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LAPLAND AND SIBERIA BY WAY OF THE ARCTIC SEA.

(Read at Meetings of the Society, Dundee and Aberdeen, February 1889.)

BY PHILIP SEWELL.

ON the 19th of last July there left Newcastle a vessel of "whaler" build, the S.S. *Labrador*, one that often in the service of the Hudson's Bay Company had visited the Arctic seas. Her crew had been picked from among those men whom Lieutenant Greely has spoken of as the "hardest and most fearless navigators of the present day—Scottish whalers." She was under the command of Captain Wiggins, her destination being Siberia.

The voyage was the fifth in a series undertaken by Captain Wiggins, aided latterly by the *Phoenix Company*, with the object again to carry a cargo of manufactured goods into the heart of Siberia, by steaming to the mouth of the great central river, the Yenisei, and there exchanging cargoes with the company's river steamer the *Phoenix*.

Unfortunately this end was not attained; when at Vardö, the port immediately to the east of the North Cape, the *Labrador*, when on the point of continuing her journey, was stopped by the news, telegraphed from Siberia, that the *Phoenix* was aground. It was supposed that she would not be floated until the floods of the succeeding year, so that the directors of the company had before them but the alternatives—either to recall the *Labrador* for this season, or hastily to send out to her a steamer suitable for the river traffic.

They chose the latter; and, briefly to finish the narrative of last year's expedition, the steamer sent out from Glasgow detained the *Labrador* at Vardö for so long a time, that subsequent delays, consequent upon the separation of the two steamers in a storm, and finally the return of her companion to Vardö, made it useless for the *Labrador* to push forward to the river mouth. We were then, of course, ignorant of the fact, learnt only on our return to England, that the *Phoenix* had, after all, proceeded down the river to the rendezvous; this news did not, naturally, tend to lessen the disappointment felt by all.

It is abundantly evident, however, that the company, though seriously thwarted, has definitely advanced a step in this last expedition. Wiggins has again demonstrated his route, for a vessel adapted to navigation among ice, and this in the worst season known for years, or, indeed, the worst among those of which there is definite record.

It is, to my mind, a fact of equal importance with this, that the captain of the *Phoenix* has taken his steamer—one not by any means best adapted to the difficult river navigation—not only to the river mouth (despite the slight accident, so serious, however, in its results), but he has taken her back again to winter quarters at Yeneseisk, a town more than a thousand miles inland. Wiggins, although he did not proceed actually across the Kara Sea, yet rounded the pack ice lying to the south-west. Shipwrecked walrus-hunters taken on board told us that they

had sailed as far as to 75° N., and found open water extending beyond loose pack of which we had seen the eastern limits.

The remarkable interest which this country now awakens has perhaps, by this time, prepared us to expect great things of a region that but a few years ago was regarded as the dismal home of exile—a land the most dreary upon earth, over which a continuous winter was supposed to hold sway.

We receive now from all sides—most recently from the brilliant series of letters by Kennan in the *Century Magazine*—accounts of the possible productiveness of this country; and along with bright forecasts as to its future, we have statements as to its present actual wealth in the grain-yielding districts and in the mines. Wiggins tells of the comparative civilisation of the gold-mine owners, with their almost palatial houses, where may be seen choice furniture from London or Paris; he surprises us when stating that the telephone and the electric light are not unknown, whilst yet more remarkable is it to picture with Kennan the magnificent public buildings—the universities and the libraries in some of the more important southern towns.

Our most recent knowledge shows that, though enduring, in certain areas well to the east, the greatest degree of cold known on the face of the earth, yet in summer it also enjoys an extreme warmth.

Although to the north there extends a vast “tundra” region, uninhabitable save along the river banks and the coast, and apparently useless for any purpose whatsoever, yet to the south the land is spread out in great fertile plains, watered by a gigantic net-work of noble rivers. If we may believe the many reports as to its fertility, it holds out a possible wealth in its virgin soils and stores of minerals surpassing in degree the wealth of Manitoba, or of the Western States of America, just as the country surpasses such in extent.

Although at the present time its population is totally inadequate for the right development of even a small fraction of its resources, there are many who even now have realised large fortunes, settling down along the river highways, and it is to be supposed that—thanks to the system of exile—the number of these is continually increasing. Further, a large number of free emigrants from Russia are yearly adding to the population.

It remains to be seen how Russia intends best to develop this part of her dominions. At present it is not alone this most enterprising British Company, but certain no less persevering Russian merchants, who would stimulate the interest in Siberia and open up fresh fields for commerce.

Necessarily, we shall turn our attention this evening chiefly to the endeavours made in the north of Siberia, but we must not overlook the remarkable facts told us regarding the vast herds of cattle, and the vast exports of grain, butter, potatoes, etc., from the Tobolsk provinces to Constantinople and the west. Concerning ourselves, however, with the assiduous work of the Russians, we find on the Yenisei and the Obi those who would make use of the great northward-flowing rivers to bring some of the produce to the more populous centres in the west, and thus set up a demand as shall tend effectively to benefit their own land.

M. Sibiriakoff, the successful promoter of the Northern Trans-Ural roadway, is one whose name should be mentioned first among those who, in Russia, desire to make use of these rivers.

He is especially interesting to us, in connection with the work of Wiggins, inasmuch as, before the *Phoenix Company* came to aid that dauntless navigator, he had given him £1000 towards the expenses of his voyage in the *Thames*. This was his second voyage into the Kara Sea, the first in which he actually ascended the Yenisei.

Sibiriakoff has already a couple of excellently constructed steamers which trade with towns on the Obi, but he is far from being so sanguine as to the use to be made of these, as is Wiggins. He looks to the completion of his roadway between the Obi and the Petchora at once to obviate the difficulties of navigation in the Kara Sea, and, at the same time, to allow of goods being brought down the river to the open sea north of Russia, where, except during the winter, ice is never met with. But Sibiriakoff is not a navigator as is Nordenskiöld, who, from the first, has favoured the Kara Sea route, nor as is Wiggins, who now has demonstrated its feasibility beyond disproof.

Another proposal, which I think emanated from the Russians, is to cut a canal through the foot of the Samoyed peninsula, thus lessening the distance to the Obi by close upon a thousand miles. This, Wiggins has regarded with extreme favour, and when, last year, Mr. Victor Morier left us at the Yugor Straits for an overland journey to St. Petersburg, Wiggins persuaded him to travel along the Kara Sea shores that he might inspect as to the land through which such a canal would be constructed.

There is also M. Sideroff, a wealthy merchant on the Yenisei, who owns among other things, graphite mines, and is naturally anxious to see trade with Europe established. It was as his agent that Captain Svanberg sailed from the Yenisei to St. Petersburg in a small craft that had been constructed for Wiggins and Seebohm, and in which, had his sailors but had pluck enough to have accompanied him, the former hoped to have returned to England.

Mr. H. N. Sullivan, the indefatigable director of the *Phoenix Company*, tells me that Sideroff is now dead, and that in addition to Sibiriakoff's undertaking, a railway is being constructed from the Obi through North Russia.

Such, then, are the efforts now in progress, to develop a part of the industries of this country, whilst the important fact that the Russian Government has granted to the *Phoenix Company* for five years certain trade concessions, is an unmistakable sign of her liberal willingness to render aid, as well as to receive it from the enterprise of our own countrymen.

This work of Wiggins and of the *Phoenix Company* is, however, not so new as at first we might imagine it to be. True, it is a scheme at once more definite and successful than any ever before put forward with the purpose to trade with the north-east, but these most interesting voyages, dreamed of forty years ago by Wiggins, when engaged in the Archangel trade, form but another chapter in a long record of such, which, culminating as regards the actual North-East Passage in Nordenskiöld's brilliantly successful voyage in the *Vega*, have their origin in those more or less

disastrous voyages, begun more than three centuries ago by the earliest of the "Merchant Adventurers."

It was in 1553, the year before the birth of Raleigh, that the first Arctic explorers, Sir Hugh Willoughby and Richard Chancellor, left London in their three small vessels, rounded the North Cape, and proceeded eastward, essaying to reach China and Japan. Sebastian Cabot had given his best counsel to them, the court and people had encouraged them, but they went to a dismal fate.

The first from our shores to brave an Arctic winter, ignorant totally of its severity, ignorant of the barren shores of those seas, Willoughby and his crews perished; Chancellor, however, escaped to the south, and discovered Archangel.

It is worthy of remark that this voyage to the East thus stands first in the long series of those to the Arctic regions—it was not until thirty years later that Davis re-discovered Greenland, and "opened up the Smith Sound route to the Pole."

After this unfortunate venture, other of our bold sea-captains, Hudson among them, attempt the passage. Nor are the Dutch behind-hand in the search.

All set out confident that they would reach the Indian Seas—none push further than to Novaya Zemlya—some meeting with ice (as we did this year) off its south coast, others seeing before them open water to the Siberian northland. These voyages continue for more than a century, until, with the failure of Wood, all thought of further exploration is given up, and it is left to the Russians, in sleigh-journeys along the coast, to map out the coast-line of Asia, and to trade, as to-day they trade, in furs and skins, from the Petchora and the rivers further to the east.

But we may view these voyages of Wiggins, not alone in their relation to the trade and development of Siberia, but as attracting our attention to the Arctic regions, a part of the world that has always aroused interest in this country, especially, in these towns (of Aberdeen and Dundee), where for some years our whaling industry has been centred.

In this country, naturally enough, having before our minds that noble array of names from Davis and Baffin to Franklin and M'Clintock, our thoughts turn, on mention of the Arctic regions, to the Greenland seas. Yet, thanks to several public and private expeditions in recent years to the Polar regions east of us, we may now make comparison between these and the better-known regions to the west, where, indeed, some essential differences have to be taken notice of.

The feature of prime importance is, of course, the Gulf Stream, which, as a current of warm water, flows past the North Cape to the uninhabited¹

¹ The Russians attempted to settle a colony of Samoyeds upon Novaya Zemlya, but the attempt was not successful; nor is this to be wondered at when, one winter, the steamer sent with stores did not approach the coast because of a barrier fringe of ice. There has, I think, been on the south island a Russian scientific camp for the greater part of the year, whilst it is purposed to stay for several years continuously. On Spitzbergen, this winter, Lieutenant Pike from London, and a party of Norwegian sealers are braving the winter alone, unless, indeed, the crew of a sealer from Vardo, which has not returned to that port, are shipwrecked thereabouts.

islands of Spitzbergen and Novaya Zemlya. This it is which makes Lapland as habitable in the winter as New York or Chicago, as regards the temperature—and which, in the summer, gives to it and Novaya Zemlya a climate so mild and genial that, with some slight exaggeration, the old Dutch explorers described it as like that of their own country in the “dog days.”

However, it is not in summer, but in winter, that the temperature experienced in these regions is so much milder than their high latitude would suggest. In summer, lines of equal temperature run fairly parallel to the lines of latitude; in winter, on the contrary, they run more parallel with those of longitude, almost from north to south in Scandinavia and between the North Cape and Novaya Zemlya; so also to the east of Novaya Zemlya, until indeed the pole of greatest cold is reached in the valley of the Lena.

In the beginning of winter when Polar seas are yet open, the effect of this is abundantly seen, for while it is probable that the temperatures of the water in the Greenland seas is never more than one or two degrees above the freezing point, in the Kara Straits it may be close upon, perhaps above, 40° F., even at the end of September. Wiggins found the surface temperature at 50° in the Kara Straits when in 1874 he was returning towards the end of August; last year, with ice in the neighbourhood, it was 37° on the 29th of September. Earlier we found so much drift-ice in the straits that, as was to be expected, the temperature of the contiguous surface water was commonly down to the freezing point. But this was not always the case: with a wind setting up a strong current through the straits from the west, even while amongst the ice, my thermometers one day showed a temperature of 38° F. and 39° F.

It is abundantly evident that although the main current which passes the North Cape may fail to enter that part of the sea SW. of Novaya Zemlya, yet it has a considerable effect in raising the temperature thereabouts. Nordenskiöld detected its presence much further to the north, whilst Wiggins is confident that the high temperatures he observed were due to its influence chiefly.

Last year we kept as careful records of the temperatures every four hours as was possible. They showed a gradual lessening of the water temperature as we proceeded eastward from the Cape; thus, off Kolg-nieve Island, $43\cdot5^{\circ}$ F. was 3° less than the temperature recorded at Vardö—this in the beginning of September. There was, of course, a very sudden fall in temperature as, proceeding further eastward, we neared the loose pack.

The water temperature off the Loffodens was some 4° F. colder on our return in October than when we had passed in July. Whilst at Vardö, experiencing a characteristically even climate throughout the almost continuous day in August, the temperature of the air was never above 56° F.; the lowest recorded was 45° F. During our stay in September at the Yugor Straits the limits were from 41° F. to $28\cdot5^{\circ}$ F., where winter gave ample signs of its approach in a heavy covering of snow; the days had by then very considerably shortened. Both there and in Lapland the aurora was on several occasions conspicuous. Of interest, as

showing comparison between the climate of Lapland and that of the British Isles, are the recorded early October temperatures, 26° F. to 34° F. in the former country, as compared with temperatures in the shade of from 29° to 65° F. late in the same month in the north of England.

But, omitting further comparison between climatal conditions in these places with those in our own country, it is essential to recognise that the low-lying land of those regions conduces materially to a warmer climate, for unlike the glacier-covered slopes of Greenland, the north of Siberia and the southern islands, at least, of the Novaya Zemlya group, lose their winter's mantle of snow before the summer is well advanced.

There is poured into the sea a vast volume of comparatively warm water which Nordenskiöld judges would, with the heat of the sun, be sufficient to melt any ice left as drift in the Kara Sea; this ice, from the absence of glaciers, being limited to floes and hummocks. Of course it will depend largely on the time of year in which these are seen—but their size in September was not in any case very large. Floes of 200 by 400 feet were uncommon, although in the Kara Sea pack we saw some much larger. The pieces of drift were smaller about the Straits, where, doubtless, they had become much broken up. Fifteen to twenty feet would be the maximum thickness of any ice that we met with, although some of it was that of the preceding year.

On the surface of the larger floes were ponds showing the deep ultramarine colour of the ice; the water of which was perfectly fresh. This ice formed no obstacle to the progress of the *Labrador*, which, when slowly steaming, would send the floes to one side of its bow, or cause them to break in pieces, but it very seriously hampers vessels without steam, and indeed proved destructive to four of the slighter sloops of the Norwegian walrus fleet this year. It was the impatience of these men that proved their ruin. When on their homeward course from the open water of the north and north-east of the Kara Sea, they came where, in the south-west, the drift-ice is packed loosely against Waigat's Island and the east coast of Novaya Zemlya. Having had a bad season, and fearful lest the ice should cut them off, they ventured, before a northerly wind, between this drifted pack and the coast to the south. It only needed that the wind should increase, or shift a point or two to the north, and it was evident the ice must be drifted down upon them. They hope to gain the entrance of the Yugor Straits, but the ice is upon them before it can be reached—some are crushed, and the men escape only in open boats—others are driven on shore. When, two weeks after this, Wiggins steamed into the Kara Sea and found a passage twenty miles in breadth where these men had been caught, he showed that had they but waited behind the ice they might have sailed out in safety and with the greatest ease. It is unusual for these men to lose their ships; at times they sail round Novaya Zemlya—generally they follow up the ice to the north-east, entering the Kara Sea in June and August; Captain Jansen pushed this year to 75°, where there was, as usual, open water.

This year they were evidently surprised that so much ice remained in September. Even Nordenskiöld, from his own experience, and from

the statement of the walrus-hunters, considered it probable that every year the ice in the Kara Sea would be entirely melted. Wiggins in 1887 met with no ice, nor indeed has he ever met with it, when on his homeward voyages, however abundant it might have been earlier.

A glance at the map will show how, with persistent northerly and north-east winds, the ice in the south of the sea can never be moved away. It may be forced, in comparatively slight amount, through the Straits to the west, but it cannot disappear in this way. On the other hand, if winds from the south are general in the early summer months, they drift this mass into the currents of the Obi and Yenisei, and so cause it to disappear entirely. It may be usually the case that, if not so drifted away to the north, it is entirely melted, but it is evident that this year, the late season (of which we heard when at Vardö) and the resulting unusual thickness of the ice-floes, caused the pack to persist in so marked a manner.

These facts allow of much certainty in judging as to the prevalence of ice in the southern latitudes of these Arctic seas; they are of importance, in relation to sealing and trade—not, however, of so much interest to the more adventurous explorers who may push further to the north.

Before proceeding to the purely descriptive part of my lecture, when I hope my photographs in the lantern will enable you to obtain a conception of the country and of the ice-floes better than can be given in words, I would speak of that great industry of the north of Norway, of which we saw not a little—the Fin-whaling.

It ranks second in importance to the fishing at Vardö, for which in the early part of the year as many as 5000 to 6000 fishermen come to the little port, which has an ordinary population of 1500. But the fishing industry is carried on in much the same manner as elsewhere, save for the piles of cod-fish heads stored for manure, and the great vats filled with decomposing livers, a stage in the production of a coarse train-oil. The whaling, however, is unique in method, differing essentially from that of the Davis' Straits, to which we are accustomed. The species of whale pursued is chiefly the Rorqual, although Blue Whales and Humpbacks swell the total. Though not approaching in value the Greenland whale either as regards the yield from the blubber or the quantity of *baleen*, they are captured more economically, and, in addition, the carcase is manufactured into guano—a source of income denied to the western whalers.

The pursuit is with active little steamers, capable of making twelve knots per hour, and so constructed that on directions given by the lookout in the "crow's nest," they may be turned as rapidly as desired.

We saw several of these active little steamers, which in July and August are especially busy. Just off the North Cape one passed near to us in full pursuit, turning here and there in a swift confusing chase. In her bow was the large harpoon-gun, capable of throwing the explosive harpoon to an effective distance of perhaps thirty yards. This gun is moved easily on a swivel, and may be fired as readily as a pistol. The harpoon, about four feet in length, is attached, not to a line, but to a veritable cable. Having entered the body of a whale, an explosion set

up by the impact, usually kills the animal at once, and at the same time throws out from the harpoon shaft three stout iron barbs, which fix the instrument as an anchor in the victim, and allow it to be towed in safety to the nearest boiling station. The distance to the station may at times be great, and occasionally the whale has to be abandoned; such an one, after floating about for weeks, was brought to Vardö when we were there, and a fearful sight it was. Its carcase and remaining blubber yielded oil in some quantity.

Some idea of the size and nature of the explosive harpoon may be gained from the statistics kindly placed at my disposal by Mr. Heneage Cocks, M.A., whom we met at Vardö, and who is so well known as an authority on this subject.¹ "Without the shell it weighs 123 lbs., its cost is about £4, 10s. as it leaves the blacksmith, over £5, 10s. when ready for use. The required charge is over half a pound. That of the shell over three-quarters of a pound."

We visited one of the boiling stations, and saw the immense animals stranded between tide marks, the blubber cut off in huge pieces and dragged up an incline plane to the vats. Then after the jaws have been cut off, the carcase or "krang" is, perhaps at the next tide, towed away to the nearest factory, where, in the short space of thirty-six hours, it may be reduced to guano.

In this industry, which commenced less than a score of years ago, there are to-day over a dozen companies engaged, with thirty-two steamers, at twelve stations.

They are, however, suffering from the competition thus established. About this we heard serious complaints when at Vardö, but the valuable tables of Mr. Cocks show more definitely the state of the depression. He mentions that in 1885 there were obtained 1398 whales; in 1886, 954; and in the succeeding year, 854.

The fishermen also complain that the whalers have injured their trade, driving away from their coasts some of the vast shoals which there exist. That such a result will be discovered, as that the whalers are seriously responsible for the fewer hauls of fish, is unlikely, but it is more than probable that the system of hunting the whale so close in to the coast (necessitated by the position of the boiling stations) materially lessens the numbers of the latter.

On our outward voyage we saw great schools of Rorquals and other *Cetacea*, at a distance from land to the south of the Loffodens, sighting them first about the sixty-eighth parallel, when perhaps a couple of hundred miles from the coast. We saw them in great numbers after that, yet, although we noticed quantities of their probable food when near to Novaya Zemlya, only once to the east of Vardö did we see the animal itself. This was perhaps due to the considerable storm we experienced at the time.

Although, perhaps, not so daring a life as that of the walrus-hunters, and certainly not comparable, in this respect, to the life of our own whalers, there are peculiar dangers to be encountered by the Norwegian

¹ *Zoologist*, 1887.

whaling fleet about their difficult coast, whilst Mr. Cocks tells us that the whales, of an especially active species, have not infrequently charged at and seriously damaged steamers and boats.

The two countries Lapland and Siberia, as seen respectively from the port of Vardö, and from the anchorage at the Yugor Straits, offered many contrasts. As seen from the sea, Lapland immediately to the east of the North Cape is not mountainous, appearing almost low in comparison with the noble mountain ranges of the Loffodens, which we had seen extending in one grand panorama of snow-topped summits, as, towards the end of July, we steamed past them. Again, too, on our return voyage we steamed among the noble fiords of this island range; where in places, so steeply does the rocky wall pass into the water, and so deep is it, that "anchorage" is impossible, and instead the vessel is made fast by hawsers to rings placed in the face of the cliff! Just as the mountains of the Loffodens give place to the high cliffs of the North Cape and the Nordkyne, so, as you pass further east beyond Vardö, the lower land is again superseded by the mountainous country of the Murman shore. This higher coast of Russian Finmark may be seen from Vardö, as a blue line of mountains, forty miles away to the SE.

When, however, that part of Siberia, north of the Urals, is reached, where the mainland is separated from Waigat's Island by the narrow Yugor Straits, the country, as seen from the deck, is low-lying in the extreme. The cliffs are commonly not more than 20 to 30 feet high, although they are perhaps 100 to 150 feet at the eastern entrance to the Straits, where the low hills—the northernmost spurs of the Urals—pass into Waigat's Island. These hills, though in reality most insignificant, are an especial feature in those parts, where bogs and shallow pools, amid a most monotonous vegetation, of course without trees or shrubs, extend to east and west. However, neither the land of Waigat's Island, nor of the mainland, appeared so barren as we had expected. When seen from the ship's deck it was brown with autumn colour, and no doubt in mid-summer had been vividly green with its covering of coarse grasses and sedges. Yet once we stepped on shore, we missed the turf of our own meadows, or even such as we had been accustomed to on the island of Vardö—the grasses and characteristically Arctic plants were but sparsely scattered over the stiff bluish clay, formed from the shales which most especially occur thereabouts.

The land was not, however, "frozen a few inches below the surface," as is the case in the higher lands east of the Yenisei, but whenever the traveller might attempt to cross the boggy peat of the "tundra," he would find that in that part of the world, too, he was able to sink substantially below the surface.

On land, animal life was very scarce; we noticed traces of the lemming, saw several foxes and a stoat, snowy owls, and a few small birds about the tundra; whilst passing to the south were occasional flights of geese and ducks, and about the village were many skins of bears.

Also sea fowl were nearly absent as compared with the great numbers we had seen about the North Cape; the shoals of fish that off the coast

of Lapland had in places darkened the water with their presence, did not visit these colder seas, the only kind seen during the time of our stay there was a species of stickleback, which was obtained in my tow-net over the ship's side, along with many *Crustacea*. Among the shells and sea-weed on the beach were the eggs of the cod, drifted there doubtless from some distance, as evidently the surface currents bring large quantities of drift-wood, planks of ships, and such signs of different latitudes to those shores. We heard, however, that in the summer the Kara River is well stocked with salmon and other fish.

Seals, a few walruses, and the remains of a grampus on the beach, were the only signs of the larger animal life of those waters.

It is not the place here to make mention of the exceedingly interesting Arctic flora, showing much the same plants as occur in Lapland and in Greenland; among these are many of the rarities of our Scottish mountain tops.¹

As to the people and their dwellings in the two countries, there is, of course, all the difference in the world. Lapland is now in its towns as much civilised as are the southern parts of Norway. Except at certain places here and there along the coast, the Laplander is not conspicuous. Three generations, and more, ago, Lapland (or Finmark) was the land of exile from Denmark; to-day the descendants of these exiles are the merchants who have attracted others to the country, and who now derive considerable wealth from the fisheries. The Laps, with their strange garb, their coloured "mortar-board" hats and their reindeer garments, appear out of place among the civilians and conventionally civilised Norwegian officials; their curious and light skiffs contrast oddly with mail steamers and the concrete piers of the port of Vardö. This place, Abercrombie, in his most recent work, characterises as saturated with uncomfortable grease, which indeed we found the prevailing feature.

With it the little village at the Yugor Straits has one point in common—both possess churches! It is most strange to find, among the few log huts of the company of Russian merchants, at the latter place, a new and trim little church, given to the village with a large and ugly storehouse, by the merchant Sibiriakoff. The Samoyeds have given up their idols, carved out of the abundant drift-wood; they are clothed in the same way as when the first travellers described them as having "the bodies of oxen and the feet of birds," so strange had the reindeer clothing appeared to them. Their fantastic, open graves, covered with bones and relics of the chase, are less tended than formerly, though yet to be seen along the coast, whilst near to the village was an ordinary burial-ground, with the characteristic sacred crosses of the Russians at the head of each raised grave.

The Samoyed men had an oily joviality about them; though of small stature they looked a strong race of hunters; their women were more evidently phlegmatic—and were seen sewing pieces of reindeer skin together into the picturesque and comfortable garments needed for the winter, or perhaps they might be seen engaged as the hewers of wood

¹ See *Trans. Royal Botanical Society of Edinburgh*, 1889.

and drawers of water. To their children and their dogs these people are most affectionate,—so, at least, we hear.

The curious tents, covered in winter with reindeer skin, or, in summer, with birch bark, are picturesque in the extreme, though dark and dismal in their interiors. Perhaps there were some dozen of these at this village, which is quite the most important settlement thereabouts. Through it the natives pass to lead their herds to the pasturage of Waigat's Island when winter is about over. A wealthy native may own several hundreds of these useful animals, which supply him with all the necessities as well as the comforts of life; lately, among these herds the spread of a species of cholera has worked terrible havoc.

Doubtless, most of the Samoyeds migrate southward in the early winter, leading their herds to better feeding-grounds nearer the Urals, although some remain throughout the year at the village, and with them a subordinate priest to tend the church. The priest himself left by one of Sibriakoff's steamers for the Petchora, whither the Russians also migrate for the winter. He had actually taken his daughter with him to that isolated spot, and when the ice appeared at the time of our visit, was most fearful lest it might hold him a prisoner there throughout the long darkness. It, however, was only blown about by surface currents, nor would the passage be blocked until a full month after we had left the straits.

Yet the darkening days and the, to us, so early snow gave signs of the approaching dominance of all-powerful frost and darkness, before which such of the inhabitants and animals as could were thus migrating. We, with the Norse crews, to whom Wiggins so kindly gave a passage home, were not the less pleased to retreat before this swiftly coming and overwhelming Arctic winter; having, however, left on shore one of our number, Mr. Victor Morier, and two of the ship's company, to face the difficulties of a homeward land journey, and to migrate southward with the Samoyeds by way of the Valley of the Obi, and so to Petersburg, where, after a remarkable journey, they arrived in January.

THE ESKIMO TRIBES.¹

DR. HENRY RINK, the leading authority on the Eskimo tribes, who has been the foremost upholder of their American origin, has published the results of his investigations in the eleventh volume of the *Meddelelser om Grönland*. The greater part of the volume is devoted to a treatise on the Eskimo grammar and a comparative list of the independent stems of the Eskimo dialects—the Greenland dialect, being the best known, serving as a basis for this list. The first portion of the book includes a comparative view of the manners and customs of the Eskimo, tracing the Eskimo migration from west to east. Dr. Rink's theory

¹ *The Eskimo Tribes: their Distribution and Characteristics, especially in regard to Language* By Dr. Henry Rink. Vol. xi. of the *Meddelelser om Grönland*: Copenhagen, 1887.