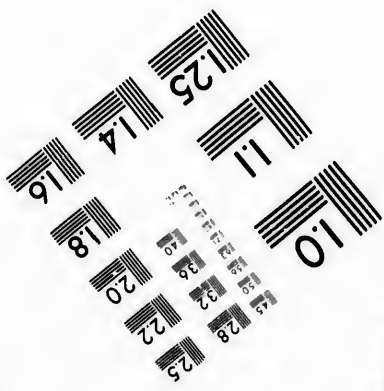
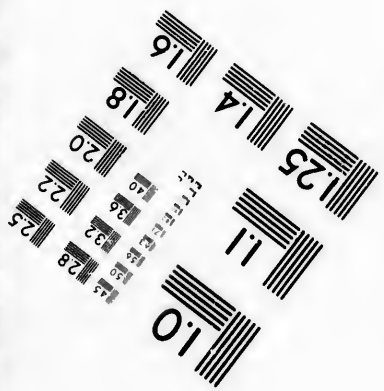
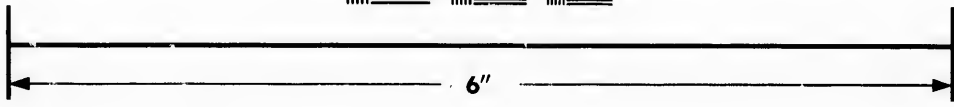
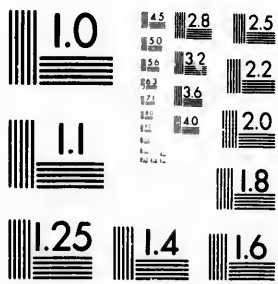


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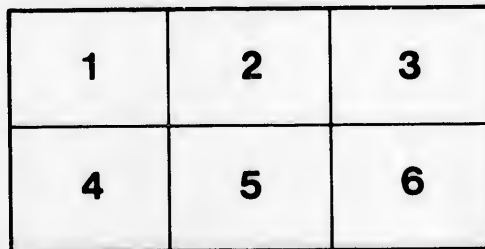
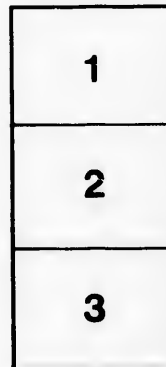
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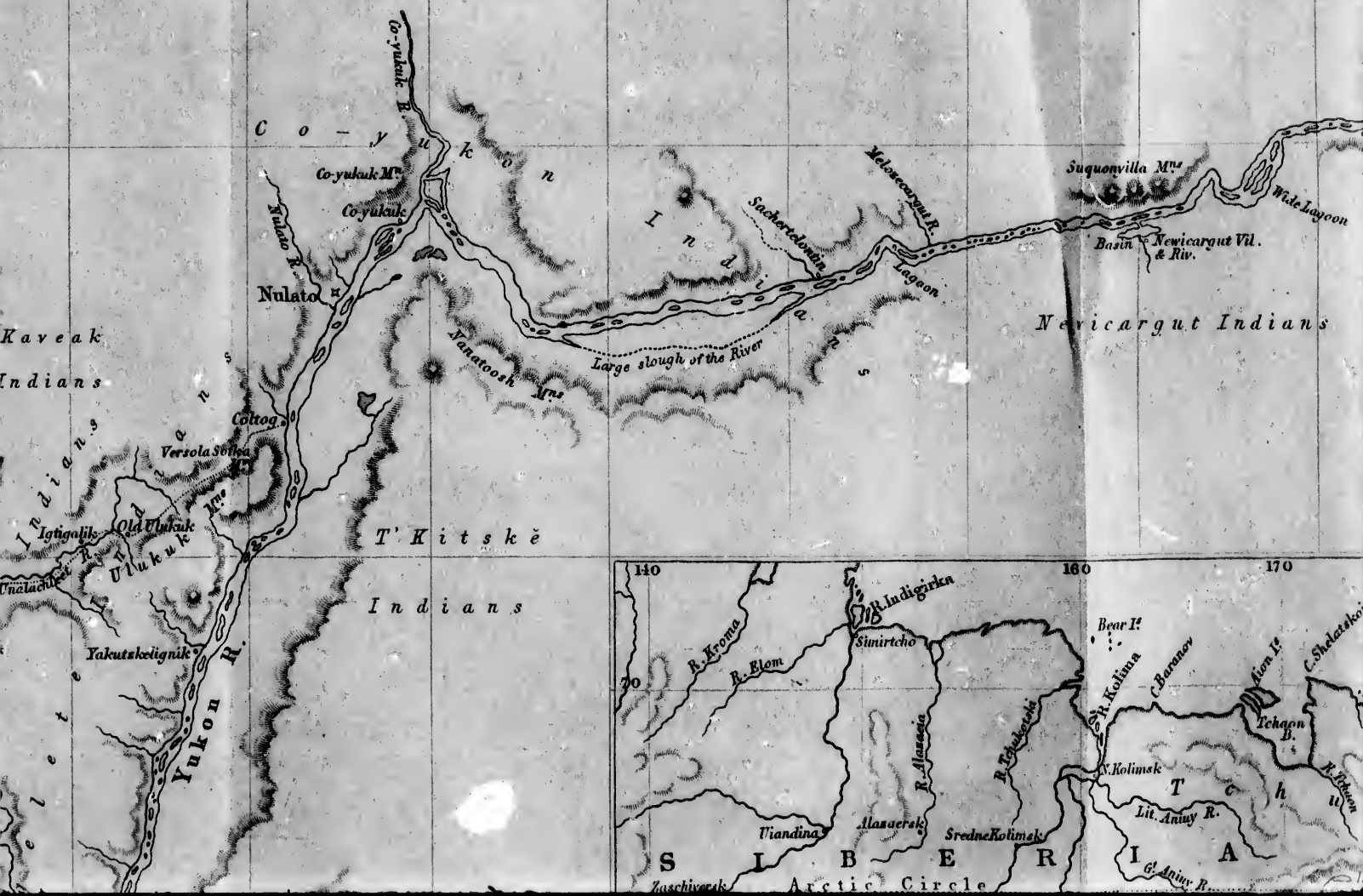
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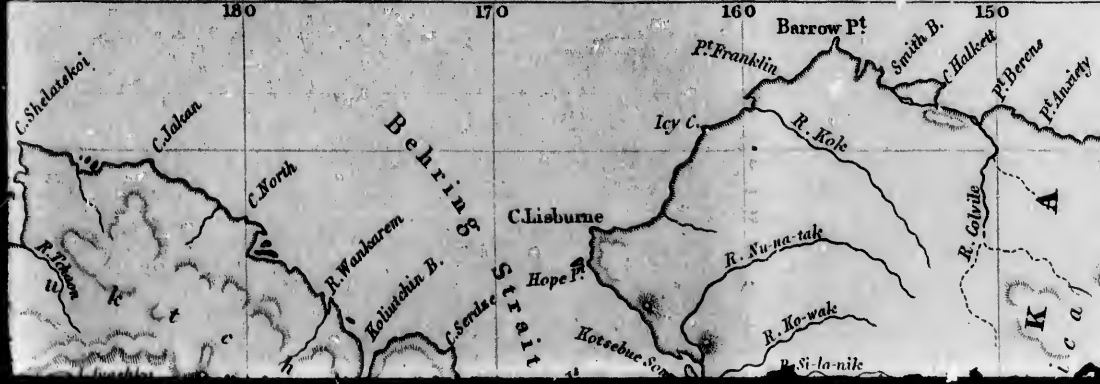
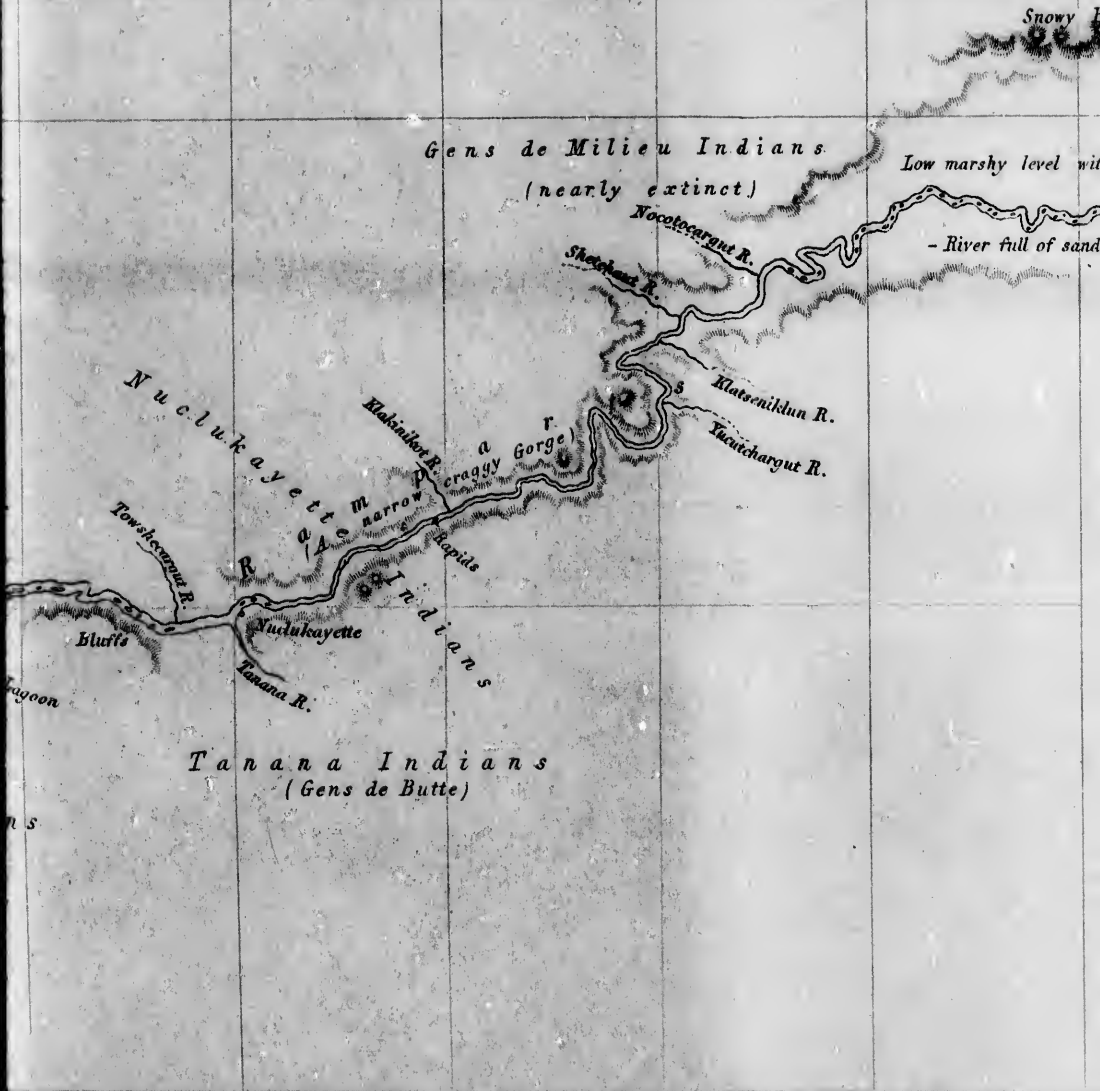
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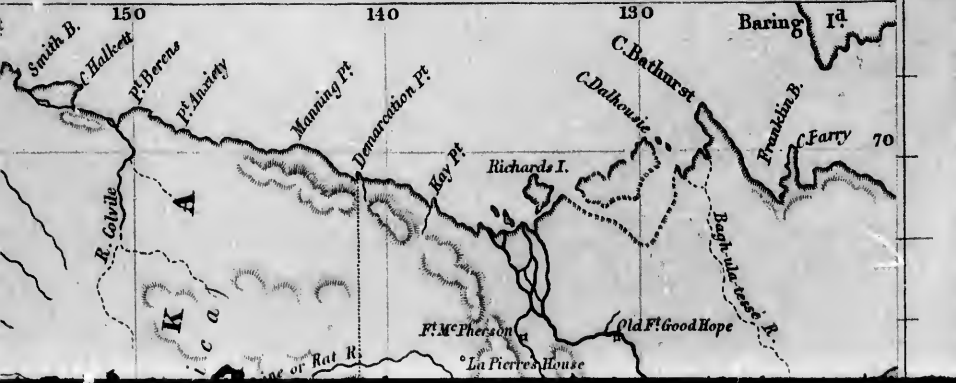


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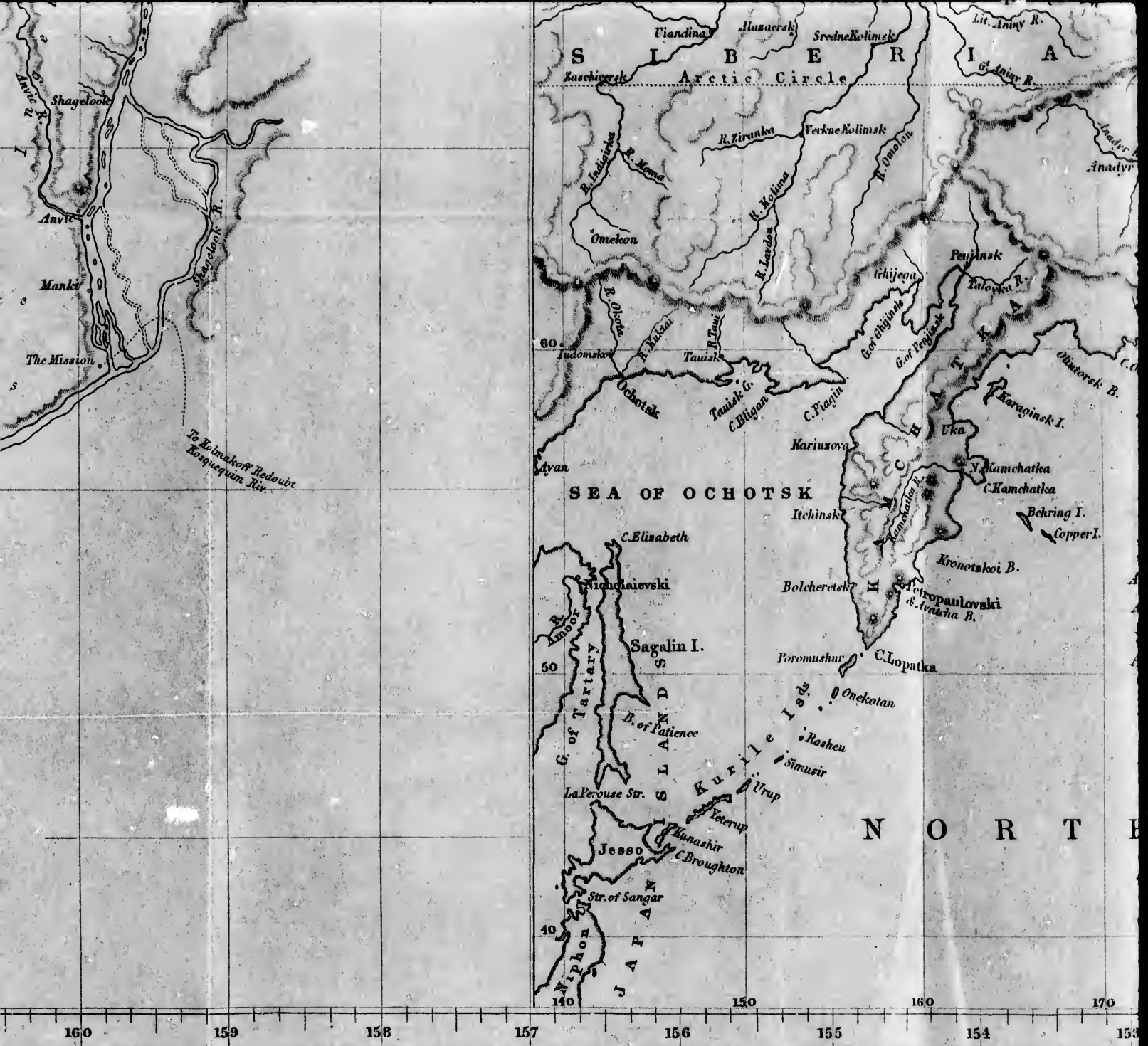




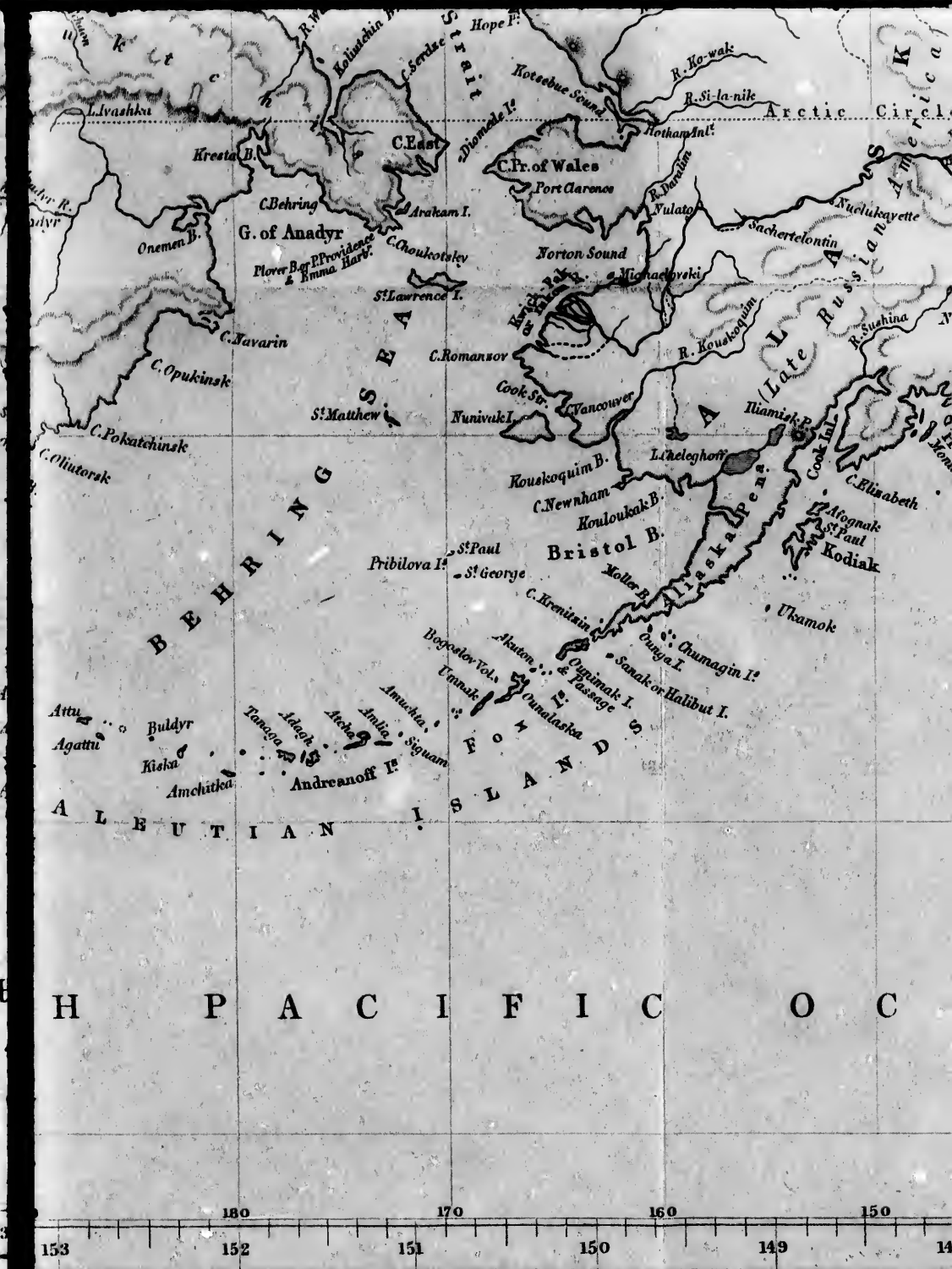
Map of the
YUKON
 OR
KWICH-PAK RIVER.

(To illustrate Mr. Whympers Paper.)

*The Mouths of the River are from the sketches of M. E. E. Smith, of the Western Union Telegraph Expedition.
 The lower course is compiled from Lieut. Zagoskin, R.N. and other data.
 The upper course to Fort Yukon, is laid down from the bearings, distances, and notes of M. F. Whympers. — Constructed & drawn by J. Arrowsmith.*



Pub^d for the Journal of the Royal Geographical Soc^y by J. Murray Albemarle Str^t London, 1868.





J. Arrows

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EXCERPT FROM THE JOURNAL AND PROCEEDINGS OF
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VIII.—*A Journey from Norton Sound, Bering Sea, to Fort Youkon (Junction of Porcupine and Youkon Rivers).* By FREDERICK WHYMPER, Esq.

Read, April 27, 1868.

THE journey of which my present paper treats was made in the service of the Western Union Telegraph Expedition, often known as the "Russo-American" or "Collins' Overland Telegraph." This enterprise, in which the Company is said to have spent 3,000,000 dollars (in gold), was, in 1867, abandoned, solely owing to the success of the Atlantic Cable, and not from any difficulties in the way of the undertaking itself.

Our expedition was largely Arctic in its character, and affords perhaps the latest confirmation of the possibility of men enduring extreme temperatures and working hard at the same time. During the winters of 1855-6 and 1866-7 we had stations at the head of the Ochotsk Sea and at the Anadyr River, Eastern Siberia, at Plover Bay and Port Clarence, on either side of Bering Straits, two in Norton Sound, and one on the Great Youkon River, besides numerous parties in somewhat lower latitudes.

Our men were engaged both exploring and building telegraphs at temperatures frequently below the freezing point of

mercury. Minus 58° Fah. was our lowest recorded temperature in Russian America. Now, in such a climate, this work was no joke. The simple process of digging a hole to receive the telegraph pole became a difficult operation when the ground was a frozen rock with 5 feet of snow on the top of it, and where the pick and crow-bar were of more use than the spade or shovel. The axe-man, too, getting out poles and logs, found his axe ever losing its edge or cracking into pieces. All this was in addition to transporting *matériel* and provisions. Yet our men persevered, and succeeded in putting up at least one-fourth of the whole line, and I can sympathise with the feeling that prompted some of them at Unalachleet, Norton Sound, on hearing of the withdrawal of our forces and the abandonment of the work, to hang black cloth on the telegraph poles and put them into mourning!

The Youkon is by no means a familiar river to us, yet it certainly deserves to rank among the great streams of America. Its name is of Indian derivation. "Youkona" is the term used by three-fourths of the natives on its banks. But, near the mouths, other tribes call it the Kwich-pak (pron. Kwif-pak) and the Russians on their first entry into the country adopted their name. Both terms signify "big river."

Its course is very worthy of notice, being a reproduction, as it were, of the outline of the lower coast of Russian America from the peninsula of Aliaska to the Stekina River.

The first Russian travellers on it were *employés* of the Fur Company. Glazoonav in 1835, Malakoff in 1838, and Derabin in 1839, went from Norton Sound to the Youkon; the latter, in 1842, commenced the erection of the Post at Nulato, which long bore his name. The same year Lieut. Zagoskin, of the Russian Imperial Navy, arrived at St. Michael's, Norton Sound, on a mission in the interests of the Russian-American Fur Company. His principal journey, made under great disadvantages, was so far successful that he reached a point on the Youkon some 120 miles above Nulato, and he then descended the river to its mouths. His work, published in Russian, was translated into English for our expedition, but was never printed.

In 1850-1, members of Captain, now Admiral, Collinson's Expedition, went through from Norton Sound to the Youkon, and one brave Englishman, Lieut. Barnard, met his death at the hands of the Co-Youkon Indians. His grave, near the Russian post of Nulato, where I spent a part of last winter, is in good preservation. At Unalachleet, Norton Sound, Captain Bedford Pim is very kindly remembered by both Russians and natives.

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In 1865, at the commencement of our enterprise, the services of Major Kennicott were secured by the Directors of our Company to lead a party on the Youkon. This gentleman, an enthusiastic collector, had spent several years previously in the Hudson's Bay territory, in the interests of the Smithsonian Institute at Washington. He was landed at St. Michael's, in September, 1865, with a party, and commenced the work with great energy, but he died at Nulato before he had made the trip nearest his heart—the journey to Fort Youkon from the Pacific side. He had previously been there from the Atlantic States. Two of his party, Messrs. Ketchum and Labarge, were the first to make this trip in 1866, and subsequent to his death.

While this was going on I made two lengthened voyages in the North Pacific, visiting most of the stations before mentioned, with the addition of those of Sitka and Petropaulovski. On the 30th September, 1866, I went ashore to the post at St. Michael's, with liberty to attach myself to any of our parties, and travel where I deemed best, with due regard to the Company's interests, and I immediately determined to join the Youkon division. I found my friends of the previous year, although rough-looking specimens enough, generally in good health, with a fair knowledge of the country, and the means of travelling in it.

ST. MICHAEL'S (Norton Sound).

Lat.	63°	28'	45" N.	} Zagoskin.
Long.	161°	44'	61" W.	

Redoubt St. Michael's, or Michaelovski, deserves some brief notice. It is not merely the principal station in North-West Russian America, but is likely to become a military post in the hands of its new owners. It was long the head-quarters of the Fur Company for this district of their territory.

St. Michael's is situated on the island of the same name, was founded in 1833 by Michael Tebenkoff, and is built on the model of a Hudson's Bay Company's fort, with enclosure of pickets and with bastions flanking it. Inside you find magazines, bath-house, *caserne*, and the houses of the *employés*. These latter, with their yellow walls and red roofs, give it a somewhat gay appearance.

Outside the post, besides other buildings, there is a small chapel, in which on Sabbaths and "Prasniks," or holidays of the Church, a service is performed. A priest of the Greek Church, resident at the "Mission" on the Lower Youkon, comes down occasionally to baptize the natives. The Greek Church practices, I may observe, *total immersion*, and when an infant is christened it is dipped bodily. In the case of Indians, they are

baptized in the sea at this fort, and rumour says that some of them have been so christianised many years in succession, in order that they may obtain small gilt crosses and other presents given them at such times.

The Island of St. Michael's is covered with moss and berries, resting sometimes on a bed of clay, but more commonly on a porous lava rock. This formation apparently extends to the Youkon. The Indians have a tradition that the island was upheaved from the sea, an occurrence at least possible. A large rock in the chain of the Aleutian Islands, known by the Russians as the Bogoslov Volcano, rose from the sea in 1796. Zagoskin says that the spot where the fort now stands has been covered by the sea within the memory of the Indians living at the date of his visit, 1842-3.

The ice in Norton Sound forms in October, but is frequently broken up and carried to sea till late in winter. On Christmas Eve some of our men arrived at St. Michael's from Unalachleet, having travelled on the ice sometimes at a distance of a mile or two from the coast. They, as usual, were invited in at once by the Russians to "Chi-peat," or drink tea. This over, they sallied outside the fort to smoke their pipes and look after the dogs, &c. What must have been their surprise to find that all the ice, as far as the eye could reach, that they had so recently travelled over, had broken up and gone on a cruise. Had they been half-an-hour later they would have gone with it, and would have been floating about Bering Sea on a field of ice. Norton Sound was not clear of ice till the third week of June last year.

On the coast, although the thermometer usually stands rather higher than in the interior, the cold is well known to be more felt. Nearly all the cases of frost-bite among our men occurred whilst travelling in, and north of Norton Sound. Again, whilst "clear ice," *i.e.*, ice free from a covering of snow, is scarce on the rivers, except very early in winter, it is common enough on the coast. When your sledge arrives at such ice the dogs will often start off at a great rate, although but a few minutes before they may have been proceeding with difficulty. At such a time it is usual to jump on and take a ride, and you have to look sharp to do it. Now, if there is much wind at such a time, however warm you may be from previous exercise, you may chill very readily. Under exactly such circumstances as this the Russians at St. Michael's were once horrified at the arrival of a sledge with an Indian on it, sitting erect, but perfectly dead. Unable to stop his dogs, the poor fellow had jumped on his sledge, and had probably frozen to death in a few minutes. Such incidents are rare, but it is common enough to find Indians

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with faces much disfigured, and having lost part of their ears or noses. It has been the universal testimony of Arctic travellers that the most extreme temperatures without wind are infinitely less felt than more moderate temperatures *with* it, and it is a fact that usually the very low temperatures occur in calm, clear weather.

In Norton Sound a small steamer had been left for our use. On the 2nd October she made her first, and, as it proved, her last trip, for the season, from St. Michael's to Unalachleet, with a number of us on board. We found the Unalachleet River completely frozen up, and ice forming on the coast. On the 7th October she was beached for the winter.

The post at Unalachleet, founded in 1840, is, on the authority of Zagoskin, lat. 63° 53' 33" n., long. 160° 30' 16" w. It is the most northern Russian settlement on the coast, and is at the mouth of the river of the same name on the north bank. It is partially surrounded by the usual picket fence, but is on a smaller and meaner scale than St. Michael's. The "Bidarshik," or head man, has but one room for himself and family. The caserne is occupied by several men with families, and by an immense number of cockroaches, apparently with families also. A large "pitchka," or oven, occupies an important position in this establishment, as in all the Russian settlements. The windows do not, as at St. Michael's, aspire to the dignity of glass, but are of the gut of fur-seal, white and translucent, if not transparent.

In this neighbourhood we had during the winter and spring of 1866-7 a party of 36 men, and large sections of the line were built in the country lying between it and Port Clarence. Besides occupying every available bastion and corner of the station, our men were domiciled in two rude houses built of logs and earth, which were constructed during my stay.

To the north-west of the post there is a large village of Malemukes and Kaveaks, a race of tall and stout Indians. In other respects they much resemble the Esquimaux.

The males very generally shave the crown of the head, and often wear the "totook," two pieces of bone run through holes in the face on either side of the mouth. The women are tattooed on the chin, and wear ornaments of beads from their hair, and leaden or iron bracelets. All wear rein-deer clothing, and boots with soles of "maclock" or sealskin, with the hair removed. A great trade is carried on by these people with the Tchuktchis of the Siberian coast for *tame* rein-deer skins. Although the Tchuktchis have, as is well known, immense herds of domesticated rein-deer (some of which I have seen at the

Anadyr and elsewhere), *the animal is never met with in Russian America but in a wild state.*

In this, as in other villages, there is a large building specially set apart for gatherings of the people. It is, in fact, their town hall. I witnessed several of their public dances, in some of which they burlesque the motions of birds and quadrupeds.

To one dance we were specially invited. Arrived at the door-way, we found a narrow subterraneous passage, 2½ feet high, crawling through which you at last reach the room itself, partly underground, and dimly lighted by blubber-lamps.

The Indians to be concerned, chiefly young men, were dressing. All were nude to the waist, and wore deer-skin or cotton pantaloons, with the tails of wolves or dogs hanging from their belts behind, feathers and cheap handkerchiefs round their heads. The elders sat on a bench or shelf running round the entire building, and looked on approvingly, whilst they *consumed their own smoke*—as is the manner of the Tchuktchis—by swallowing all they made, and getting partially intoxicated thereby. Their pipe-bowls are on the smallest scale, and they even dilute their tobacco by mixing willow-shavings “*f e cut*” with it. Meantime the women were bringing in contributions of berries and fish in large “contogs,” or wooden vessels, varying in shape from a deep dish to an oblong soup-tureen.

The performance commenced by the actors therein ranging themselves in a square and raising these dishes of provisions to the four cardinal points successively and once to the skies with a sudden noise, like “swish!” or the flight of a rocket. May-be it meant an offering to the seasons and to the great spirit. Then came the feast, and that over, a monotonous chorus with an accompaniment of gongs was started. The words of the song commenced “*Yung-i-ya i-ya-i-ya*,” and continued throughout “*yung-i-ya*.” Then a boy sprung on the floor; he was speedily joined by a second, then a third, till a circle of 20 was formed. Now they appeared violently attracted together, and now as much repelled; now they were horrified at one another's conduct, and held their arms in warning gestures; and again all were friends, and made pantomime of their happiness. In this performance there was nearly as much done by arms and bodies as with the feet. When there was a lull in the entertainment, small presents were brought round to all the strangers; mine was a pair of boot-soles of seal-skin.

So decided an odour at length pervaded the ball-room, that we one by one left the festive scene. The Indians kept it up for hours afterwards.

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this people, I must proceed to speak of our journey to the Youkon, mainly by a land-route, and one made constantly during winter by our men. The distance from St. Michael's is by this way but 225 miles, against nearly 700 by the mouths of the Kwich-pak or Youkon.

We left Unalachleet on the 27th of October, and followed the course of the river of the same name for 25 miles, and then for the most part a valley direct to the Youkon. The snow was so deep and soft that the journey took us 11 days, although it was subsequently made in 4 or 5. Our light birch sledges (with bone runners) had five dogs a-piece when we started, and were heavily laden. I say "when we started," for our dogs infinitely preferred the luxuries and ease of an Indian village to our service, and deserted whenever they got a chance. "Ukalee," a small salmon dried, is the regular dog-feed of the country, whilst a soup is sometimes fabricated at the Russian forts. Contrary to Dr. Kane's experience, we found our dogs *would* eat beans properly softened, and even rice and bran, when mixed with a due proportion of oil, blubber, or fish.

We were surprised at finding this a well-wooded country. Spruce, birch, and willow are abundant within a short distance of the sea-coast. In camping, we could almost always, after clearing a space in the snow, lay down a bed of fir-brush for our blankets and hides to rest on. This with the certainty of a good log-fire, made any temperature endurable. Tents were rarely used at this time, but sometimes erected a semicircular screen of cotton-drill or canvas around our camp to shelter us from our only enemy—the wind. Our first care was always to put up everything eatable out of the reach of our dogs; and as they do not object to old boots, skin clothing, and will frequently eat their own harness, it was a somewhat difficult task.

At a distance of 25 miles from Unalachleet we came into the country of the Ingelete Indians, who speak a dialect entirely differing from the coast Indians, and one, as we found, more allied to the Co-Youkon. At their villages of Igtigalik and old Ulukuk we spent some time. Their winter dwellings are underground, the roof only raised above the surface, and to get into them you have to crawl through a narrow passage a little over 2 feet in height. A square hole in the roof to let out the smoke of the fire below, and the narrow entrance-hole are the only openings, and when the fire gets low both are covered by skins, thus effectually keeping in all warmth, with a good deal of smoke and carbonic acid gas. The dogs, scrambling over the roofs, will sometimes tumble through the large smoke-hole on to the fire below, scattering cooking arrangements to the wind, and themselves retreating with great alacrity.

The second Ingelete village is prettily situated by a stream, with rapids and fish-traps, and is the paradise of the neighbourhood in regard to salmon-trout and rein-deer meat.

Our course after leaving this happy spot followed more or less the Ulukuk range of mountains. They are a conspicuous landmark in this country, but do not, I think, exceed 3000 feet in height. Our course to the Youkon was in general terms north-east.

The snow was so soft that, without snow-shoes, we sank in $2\frac{1}{2}$ feet, and we accordingly wore them. In order to make a track for our dogs, we, with our Indians, often walked on a-head, returned, and again started forward, thus going over the ground three times. At snow-banks all hands had enough to do, in assisting the dogs to struggle up with their heavily-laden sledges.

Near the Youkon are many warm springs, said never to freeze. One of them, I examined, and found innumerable bubbles rising to the surface—the water showing a temperature of 33° Fah., the air at the time being 23° colder.

On the 11th of November, from a slight eminence, we saw a faint streak of blue over the woods; travelled hard to reach it, and at sun-down broke from the thicket, shot down a steep bank, and stood on the borders of an immense field of snow—the mighty Youkon! Hardly a patch of ice was to be seen; though huge hummucks in places had been forced on the surface, all was covered by a wintry mantle; the river in but a few isolated streaks, still open and running swiftly. From bank to bank was not less than a mile, and several islands were visible in either direction.

Within a short distance of the termination of the portage (or "peronose," as it is called by the Russians) that we had just travelled over, we found the Indian village of Coltog, where we again stopped. In our intercourse with these people, as with most other tribes, we found that the best goods for trading purposes were useful rather than ornamental ones. Axes, knives, flints, powder and balls, were all much inquired for, whilst rubbish was at a discount. Even beads were required to be of a substantial nature, not easily broken. Our business with them was principally, of course, in purchasing supplies or in paying for services rendered.

The course of the Youkon from Coltog upwards is for 65 miles very little east of north, till at the Co-Youkuk "Sofka," or mountain, the great bend to the east occurs.

We found sledge travelling on the great river comparatively easy, and we arrived at Nulato on the 15th November to find fair quarters assigned to us, and a hearty Russian welcome from the men at the Fort.

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— 6° Fah. was our lowest cold on this trip: later in the same month we had it down to — 36°. In December our coldest day occurred — 58°. January proved our coldest month, ranging from + 10° to — 49°.

The Post at Nulato resembles the others, and differs only in having two watch towers. Zagoskin makes its lat. 64°, 42', 11" N.; long. 157°, 58', 18" W. It is the most interior and northern fort of the R. A. Fur Company, and is on the north-west bank of the river—on a level and comparatively open space bounded by two streams.

Indians come hither from distances of 200 and 300 miles to barter their furs. The tariff last year was about 7½*d.* in trade for one marten skin—and they have obtained as many as 5000 in one year—besides other furs, beaver, white, red, and more rarely black and silver-grey foxes. Free traders, doubtless now the country is open to them, will play great havoc. Soon the record too of the interior, as of the coast trade already, will be—to use the words of a well-known traveller—"White men, whiskey, guns, powder and ball, small-pox, debauchery, extermination."

Our quarters were warmed by an immense oven, and usually we could keep up sufficient heat. The floor, however, was sometimes intensely cold; I have tested it and found the temperature + 4°, or 28° below freezing! I remember once hanging up some damp cloth; near the roof it steamed, within a foot of the floor it was frozen hard with long icicles hanging therefrom.

Our supplies from the resources of the country were very variable. At one time we luxuriated on Arctic grouse, or deer meat, and at others we were reduced to tea and bread.

I had before seen Indians fishing through the ice, but was not prepared to see it done on a large scale, as on the Youkon. Early in the season large stakes were driven down through the ice to the bottom of the river. To these were affixed traps, consisting simply of a wicker funnel leading into a long basket, not unlike the eel-pots to be seen on the Thames—at Reading—and elsewhere. They are, however, of a larger size.

Oblong holes above them were kept open through the ice by frequent breaking, and sometimes a great haul of fish was the result, when the traps were raised.

The true Nulato Indians do not now number over 5 or 6 souls. At the period that our countryman, Lieut. Barnard, met his death, the Co-Youkons wreaked their vengeance on the Nulatos by surrounding their underground dwellings, stopping up the smoke and entrance holes, and raising great fires over

them. All were either suffocated or shot. The Co-Youkons never gave us any trouble, but are wilder Indians than those of the coast. Their true dress is a double-tailed coat, one tail in front and one behind. In various modifications this fashion extends to Fort Youkon and beyond. The women wear an ornament made of shells and running through the cartilage between the nostrils. Curiously, higher up the river, it is the men exclusively who adopt the same ornament.

The tribes here mourn for the dead one year, and the women during that time often gather together, talking and crying over the deceased. At the expiration of that term they hold a feast, or "wake," and the mourning is over. Their graves are simply oblong boxes raised on posts, sometimes decorated with strips of skin hanging over them, sometimes with the possessions of the deceased (as a baidarre, or a birch-bark canoe with paddles) on the top of the box. Smaller belongings are put inside the box with the corpse. I cannot describe it better than by calling it a 4-post coffin!

They have certain superstitions with regard to the bones of animals, which they will neither throw on the fire or to the dogs, but save them in their houses or caches. When they saw us careless in such matters they said it would prevent them from catching or shooting successfully. Also they will not throw away their hair or nails just cut short, but save them, sometimes hanging them in packages to the trees.

As the rivers are unnavigable from late in September to late in May inclusive, the winter might be said to be 8 months in length, but still warm weather commences comparatively early. On the 10th April I found the willows budding; on the 28th the first goose from the south arrived; on the 12th May mosquitoes made their appearance, and the next day swallows were flitting round the Fort.

The break up of the great river was an interesting sight, the smaller streams and tributaries opening first, and running out on the surface of the ice. It was on the 19th May that the Youkon made its first great move, and for several days afterwards a constant stream of broken ice travelled past our station at about 6 miles an hour—now surging into mountains as it met with some obstruction, now grinding and crashing on its way, and carrying all before it. Whole trees and banks were swept away remorselessly before its victorious march, and the river rose 14 feet above its winter level.

On the 26th May we started up river, the Russian trader and employés bearing us company as far as Nuclukayette. My only companion was Mr. Dall, a collector for the Smithsonian Institute. Our crew was Indian, our craft a "baidarre" or

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skin boat. The river was still full of drift wood and ice, and we found navigation somewhat difficult. One man always, at this time, stood in the bows of our canoe, with a pole shod with iron, to push away the floating logs or angular pieces of ice, lest a collision should ensue, and we with our frail bark come to grief. We had frequently to cross and recross the stream to get into quieter water, and at such times exerted ourselves specially, so that we might not lose by the operation. As it was we usually drifted down half-a-mile or so. The current certainly averaged 6 knots an hour at this time, and at angles of the river, and partial rapids, a much greater speed.

How shall I in few words describe this immense stream? one that our men were wont to compare with the Mississippi! At Nulato, 600 miles above its mouth, it is from bank to bank one mile and a quarter. In other places it opens out into lagoons, 4 to 5 miles in width, studded with innumerable islands. Our explorers have travelled down it 1800 miles. Its tributaries would be large rivers in Europe. The Co-Youkuk, Meloze-cargut, Newicargut, Tanana, and Porcupine Rivers, with many others, are all considerable streams, and I can understand the proud boast—uttered by a native of its banks and translated for our benefit—“*We are not savages, we are Youkon Indians!*”

On the 27th May we passed the Indian village and river of Co-Youkuk. Here a large mountain terminates on the river in a steep sandstone bluff, perpendicular strata taking the place of the more usual horizontal formation. The islands of the river were all more or less submerged, and we floated over some of the lesser tree-tops. We were accompanied by a fleet of birch-bark canoes, their owners all bound for the annual trading meetings at Newicargut and Nuclukayette. These canoes are well constructed on a light frame of birch, and vary in length from 8 to 14 feet; some being intended for but one, and others for two or more persons. They commonly use a single paddle. The seams of the canoe are sewn with the finer roots of spruce fir, and are rendered tolerably water-tight by rubbing in the gum of the same tree. When they are found to leak the Indian goes ashore, lights a small fire, turns his canoe over, and works in the gum in a heated state. Every canoe carries a wooden vessel, or more rarely iron pot, containing smouldering sticks and embers. This is done for a double reason, to enable them to start a fire readily, and at the same time with the smoke to keep off the mosquitoes, the pest of early summer. From “*Sachertelontin*,” an Indian fishing village about 100 miles above Nulato, I kept a constant running survey (of bearings and distances only). Our only authority—the Map of Zagoskin—terminates near this point, and I have therefore

attempted to lay down the continuation of the river to its junction with the Porcupine, on a sketch-map. With many windings the general direction is N.E. magnetic, and so little does it really vary from this that my notes contain little else but points ranging from N. to E.

On the 2nd of June we passed the Melozecargut River (north bank), and later in the day the Suquonyilla Mountains—snow lying in patches on them; but they are of inconsiderable altitude.

The night of the 3rd and 4th June, on the south-east side of the river, we found an opening leading to a kind of fresh-water bay, into which the Newicargut River empties. At its mouth we met about 150 Indians, nearly all wearing the double-tailed coat, much-ornamented fire-bags, and knife-belts. The Russians and ourselves saluted the village with a miscellaneous discharge from revolvers, carbines, and shot-guns, as is the delight of the Indians hereabouts, and they returned it with great zeal. Whilst the Russians traded for furs we laid in a whole canoe load of dried meat and pemmican. In the evening of the 4th "Larrione," a Co-Youkon, "made medicine" over a sick man. A group of Indians encircled the invalid; in their midst burnt a dim fire. A monotonous chorus in an undertone was kept up whilst Larrione went through an elaborate performance, some details of which are absolutely revolting and cannot be mentioned. Now he appeared to draw the evil spirit from the sick man, and wrestling with it throw it on the fire, and then repelled, ran wildly from it with mock terror and affright. Now it had possession of him, and he gesticulated, groaned, and frothed at the mouth—the whole accompanied by a recitative, wild enough, but artistically managed in connection with the chorus. The whole affair was not unlike a weird scene in a sensation drama, taking into consideration the accessories, the over-hanging trees, the twilight, the dim fire.

At last the performance assumed a gayer tinge, the chorus grew louder and livelier—the man was supposed to be dispossessed, and he hobbled from the scene.

Above Newicargut the river opens out into a wide lagoon with large islands, and running due north (magnetic).

On the 8th June, after passing the mouth of the Towshecargut River (entering from the north-west), we arrived at Nuclukayette, at the junction of the Tanana with the Youkon, the furthest point ever reached by the Russian traders, and approximately 240 miles above Nulato. Hither come, for trading purposes, Indians from all quarters; on some occasions their gatherings have numbered 600. Within two or three years the Hudson's Bay Company's men have also come down from Fort Youkon.

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The Indians from the Tanana had not arrived, but we met a number subsequently. I believe them to be the most unsophisticated natives to be met with at the present day. Painted faces, large feathers in their unkempt hair, a patch of red clay at the back of their heads covered with small feathers, a long ornament through the nose, double-tailed buckskin coats and pantaloons, much adorned with fringes and beads, and much-worked firebags and belts. They reminded me of the ideal North-American Indian that I had read of, but had hitherto never seen.

On landing at this village a ceremony had to be gone through. The Indians already there advanced whooping, yelling, and brandishing their guns till they reached us, then discharged them in the air. We, with the Indians just arrived, returned the compliment, and then the chief, whose acquaintance we had made during winter, came forward and welcomed us.

This village was almost bare of provisions; but they kept up dancing and singing vigorously, knowing the season for moose-hunting was at hand.

From this point we travelled exclusively by night; the days were too hot, sometimes 78° in the shade. But at that time night was no night, sun-set blended into sun-rise: our shortest night (when nearing Fort Youkon) was but 45 minutes in duration.

Immediately above Nuclukayette the river narrows, and is more or less shut in by mountains with craggy bluffs and heights for 200 miles. About a day's journey above the village we came to the only "Rapids," at all deserving the name, to be met with for 1200 miles from the river's mouths. Here a bar of sunken rocks makes the water boil and surge; but there is a clean channel and no fall, and we got through with very little trouble, part of the time "tracking" from the rocks on the banks.

The heights surrounding this gorge are known at Fort Youkon as the "Ramparts." When we passed the river had fallen 10 feet, and we could track or tow from the banks very frequently.

This part of the river abounds with moose; both Indians and ourselves shot several. The mosquitoes are the principal cause of the moose leaving the woods and taking to the river, and when in the water they are very clumsy. Natives do not always waste powder and ball over them. I have seen an Indian approach one carefully in his birch-bark canoe and kill it by repeated stabs from a knife.

Above the "Ramparts" the river again opens out and is full of sandbanks and shallows. The islands are again numerous; their banks, generally wooded, often overhang the river, the

strong currents having undermined them. It is no uncommon thing to find a tree with its roots dangling in the air, and only supported by a little earth and moss. These constantly fall in, and there is no doubt that great changes, both with regard to the formation as well as the destruction of islands, are constantly going on. On sand-bars and at the mouths of streams immense piles of drift-wood are common, and we frequently camped near them. The channels of the river evidently change: we passed passages or "sloughs" completely dried up that had been of old unmistakably water-courses.

On the Youkon the berries are innumerable; wild rhubarb attains a fair growth. I have seen, but more rarely, wild currant and gooseberry bushes. The wild rose is everywhere abundant.

Many rivers and streams enter the Youkon between Nulukayette and Youkon; but they are generally small, excepting only the Porcupine. This part of the river is not peopled, though the Indians from a distance frequently hunt there. The "Gens de Milieu," a tribe formerly there, died off some years ago from scarlet fever. We passed some of their untenanted houses. While, however, at Fort Youkon I heard that a tribe from the Porcupine River were coming to occupy this deserted ground.

On the 23rd June (29 days from Nulato, 26 days' travelling time) we reached Fort Youkon, to find but three of the company's men to a large crowd of Indians, all awaiting the return of the commander (from La Pierre's house on the Rat or Porcupine River).

We shook hands with everybody, including a large proportion of the Indians, and were soon installed in a room of the fort. A few days later the commander, Mr. Mac Dougall, returned with his season's supplies, and with him the Rev. Mr. MacDonald, a missionary of the Church of England, stationed there. Both welcomed us warmly, and we spent over a week in their pleasant society.

Fort Youkon was founded in 1847. The present fort, commenced in 1864 and unfinished last year, is at a distance of about three-fourths of a mile from the old post. It is situated about half a mile above the junction of the Porcupine River, on the north bank of the Youkon, is approximately in lat. 66° N., and is well known to be within the boundary of Russian America. It may be fairly considered as the most remote of the Hudson's Bay Company's posts. Their supplies of trading goods are brought through all the Hudson's Bay territory, and consequently provisions are hardly brought at all. Moose-meat, fresh and dried, is their staple diet.

The Kotch ā kutchin (or lowland nation) is the tribe living at Fort Youkon and neighbourhood. My lamented friend, Major

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Kennicott, when here on his visit from the Atlantic States, made a very careful vocabulary of their dialect.

These Indians dwell partly on the Youkon, partly on the Porcupine, and are divided under two chiefs. Compared with the natives of the lower river they are well provided with necessaries. They wear every variety of dress, from mock uniforms, or ordinary clothing imported by the Company, to moose and rein-deer clothing of every shape and style. Here, too, we get into the buckskin and mocassin country. The principal tribes also visiting this station for barter are the Tananas (or "Gens de bulte"), An-Kutchins ("Gens de foux"), and Tatanchok-Kutchins ("Gens de bois").

The Fort Youkon snow-shoes are pointed at either end, the foremost turning up. Their sledge is undoubtedly the simplest in the world, being nothing more than a wide plank. One end is softened by steam till it can be turned up, forming a kind of prow, and this is kept in its place by thongs. A few cross-pieces on the plank, and the lashings, complete the sledge. The prow is generally covered with hide.

On the 29th June Ketchum and Labarge, who had been 600 miles further on the Pelly or Youkon, returned. They had reached Fort Selkirk (Mr. Campbell's Fort, as they called it at Fort Youkon), and brought a fragment of its remains. It has been for some time abandoned. They found the Indians peaceable and supplies good. This part of the river, according to their observations, agreed in its general course with that laid down for so long a time on our maps. I may remark that the river between Fort Youkon and Nulato is less known than those portions nearer its source, or near its mouths. Doubtless the Hudson's Bay Company could tell us much of the Youkon *above* their fort.

The Porcupine or Rat River, emptying into the Youkon below the fort, is undoubtedly the river mentioned in 'Mackenzie's Voyages.' He was—when on the great stream that now bears his name—told of a river, in comparison of which he says "that on whose banks we then were was but a small stream; that the natives were very large and very wicked, and kill common men with their eyes;" that they were "adorned with wings," and that they could eat "a large beaver at a single meal." It was also described as falling into a great lake or sea. Now the Porcupine, with its virtual continuation, the Youkon, answers perfectly to this; but I need hardly say the people dwelling there are comparatively common-place after this description.

On the 8th of July, having obtained two extra birch-bark canoes, we started down. Ketchum, Labarge, Dall, and myself, with four Indians, formed our party. Our canoes, lashed together,

floated down the current, without much exertion on our part, at the rate of 100 miles to 24 hours. We slept and took our meals on board, travelling steadily day and night, and simply going ashore about twice a day to boil the water for our tea, &c.

Arrived at Nulato, we stopped two days, and then resumed our trip in one large baidarre obtained from the Russians. At every Indian village, and there are many, we found them engaged in taking salmon in weirs, in hand nets, or by spearing. This fish, of at least two varieties, is very abundant; the larger kind extremely rich and oily, and measuring sometimes $4\frac{1}{2}$ feet and over. I have seen the sides of boots made of the tough skin. Everywhere they were also drying meat and fish for winter use, and living either in small tents, or in open booths.

The largest village on the lower river is "Anric," at the mouth of a stream of the same name. Here we saw well fashioned native jars and pots of clay, used for cooking purposes. The Indians of this part of the river, though apparently well fed, are miserably clothed, and worse provided than those of the upper portion. Needles and tobacco will buy anything they have. We purchased 30 or 40 lbs. salmon for 5 or less needles!

The Russians had two establishments on the lower river, the "Mission" (Missie) and Andreavski, recently abandoned.

At the Mission, a priest of the Greek Church resides: there is an Indian village, three log houses belonging to the Fur Company, and a small chapel, with the residence of the priest. We arrived there on the morning of the 20th July to find most of the Russians absent. Those remaining had soon, with true Russian hospitality, the brazen "samovar" on the table, and a fragrant cup of tea for us. They had experienced a shock of earthquake the night before; we had felt the same on the water, as though our canoe had received a sudden jar.

The cliffs abutting on the river immediately by the station, are of rock riddled with holes, and resembling those of St. Michaels, except that they are of a more crumbling nature.

Passing over our visit to Andreavski—the deserted—where we found one poor Russian in charge, who was very glad to see us, I must pass on to the country near and immediately by the mouths of the great river.

Long sketches of low country extend in all directions, with islands, sand banks, and passages innumerable. It is generally wooded, though occasionally bare hills are seen. The current is here more sluggish; yet averages 3 knots an hour, and in spring certainly 5 or 6. A steamer of good power, and capable of going at least 10 knots, built with flat bottom, and stern wheel in the American manner, could proceed 1800 miles on

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the Youkon, and sap the entire trade thereon. Such an experiment has been proposed in San Francisco.

We came out to the sea by the most northern or "Aphoon" Mouth, that travelled annually by the Russians to and from St. Michaels. This is the most narrow outlet, and is known by willows and larger trees on its banks, whilst those of the larger mouths are bare.

Mr. E. Everett Smith, a member of our expedition and a sailor by profession, was sent to the mouths exclusively to take soundings, it having been the intention of the Telegraph Company, to put a steamer on the river.

He found that whilst the "Koosilyac" mouth gave soundings of from $2\frac{1}{2}$ to 9 fathoms, a vessel of the class proposed could only enter it by going first some way out to sea. The intermediate mouths were too shallow, and he came to the conclusion that the "Aphoon" mouth, so long used by the Russians, was the only available one. His sketch map (which I have incorporated with my own) shows innumerable passages running between the mouths. He found them blocked with ice till the 1st June. Generally the water outside is extremely shoal, and the Indians drive the "balouga" or white grampus into shallow water, and there spear them. On Indian authority it is said, that whales from Bering Sea go into the mouths to calve.

Mr. Smith found the water fresh, 10 miles outside, at sea.

The geese and ducks are there extremely abundant in spring. Some breed there; a large number leave later for the Arctic. Mr. Smith in three days shot 104. Eggs were so abundant, that 10 could be bought for a needle!

Immediately at the Aphoon Mouth is the Indian village of Pastolik. Here we got a larger baidarre, and left for St. Michaels, arriving there on the 25th July, but $15\frac{1}{2}$ days from Fort Youkon, a distance of 1260 miles.

A month later we sailed for Plover Bay, E. Siberia, meeting those who had wintered there, with the parties both from the Anadyr and Port Clarence, numbering in all 120 men. Shortly afterwards on the arrival of the *Nightingale*, our largest vessel, we set sail for San Francisco.

My companion, Mr. Dall, was an indefatigable collector, and the results of his work, in the hands of the Smithsonian Institute, must eventually add much to our knowledge of the productions and natural history of Russian America.

In conclusion, let me pay a high tribute to the American gentlemen, with whom I was associated. I count some of the pleasantest moments of my life in the time spent with them, and every member of our expedition remembers Colonel Bulkeley, our leader, with the sincerest respect and genuine affection.

NOTE.—In 'Silliman's Journal' for January, 1868, Mr. Dall has published a few notes on the geology of the Youkon country, which may perhaps be of interest in connection with the above. Speaking first of the cliffs known as the "Ramparts," he says they "were entirely composed of Azoic rocks, of which a silvery-greenish rock of talcose appearance, but very hard, predominates. Quartz, in seams, slates and quartzite rocks, are abundant; and a rock resembling granite, but with a superfluity of feldspar, and no mica, rarely. The slates generally have a north-westerly dip. True granite appears only once, near the termination of the Ramparts, and forms a ledge extending across the river, and making a rapid—not, however, a dangerous one."

Further on he says, "From the end of the Ramparts to Coyoukuk river (250 miles), the right bank presents in their order: conglomerate, quartzite, bluffs of yellow gravel, blue talcose slate, conglomerate hard blue slates and quartzose rocks, blue sandstones, and a soft green rock (Plutonic) with light stellate spots in it. Granite is very rare, and mica also. I have found fine specimens of obsidian on the beach and just above the Ramparts pebbles of Niagara limestone with its characteristic fossils. From the bend we find the following strata: blue sandstone (unfossiliferous), brown sandstone in beds at least 500 feet thick, containing vegetable remains, in some layers and rarely, casts of mollusca, all as far as I have collected, Lamellibranchs. Thirty miles below the bend is a small contorted seam of coal, between two thin layers of shale, containing very poor vegetable remains, and underlaid by the brown sandstone, which also overlies the blue sandstone; which, in its turn, I think covers the blue slates. The coal seam is very limited, being on the extreme point of a bluff, and the greater part of it has been denuded. The fossils are very poor, vegetable, and resemble Fuci. The coal is of good quality, bituminous, non-caking, and leaves a gray ash. The seam is 16 inches wide. The sandstones continue down the river some 45 miles, more generally with a north-west dip, and always in gentle undulation, sometimes continuous for miles, and often broken short off. Below, the rocks for 300 miles are slates and eruptive rocks of a pink colour, sometimes containing spathose minerals. The formation changes at the Russian mission, from hard blue slate to a volcanic rock, full of almond-shaped cavities, which are empty; but certain parts of the rock are quite solid. It is black, and contains minute crystals (of? olivine).

[It is roughly columnar on Stuart's Island, Norton Sound, in five-sided columns, on the beach.]

"From this to the sea the banks are mostly low, but when they approach the river they are invariably blue hard slaty sandstone or sandy slate, the rock passing from one into the other imperceptibly. This formation extends to St. Michael's, nearly where the fore-mentioned volcanic rock takes its place, and continues up the shore of Norton Sound some 30 miles, when it is replaced by the hard slates and sandstone, and I have followed them up for 30 miles more to Unalachleet river. Here you cross in winter to the Youkon, 200 miles of portage.

"The entire country is sprinkled over with remains of Pliocene animals, ? *Elephas*, *Ovibos*, *moschatus*, &c. Beds of marl exist near Fort Youkon, consisting of shells (fresh-water), still found living in the vicinity. The Kotto river, emptying into the Youkon above Fort Youkon, is held in superstitious dread by the Indians, on account of the immense number of fossil bones existing there.

"The Inglutalic river, emptying into Norton Sound, has a somewhat similar reputation.

"I have carefully examined the country over which I have passed for glacial indications, and have not found any effects attributable to such agencies.

"My own opinion, from what I have seen of the West coast, though yet unproved, is that the glacier-field never extended in these regions to the west-

ward of the Rocky Mountains, although small single glaciers have and still do exist between spurs of the mountains which approach the coast. No boulders, such as are common in New England, no scratches or other marks of ice action have been observed by any of our party, though carefully looked for."

