 6th
Morning rainy & stormy. Go
ashore after breakfast and

walk up to the Apollo Consolidated Mine about three miles where we meet Capt. Hague B.T.P., go over the mine and I go round and see the works under guidance of Mr. Barston. Take lunch with them, have a chat with the Dr & Mr. Vincent. Return by the launch about 4 P.M. in a storm of wind & rain. Up anchor & go inside the inner harbor for better protection. Night blows hard in squalls with hard rain.

Wednesday Aug 7

Morning wind still fresh but a little more to the westward Dr. B.T.P. goes up again to the mine. I remain on board to write up notes &c. The rock off entrance to Sclavoff Harbor lies SE by $2\frac{3}{4}$ E by compass from the middle of entrance to the lagoon & is visible at low water.

of middle part?
the visible S end of Napaid E by
S. $\frac{1}{4}$ S. North Head (inner) of
Harbor E by S, Rock at S. Head
S E by S. $\frac{1}{4}$ S. Going out we
find the breaker in line
with the trend of the point
on the south side of the entrance
The party return about 4 P.M.
and we sail for Coal Harbor
anchoring in the lee of the
island about 7.30. Messrs
Alex. & Henry Tibbey & Mr. Nel-
son board us later.

Day 8, Thursday —
Morning go ashore to examine
the rocks near anchorage then
across to see the coal. Touch
bottom in left half a mile off
shore. The Tibbys have been
trying to make something of
the coal for 9 years have
been residents for 2 years
there are three tunnels, one
at the lower level was
run 150 ft but was improper

ly timbered and has caved
in. The next above in

Thurs. Aug 8/95

The main coal seam has
(Bag 131 coal from lower bed
Zachareffskaia Bay
Bag 143 coal from layer
over 131.) an 18 inch seam
of dull coal ¹⁴³ fairly free

from slate, above this half
a dozen small seams of
4-5 inches thick of impure
coal, partly brilliant and
partly dull, the fissures
much reddened by iron oxide
and with many thin sandy
or shaly laminae. In spots
iron pyrites is very abundant
These seams are separated by
wider bands of carbonaceous
aluminous shale or gray
sandy layers.

The tunnel from which this
coal was obtained is about
six feet by eight or ten and
runs in about 20 ft. It

seemed about 200 ft above the bay. 100 ft higher was a third tunnel of about the same size, partly timbered with much percolating water. The coal in very numerous small seams varying from $\frac{1}{4}$ inch to 2 inches with bands of carbonaceous shale intermixed the whole of too poor quality to be of any importance, so that this tunnel has not been worked of late.

The spots where these openings have been made is more to the southward than the old diggings of 1864-72.

Leave the bay about 11 AM and visit the volcanic neck at the NW head of Popoff Strait then ran down to Rei Cove and examine the rocks, then back to Sand Point where we tie up at the wharf and

Thursday Aug. 8.

and land our baggage about 4.30 P.M., going to the Popoff Hotel where we get a much needed bath, supper and turn in at 10 P.M. to sleep in a bed for the first time since June 21. Wind blowing hard.

Friday Aug. 9

Waked to our great disgust at midnight by the cry that the Dora had come, pay bill & get things aboard in a hurry and leave Sandpoint for Belkofsky at 1.30 A.M.

Fresh gale blowing, reach the village about noon and land some supplies then proceed against a strong SW. wind sometimes rising to a gale in squalls.

Saturday Aug. 10

Morning fine. fresh Westerly wind. proceed toward Unalga Pass, which we reach in P.M. with high wind at times, a heavy

swell and tide rips in Skutan
pass and arrive at Dutch
Harbor about 6 P.M. Go ashore
& are cordially rec'd by Mr.
Baldwin & Capt. ~~W~~ Rice. Go
aboard the cutter Rush and
see Capt. Hooper who wishes
to withdraw his offer of a
cutter to Herendeen Bay, as
one of his vessels has been de-
tained at Sitka. Dr Becker
decides to give up that trip
and go to S. F. on the Ber-
tha which is expected here
in about a week. Return
to the shore and sleep at the
Co's house.

Sunday, Aug 11/95

Morning calm, cloudy, the
sun trying to get out. Write
letters and post up notes.

Corral Hollow coal
bag 142

From anchorage

S. spit	SE $\frac{1}{4}$ E
S. Edge Bogosloff	SSE $\frac{1}{8}$ E
N " "	S. by E
S " Grewingk	WSN $\frac{1}{8}$ S
N " "	W $\frac{1}{4}$ N.

N. Peak Bogosloff $\frac{1}{3}$ tot length high
 Middle peaks little higher
 Highest part of Grewingk a little
 more than $\frac{1}{5}$ total length

Bogosloff & Grewingk vol
 canoes Aug 13/95

Greenough

Barfaloft

From anchorage May 13/95

Boyscott from anchorage
Aug 13/95 - to scale

Viewing from anchorage Aug 13/95
N. side

Aug 13, 1895 - off Bogosloff &
Grewingk volcanoes.

Sail round the islets logging
the distances & taking the
bearings

Bogosloff bearing South the
log reads 0.2 mile

The two islets in one South 55°
East - log 0.93 mile

Off middle NE end of Grewingk
log reads 1 mile

Bogosloff comes out west of
Grewingk, west edge S, 55° E
log reads 1.30 mile

Bogosloff clears Grewingk log
reads 1.55 mile

North edge of Grewingk bearing
NE, log reads 1.8 mile

South edge of Grewingk bluff
bearing NE log reads 2 miles

North edge of Bogosloff bearing
NE, log reads 3 miles,

South ditto NE, log reads 3.25

East edge Grewingk in one with

West edge Bogosloff log reads
3.65 whole island covered 3.645
East edge Grevink and East edge
Bogosloff in one, log reads
3.775 miles

Bogosloff is wedge like.
Grevink flattish top with
a little stream, form squarish
with three short northerly
projections.
The spit projects past
Bogosloff and curves to
the eastward under water.
There appears to be a channel
between the two. Anchor in
seven fms. East of the spit.

Aug 31, shells like Spirifer
from Cape Thompson SE
Alaska, Cal. Acad. Sci.
also mesozoic fossils from
Kamishak Bay and tertiary
from Ungat Id. Fisher -
Ammonite in A.C. Co's. museum
from Sutkum Id.

Heenden Bay coal ACCO
bag 227

#126 coal exists in a clay bank
on the beach ^{Red River} near Rodak Id
specimen obtained by P. & B.
July 16/95

North Pacific Mining & Transp.
Co. Capt. 300000 shares @ \$10.000
Jos. Rosenthal Pres.
J. A. Bradley Vice Pres.

4?
Organized Oct. 1895, under the
laws of Cal., commenced oper-
ations immediately.
650 tons brought from Eastland
Cañon.

Expenditure of some \$42,000
(Alaska C. Co. about \$50,000.)

E. W. Wood testing coal for Co.
W. H. Yanall & Co. Brass
founders, used some of the
Kachemak Bay coal
and report it as very fair
steaming coal. When a

good fire was kept up they
used 2600 lbs in a given
time during which they would
have used 2200 lbs of Cornish
coal. With a low fire and
small pressure of steam the
amount used was 2240 to
1350 of Cornish.

222 4ft vein 4m. South Eastland
 142 Corral Hollow July 28
 227 Herendeen Bay
 115 Sepphagen Mine Kil
 116 Pt. Sullivan
 117 Meade & Mitchell seams
 118 Brightman & de Graff
 114 McCloskey
 218 Eastland Cañon main vein
 219 " " " dump
 220 " " " in place
 224 McNeil vein
 213 Bradley vein
 214 Amalik Har
 141 Chignik
 131 Lower bed Unga
 143 Next above 131
 126 Red River, Kadiak

	213 +	
	214 +	
114 +	218 +	
115 +	219 +	
116 +	220 +	
117 +	224 +	222 ?
118 +	227 +	
126 131 + x	222 +	
141 +		
142 +		
143 +