Book B

Ellesmereland Field

March to June 1915

W. Elmer Ekblaw Geologist

Crocker Land Expedition

FIELD NOTE BOOKS

CROCKER LAND EXPEDITION

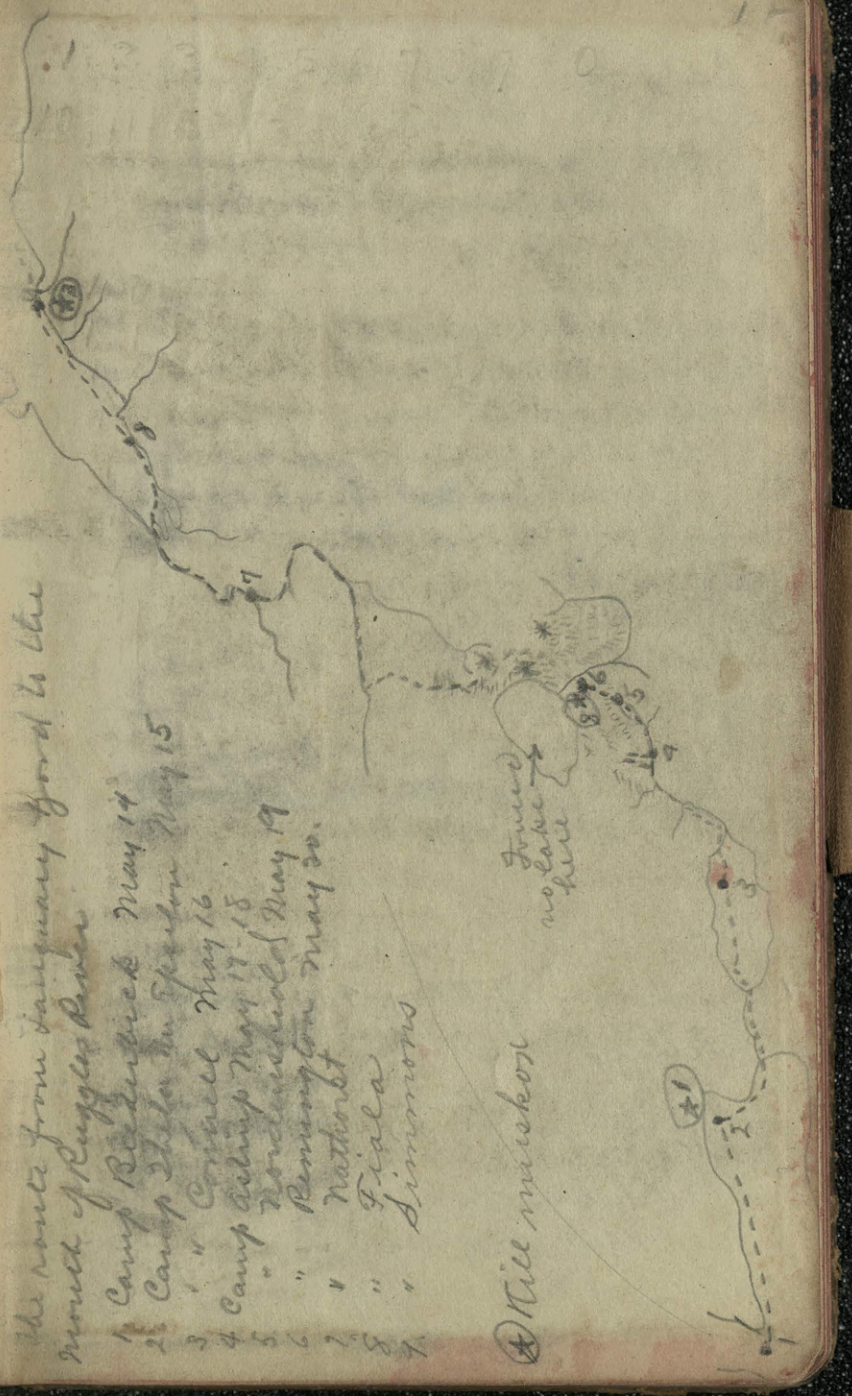
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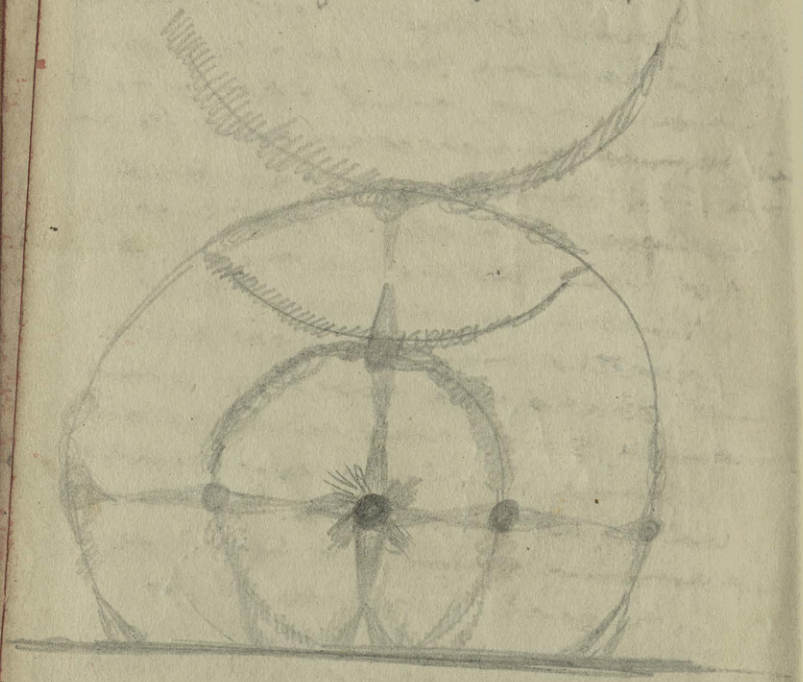
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The record, made by H. Ethier Ellsworth, Geologist to the Crocker Land Expedition, of his journey and observations from Camp Etukishook at the head of Wostenholme Fiord to Camp Nathorst, L. Hazen on its way across Ellesmere Land by way of Inglefield and Ruby Fiords, up Franklin Sound, up Canon and Greely Fiords to Lake Hazen, across Grant Land to Fort Hazen and Fort Conger and down Kennedy Channel and Hall Basin to Etah, accompanied by two reliable and faithful Eskimos, Kaya and Etukishook. The record to date including Camp Etukishook is found in Book I.



Parhelia observed about South shore of Tanquary Fjord, May 14



This solar phenomenon lasted for about two hours between 9 p.m. and 12 midnight of May 14 at Camp Biederbick when for a short time the clouds became thin, though snow continued to fall. It was the best exhibition of parhelia that I have seen, brighter and more complex than that in Bay Fjord. The two inner parhelia were as bright as the sun itself.

April 26 1915

On this day, April 26, 1915, Egayoo and Elukashoo, my two Eskimo companions, and I rounded this point on our way into Canon Fjord. We have been encamped since April 19, a short distance west of here, where we killed twenty-one muskoxen, fed and rested our dogs for seven days, dried our footgear and sleeping bags, and made ready to continue our journey. Since April 14, when we left our last supporting party, we have been on the march five days, and resting seven. We have seen game and killed plenty for ourselves and our dogs.

Our dogs are in good condition, our clothing and equipment are none the worse for wear, and we have ample provisions and oil for the rest of our journey.

After exploring Canon Fjord, we shall traverse Greely Fjord, and attempt to explore the contiguous territory and any fjords that may be tributary to the main fjord. We expect to reach the head of

Greely Fjord on, or about, May 15.
We shall cross to Lake Hazen,
and thence by the small lakes
at its eastern end, descend to
Fort Conger. We expect to stay
at the outlet of the lake into
Ruggles River for four or five
days.

The weather has been clear,
calm, and mild. The going has
been uniformly good. We saw
the midnight sun the night of
April 18. We are all well and
in splendid physical condition.

W. Elmer Ekblaw
Geologist,
April 26, 1915 Crocker Land Expedition

On the back of the record the first
stanza of "Illinois"

On the envelope: "How do you do?
I am glad you got here safe and
found my Eskimo and record.
Good luck to you."
W. Elmer Ekblaw,
April 26, 1915

April 25 - Camp Etukashoo.

Early this morning I made tea,
woke my Eskimo and prepared
for a long march. We had not
got out of the igloocca however
before a heavy wind down Greely
Fjord began drifting the snow and
I told the Eskimo we would not
start until the wind stopped. We
had still plenty of meat here for
our dogs, and I thought it useless
to set out against a head wind
with them. In one windy hard
day they would lose a lot of the
flesh they have been putting on
this week. Besides I feel that we
have no need to hurry.

We got out and each of us skinned
a muskoxen and fed his meat
to the team. I thought my team
was too stuffed to eat much but
they made way with four whole
quarters and the flukes of a
full grown muskox. We then
fooled around for a while, went
into the snowhouse where I began
whittling out a horn spoon and
Etukashoo completed a pipe on
which he has been working here.
The weather is mild, but cloudy and

April 26 Camp Toshiem.

At ten o'clock we left Camp Etickashoe, and soon after rounded the foot of the wooded ridge Mt. Hovey. Just westward of Mt. Hovey 10 full grown muskoxen were feeding on the plain but we did not molest them. All along our way, which lay close to the icefoot, we saw fresh bear tracks - of at least four different bears. One had killed a seal only yesterday along the icefoot, and after eating all he wished abandoned the remainder to the foxes of which the tracks were innumerable. We saw two flocks of ptarmigan, the tracks of many wolves, lemming, musk oxen, foxes, and ermine along the icefoot.

I looked in vain for a suitable place to build a cairn and deposit the record of which I have made a copy on pages 3 and 4 of this book. The ice near shore was piled up high and impassable, and

April 26 Camp Etickashoe
Camp Toshiem

there were no rocks of which to build a cairn. Finally about 6 o'clock in the evening, about a half hours drive before we could look down into Canon Ford we found a place where the rocks seemed numerous enough, and here we built a modest cairn about four feet high at a distance of about 38 yards from shore and forty feet above the icefoot. It is not conspicuous at a distance for it is erected on only a small knoll. The country here is so gradually sloping, and the mountains are generally so far back from shore that it is hard to find a prominent place on which to build. However our cairn is readily distinguishable on the slope within a quarter of a mile and should easily be found by any one passing.

We made camp along an iceberg where we stack cache all our supplies load that we shall not need the few days it will take us to go to the head of Canon Ford and back. When

April 26
Camp Foshiem

we get back we shall load them on again and cross to the north side of Greely Fjord, where a tributary fjord seems to open up and invite exploration. We are sleeping on our komatiks tonight for the weather is, as it has been all day, mild, clear and calm. On the morrow we shall start up Canon Fjord. We expect to get back in from four to six days.

Today when I built my cairn, and deposited I felt like a real explorer; I took two pictures of my first cairn, one near at hand, and another from the ice!

The going has been fairly good, though several times we have had rough going in patches of last years ice, and twice at were forced to the ice foot. On the whole, however, we have done fairly well today, and tomorrow, with practically empty komatiks we ought to fly fairly. One of my dogs, the old cripple is lame from a bite I guess

Fine weather – Snow melting on ice and hillsides. Clear and calm.

April 27 Camp Heth

We set out at ten o'clock from our sleeping iceberg at Camp Foshiem and started up the beaches of Canon Fjord, the head of which we could easily make out in the clear, bright forenoon sunshine. We had good going all along, though sometimes we were down to the ice foot by rough ice; sometimes tossed and tumbled over hummocks last years ice, smooth as glass; sometimes dragged with difficulty over drifts of shed and still blown on the ice; but every where else we found smooth hard snow, or more frequently, smooth ice with only a filmy dash of snow.

We passed Fat Boy Foshiem's mountain of the serrated crest at half past twelve. Here we stopped while I tried to ascertain whether or not there were any fossils in the sandstones that form the major portion of the cliff that extends for over a mile along the ice shore. All I saw were the tracks of ermine. Soon after we rounded the point of a low flat emerged section

Good going generally. Middle of fjord badly broken up. Fairly good near shore. Camp Hekla Apr. 27

and we were [illegible] of the end of the fjord. I told my Eskimo to kill six muskoxen as soon as we saw any near the ice. We had already passed one group of three, and another broken individual. In less than an hour we passed two large herds but they were too far up on the hills to warrant our going after them. One was a herd of eleven, the other of twenty-six. O

At half past six we sighted eleven near the ice on the plain of the valley of the stream on the west side of the fjord about three miles from the head, on the hills just above, and some forty or fifty further back on the plain. We stopped and quartered our game. We killed eight, and made camp. We found ice near in the main stream. We fed our dogs three whole muskoxen. I am very well satisfied with the days march, for we have made almost the entire length of the

Camp Hekla 11 P.M. Weather fine

April 27 Camp Hekla

fjord. I think the lower half of the fjord is much narrower than mapped for most of it is not so wide as Flagler & more like Frobisher fjord. I think also that the length is exaggerated. Moreover we have seen nothing of the large glacier which Forchhammer declares debouches there into the sea for six or eight miles along the east side of the fjord. Harboe Svendsen's map is essentially correct - bays, capes, streams etc, except, I think, in dimension. So far as the glacier is concerned, Forchhammer may have mistaken a steep cliff of sedimentaries, considerably piled snowed over than the rest of the coast, for a glacier, though this, I consider, is a far-fetched mistake.

My old dog is in very sad condition. On examination I find he is all chewed up by the dogs - probably Pago my big black bully.

We all took to our dark glasses today and saw the first snow bunting and [illegible] signs of spring.

I named this camp "Hekla" for tomorrow is the anniversary of the founding of my home chapter of Dacia.

Bear sled

dig found brown cocoon at this camp

April 27 Camp Heth.

We have rounded Fosheim Peninsula and everywhere found muskoxen in plenty. Though we have killed all we needed we have seen five times as many. Game there is in abundance and any future explorer in these parts need fear no lack of dog food. Besides muskoxen there are many hare and ptarmigan, and though it has not been our good fortune thus far to see any I am sure that a little later in the season there will be many seal. Also, later in the season the bears are probably numerous, judging by the tracks we have seen even this early.

What we shall find in Greely Fjord I am anxious to learn; I fancy that the northern side with its warm southern exposure, will have sufficient vegetation to support grazing animals, and that we shall find many hare, muskoxen and caribou. The time is fast coming when we shall know

Record in Cairn at head of Canon Fjd

April 28, 1915

On this day, April 28, 1915, Etukashoo and I erected this cairn and deposited this record. We left Ekayoo in charge of Camp Heth, which we established last night about three miles back along the west side of the fjord, where we killed eight muskoxen, and saw many more. We made almost the entire length of this fjord in yesterday's march.

All well; going good; rather mild, clear and calm; snow melting on land and ice.

We saw our first snow-bunting this morning flitting familiarly about our camp.

V. Elmer Ekblaw
Geologist, Crockerland Expedition

April 28, 1915.

Advise the American Museum of Natural History of the finding of this record.

The year's at the spring
And spring's at the morn,
Mornings at seven;

Record in cairn at Head of Canon Fjd.

The hillside's dew-pearled,
The lark's on the wing,
The snail's on the thorn,
God's in His Heaven,
All's right with the world
Pippa in "Pippa Passes."

On the envelope:

Hello! I am glad you got here all right and found my record. Will you please let the American Museum of Natural History, New York, U. S. A., know of your finding this?

W. Elmer Ekblaw
April 28, 1915

Thus far this leaving of records in cairns is more or less of a joke. This cairn record may however sometime prove, should doubt ever arise, that we actually visited Canon Fjord, marched to its head, and explored it, — the fact that we must deny the existence of Fosheim's big glacier, may give rise to a dispute that time and the finding of my cairn record has to settle.

Good going
Fine weather. Snow melting

April 28, Camp Neth

We rose early, about seven o'clock and I rose before the rest, made tea, and boiled meat. After breakfast Etukashoo and I set out at once for the head of the fjord. We took his dogs and my komatik. Esayoo stayed behind to keep camp and to cut up the musk ox.

Etukashoo and I had to keep to the ice foot all the way from camp to the head of the fjord, for the ice out away from it was very rough. We got to the head of the small bay in the southwest corner in about an hour and a half, took a look about for flint rocks with which to build a cairn, and finding none turned back. About a half mile from the head of the bay on the west side a long low flat point runs out quite a way, and on a sandstone ledge that maintains the very point and about 100 yds from the waters edge we found good stones with which to build.

We erected a big, tall cairn here, a cairn really creditable to an explorer (sic). It is built of sandstone blocks, some of them

Cairn Record — Ethnologys

Apr 28 Camp Herk

so large that Etukashoo and I together could scarcely get them into place. It is about 3 ft square and about 10 ft high. It is capped by a round water worn granite boulder.

In this cairn we deposited the record (copy on pages 13+14) between three basalt rocks. To get at this record one must remove some small slabs of sandstone from a crevice in the northwest side at the very base, near the sandstone ledge, and then by reaching his hand can easily get hold of the small sealed bottle in which it is placed. The bottle is wrapped in a Riegel sack.

Near this cairn we found three structures built of sandstone blocks. The structures were now in ruins but were unmistakably man's handiwork. They consisted of one large round structure and two smaller square ones. They were built of large thin sandstone slabs, and wedged with smaller ones. Whether they were the work of aborigines, or

April 28 Camp Herk

whether Foshemm and Raanes one day amused themselves by faking these ruins we could not tell. They were so covered with snow as to make only obscure photographs so I wasted no films on them.

We also found on the gravel beach not far from the edge of the ice a circle of stones, and different ring dust this I felt quite sure must be of Foshemm & Raanes' construction.

On our way back we saw the tracks of a big bear, several musk oxen and three rabbits. We took on some ice and got back to camp about four o'clock. It took us a long time to put up the cairn but it was such a conspicuous success that it was worth while I guess. (Herk)

The sunshine is now becoming very warm. To day the ground here was muddy and the snow was melting fast. When we set out this morning we saw a pair of snowbuntings, of which we saw the tracks yesterday. They flitted familiarly about our camp like a pair of white sparrows, and

Muskox calf

April 28, Camp Herb

their presence made the day seem homelike.

When we got back we fed our dogs all they could eat and then prepared a banquet to celebrate the installation of my home chapter of my fraternity. Ehukachoo fried muskox tenderloin and brains, and boiled heart, while I made tea and erbswurst soup.

While we were eating, a muskox cow a short distance away gave birth to a calf. Soon after birth the little fellow was up toddling about after his mother. This is the first calf of this season that we have seen.

As yet we have seen no glacier that answers Frahems description. Only two small glacial streams debouch upon the fjord and they terminate some distance from the water. No large one appears anywhere. Tomorrow we shall go down the fjord along the east shore, the more certainly to determine the presence or absence of the glacier.

Geology Notes

The north end of Fosheim Peninsula is plainlike a short distance from the sea, and continues so, with an occasional group of hills here and there, back to a rough mountainous district about 25 or thirty miles southward. The mountains rise abruptly at the southward of this plain, in what appears to be a continuous chain.

The slope up the plain is marked by numerous old beach ridges and terraced by old sea levels. The streams entering the sea have trenched themselves in old deltas which now form step like terraces at the mouths. These terraces are at irregular intervals and of varying width, indicating irregular intermittent recurrences of the withdrawal of the sea.

The margin of this plain and the surface generally is made up of an alluvial deposit, much like the soil of our western prairies, but more plentifully set with boulders and pebbles. Three species of shells, similar to those found on the ridges nearest the

Geology

shore are abundant throughout this soil. Fragments of sandstone, limestone and shale, and even of coal are scattered everywhere. In rounding Tokeinn peninsula I examined every approachable rock ledge, but never found no fossils. Sandstones, limestones and shales, in none of which I could find fossils succeeded each other in the series but sandstones predominated. These were gray or buff in color while the shales and limestones were dark almost black. The strata were all more or less bent and broken, tipped and tilted, generally north about 35° west. After we passed southward of Mt. Blackburn the country became more rugged and mountainous. Mt Blackburn itself rises sheer from the sea in a great brown and buff wall, almost exclusively sandstone. A great black dioritic sill outcrops near the top and continues down the dip to the water about a mile south. The exposed strata dip to the south at angle of about

Geology

25°.

Two great terraced deltas lie along the west side, made up of dark limestone fragments and buff sandstone. The same indication of the withdrawal are apparent here as elsewhere. At the head of the fjord, and near it, great sand- and limestone slopes determine the contour of the land. Several considerable stream valleys, the grazing ground of numerous muskoxen, cut the steep shores.

Along the east side of the fjords the topography has much more relief. Steep, precipitous exposures of gray and black limestone capped by even more abrupt walls of limestone rise from the sea. Three of these broad valleys with flat terraced delta-plains intersect the rocks. At the heads of two of these valleys, small glaciers have their ends, but none reach the sea. We saw nothing of Tokeinn's great glacier, and, I am sure, none exists. True, there are numerous big bergs in the fjord, but these have certainly drifted in from the northwest winds that

Geology + Zoology

have swept the fjord and made such a chaos of the ice all over the fjord.

I am disappointed in finding no fossils in the strata I have examined. I feel sure that with less snow, and with more time at a more favorable season I should reap a rich harvest. I found fragments of coal in the stream bed at Cape Hoth.

Zoology.

All the way around Foshein peninsula we saw the tracks of bear, fox, wolf, lemming, and ptarmigan. On Apr 26 we passed three ptarmigan that flew down to us from the land to the ice. Just east of Mt. Hartz we passed a herd of ten muskoxen on that same day. They were feeding on a slope about half a mile from the sea. The tracks of the bears were fresh, and at one place we found where one had caught a seal, by digging down through the drifted snow to the tidal crack. The lemming tracks often came out on the ice for a considerable distance

Zoology

Going up Grely fjord along the west side, we passed a group of three muskoxen, about two miles north of Mt. Bridgman; a single one just south of it; 17 feeding on a slope about 3 miles south; 11 a little farther on; and near the head of the fjord in a large valley and along its slopes, over fifty. Here we killed eight for dog food and stayed a day. All those we killed were fat. While we were camped here one of the cows gave birth to a calf, the first little fellow we have seen this year. At the head of the fjord and all along the side we saw rabbits and the tracks of foxes and wolves. At the base of Mt. Bridgman a network of ermine tracks indicated that a pair or several, made their lair there. Along the east side of the fjord we saw five muskoxen feeding, three rabbits and one fox. We found two dead muskoxen, one killed by wolves and one dead of old age or starvation. Both had but recently died, and both were in poor condition.

We saw old tracks of bear but no fresh ones on both sides of the fjord

Zoology:

On the west side of Canon Fjord near Camp Toshenn, we saw a group of five muskoxen. When we went up to the slope where we had seen them feeding on our way down, we found one dead one, killed, probably the day before, by wolves. They had hamstrung him, and eaten from anus inward. The struggle has apparently not been a long one, for only over a small area were the tracks. Two wolves had done the work, and were apparently near, but we could not see them about.

When we got back to the ice we ran upon fresh tracks and one big fellow had come within one hundred yards of camp.

We have seen no bear since Elder fjord, but their tracks continually. Except for muskoxen, which Toshenn pennanta seems a rich pasturage we have not seen as much game or so many traces as on the west side. I had expected to find seal on the ice on this but as yet have seen none except the "putrisse" carcass left by a bear.

Ornithology:

Just west of Mt. Hovey on April 26 we saw three ptarmigan. On the 27th I saw the tracks of many on the land just north of Mt. Bridgman. I saw none on the east side of Canon Fjord.

On April 27, at Camp Heth, we saw the tracks of a snow-bunting, and on April 28, a pair flitted about our camp all day, a cheerful token of spring. Their gay chirruping reminded me of early spring sunny mornings in Illinois.

On April 29, the same pair was still about camp, and five bright white males flew chirruping over camp as we lashed our komatiks preparatory to leaving. I have not the slightest doubt that hundreds of pairs breed on the rich pasture grounds.

We have seen no owls, and since Camp Rinkashoo no traces of any.

I fancy that the broad fertile stream valleys along Canon Fjord are the breeding grounds of many sandpiper. I found the last year depositions in the soil near camp Heth of some bird like the turnstone.

We have seen no ravens on the west coast of this land.

Fairly good going
Fine weather

April 29, Camp Foshein.

We are again back at Camp Foshein while we cached our surplus baggage on the evening of the 26th. We have been to the head of Canon fjord, - one day up, one day at camp there, and one day back.

We set out from Camp Foshein this morning at ten o'clock, crossed to the west side of the fjord and most of the way down that side made our way along the ice foot. The fjord is so narrow where we crossed that it took us only about fifteen minutes to cross. The ride however was very good there, and we went along almost as fast as the dogs could run. All along the west side we found the ice very rough, and much of the time we had to stick to the ice foot. We traveled along that side for eight hours, and then on a belt of fairly good ice crossed back to the east side just north of Mt. Muth (the serrated crest mountain, and thence along that shore back to Camp Foshein. All along the east side the going was good.

Apr 29 Foshein Camp 12.30 pm

Game.

April 29 Camp Foshein

On the east side of the fjord we passed two groups of muskoxen, one of two individuals, and one of three. We also came upon two dead muskoxen about five miles apart, of which one had been killed by the wolves, and one had apparently died of old age - or starvation. Both were near the ice foot, and both had been dead but a short time.

When we got to the shore of Foshein peninsula, that beyond muskox pasture, our dogs kept winding game continually, and finally we saw a herd of five feeding up on the hillside. We did not stop to get them however for on our way up the fjord we had seen three near the ice and near our camp, and we decided to go after them. We soon came in sight of the flock, and could see one of the big fellows lying down as if asleep. We supposed the rest were near. We started up the slope, unleashed a few of our dogs, and expected to make a kill. Much to our surprise

continued on page 30.

Heavy going
Good weather

April 30 Camp Brainard.

The record of this day is a chronicle of a day's hard going in deep snow, and the arrival at an apparently inhospitable snow covered shore.

We set out at noon this morning and at first had good going over hard packed snow. We were in fine fettle and expected to cross in a short time. However, we had not gone far when the snow began getting deeper and deeper and it was not long until it was runner deep. Through this soft, fluffy going we made slow progress indeed, and it seemed as if we should never get across. The Eskimo became discouraged too, for as we approached the land we could see no traces of game, while on the low gradual slopes of the south side we could discern two large herds of our much desired dog-food the musk-oxen.

The south side of the fjord at least in these lower regions is a long sloping coastal plain

Apr. 30 Camp Brainard

apparently not so deeply covered with snow as is this north side where the cliffs rise boldly from the icefoot. Evidently the south side is the more favorable region for good pasturage and consequently of grading game.

It was because I wished to explore what looked like a considerable fjord on this side that we came across, and tomorrow we shall leave our boots at this camp while we go westward about a mile to where either a valley or a fjord opens upon this main fjord.

Our conspicuous tracks in the distance up over the hills as we approached land yesterday indicate caribou to Eluksahoo says, but for several miles down the fjord we shall kill no game for the cliffs are too abrupt here there are no valleys. Our only hope for game tomorrow lies in the depression to the westward.

I hope that eastward of a mountain pointed cape up the fjord we shall find better going. It is about five or six miles from camp;

muskox killed by wolf

Apr. 29 Camp Tahenin (continued)

when we got there, we found the one ox we had seen, half eaten by wolves. He had been dead but a day. The other two had fled over the hills.

The dead muskoxen had been ham-strung; and the Eskimos say that it is thus that the wolves always bring down their quarry as far as their experience goes. They begin eating their game at the base of the tail and eat into the beast, leaving most of the best meat untouched.

Chagrined and disappointed we turned our dogs down the slope and back to camp. We found everything as we had left it, but before we got to our cache we crossed the imminently fresh track of a big bear and I feared that he should find the boxes disturbed. We made tea cooked meat, and made ready to cross to the north side of Grely Fjord on the morrow. I am glad that we have completed thus much of the trip safely and successfully and hope for continued good progress.

Botany Notes.

I stopped in a small ravine just north of Mt. Bridgman and on the delta at its mouth I found Saxifraga oppositifolia, Dryas integrifolia, Salix arctica (large luxuriant specimens), Draba hirta in profusion great beds of Dryas and Cassiope with scattered patches of Pyrola and Lignon. Calamagrostis, Poa, Festuca, Glyceria, and Hierochloa formed a rich pasture. Had I had more time here, I think I should have acquired a long list of plants.

At Camp Heth I had abundant opportunity for studying the vegetation for the snow was not deep, the ground was bare in many places and I had most of a day in which to look the ground over.

The vegetation was much like that of the gravel plains about Umanak. Scattered but numerous and sturdy plants of Salix arctica dotted the plain. In the swales and hollows luxuriant growth of grass and sedge flourished. Along the old stream floodplain I found a large area in which

Botany

almost the exclusive growth was Calamagrostis, rank, tufty, abundant.

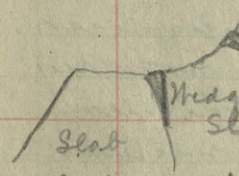
That there is a wealth of vegetation here there can be no doubt for the number of muskoxen grazing here, and the fat condition of those we killed indicates abundant and luxuriant forage.

The plants I observed at Camp Keith were Alopecurus alpinus, Calamagrostis, Arctagrostis, Trisetum spicatum, Festuca ovina, Glyceria angustata and tenella, Poa 2 sp. Eriophorum polystachium, Elyna bellardi, Carex capitata, pulla? incurva, and 3 others, Juncus biglumis, Salix arctica, Polygonum viviparum, Oxyria digyna (in great profusion) Arachnium alpinum (rare) Stellaria longipes, Alsine verna, Melandrium sp. Ranunculus sp. Papaver radicatum, Draba 2 sp. (probably hirta and alpina). Saxifraga oppositifolia, tricuspidata, and nivalis, Dryas integrifolia, Potentilla Vahliana, nivea ? and rubricaulis? Pyrola grandiflora, Mytillus alpina Statice maritima, and Taraxacum sp.

Ethnology

Whatever work it was that Etukashoo and I found near the head of Canon Fjt, I consider it worth noting. I am inclined to the belief that it was the work of former people rather than of Frobisher and Davies, for it is hardly likely that they would have gone to so much trouble on the very slim chance that any one would ever find their work.

I found the larger structure and one smaller one and Etukashoo found one of the smaller. They consisted of large slabs of stones leaning against each other supported by wedges of smaller stones of different material. Their disposition and arrangement was such as to preclude the possibility of accidental structure. I think the larger one was a habitation, the two smaller, meat storehouses.



The one meat-house was near the larger habitation, the other not far from there. Since I could not determine with certainty what the ruins were, I fancy they will ever remain a matter of conjecture.

Botany.

Thus far the west coast seems more fitted to vegetation than the east coast or the coast of Greenland. The slopes are generally more gentle, furnishing a more permanently position basis for the soil, and retarding the rapid run-off of the melting snow. Though my lists will not furnish nearly so many numbers as my Greenland studies have done, this is due to the difficulty of finding the plants. The lists are necessarily incomplete and inadequate, but this is due not to paucity of vegetation but to the unfavorable conditions for study and observation. The greater extent of area favorable to plant growth, the equally numerous varieties of plant habitats, the less inclement and modster weather conditions which I believe prevail here throughout the growing season would tend to indicate not only as great a variety and number of species, but a greater number and more luxuriant growth of individual plants. The number of grazing animals and lemming that should support this view

Camp Esayoo. May 1st.

About noon we set out to explore the fjord that opened to the westward of us. The men were slow in starting for they were reluctant to turn backward along such a heavy snow shoe trail as we had yesterday. Besides the thin sharp crust on the soft snow we waded through has cut the dogs feet badly.

Feeling sure from what I had seen yesterday that the fjord was not extensive, I told the men that we would take only our sleeping and cooking necessities, two cans milk, 3 gallons oil, one case biscuit and a little tea, leaving most of our loads in cache at Camp Brongard.

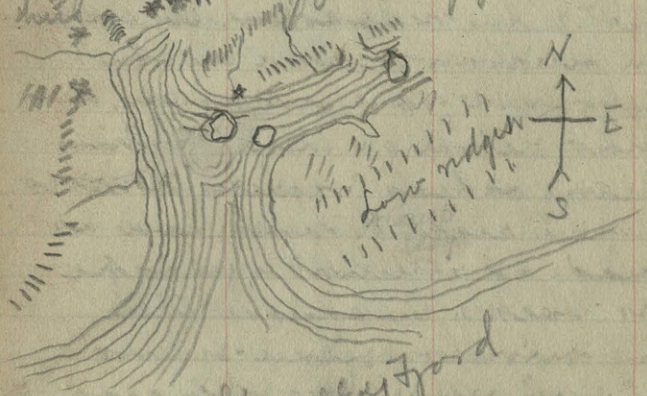
The fjord lay about three miles westward of our camp, and we found deep snow all along the shore. We entered the fjord about 3 o'clock and found the snow, if anything, still deeper and softer. Bear, lemming, wolf & fox tracks were numerous.

As we plodded along the fjord began to assume form and dimensions that I had not anticipated. After about ten miles of the main fjord we saw

Deep snow
Heavy going. Fine weather

May 1 Camp Esayo

that one branch extended northwest and another one north-north-east, almost paralleling Grady Fjord. This latter fjord though narrow is deep, and may perhaps prove to be a sound striking an island of the land to the south east of this camp. A small island lies in the fjord, a short distance southwest of us. At present the fjord appears to us



* Camp Esayo

As we approached Camp Esayoo we saw on the hills many musk oxen scattered about, over fifty in all, in several groups. We determined to make a kill from the herd nearest us. I told the men to kill ten, for I expected to make this camp a sort of base

Camp Esayo
May 2
3 p.m.
8 °

May 1st Camp Esayoo

from which to explore the fjord. The snow on the land was from one to 3 feet deep, with only a fragile crust and we soon saw that it would be impossible to get the dogs through it up the steep slope to the muskoxen about a mile back. We then left our dogs at the point of two confluent ravines and started on snowshoes up the hill. I thought we should never get to the muskoxen. At every step our snowshoes sank in the powdery snow up to our knees, and the snow fell in on them so they were heavy as lead. Finally however we came in sight of them, and as they made no attempt to escape we got back of the square they formed before we began firing. At the first volley three fell, and when the rest ran we brought down two more. The rest, panic stricken rushed pell-mell down the slope, and upon striking our snow shoe trail followed it for over a mile down to the fjord where we left our dogs. There much to our joy, the came to bay, the dogs failed to get at them, and we

May 1st Camp Esayos

killed eleven there. I regretted very much to have killed the five big fellows back on the hill so far, for they were almost out of reach, and this nearer group was quite sufficient I considered.

We fed our dogs heavily, made tea and boiled meat, and got into our sleeping bags at six o'clock in the morning.

The vegetation on these slopes is luxuriant. Wherever the muskoxen had fed, and many places where I scraped away the snow I found luxuriant growth of heath- Poa glauca?; Calamagrostis, Glyceria tenella; Carex capitata; Elyna bellardii; Myrtillus uliginosum; Dryas integrifolia, Cassiope tetragona in great profusion; Lycopodium selago; Campanula uniflora; Pyrola grandiflora; Draba sp. Papaver radicatum; Salix arctica; Saxifraga oppositi; Alsine stricta; " tricuspidata; Arnica alpina; Pedicularis capitata; Pedicularis hirsuta or lanata; Alopecurus alpina; Hisetum spicatum;

May 1 Camp Esayos

festuca ovina; Agrostis borealis; and several sedges that I could not determine. The grasses and sedges, the dryas, myrtillus and cassiope make a continuous carpet over the slopes we examined. Nowhere did we find bare ground. The soil is a rich alluvium and only in the ravines and along cliffs can we see rock exposures. Those near us are all of sandstone and limestone. The two ravines which unite at this camp, though neither is large, contain ice, showing continuous flow in the summer. I imagine that these hills are really green in summer, for the grass we found was luxuriant and fresh under the snow.

We saw the spot where an owl had but lately caught a lemming on the hill slope where we first killed the muskoxen, and a ptarmigan alighted on the snow beside our camp just as we were breaking tea. We heard the chirping of snowbuntings but saw none. Both on the ice of the fjord and on land we saw the tracks of lemming, wolf, fox.

Geology & Physiography

May 1 Camp Esayoo

The point we rounded in entering the fjord is of low rolling land, much intersected by juvenile gorges. The top of it is the plain which I have called the Acpohon fine-plain. On both sides of the fjord this plain and the [illegible] bench lines and terraces are numerous. Sharp, rugged peaks rise back of the rounded hills north of us and extend eastward as far as we could see. The rolling country about us, a sort of coastal plain, is of the Acpohon peneplain. The sea shore is low wide and fairly flat.

We shall stay in camp tomorrow and on the following day proceed up the fjord-branch to the north west of us to its head. This done we shall turn into the fjord-arm to the east to its head, if it be a sound pass through it.

This day is the first of genuine exploration, and I felt a thrill of gratification when I realized that this fjord would afford us some real work on a fairly extensive scale.

June day.

In camp

Camp Esayoo May 2.

Today we stayed in camp for our dogs were so filled with musk-ox that they could scarce move or breathe. I fed my dogs eight entire quarters of two-year old musk-oxen.

After we had our breakfast I set out on snow-shoes to the top of a mountain to the east of us for I thought that perhaps I might see what lay up that arm of the fjord. I was disappointed for another mountain higher than that to the top of which I had ascended cut off my view. I then descended and cut across to the island south of our camp to ascertain whether or not I could determine the head of the other fjord arm. Again I was disappointed, for a low point of the land obstructed my view. These two trips took me eight hours but when I got back to camp the Eskimo and I searched the sandstone ledges for fossils — without success. We then uncovered several square

May 2 Camp Esayoo

rods of the hillside to determine the character of the vegetation and were highly successful. We uncovered a large patch of Pyrola grandiflora and Campanula uniflora thickset with Melandrium affine, Pedicularis capitata and Antennaria glabrata. We found several plants of Arnica alpina and Potentilla pinca, and Vahliana; Cassiope, Myrtillus, Salix, and Dryas grew everywhere we dug away the snow. The hillside was thickly covered with grass- a luxuriant growth of Poa glauca and Glyceria distans and Luzula with much Calamagrostis, Festuca, and Trisetum. In a ravine we found a luxuriant growth of moss, marchantia, agrostis, Eriophorum polystachium, Luzula, and alopecurus. I found great areas thick set with the spikes of alopecurus. Equisetum variegatum, Salix herbacea, and Erigeron compositus were my new finds, and in addi-

May 2 Camp Esayoo 8 p.m. 8°

Heavy fog rolls in

May 2 Camp Esayoo

tion I found Luzula arcuata Hierochloa alpina here, the first I have detected on this trip. I have looked in vain for Cochlearia officinalis, Saxifraga nivalis, tricuspidata, oppositifolia, and groenlandica grow here,- how many more I do not know, but these I found.

I was well satisfied with my botanical work today, but my geology and exploration came to naught.

2 On my walks I saw the tracks of lemming, fox, wolf, bear, muskox, owl, and ptarmigan but not one rabbit. Across the fjord to the south of us I made out a herd of eighteen muskoxen, and two more farther west.

The day has been brilliantly clear but tonight a heavy fog and clouds are rolling in upon us from Canon Fjord. The wind all day has been from the south- a mild breeze.

We fed our dogs liberally and make ready to explore the north west arm of the fjord on the morrow, if the weather permitted.

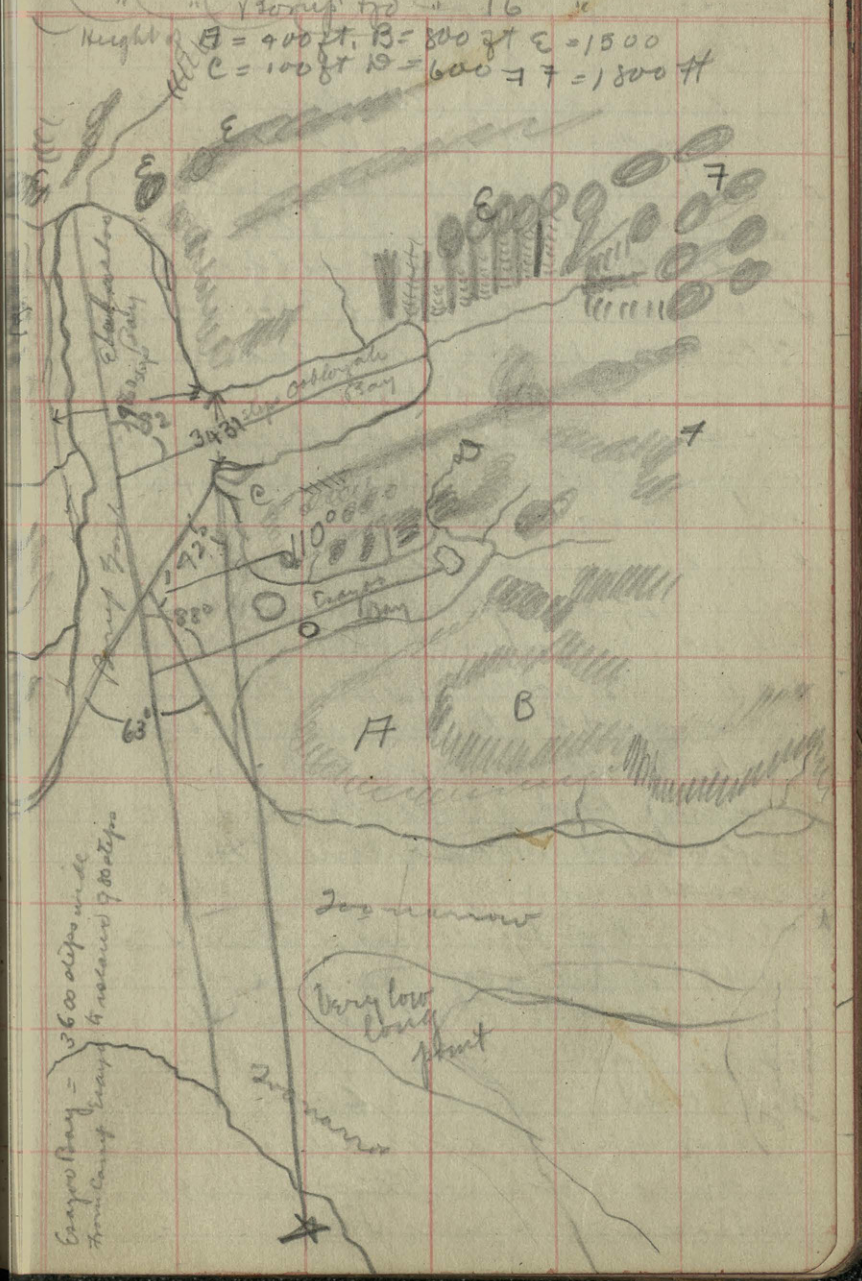
Heavy going
Sunshine followed by cloud + fog.

Camp Esayoo May 3.

When we rose this morning the fog had cleared away, so we started up the northwest fjord. As we proceeded up this fjord it opened up into two fjords, one branching off to the east, the other continuing to the northwest. The going was very heavy, and all day I broke trail ahead of the komatiks. At every step the snowshoes sank from eight to ten inches into the snow and by night I was dead tired, my toes ab numb and stiff they seemed dead, my whole legs aching so that I vowed if ever I got back to the states I should never walk one unnecessary step. The farther into the fjord we got the deeper became the snow. As soon as we could make out the entire shore of the northwestward Bay we turned up the eastward one until we could see the complete shoreline of that as well. Here we stopped and while Esayoo tried for a seal asleep on the ice Etukashoo and I made coffee. After coffee we retraced our steps back to camp

Depth of Etukashoo Bay 4½ miles
" " Esayoo " 6 miles
" " Qoblongah " 3½ "
" " Bowup Fjo " 16 "

Height A = 400 ft. B = 800 ft C = 1500
C = 1000 ft D = 600 = 7 = 1800 ft



First seals - kill none
Explore Bays

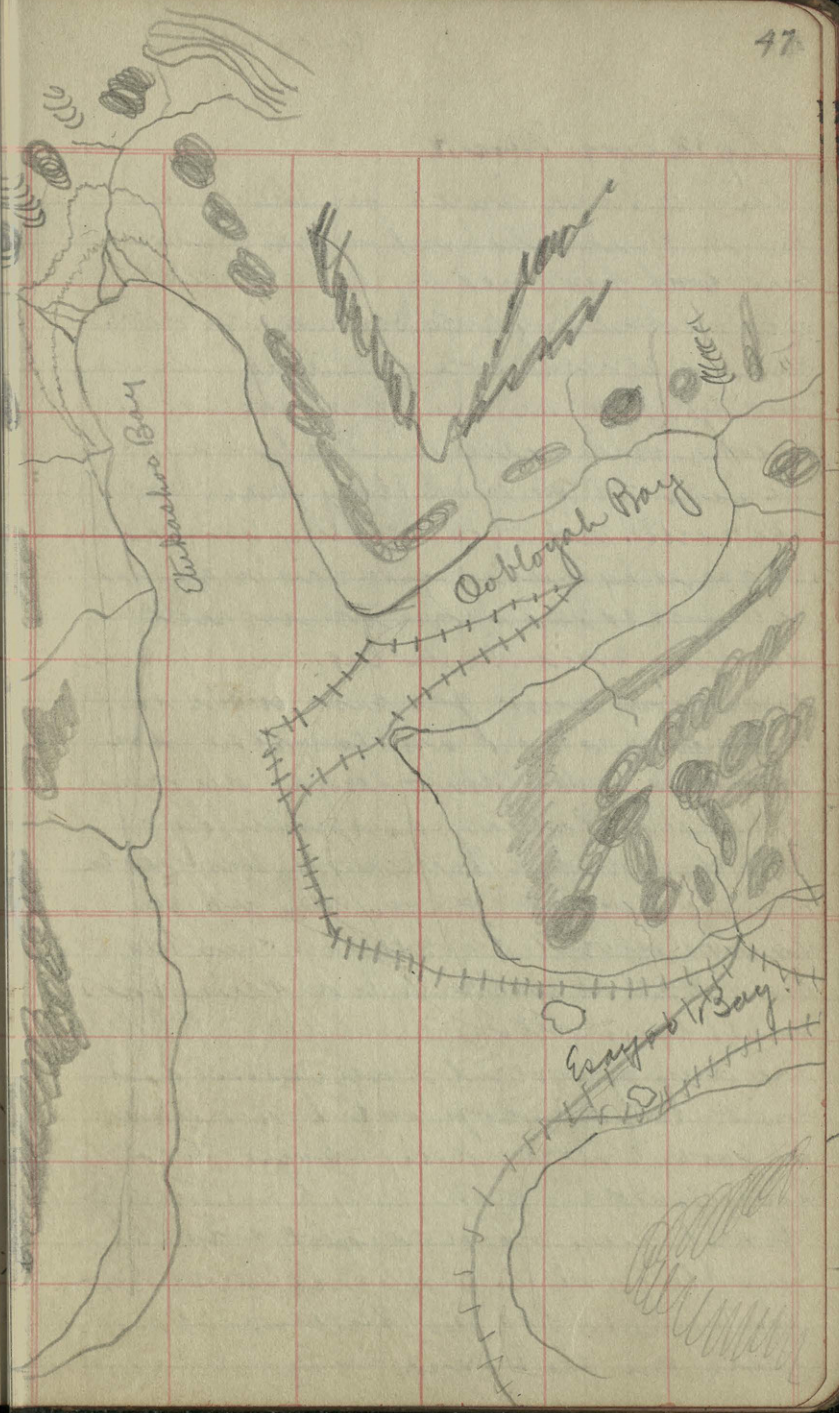
Camp Crayon. May 3.

which we reached at two o'clock in the morning, all of us and our dogs dead tired. I felt elated over having explored my first fjord and besides the coffee so stimulated me that sleep was with difficulty that I got to sleep tired as I was.

This was the first day that we have seen seals on the ice, and all told we saw five - the men two for four of them but got none. All day long we saw the tracks of many bear, lemming, fox and wolf on the ice-snow, and of one caribou. In two places we saw where an owl had brushed the snow with his wings and feet. We saw the tracks of many musk-oxen, took up the shores of both Etukashoo and Dobbin ah Bays but we saw none of the animals themselves.

The day has been clear, calm and mild, but a heavy fog is drifting in from Cairn Fjord again this morning.

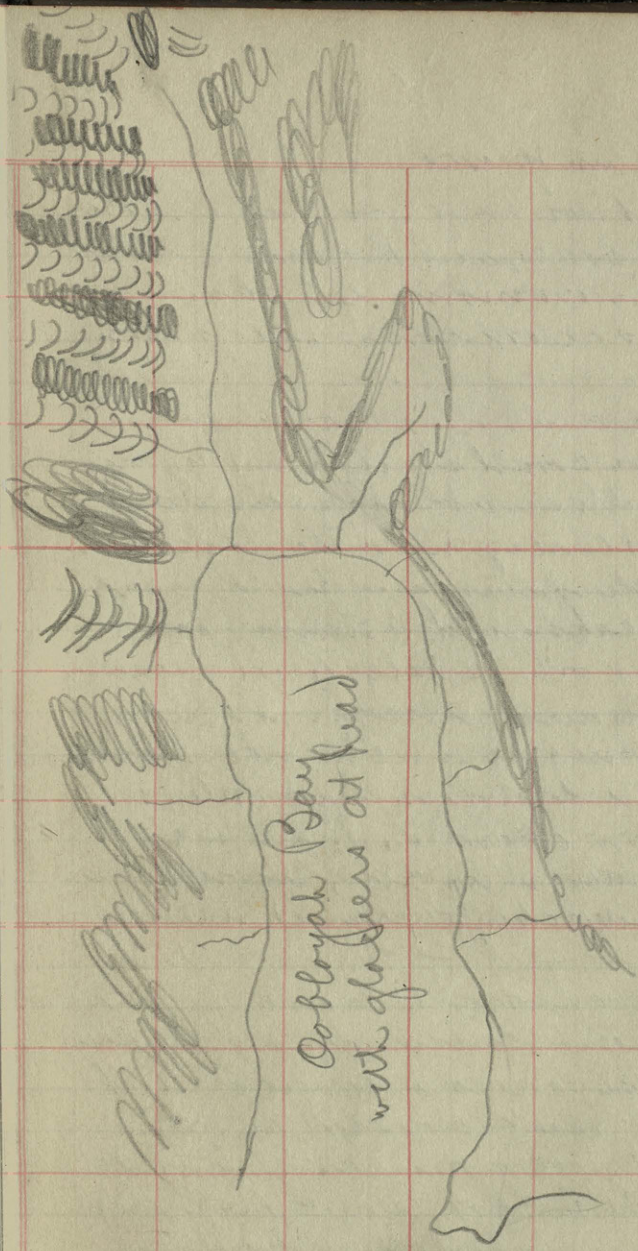
I write this record at 6:00 p m. still unable to get to sleep - the coffee was too much for me I guess. It hasn't affected the Eskimos so far as I can see



May 3, Camp Esayoo

The two bays, which for the time at least, I call Etukashoo and Coblogak are both bordered by low terraced plains back of which rise mountains of considerable altitude - sharp-peaked, alpine, and picturesque. A long wide valley runs back from the head of Coblogak Bay, and on the north side of this valley the scenery is grandly picturesque. Eight great sharp-peaked mountains rise abruptly from the valley, and between them come down precipitous glacier tongues that end up the valley slope. The south side of the valley is more gradually sloping, and rolling.

Nowhere did I have a chance to examine the rocks for fossils. The deep snow prevented walking farther than was necessary to define the coast-line: all accessible rock ledges are deeply covered or surrounded by snow. Disappointed as I am to have to forego any chance to collect fossils, I dare not delay here longer, for if any more large fjords lie up the fjord further, and the snow continues deep, we shall not have any time to spare.



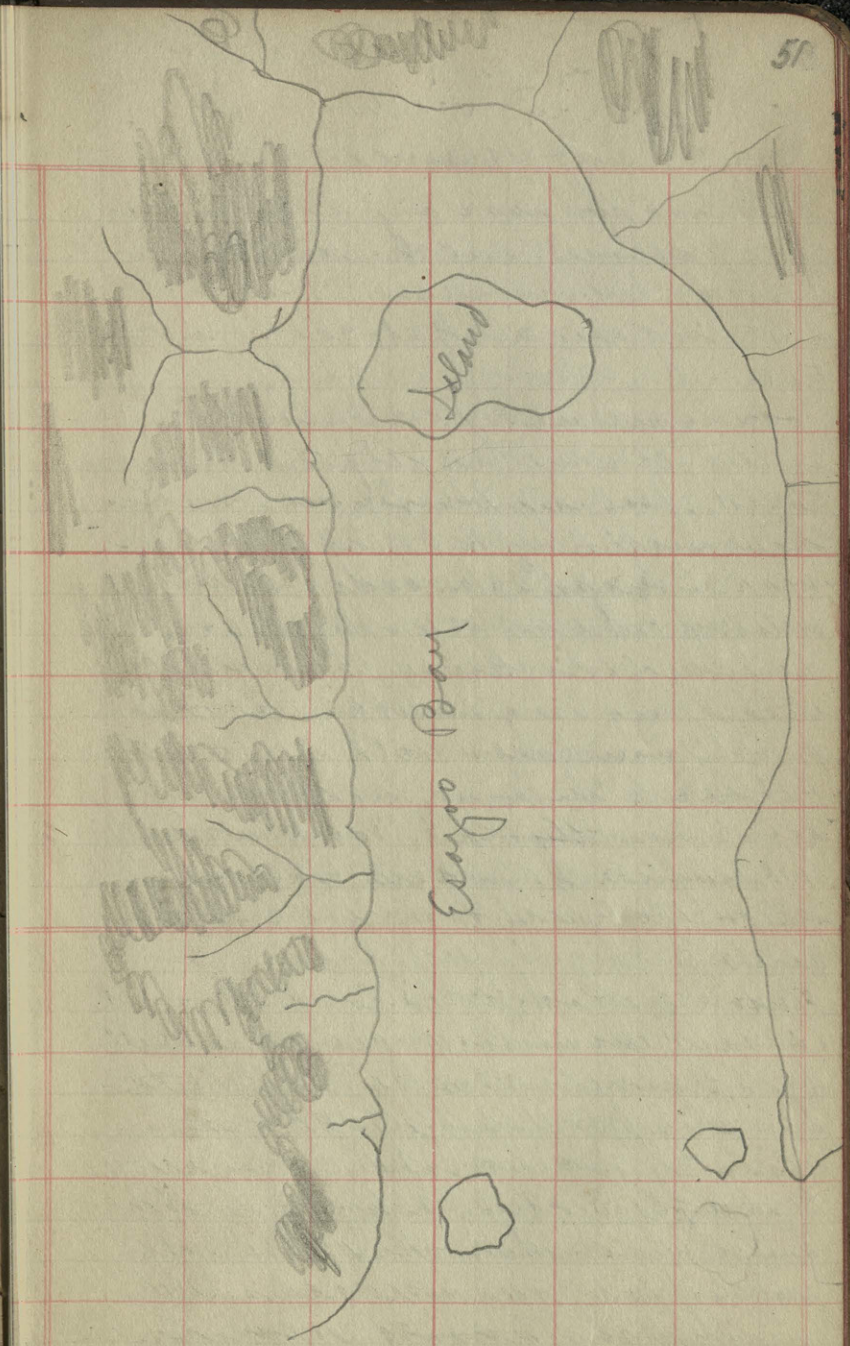
Camp Brainard
near 4th
Heavy going
Gloomy weather

May 4. Camp Brainard.

Tonight we have got back to our cache of boxes, and though it is two o'clock in the morning I shall write this record while Esayo makes tea.

Today we went up Esayo Bay until we could see its head in entirety. The snow was even deeper than yesterday and the Eskimos were in despair. Besides the sky was overcast and a heavy fog hanging over Grinly Fjord finally rolled inland and enveloped us. It was dreary going after we turned back, the fog hid about us, and only gray gulls know ~~our sights~~. When we finally got into camp here, we were all considerably depressed and dispirited.

Before the fog settled down upon us we saw two musk oxen on the hills and ~~four~~ seals on the ice. Etukishook tried for one of the latter but did not get him. I fancy that about the head of Esayo Bay there are many muskoxen for the land is low, flat, and well adapted to a flourishing growth of grass and heath.



Heavy going Deep snow
Cloudy weather

May 5 Camp Lockwood.

We set out up the fjord, leaving camp at two o'clock. With our heavily laden sledges we made slow progress. Etukashoo and I took turns breaking trail. The sky once we had as far back as we could see was heavily overcast but ahead of us up the fjord the sun shone bright until just before we made Camp Lockwood, when the entire fjord was overclouded. After the clouds darkened the landscape it became impossible to distinguish shore lines with certainty but while the sun shone we could see distinctly. A large glacier and two confluent streams debouched upon the fjord from the mountains along the south side across from us, and farther up the coast on the same side a small narrow fjord penetrates the land. A glacier enters the fjord at its head and along the northwest side a considerable plain and valley extends. Since we could make out this whole fjord from our route, I determined not to go across to it until we should get farther up the

Camp Lockwood
lat 82° 1'

May 5 Camp Lockwood

coast and ascertain whether or not there were any larger fjords on the north side that we could not yet see. We could not see the head of the fjord when we made camp, but I took a considerable mountain looming up in the distance on the south side of Greely Fjord beyond the small fjord which I have gotten to be Lockwood and Brainard's farthest. I feel certain, from having gone up the fjord thus far and having carefully studied Lockwood's sketches, that they could not have seen Fosheim Peninsula or Aard Heiberg Land, but that they saw beyond the point marked Cape Brainard on the north side of the fjord of Greely's map.

We saw no musk-oxen, but two seals lay on the ice. Auidogs often sniffed the air towards land, and I consider that in some of the numerous valleys we have passed are herds of musk-oxen, especially since we have seen their tracks several places on the hills. Bear tracks, not fresh, but many and often large net the snow. In several places they led up the shore and onto the hills. The omnipresent lemming tracks have not

Geology

May 5 Camp Lockwood

been numerous but in sufficient numbers to indicate considerable vegetation on land.

The shore is made up of alternate gulley like valleys and steep cliffs of brown, umber, and buff sandstone, with here and there an intrusive sill or dyke of dyke basaltic rock. No place could I obtain a fossiliferous fragment. The sandstone was of coarse, rounded grains, rather loosely cemented, ripple-marked and cross-bedded. I found two seams of limonite in old yount plains. The rocks generally dip to the westward, but they are so faulted, bent, and slipped along the cliffs that it is impossible to state with certainty the degree of dip. Block-faulting, with its resultant slopes and scarps, dominates the structural contour, and the physiography is a reflection of the structure.

Across the fjord on the south side a rolling, sloping coastal plain rises, behind this is a valley or glacier bed, and back of this rises rounded domes of snow-capped mountains. What lies behind the low rolling ridge?

Camp Raanes May 7 3 p.m.

Heavy going

May 6. Camp Raanes.

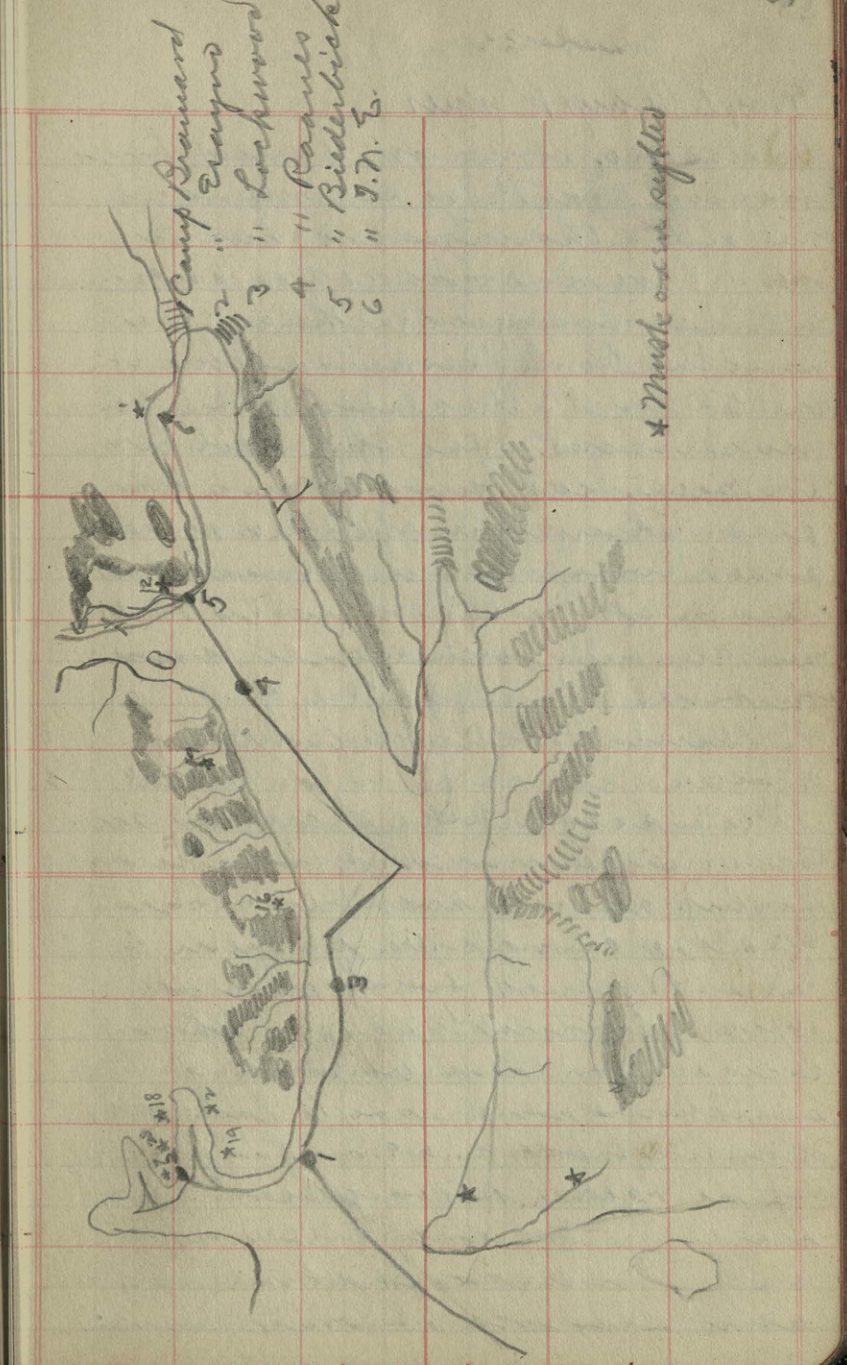
Another grueling day of deep snow and hard going. This is the fifth day that I have not taken off my snowshoes from the time we start in the morning until we stop at night to camp. And most of this day it has been cloudy, though farther up the fjord the sun has shown bright and clear. Our route today lay along the north shore until I gave orders to start across to explore the little branch fjord which lay open to our view all day yesterday. Halfway across however we saw another fjord, apparently a large one, opening up on the north side, at right angles to the main fjord, so I set out toward it at once, Etukeshoo following. Esaya who was far in the lead, did not see our change of course for some time, but as soon as he did, he at once turned toward us. The smaller fjord on the south shore did not interest me much, for I felt sure that we had seen its entire coast line. My only reason for entering it, was my hope that on the large plain a-

Geology

May 6 Camp Raanes

long its south side we should find an abundance of muskoxen. I feel sure that there are many there, for it looks like a splendid feeding ground for them. We kept on to the northwestward until one o'clock, and then made Camp Raanes. The last five hours the route lay through rough hummocky last years ice with snow from one to two feet deep, and so fragilely crusted that the sledges continually broke through.

All along the shore lay steep cliffs of clay, buff, brown, and rubbly sandstone with here and there gray and black bands of limestone. The sedimentaries here are strikingly similar to those of Canon Fjord, both in character, and structure. Their succession and color are similar — some 2000 to 2000 ft. of sandstone capping an almost equal thickness of limestone. There are limestone and shale bands in the sandstone series and sandstone & shale in the



Muskoxen

May 6 Camp Raines

limestone. Somehow I can't help feeling that these sedimentaries are older than Triassic, but as yet I have no evidence of a tangible nature. Today I carefully examined the boulders and rocks at the bottom of the cliffs, but with no success. I thought I detected the presence of favosites in a large slab of limestone but I was not sure. Everywhere in stream-bed and on slope the snow lies deep and the only rock exposures are on vertical cliffs. My geology of Grinnell Land is destined to failure I fear.

We passed a herd of muskoxen today: sixteen in number - finding further up an impassable ravine. We stopped long to watch them for we sadly need dog-food and have been reluctant to go on without even a try at them. After carefully searching for a way to get our dogs up to them, we had to give up the hope of killing them. They were at least three miles up the valley and 1000 ft above sea-level. They were the only game

Bear tracks

May 6 Camp Raines

we saw today, though we passed over many old bear tracks, and made camp tonight beside a hole where a bear had killed a seal.

Last night and tonight we fed our dogs pemmican, the first since leaving Flagler Fjord. Coyah, my white dog, chewed his traces last night. The dogs have had a hard time of it these last few days and show the lack of food and the effects of heavy going. My staunch seven are hauling my load all right but they are hard to start going whenever we have stopped to rest. The Eskimos too feel rather depressed though both Esayoo and Etukashoo are doing their level best to be cheerful and helpful. They are congenial, loyal, and always dependable. I think I should have had more selecting a better pair for a trip like this. I like Etukashoo the better, but I depend the most on reliable, sensible old Esayoo. He has done much to make me comfortable, and still more to make our way easy and successful. The two men are a good

Meteorology

May 6 Camp Raanes

complementary pair, and work together well.

The weather at the head and mouth of this fjord must be strikingly different. The moisture bearing winds come from the south west by way of Canon Fjd and Eureka Sound and meet drier, colder winds coming down the fjord. The upper fjord has usually clearer, fairer, calmer weather judging by the snow; but it has also a heavier snowfall, snow that lies heaviest and deepest in the middle reaches of the fjord. Yesterday and today it's been as before, the clouds came up from the southwest bringing fog, and were dispelled by being driven back again.

The ice of this portion of the fjord is all last years. There are many large "floe bergs" in this part of the fjord, but up near its head we can see many more, great fields of them assembled in some places.

The farther we go the more certain do I become that

Coast line

May 6 Camp Raanes

Lockwood and Beaumont never saw as far as Bonup Fjord or to Fosheim Peninsula and Axel Heiberg Land. Not only do the fjord head too much, but the low land lies quite below the horizon. Mt. Hovey when I last saw it by the fifth looked through my glasses like a small flat island and even from the hills of Bonup peninsula it was low on the horizon. Even the long low point of Arthur Land is so low that I doubt that they saw it though I think their farthest west is as they saw it was the mountains to the south of the point.

The head of the fjord is now beginning to assume somewhat the character depicted in Lockwood's sketches though I am surprised that they do not note the deep fjord at the mouth of which we are now camped. It is at least ten miles deep, and perhaps more. A small glacier debouches into a valley near its head but in no wise occupies even a small part of the area.

Tonight the fog seems rolling in upon us as we close up our tent to go to sleep. The mouth of the fjord has been wrapped in fog for over a week.

Heavy going Icebergs
Better weather

May 7. Camp Biedenbick

We continued our way across the new fjord today. The ice was rough fld ice with deep snow between the hummocks, the hardest kind of going. We made slow progress, and I thought we should never get to the coast shore where from the middle of the fjord we had seen two muskoxen feeding on the hillside, — muskoxen that we sadly need for dog food, for the pemmican the last three nights has physicked our dogs so that they barely crawl along.

We saw bear tracks continually, but no recent ones. Fox and lemming tracks were numerous on the snow.

Great fields of gigantic bergs lay here and there in the new fjord, and all those we passed ~~have been~~ stationary for several years for great "talus slopes" of blocks were piled about their bases. They are slowly shattering and disintegrating in situ. The head of Greely fjord which we could

Camp Biedenbick
May 8
3 p.m.

Muskoxen killed

May 7 Camp Biedenbick

easily recognize from Lockwoods sketches is filled with icebergs of large size. I think I recognize the mountain which was Lockwood and Brainards "farthest". It corresponds in distance and view with what they saw and described, but I can not for the life of me see how they missed this new fjord. Surely it could not have been glaciated when they were here!

We left the loads of our sledges on the ice some distance from shore, so that our camps should not be in shadow of the cliffs back of the muskoxen, and with bare komatiks dashed to the land and up the slopes after the muskoxen. The dogs soon quarried them and in a moment the men had shot them and we had meat for a day or two

Beside one of the muskoxen I recognized in a large slab of limestone, the fossils of a large cephalopod, Streptelasma like coral, and upon examination I found that all the rocks here were of coralline limestone. I discerned and collected four species and one brachiopod, a Productus, I think. I determined at once to remain here tomorrow to search the neighboring

Geology

May 7 Camp Biedenbick

cliffs for ledges from which to collect. The dogs have had five days hard packing and need at least a days rest. I wish that instead of two muskoxen we had killed twelve.

The fjord into which we have come is rather good-sized, at least eight or ten miles deep, and the head is not in sight. Thus far we can make out only a very small glacier descending into it, near its head. A small reindeer lies along the south side.

We saw the tracks of foxes, hares, ptarmigan, lemming, and snow-bunting on the slope where we killed the two muskoxen.

The snow on the land was deep, not quite so deep as on the ice however and better crusted. We could make our way up the hill without snowshoes.

After the first four hours of traveling today we got into bright glorious sunshine again for the clouds retreated down the fjord. Since April 27, we have worn our snow glasses continually on the trail. This constant straining the eyes to determine coast line tires them very much and I fear snow-blindness, ere long

Tuesday in camp. No wind, mild sunshine Geology

May 8 Camp Biedenbick

Einkaehos and I took a long walk along the rock ledges on the hills along the east side of this branch fjord for the purpose of collecting fossils, and for examining the hills for muskoxen, and the shore line. We left Hayes in charge of camp.

We were successful in our fossil hunt - at least four species of coral, two of brachiopods, two bryozoa, and several indeterminate forms. A large simple coral occurred in great profusion. The whole limestone bed was full of it, and the weathered out fossils were very numerous. We saw some very large specimens - 3 inches and over in diameter and some 20 inches and over in length. Also found a favosites-like form, a Streptelasma like form, and a Tubulipora-like form. A large productus and a smaller productus-like form, the edge of an atrypa, two bryozoa, and several indeterminate forms comprised our collection. A small foraminifer-like form that I have seen all the way from Camp

Ornithology
Zoology

May 8 Camp Beechey

Etukashoo was very numerous. The limestone ledge from which we collected this fossil was about 100 feet thick, of conformly massively bedded limestone, quite pure, and dark gray in color. A crust of travertine and lichens covered much of the exposed surfaces and made a careful examination of the rocks well-nigh impossible. However I felt quite satisfied with my day's work.

O and Z

We found three old nests of the snow buntings and saw one female bird, and many tracks. The nests were made of an exterior of grasses largely glyceria, and lined with muskox hair, and no plumage nor feathers, and the fur of hare and fox. We saw the tracks of many ptarmigan and heard the birds though we saw none. We saw many tracks of lemming, fox, and hare. We could see no more muskoxen anywhere along the fiord, though we looked long and carefully. When we got back, I packed away my rock specimens, looked over my bones, fed my dogs and did a

Vegetation

May 8 Camp Beechey

few other things that I needed to do.

B On the slopes about our muskox hill I found Saxifraga tricuspidata and oppositifolia, Carex capitata, Lesquerella arctica (in profusion though the plants were smaller than those at Unanak), Ellyna bellardi, Juncus biglumis, Eriophorum polystachium, Alopecurus alpinus, Hierochloa alpina, Festuca ovina, Luzula spicata, Draba hirta and nivalis, Dryas integrifolia, Myrtillus uliginosum, Cassiope tetragona, Stycenia distans & tenella, Poa sp., Taraxacum sp., Pedicularis capitata, Papaver radicatum, Salix arctica, and Anaetum triglumis.

The vegetation was not nearly so luxuriant as at Camp Esayoo at least not so far as I could judge from the bare spots, and the places where the muskoxen had been feeding. However, the snow was so deep that I should have been unable to observe carefully even had I been less intent on fossil collecting than I was. I saw in addition two species of Potentilla, and the leaves of Pyrola grandiflora,

Up Tanquary Fjd

May 9. Camp Lynn.

We set out from Camp Biederbick just at noon to explore this fjord. We expected to get back today, for though we could not see the head of the fjord we thought it ended not far from the limit of our view. However we took provisions - oil tea, and crackers, - enough for six days. The going at first was rather hummocky but the snow was not deep as in Greely fjord. We made good time, for the dogs were feeling good, and the weather was ideal, - mild, clear, calm.

We passed the first limit of our view about ten miles from camp, and upon rounding a point there came another ten mile stretch opening before us, and apparently beyond that still more sea ice. The going improved and we crossed this second stretch in three hours, only to enter upon a third expanse equally as long as the first two, and again we end in sight. Near the northeast end of this stretch we stopped to make coffee, and beside the iceberg where we stopped we decided to kill two muskoxen which we could see near us on land, camp for the night there, and on the morrow

May 9, Camp Lynn.

proceed up the fjord. Egayoo suggested that in view of the considerable length of this fjord already, that we might do well to take to the land to Lake Hazen from this fjord instead of from the head of Greely fjord, if we should find a suitable pass to cross by. In this view I concurred for I felt that we shall be much nearer Lake Hazen tomorrow than we shall be at the head of Greely fjord. I told the men we would take a look at the head of this fjord - Tanquary fjord - I call it temporarily - then return to Camp Biederbick to take a look at the head of Greely fjord there to build a cairn and deposit a record. Then we should decide which of the two routes seemed best.

We crossed to the land, and climbing a high slope killed the two muskoxen and made camp. While Egayoo made tea, Etukashoo and I took a walk back ~~over~~ the hills along a valley beside our camp, to look for muskoxen nor caribou, and to determine the character of the country. We saw neither animals, but we found two old circular rings of stones, unmistakably the work of human

Zoology
Botany

May 9, Camp Lynn

hands, — two meat caches we judged, built by a people who lived here long ago. These two "cairnes" were about four feet in diameter and still two feet high. They stood isolated on a terrace-plain and at one time served to hold either caribou or musk-ox I feel certain.

We came back to camp, cut up the musk oxen, fed our dogs, ate supper and went to bed at six in the morning, after a most pleasant and satisfactory day, a long march, and an ample bill of game.

We crossed many bear tracks today many of them fresh; the tracks of several caribou; the tracks of many hare, fox, lemming, and ptarmigan; we saw one seal asleep on the ice; and while we ate supper, a flight of gleaming snow-buntings passed overhead.

B On Ekblaw's and my long walk I saw Draba sp., Dryas integrifolia, Cassiope tetragona, Ellyna bellardii, Potentilla nivea and rubricaulis? Melandrium sp.? Myrtillus, Carex capitata, Glyceria distans, Festuca ovina and Calamagrostis. The vegetation where we are camped is

Geology

May 9, Camp Lynn

rather sparse, the principal plants being Dryas and Ellyna. This may be due and I feel sure that it is to the character of the soil, a loose dry gravel very coarse. Up the valley farther I fancy it is more luxuriant.

C This fjord, I think, is a drowned river valley, a meander trenched not only in the accordon peneplain but in an older cycle of erosion as well. The sinuous course of the shores the character of the slopes, and the contour of the contiguous country corroborate this view. There are many terraces as usual, many of them very distinct; and terraced deltas, terraced both by the fjord sea, and by the streams that have trenched them are numerous. Many of these deltas are at the mouths of gorges now hanging considerably above sea-level, and the gradient of the streams crossing them is considerable. Along the convex sides of the curves of this fjord, these deltas form almost a piedmont plain, and along some of the concave portions as well.

I consider that some of the valleys have at one time held glaciers now

Geology

May 9, Camp Lynn.

gone, for some of them are characteristically U shaped, though gorged at the base. The valley up which Etukashoo and I wandered has most certainly been glaciated for the remains of both lateral and terminal moraines are distinct.

The rocks are sandstone and limestone terrane similar to that along Greely Fjord. As yet I have detected no fossils in the sandstone anywhere. The same fossils occur in a dark limestone ledge near camp as I found at the head of the fjord and in the pebbles of the moraine ridge on which we are camped. My Eskimo and I, even with the most diligent search could find no others.

The strata have been much tipped and tilted, fractured and broken but in few places are there any indications of folding and they only to a slight degree. Since there are considerable stretches of cliffs in which synclinal and anticlinal structures would reveal themselves I consider that I am justified in saying there are practically none. Faulting is the dominant feature.



Muskoxen

May 9 Camp Lynn

At intervals along the way we saw muskoxen, 30 all told. Many of them were in pairs and only at one place was there a herd of considerable size. This herd is far up on the slopes. If I could have on the hills and near the sea ice, I should tell the men to slaughter all of it, and we should stay to get our dogs in good condition for the land trip across to Lake Hazen.

The muskoxen here feed on the willow and Dryas as freely as on the grasses and sedges apparently. Not only did I find the places where they had been grazing on these plants, but upon examining the contents of the first stomach of one, I found as much dryas as grass, and considerable willow as well. The pasturage is apparently not subservient, for the herds are small. This may however be due to more limited ranges, or it may be that at this season the large herds separate into smaller groups that confine themselves to more restricted areas where they may monopolize the grazing; or it may be that the danger from wolves is less at this season, so the muskoxen do not feel the need of staying together for mutual defense. We have not seen so many wolf tracks in this fjord as before on our route.

May 10 Camp Beaver

It was six o'clock of this day when we went to bed and five o'clock in the afternoon when we again struck the trail. We kept on up the fjord, the dogs racing along on fairly good ice or the very good icefoot till we reached the head of the fjord about eight o'clock at night. Here we stopped at the edge of a large delta at the mouth of a gorge like valley that entered the fjord near the head on the east side. The valley to the northwest held a glacier, as did that to the north-northeast so we knew it was useless to seek a pass in either of them.

We hitched nine dogs and climbed a high mountain along the valley to ascertain whether or not we could reasonably attempt to attain Lake Hazen by this route. It was half past nine when we got to the top of the mountain. A short distance above the mountain the valley divided into two branches, one occupied by a glacier and the other apparently a narrow rocky gorge through which we could hardly expect to effect a passage with our sledges. Beyond the glacier and the gorge, the country apparently opened up into a large valley. This valley I suspect holds a lake for the stream which has its mouth here is of considerable volume at some season of

Father's birthday
Seek pass to Lake Hazen

May 10 Camp Acacia

the year, though scanty extract at this season. The delta, the largest one I have seen along this fjord, is composed in large part of an alluvial silt, such as might come from a lake or from a valley of wide and gentle bed in which erosion is far advanced toward a plain. However, I felt it beyond my province to attempt to explore the valley further, though had there been muskoxen near for dog food, I should have delayed at least a day to examine it.

When we got down from the mountain it was almost midnight and when we had made coffee to celebrate the anniversary of my father's birthday, and had got ready to leave again it was after twelve on May 11th.

We started back down the east side of the fjord but soon crossed to the west side where we killed four muskoxen, made camp, and prepared to stay for a day. I am reluctant to stay here now that the fjord is all explored, but I anticipate hard going without much game from this fjord to Lake Hazen and want to get our dogs into the good condition as time and circumstances permit. Having come thus far successfully, done our chief work and met no misfortune, I shall do all I can to insure an equally successful end to the trip

Zoology
Ethnology
Geology

May 10 Camp Acacia

Today we crossed fresh tracks of bear and caribou on the ice, and expected consequently to see them, but bear and lemming tracks were numerous. At the head of the fjord on the delta and up the mountain slope we found the tracks of muskoxen, bear, caribou, wolf, fox, hare, ermine, lemming, ptarmigan and snow bunting. Elisabeth saw four bears. The tracks of fox, wolf, and hare were very numerous, and several paths led up the valley — which fact supports my supposition that a large territory lies open there. A fresh bear track also leads up the valley which makes the Eskimo fancy a pass to sea ice to the north.

Essayou found four old stone structures three probably former igloos, and two probably meat caches. She looked carefully for relics but found only a few old weathered muskox bones. She says the ruins are unquestionably the work of human beings of a time long past. This region must have been well peopled in a time not long passed.

The delta was almost devoid of vegetation but I observed considerable growth up the side of the mountain and up to its very top. Festuca vivipara, Carex capitata, Ellyna bellardi, Saxifrage oppositifolia, rivularis, and tricuspidata, Draba 2 sp., Dryas

Geology

May 10 Camp Acacia

integrifolia, Salix arctica, Polygonum viviparum, Oxyria digyna, Glyceria sp., Poa sp., Calamagrostis, Papaver radicatum, Potentilla nivea and subricaulis(?) Melandrium sp., Eriophorum scheuchzeri, and Luzula sp. were all the plants I saw. Along the beach were great drifts of dried roots and branches of Salix.

On the mudflats of the delta, when the wind had swept clean, the ground was studded with pairs of shells, often worn down by the wind, but almost invariably in situ as they were when the animals inhabiting them, were living. Only the two clam species were represented. So good was the state of preservation of these shells that it must have been very recently that the water receded from them.

The scenery at the head of Tanquary Bay is perhaps the grandest I have seen on the trip — great sharp-peaked or snow capped mountains, terraces, gorges, glaciers, deltas etc. The same igneous rock as prevails at Umanak forms the mountains, peaks & ridges of the topography here. The dip on both sides of the fjord is to the west, and the old stream valley which forms this fjord was determined I think by a great fault along which the sedi-

Geology

May 10 Camp Acacia

mentaries tilted.

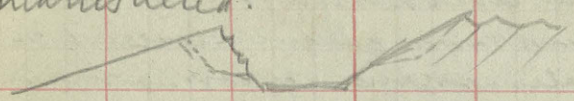


Illustration schematic of fault structure.

I am more firmly convinced than ever that this is an old stream bed trenched on the Acpahon peneplain, and of which the original course was determined by a great fault, the plane zone along which the sedimentaries dropped broke. The Acpahon peneplain is very distinct. Numerous beach lines and terraces along the fjord, and along the stream beds across the delta-plain indicate the successive intervals at which the sea has paused in its recession. I believe that even the boulders on the terraces record the interval of the pause, being most rounded on the lowest terraces. Some of the streams have varied in their cutting power at different stages of recession for their width does not always bear a constant relation to the width of the sea terraces. I wish I had more time to devote to the study of the topography and structure of this region, but time does not permit, when I must begin to feel concerned about our return across Kennedy Channel.

Hesperis Pallasii
Snow bunting + warm wind

May 11 and May 12. — Camp Acacia

We made this camp, where we killed four muskoxen, at two o'clock of this day and it was almost noon when we got into our sleeping bags. We rose at eight o'clock in the evening, when I got up first and made tea. It began snowing soon after, but soon stopped. The sky was overcast and the weather was so warm that I thought it was going to rain. I went for a walk across the hills to a nearby glacier, following the grazing trail of the muskoxen we killed yesterday. I saw the tracks of many hare, fox, ane lemming, some wolf and caribou, and of two ermine. During the day we heard many snowbunting chirping as they flew over us, borne on the warm south wind. We saw an great owl slowly flapping his way up the fjord, and a ptarmigan near the camp. The ptarmigan was a male and frequently gave the mating call.

B On my walk I found on the low moraine, numerous plants of Hesperis pallasii, ~~the first~~ ~~I had found this trip~~. Also found Alsine verna, Salix arctica, Festuca vivipara, Glyceria distans and

Camp Acacia May 12 8 P.M.

Snow
Vegetation
Muskoxen Food

May 11 and 12 Camp Acacia

tenella, Poa sp. Calamagrostis, Luzula sp., Eriophorum Scheuchzeri, Carex capitata, Ellyna bellardi, Carex sp(2) Draba sp(2 of which are hairy stems), Lesquerella arctica, Statice minutiva, Papaver radicatum, Saxifraga tricuspidata and oppositifolia Dryas integ. Cassiope tetragona, Hypnum uliginosum, Melandrium sp, Potentilla (vulvea or Vahliana) and rubricaulis, and Antennaria sp.

We examined the contents of the stomachs of three muskoxen, — much grass + sedge, considerable dryas and minor vegetation, and great quantities of willow, leaves roots + branches. I can hardly understand how they swallowed some of the branches. Ate

Along toward morning of the 12th it began snowing, a warm wet drizzly snow that turned to water soon after falling, making everything disagreeably and uncomfortably wet. The Eskimo girls had large sealskins to cover them got into their sleeping-bags, but I slept with my clothes on, on top of my sledge load, using my small sealskin to cover the load that I did not want to get wet. We went to sleep about eight o'clock in the morning

Bad weather – Wet snow
Bad Going

May 12 Camp Acacia + May 13.

About noon the sun came out clear and warm, and I got so hot sleeping that I woke to find everything running water and steaming. I went to sleep again, and when next I woke at six o'clock it was snowing damp again. I rose at once, made tea and boiled meat, for I could not sleep with the discomfort of snow and no cover. Esajas and Elukashoo ate in their sleeping bags and stayed in them until about ten o'clock, when the water from the wet falling snow drove them out. It kept getting worse and worse, so Elukashoo diagnosed suggested that we start out for Camp Biederbeck. No sooner said than done. We packed up as best we could and for ten hard solid hours plodded through fog and ever-deepening snow until at noon of the 13th we got back to our cache. I shall not soon forget that march. Wet through and uncomfortable, our dogs lazy from overfeeding, and finding deep heavy snow and dense fog where on our way up the fjord we had good going and clear sunshine, we were a disgruntled party

May 13 Camp Biederbeck 2 p.m. Ok.

Bad Weather – Wind, Snow Cold.

May 13 Camp Biederbeck

when we got back to camp to find all the stockings and kamiks we had put out to dry in the sunshine when we left, our tent, all our bags and skins and boxes wet, coated with ice, and covered with snow. We went to work at once cleaning up all that we could. We put up the tent, and then for two hours we beat snow and ice. All the time too the wind blew a gale from the southwest, all the time growing colder.

When finally we got into our sleeping bags about six o'clock in the evening, after a supper of tea, crackers and cold meat, we were well ready to go to Dreamland where wet snow, wind, and cold have no place in the climate.

I have almost lost track of the time during these last four days for we have been so irregular and inconstant in our traveling and sleeping that if I had not had a 24 hour watch to keep the record I should have become hopelessly confused.

I have learned from my experience on this trip the value of the 24 hour chronometers to a traveler or explorer in the land of the midnight sun, all night

May 14 Camp Biedenbick

We rose at three o'clock A.M. All through the night it blew hard, and this morning it was still snowing when we got out of the tent. We decided to spend the day here, for we can not see anything in the snow and haze, and we shall gain nothing by setting out. Later in the day we may set out, if the sun comes out.

We spent all day in camp here, no sunshine, - only wind and wet snow. Most of the time I tried to repair my stove, for Esayoo's is going to the bad, and mine has been useless since Camp Etukashoo. Esayoo Etukashoo, and I took turns at the two stoves, and finally I succeeded in getting mine in tip-top shape by filing the leaky place instead of trying to solder it.

Brindle & Blackie have been chewing their traces today, and two of Etukashoo's have likewise been recreant. They surely are not hungry for it has been but a day since they were so gorged they could not move. If it were not for the worry and work with my dogs I should enjoy this trip to the full, but I

Camp Biedenbick May 14 6 A.M.

May 14 Camp Biedenbick

can't reconcile myself to the tying animals or to the hunger and hard work that I must force upon them.

The snow is growing ever deeper and I fear that our journey up the fjord will be long and wearisome. It is now 32 years to the day since Lockwood and Brainard camped just across the fjord which yesterday they discovered.

Thinking that we should kill game on our return yesterday we saved no meat from our kill of the 11th and as a consequence we must eat tea, crackers and pemmican solely tonight, except for a single longue and heart that Etukashoo has hidden away.

The last two days have been the gloomiest of the trip thus far, but with returning sunshine and more game we shall again feel all right. Much depends on the ease with which we cross to Lake Hazen. If the trail is hard we shall be well tired when we get to the mouth of Ruggles River; if easy we shall be elated and well ready to feast upon the salmon, hare, musk-ox and caribou for which the place is famous.

Weather - Cloudy, mild, snowy.
Going Heavy

May 15 Camp Theta Nu Epsilon

We rose at midnight this morning, ate after breakfast made ready at once to proceed up the fjord. Getting our komatiks ready took sometime for everything was icy and snow covered. The sky was overcast and indicated continued snow.

We set out at four o'clock. The going at first was well-nigh impossible - soft, fluffy snow a foot deep on the level. We all three broke trail on snowshoes for the first two hours. At a moment when the sun gleamed faintly through the clouds I tried to take some pictures of the head of the fjord to show how faithfully Lockwood's sketches delineate the contour of the shore. Lockwood certainly did good work and there is no mistaking any one of his cliffs, ravines or mountains. His sketches are remarkably true to the scenery here. It is 32 years to the day since he sketched the head of the fjord as it appeared from their farthest. We are hoping that we shall find as good going on land as they found thirty two years ago.

Muskox.

May 15 Camp Theta Nu Epsilon

As we proceeded up the fjord the snow became less deep, though the going was by no means easy. The sun gleamed out dimly and hazily through the clouds occasionally but most of the time fine snow was falling. As we neared the head of the fjord we saw a lone muskox upon the delta flat on the south side of the fjord near its head (Adolphus Bay) and leaving our luggage on the ice we went up after it, for we had no meat for breakfast and wanted some. Besides our dogs needed food, more than the one muskox afforded. We killed it, an old bull, and going back to the ice established Camp Theta Nu Epsilon.

Back at camp, we set up the tent at once and while I got my stove going Evans succeeded in removing the worm mouth piece from his, and with duplicate parts that I had spare - paired it as well as if it were new. To celebrate his success we took a small drink of whiskey all round, the first we have had since we started the first I have tasted since March 31 of last year when I got back to that

Science { Geology / Botany / Zoology.

May 15 Camp Theta Nu Epsilon

with my feet frozen. By seven o'clock we got into our sleeping bags.

The single muskox was the only sign of life we saw today. On land I saw only three plants Salix arctica, Saxifraga oppositifolia, and Festuca ovina. The muskox we killed was though old was fairly fat, so I suppose he has found enough for forage for the year.

The delta upon which we killed him was gorged with a labyrinth of anastomosing deep gullies in the shingle and alluvium of which it is formed. The shingle bluffs were striking in the way every little slab of limestone was quite horizontally laid.

Along the way up the fjord on all the slopes and deltas the old sea beaches and terraces were distinct. I can distinguish the same Asaphus peneplain all along. I am becoming convinced that I have constantly tended to make its elevation too low - it is 1 thousand or feet above sea level and local disturbances have modified this level occasionally.

Tomorrow we shall leave a record in a cairn at the very head of Antoinette Bay and proceed Onward Lake Hazen.

in Gorge leading up from Lake Fletcher

May 16, 1915

On this day, May 16, 1915, Esayoo and Etukashoo, my two Eskimo companions, and I, passed this point on our way to Lake Hazen, Fort Conger and Etah. We have come across Smith Sound, up Flagler Fjord, across Ellesmereland, down Bay Fjord, up Eureka Sound and Greely Fjord to this point. We have penetrated Canon Fjord to its head, and have discovered three considerable fjords tributary to Greely Fjord, of which we have explored fully the two along the north side, and examined with our glasses the entire shore of the one along the south side.

We have seen many muskoxen all the way from Bay Fjord, and killed as many as we needed for food for ourselves and our dogs. The muskoxen are numerous along Greely Fjord and its tributaries. Our dogs are in good condition, our equipment is in first-class shape, and we are well fitted to complete our journey, with ample

food and oil. We have found heavy going and encountered bad weather only in Greely Fjord where the snow has been deep, and the weather cloudy and snowy with occasional intervals of clear sunlight.

We expect to reach Fort Conger on, or about, June 1st, and Etah about June 25th. We are all well and in superb physical condition, still enthusiastic and satisfied.

H. Elmer Ekblaw,
Geologist, Crockerland Expedition

May 16, 1915

On back of record:

"And only the Master shall praise us,
and only the Master shall blame,
And no one shall work for money,
and no one shall work for fame,
But each for the joy of the working,
and each in his separate sphere,
Shall draw the thing as he sees it,
For the God of Things as they are."

Kipling - The Master Port.

On the envelope.

Hello! I rejoice that you got here safe and found my

cairn and record. I hope you will find good going all your way, and only fair weather. Good luck to you! and a safe return.

H. Elmer Ekblaw

On back of record, and on back of envelope:

Please advise The American Museum of Natural History, New York, U.S.A. of the finding of this record H.E.E.

This record I had intended leaving at the head of Greely Fjord but finding no suitable place where there was rocks to build a cairn I carried it on until we reached Camp Astrup and there on May 17 instead of May 16 as the record reads, I deposited it in a small cairn built on a large flat-topped rock that rises prominently at the middle of the gorge about eight or eight miles above L. Fletcher and about half a mile above the last considerable fork in the gorge, and a hundred yards below the head of the gorge. Any one passing down or up this gorge cannot fail to find it.

deep snow
Fair weather today - but heavy snow last night and this morning

May 16, Camp Connell.

We broke camp early this morning and set out in a snow-storm for the mouth of the valley. The short distance we had to go up the fjord was all deep snow and not until we entered the moraine creek of the glacier at the head of the fjord did the snow cease. Here the sun came out, and we found better going.

The head of the fjord in the area between the two glaciers was thickly studded with great ice-bergs, so densely grouped that it would have been almost impossible to have found a way between them. We followed the ice-foot.

The stream along the glacier face was good going, with an occasional small drift of pebbles. We got to Lake ... in good order, and there had coffee, the day being Sunday. We proceeded almost to the head of the lake before we made camp. The going on the lake was fairly good but the recent heavy snow lay undisturbed on the ice, and consequently made the sledging hard.

The lake itself is a gorge-like body much narrower in proportion to its length than the map indicates, and

Camp Connell
May 16
R X

Map
Geology

the mountains that form its precipitous walls are much higher than one would expect by a comparison with Lake Hazen on Greely's maps the shores of which he describes as being low and yet are hatchured on the maps much more extensively than those of Lake Fletcher.

The walls of the lake are of sedimentary chaotic structure, the dip being generally very steep, and usually vertical. Great faces of sheer rock along the strike resemble solid walls, and when the shores cut the strata horizontal or where the tributary canons cut them at diverse angles there is a confusion of peaks and ridges that are the very representation of Chaos in stone. The sedimentaries take of limestone, sandstone and shale; though I observed only those that were exposed near the lake I found no fossils. Structure there is in profusion - synclines and anticlines, faults and contortions of every description. Nowhere else have I seen such chaotic arrangement developed to such an extent. I am sorry that the haze prevents

Zoology Archeology
Geology

successful pictures for I should like to have some of these shores.

The talus slopes are what Geikie describes from Scotland as screes great slopes of sharp angular plate-like fragments which from a distance look fairly smooth, but which near at hand are indescribably rough.

We saw tracks of bear among the big bergs at the head of the fjord, and of a single fox on our way today. When we made camp a snow-bunting came fluttering about, and Esayoo descried an owl sitting on a rock of a terrace on the delta at the mouth of a gorge. Thinking that I might get a shot at it I went after it but it flew before I got near. The lake is a lonely, lifeless bare bit of ice - the very most solitary place in which I have ever been. Its shores show remnants of two former levels one about 30 ft, the other about 50 ft. above its present level. Especially plain are the evidences of these levels on the alluvial fans or deltas at the mouths of the tributary gorges. I consider that the lake was at one time part of the fjord, but the two terraces were doubtless formed when the glacier at the lower end obstructed the outlet more than at present

Going "ravens".
Ready snow last night

May 17 Camp Astrup.

Tonight we are camped in a cold windy canon-like gorge above Lake ..., with little hope of getting out onto the higher ground above.

We broke camp at two o'clock in the afternoon and soon reached the head of the lake. Last night it snowed heavily, so the going was harder than ever but we had clear sunshine. We left the lake by a tunnel like pass along the foot of the glacier, "picking" our way over the debris of ice and rocks along the way. It took us several hours to get by the glacier and then we proceeded along a small stream which flows between two steep mountainous walls. We reached a fork where either route seemed impassable, one to the right appearing better. Esayoo made coffee while Etukishook and I walked about a mile up the way we had chosen, finding fairly good going. We went back and after coffee started up the ravine. Not far beyond when Etukishook and I had stopped we came to a wall of rock over which the dogs could not pull the sledges, so Esayoo and I went on ahead to examine the route. We were gone three hours and found that the ravine ended in

Can find no pass over divide!

Camp Astrup May 17

an impassable screef an angle of 75 degrees, an impossible ascent. When we came down we turned our sledges about and returning to the fork turned up the other ravine. We might scarcely a mile before a heavy wind struck us, and not far ahead of us this ravine too appeared to head in an impassable scree, so we decided to make camp, and on the morrow examine further, before going on. While Esayo and Etukashoo pitched the tent, I walked up the ravine a short way, but found little hope of an outlet there. However, my eyes had gone to the bad today, so I told the men that on the morrow we would take a good look, climbing up above the ravine to overlook the country. Both men were very much discouraged and blue, Etukashoo particularly, and I dared not show the state of my own feelings. We were all tired, for our dogs were so tired that we found it almost impossible to make any progress without working hard at the sledges ourselves.

The prospect seems discouraging indeed for we have pemmican for but one more day. Just; I had counted

Discouraging prospect

May 17 Camp Astrup

on three days without movement from the head of Grady Pond to Lake Hazen, and already two have passed without even getting to the divide. I fear that after all, we shall have to undergo some considerable hardship before reaching Lake Hazen, but as long as there is a ghost of a show to go on I shall keep at it. Much depends on the men, for tonight I can gather from their conversation that they are considering the advisability of returning to Etah by retracing our way. Besides being extremely reluctant to agree to such a course, I feel that to attempt it would mean our staying at Payer Harbor all summer at least, for I do not believe there is the least hope of our getting back in time to cross Smith Sound. Also I do not know what arrangements Peary may have made to relieve us - there may be a party even now at Lake Hazen or on its way there, to support us, and our retreating would put it in an embarrassing position.

The morrow will reveal what we must do. I hope my eyes will recover with sleep, or I shall be in bad state.

No signs of life anywhere.
Dogs in poor shape.

May 17 Camp Astrup.

The only trace of life that we saw today was a single fox track and that an old one ~~and~~ only at intervals. Most of the time we were traveling between rock walls of sedimentaries of vertical dip, - sheer walls, often, along the strike, and in places a grandly chaotic confusion of peaks and points and ridges. The canon we first entered was dark and gloomy its precipitous walls of dark limestone and somber sandstone reflecting the color of our state of mind.

Our dogs kept sniffing the wind as if scenting game, but the poor creatures had to be content with a single can of pemmican to each team. Kichiriahon, my right wheel dog played out, and could barely drag himself along during the last hours and one dog of each of the men's teams was taken on the sled.

We failed to find the small lake that Bernard and Lockwood have mapped above Lake Fletcher. Whether or not we shall eat it tomorrow is a matter of some comment among us as we retire tonight.

This is the first time that I have seriously wondered what the morrow will bring.

May 18. Camp Astrup.

Since we did not get to bed until four o'clock this morning, because I wished to give the men, our dogs, and my eyes all the rest possible, and because I considered that a good nights sleep would make us all more hopeful and stronger I told the men to take a good long sleep. We stayed in our sleeping bags until seven o'clock in the evening, and then, after a brakfast of pemmican and crackers, Esanjo and Etukeshoo went out to examine the forward route, and to climb to the top of the hills to survey the prospect as far as they could. My eyes are still weak, so I thought I had best stay in the tent as long as I could and not expose them to the wind and drifting snow.

The men came back and reported a fairly passable route, but that we should have to do considerable tramping. Despite the wind we at once made ready and at midnight took the trail. We were all eager to get away from this cold, gloomy, windy gorge, which held nothing but hardship and disappointment for us, to seek unknown regions that lie up

May 19 Camp Nordenskiold.

A camp of hope and sunshine this forenoon. We have travelled hard to get here but not far. From Camp Astrup we had hard going over rocks as long as we were in the main gorge, but as soon as we entered the tributary canon up which the possible route lay we struck deep snow. A hundred yards up this canon a steep slope began, and here we hitched all three teams to each komatik successfully to drag it a quarter of a mile up the slope to the foot of a steep bank, up which we had to tump everything except the dogs. This bank was about fifty or sixty feet high. Beyond it the going was over hard packed hard crusted snow, with a moderate slope until we reached the little lake at the east end of which we established this camp. It had taken us from midnight until nine o'clock to make this distance of perhaps three miles, nine hours of gruelling hard work. The dogs look well-nigh played out and though more hard days yet failed

May 19 Camp Nordenskiold

some of them must do so in a day or two unless we find muskoxen. We saw the tracks of several as soon as we got above the Astrup slope, and we hope that on the morrow Fortune will favor us and that we shall make a much-needed kill of the big game.

The wind has blown hard all the time and the wind driven snow has been like a sand-blast. My left eye has quite given out, and I can see but dimly with it. My nose is worse frozen today than it has been since we first set out – it is tonight a great white blister, raw and sore.

Tomorrow we shall probably reach the crest of the divide and take the downward trail to Lake Hazen and home. I am exceedingly grateful that we are on our way back again – I was almost in despair yesterday.

Before we left Camp Astrup I deposited a record there which I had intended leaving at the head of Greely Fjord but owing not because of scarcity of rocks. I did not build a log cairn but by utilizing a great rock as a base I made a most conspicuous one.

May 19 Camp Nordenskiold

We rose again at six o'clock in the evening, and after a light breakfast Esayoo and I set out on snowshoes to reconnoitre and determine upon a further choice of route. We went some four miles and agreed that a gully over the ridge south of us would be our immediate route and that after crossing a streambed (which by the way is flowing in the wrong direction on the map) we should go up the gradual slope to the top of the divide and seek the Very River by passing to the eastward of Mt. Lynn. The prospect seemed anything but encouraging for as far as we could see the mountains were white with deep snow. Some fairly recent muskox tracks gave us some hope, however, that before long we should strike game. We sorely need it. All the time we slept the wind blew fiercely almost demolishing the tent, and we had to go out to dig our dogs out of the snow. All of Etukashook's dogs except three and all of Esayoo's except four had eaten their traces. Each of us had one dog that would not last the day out. Tishiwishow is the first of mine to go.

May 20 Camp Remington

We left Camp Nordenskiold at midnight, crossing the end of the little lake due north, and by the snow-packed ravine up over the mountain ridge. As soon as we got to the crest of the ridge we were out of the wind, and the downward path to the last valley we had to cross before starting up the long slope to the divide was an easy one. Esayoo led, I came immediately after him, and Etukashoo was some distance behind. We passed over the down-off edges of upturned strata as if we were on ice, avoiding the many projecting ledges. My eyes were so far gone that I dared not take my glasses off for a moment, and I had considerable trouble avoiding the rocks.

We had not reached the bottom of the valley when our dogs scented game and set off as if they were in the very pink of condition at right angles to our route. Old King pulled my sledge alone, though all my dogs except Kishiwishow and Kopohon did their share of the pulling when they could. Far to our left we saw the game, — at first two big muskoxen, then a

Enroute

May 20 Camp Remington

third smaller one. These set off at a mad pace down the slope, and then near the foot they joined several more, how many we could not tell, but enough to muster dog food enough to put our faithful beasties on their feet again. Esayo's old white dog which he had loosed, soon rounded them up, and Esayo and I followed exultantly as fast as our slackened dogs could go. Etukishook was not in sight.

When we got up to the herd we saw there were eight, four large cows and four yearling and two-year-old calves. We lost no time in killing them — one fell to each of the five shells I had in my rifle, and I saved Esayo's dog by dropping an old cow that had him pinned to the ground and was endeavoring to gore him. The kill was over by the time Etukishook came up and we yelled wildly when he came in sight. We were elated beyond expression, for the eight musk-oxen would give us ample meat for three big feeds for our dogs enough to keep them alive and going for another week, and also give us meat for ourselves. By our continued dual

May 20 Camp Remington

voiced diet of muskox meals we had become so accustomed to them that we sorely craved them when we were without. For the last three days I have been hungry, only for muskox meat. At no time on this trip have I longed for the Etah grub, at no time have I missed it.

We went to work at once skinning out an animal apiece. Despite my lack of skill I got mine flayed as quickly as did my men, and such as soon as I had cut up the meat my dogs got the feed for which they were crazily yelping. I gave them everything of the body, head backbone and ribs and all the inside savings only the tongues, heart, brains and tendons. I received three quarters however for tomorrow's feed, deeming it best to give them a satisfactory meal today, a gorge tomorrow and another full feed the day after tomorrow. Since we shall stay here for three nights' sleeps to feed and rest our dogs, there is no need of giving them a gorge today.

Besides the benefit our dogs will receive, the contented rest that my men and I shall get will do us a world of good. Unless I am mistaken

May 20 Camp Remington

another day of travel in bright sunlight would have made me quite and seriously snowblind, and this two days' and three nights' rest in the soft light of our tent will most probably restore my eyes to normal strength. My nose too will get a chance to heal, a circumstance upon which our safety and success does not depend, but which will add much to my comfort.

Another short day's march will take us to the crest of the divide, and from this camp the ascent seems easy and free of rocks. Then the down grade way to Lake Hazen should be easily and rapidly passed over and the homeward route opened to us.

All in all, this muskox kill was an event fortunate for us beyond the telling. I believe that without it we were in danger, grave danger, of failing. With it, I feel confident of success and a safe and fairly prompt return to Etah. We shall reach Lake Hazen somewhat behind schedule, but I hope to make up time between Fort Conger and Cape Scott. Bessayou thinks we can go fairly fast, provided there be plenty of seals on

May 20 Camp Remington

the ice. Whether or not we shall find anyone waiting for us at Lake Hazen or at Fort Conger is a matter for considerable speculation and conjecture with us. It will be a pleasant meeting indeed, no matter which of our American party it is. Even the prospect of finding a cache at C. Constitution or C. Calhoun is a pleasant one for it will surely contain a message from the Etah home-folk.

A We saw the tracks of two hare today and of one fox. Two snowbunting flew about us as we skinned the muskoxen today. I can not give an adequate idea how agreeable and cheerful their presence is, or how lonely it seems when we fail to see them for several days as for two or three days now passed. B The only plants I observed all day were Saxifraga oppositifolia, Ellyna bellardi, and Dryas integrifolia. This camp is along the gentle slope of a valley leading southeast from Farquhar Lynn, a direction opposite to that mapped if we are camped where I think. C I can make out little geology, for the land is so uniformly snow clad that the structure is almost indistinguishable. The great ice cap lies about four miles south of us.

May 20. Camp Pennington

After a sumptuous feast of muskox head, tongue, tenderloin, and backbone we went to sleep at 9 in the morning and did not rise until 10 in the evening when again we breakfasted on muskox, and our quart of tea which we omitted before retiring tastes doubly good. We loafed in our tent awhile and then each of us skinned another muskox and fed his dogs to repletion; arranged our wet clothes to dry; repaired our worn and torn clothes; looked over our dog traces and harnesses; and attended to the dozen and one little matters that a day's rest in camp make possible in a leisurely and careful manner. I doctored my eyes with novacane and adrenalin solution, and my nose and cheeks with Hazeline Cream. The sun has been delightfully warm and now at six o'clock in the morning as we are thinking of making tea and cooking supper, the sunlight is almost hot. A bank of clouds in the west causes me some uneasiness lest fog and cloud obscure our way when we get ready to start again.

May 20 Camp Pennington

Our dogs are enjoying themselves for the sufficiency of food and the brightness of calm and warm sunshine. They ought to be in fairly good condition for a long march when next we take the trail. It is a great relief to feel that our dogs are no longer in immediate danger of failing, and an equal relief from the annoyance of having constantly to repair traces that hungry dogs chew to pieces.

Though I have been unable to make any observations here today because of saving my weak eyes, Esayoo who went for a walk up a nearby mountain reports seeing lemming, hare, fox, muskox, and snow bunting tracks in abundance. A snow bunting has been singing his mating song at intervals through the night, from a rock ledge below us and six chirping males flew about camp while Esayoo was gone.

Esayoo further reported that he saw what he thought might be Lake Belcher to the northwest and that a possible route in that direction lay across it and out by a valley with a steep gradient

muskoxen
Vegetation

May 20 Camp Remington.

toward the northeast. He however considers it the shortest and best route to go across the divide by a ravine that extends northward six or eight miles and Etukashoo agrees with him so I presume that when we resume our journey it will be by this latter over the divide route.

B The stomachs of the muskoxen we killed at this place did not contain a preponderance of willow either stems or roots, as did those of the muskoxen we killed on Tuguary Fjord. They were well fed and fat and I suppose from this that somewhere in the vicinity sufficient grass and sedge grows for pasturage. I should like to see these heights in July when the snow has melted off, and the vegetation has sprung into flower. I fancy there would not be much luxuriance of growth, but that the valley slopes and stream beds would present much less a bare aspect than they do now. I wonder what birds nest on these lonely slopes. I suppose these lakes are peopled by birds - but which!

May 21
7 a.m.
Camp Remington
8 +

May 21, Camp Remington

The record for this day up to seven o'clock in the morning will be found under May 20.

At seven o'clock we boiled meat and made tea, and shortly after I went for a short walk about camp. D The snow is melting rapidly and the green in the Saxifraga oppositifolia is becoming conspicuous. I found Cerastium alpinum, Potentilla sp. and Festuca ovina in addition to the plants I have named. The Saxifraga oppositifolia in its caespitose form is everywhere abundant, so that in a month or two these bare hills will be purple with its royal carpeting of flowers. Much to my surprise, I found along the back trail of the muskoxen we killed that they had grazed almost exclusively on this low heath plant, cropping it close down to the ground, and even pulling it out of the stony soil by its roots.

About ten o'clock we went to sleep for Ewaigoo and Etukasho had decided not to stay here a third day but to go on on the morrow.

12 p.m. down rocky gorge
6 p.m. made camp in flood plain of gorge.

May 22 Camp Nathorst.

Promptly at nine o'clock in the evening we turned out of our sleeping bags. The bags are almost too warm to sleep in comfortably now, and Etukeshoo got out of his last night. We had breakfast, fed our dogs the remainder of the meat, broke camp, and promptly at midnight took the trail.

We soon crossed the valley to the north of us and then headed due north up a series of shallow sloping ravines to the crest of the divide which we reached at eight o'clock in the morning. Without knowing it at the time we passed the site of Greely's Camp about eight o'clock. We expected to find Mt. Lynn towering above all the other mountains, whereas, in fact, there is a whole flock of snow capped mountains about it, equally high, or nearly so. When we did find out that we had passed it we were far from it.

The small glacier formed the divide, and as soon as we struck

May 22 Camp Nathorst

a downward grade northward we stopped for coffee and water. Evans and I climbed mountains he to the south, I to the north — for the purpose of reconnoitering. Ascending a high snow clad dome, I descried to the north a large white flat area, which I knew at once must be Lake Hazen. I could not discern its farther limits, even with my glasses. Below me all the snow was gone, and the long valley at the head of the lake, was as black as the ace of spades, so I concluded at once that we should be unable to enter the lake directly because of the rocks. Studying the region with my glasses I came to the decision to follow the downward grade on which we had stopped for it led eastward and appeared to enter the lake about five miles below its head where I could make out a snow-clad land. To the northward of me towered the black sharp peak Garfield Mts. utterly devoid of snow except where glaciers poured

May 22 Camp Nathorst

through the passes in them. They looked most formidable and forbidding and I was glad we had not sought a pass by Tangenary Fjord. The scene from the top of the mountain was supremely wild, arctic and picturesque.

As soon as I told my men how near we were to L. Hazen, all our troubles were forgotten, and we set out at once down the sloping valley that we thought would take us to the lake easily and quickly, little dreaming of the trying and torturous time that immediately awaited us.

We traveled fast over good snow for an hour and then the valley narrowed to a suspicious ravine into which we plunged. Here we came to grief — the ravine was walled by high precipitous cliffs, filled with rocks and every few hundred yards obstructed by steep rock-slides. For three weary hours we toiled through this canon and then struck an hours good going which brought us to the

May 22 Camp Nathorst

head of the valley at the west end of the lake much to our discomfiture, for as far as we could see down the valley it was bare of ~~rocks~~ ice and strewn and filled with rocks and boulders.

We stopped for a while to rest our dogs and decided to camp at the confluence of two streambeds or gullies, but finding a stretch of ice beyond their junction we pushed on about a mile before we finally stopped and made Camp Nathorst. Our dogs were tired. We were tired, cross, and wet with perspiration, and the grand scenery about us affected us little. So tired were we that we almost lacked ambition to put up the tent, but when Ekuesho set off to kill a nearby hare, Esayo and I started the Primus and soon had the camp comfortable. The great consolation of the day has been the weather, calm, clear, and mild. We could always see our way, and did not have to endure the wind and drifting snow that our way up the divide was so marked by. My eyes were strong after the frost and my nose hardly

Zoology
Geology

Geology.

May 22 Camp Nathorst

tolerable.

2 All along our way we saw tracks of muskoxen, and we passed near by a herd of eleven, including two little calves, feeding on the slopes south of Camp Lynn. Even down the canon to the flat at the head of the lake we saw the tracks of one large ox; the flat itself was covered with dung & tracks, and I found two old skulls near the site of our camp.

We saw the tracks of fox, ptarmigan, caribou, ermine, lemming and owl. Snowbuntings sang all along our way. The tracks of hare covered the hillsides. The gorges afford splendid nesting sites for ptarmigan and snow buntings; the slopes good grazing grounds for hare, muskox and caribou and feeding ground for the lemming.

6 The route lay over much metamorphosed sedimentaries with high dips, much contorted and disturbed. The canon gorges suggest that the present cycle is in a juvinile stage, the beginning of the destruction of the uplifted old Archean peneplain

Suggestions for work in future.

I. When going into game country take 10 or more dogs. With plenty of game they can be kept in shape, and their greater strength will keep them from breaking down so quickly as a smaller team would. It also affords better opportunity to carry the little additional comforts impossible with a small team.

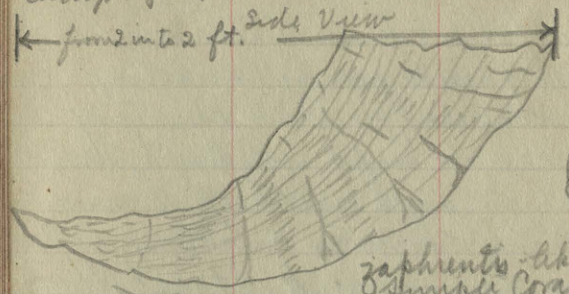
II. Take two sealskins - one large enough to keep under the sleeping gear, another large enough to cover it from damp or drifting snow.

III. If equipped with Primus stove take rosin & acid, soldering iron, and solder.

IV. Take small pieces of chamois in field-glass case and in camera case to wipe off frost.

V On a circuitous route as many possible supporting parties would better meet the main party on its <u>return</u> trip for then they can "back cache" supplies for all parties, the more rapidly lightening the load. And in caches left for a returning party cartridges and matches are an important desideratum. A circuitous route is the more wearing and difficult one

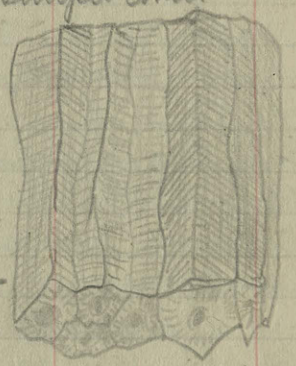
Fossils found in limestone-ledge near Camp Biedenbick and also at Camp Lynn.



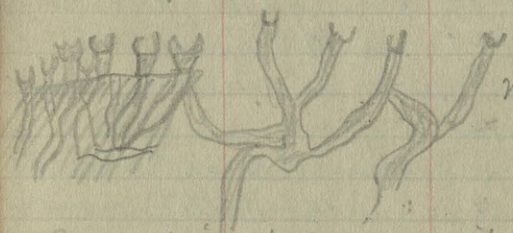


Zaphrentis-like Simple Coral.

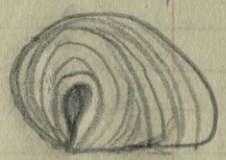




Top view
Acervularia profunda-like compound Coral



Branching tubuliporo-like compound coral.





Productus-like brachiopod from 1 to 3 in



Chonetes-like from 1/4 to 1 in

Species	Rock	Bear	Seal	Caribou	Limit	Grave	Deer	Near	Antelope	Fox	Lion	Kicked	Wolf	Bear	Sheep	Buffalo	Horse	Cow	Human
26	10	*			*			*	6	*	*	*	*				*		
27	82	8	*					*		*	*	*			*				
28	64	*	*		*			*		*	*	*	*						
29	11	*	*		*			*		*	*	*	*		*				
Ophiura	61	16	*	9				*	2	*	*	*							
Trilobite	6	16	*	2				*		*	*	*							
	1	16	2	*				*		*	*	*							
		8		*	*			*		*	*	*	*						
	14	35	6		*						*	*							
	14	11	1		*							*							
	1	1	8																

Roll no. 19

34 2 Pi Beta Phi Tent at Camp T. M. E. 1/5-11
4 Black.
32 5 Looking down toward head of Greely Fjd 1/10-11
33 6 " up toward Lake Fletcher 1/10-11

Roll No. 20

1 The Head of Lake Fletcher 1/2-16
26 2 Entering the "Tunnel" 1/2-16
25 3 "Creep" at the head of L. Fletcher 1/10-11
30 4 "Picking" our way head of L. Fletcher 1/10-11
5 The Hill that saved us - At the Top of Hellwelt 1/5-11
29 6 Camp Remington 1/5-11

Roll No. 21

one negative showing route across divide. Toward pass
1 The top of the World from Camp Remington 1/5-11
2 Another Pathway - To Lake Fletcher - Northwest.
3 View of glacier + head of L. Hazen spoiled
4 " " " " " "
5 " " cliffs at " " " "
6 " " glacier at head of L. Hazen 1-11

Suggestions for working picture (continued)

VI. Take rolls with as large number of films as possible, to save rush of reloading at critical times.

VII.

Roll # 15

27 1 Icebergs with flotation plains - Head of Greely Fjd
28 2 Icebergs at mouth of fjord near head " " "
3 Head of Fjord near Head of Greely Fjd
4 West side of fjord " " " " "
31 5 Fossil ledge of May 6, 1915
32 6 Camp Biederbeck

Roll No. 16

51 1 Approaching eastside of Tanquary fjord not far from head 1/5-11
51 2 Looking down fjord from Camp Lynn. Fjord appears closed, showing that head is not visible from this fjord 1/5-11
53 3 West side of Tanquary Fjord opposite Camp Lynn 1/5-11
4 " " " " " " " " above " " 1/5-11
5 ? At camp Lynn or shortly after
6 6 at the head of Tanquary fjord - drinking coffee to celebrate my fathers birthday anniversary

Roll No. 17

1 Head of Tanquary Fjd when we sought Hypnos 1/2-11
46 2 Across fjord 1 - showing glaciers + erosion 1/5-11
47 3 " " 1 " " " " " (a west fjd) 1/5-11
4 Northwest valley of Tanquary Fjd 1/2-11
48 5 West side of Tanquary Fjd. Hanging glaciers + erosion 1/5-11 2-11
49 6 " " " " " " " " " "

Roll No. 18

4 1 Our Acacia anniversary dinner awaiting as 1/5-11 1/1
1 2 " " " " + Camp Acacia 1/5-11
2 3 " " " " " " 1/5-11
3 4 Looking up Tanquary Fjd from Camp Biederbeck
50 5 Greely Fjord looking toward L + B's farthest
6 The head of Greely Fjd 3-11

Roll No 19

1 The Head of Greely Fjd 1-11
35 2 Making T + E. M's at Camp T. M. E. 1/5-11

Roll No 11.

1 My first Camera (Near) 1/10 on Stop
2 " " " (from Ice) 1/10 on 11 Stop
3 The Head of Canon Fjd. -1/5-11
4 Heth Herd of Muskoxen. 1/10 -11
5 Getting my Installation Day (Ballequet 1/25-11
6 " " " " Eluk+D

Roll No. 12.

1 View of cliffs of S.W. Bay of Canon Fjd. 1/10 11
2 Carrie 1/10-11 on Heth Cape Canon Fjd. Elukashoo
3 " " " " " " Nielsen
4 More remote view of same carin 1/10 11
5 Tea Course of Heth Installation Banquet 1/10-11
6 Meat + Soup Course at same. 1/2 11

Roll No 13

1 Camp Fosheim 1/10-11 Esayo counting a very large herd of muskoxen on Cape
January. 1/10-11
2. Far view of new land. Snow Shoe trail 1-11 (?)
3. Near approach to new land 1/5-11 (?)
4. Approach to Camp Esayoo - (Perhaps Camp Brainard) (?)
5. Camp Esayoo. 1/5-11
6 Head of Bay No 1. "Alps" Mts. + Glaciers 1/5-11

Roll No. 14.

1 Head of Bay No. 2. - 1/5-11
2 The Camp off Camp Esayoo. ? Camp Brainard?
3 Camp Lockwood. 1/5-11
4 Southeast from Camp Raanes. 1-11 mt in center
5 Southward from Camp Raanes 1-11
6. Camp Raanes My Dogs All In. 1/5-11

Specimens collected.

Z_2 = Bag of Shells from terrace 100 ft. above sea-level near head of Canon Fjord; EZ_4.

Bag G7 Contains E. G 7 Mixed fossils from limestone ledge on small fjord tributary to Greely Fjord. May 8, 1915

Bag G8 Contains Els 8 a large simple coral from same as Els 7.

Bag G9 Contains Els 9 a productus-like form from same as Els 7.

Bag G10 Contains Els, 0 a tubuliporate coralline form coral from same as Els 7

Envelope B_1

EB_1 Calamagrostis purpurascens from plain near head of Canon Fjd. for verification.

Bag G.11
Contains Els.11 a Favosites-like
compound coral from limestone
ledge in small fjord tributary to
Greely Fjord. May 8, 1915

Bag G.12. Contains Els.12. Large simple
coral, same as Bag G.8

Bag G.13 Same as Bag G.12.

Bag G.14 Contains Els.14 Slabs of mixed
fossils from same as Els.11.

AM2011.6.267