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### A NATURALIST IN THE FROZEN NORTH.

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Beyond the ordinary range of observation are vast ice-bound and snow-clad regions, where nature, although not there at all times profuse in the manifestation of her life forms, unfolds before the eye of the naturalist who may be fortunate enough to visit those far away places, creatures remarkable in their structure, and quite as remarkable in their life-histories and habits. Something is already known concerning certain of the animals which inhabit the frozen North : much, very much indeed, remains to be found out. The fields where those creatures have struggled to exist, and have survived, are vastly extensive, and their habitats very varied, and often singular. They exist in divers environments : they swarm in the open sea, creep about or remain stationary deep down upon its bed ; they swim at its surface, or fly immediately over it, or yet again in the upper air ; they bury themselves in mucky substances along the beach, or in sand in pools of salt water ; they hide themselves and take refuge among algæ and under stones ; they crawl along among the leaves of stunted plants, and hover among arctic flowers ; they move about amid the azoic rocks of the barrens, and even live beneath the ice in fresh-water ponds formed of melted snow.

Furthermore, there are many delicate forms, such as the medusoids, and other hydrozoans, which cannot well be preserved as museum specimens ; therefore, an adequate conception of those could be acquired only through coloured illustrations, so that they await the skill of an artist, with pencil and brush to figure them on the spot.



Ice-bound and snow-covered, then, as those northern regions are during the long winter, they yet offer to the observer a rich field where nature reveals the living objects she has placed there ; and the opportunities to observe which the short milder season affords, are many. It is primordially a place for a field-naturalist: a place, moreover, where the mind is aroused to the urgent need on the part of naturalists (and this the more so on account of the present state of zoological knowledge) for closer and deeper observations, whatever the nature of their respective researches may happen to be. In this connection, a few preliminary remarks may be in place, and are offered suggestive of what may be expected in an address which purports to deal with animal forms many of which have had little if any attention, and which are made in order to show that as yet the work of a naturalist in the Hudson Bay region and in the more northern and eastern locations, is that of a pioneer.

The mere closet naturalist lacks the experience of the field naturalist. Were one, it is true, to confine himself to a laboratory or a library, having little desire to go out of doors, were he simply to read popular works on natural history, or to pore over more advanced zoological treatises, he might familiarise his mind with general theories of classification, or with outlines of comparative structure. In other words, a student of this sort might gain a fairly accurate conception of the sub-kingdoms into which the animal creation is divisible. But if he thus limited his studies, having little ambition to walk even a mile from his home in order to stroll through the woods or along the banks of a stream, his knowledge would be curtailed and inaccurate. On the other hand, one who values the recorded researches of others, and who, whilst not dependent upon books, reads or refers to them, knowing that they contain many corroborated facts concerning the forms and habits of animals ; but who at the same time is independent enough to follow living beings to their haunts, to learn at first hand from themselves, will find his stock of information accumulating and resting upon a surer basis. Nevertheless, one who carries on original researches will discover how little, relatively, he knows, and the more deeply he pursues knowledge in the realms of natural history, the more he will see,



not only how much remains to be found out, but also how much already alleged and taken for granted, requires corroboration, or even correction. If this be so, one whose opportunities have led him into fields hitherto little frequented, will commensurately feel the gravity of nature's own obstacles which tend to impede the way in seeking to add to the treasury of knowledge, and therefore he ought to be as certain as possible of his data before entering into descriptions. The substance of the following remarks, then, is at best fragmentary and partial, an effort to adhere strictly to what was actually observed, leaving the filling in of details, in such a wide and varied field, to subsequent researches. "It is an old and firm conviction of mine," wrote Darwin, "that the naturalists who accumulate facts and make many partial generalizations are the *real* \* benefactors of science." And, surely, the true scientific method is to ascertain facts and marshal them, which of course implies incompleteness entailed through the processes of collecting them.

The mammals observed are limited to the four orders of the Carnivora, or the beasts of prey; the Rodentia, or those which gnaw their food with chisel-like incisor teeth; the Ruminantia, or those which chew the cud; and the Cetacea, or those of the whale kind. The tail in all the species observed, excepting those of the family of the Canidæ, or dogs, wolves, and foxes, is short or rudimentary. This is true even of the Ruminants, although those creatures of the North are plagued by dipterous insects—at least the Caribou is. The tail in the Cetaceans is of course broad, so as to act as a propeller. The colour of the iris is generally brown, and this is the case in many of the birds also. I was struck with the similarity of the colour of the iris in the fox and in the hare, and was led to think that some homologous purpose is thereby served to those creatures. Burrowing does not seem to be a common habit, and, when resorted to, has usually to be done in the snow, the rocks affording little facility for that purpose, except in the instance of small rodents.

In appearance the Walrus (*Odobæus rosmarus*) when seen in its habitations, is massive and unwieldy. Great numbers were

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\* Italics his.



seen at, and in the vicinity of, Charles Island, Ungava, in September, 1903. They were first observed in the sea, either singly, or two or three together. At the island they were numerous, and were moving about among the surf and boulders. Walruses were also encountered off Southampton Island. At this place numbers were resting themselves on the great sheets of floating ice, and when approached would in the easiest manner simply slide over the ice into the sea. In August, 1904, numerous Walruses were seen on floating sheets of ice, as we were sailing up the Greenland coast.

Whilst at Coming Creek, North Devon Island, some of the party, intent on making researches regarding the geology and palæontology of the place, went ashore. When in the small launch, a number of Walruses were seen swimming about in the bay. They were chased, and it was great amusement to see them rolling themselves down into the water, in order to hide, and to see them coming up again, as they were compelled to do, in order to breathe.

Knowledge of the Seals is nearly as involved as is that of the Whales. (See p. 86.) Usually only their heads are seen above water, and viewed, as they often are, from a distance, it is sometimes impossible to be sure of the species. The different kinds outwardly resemble one another, and there is considerable individual variation, occasioned by the creature's time of life; and probably for other reasons, such as that of the patterns and markings in the sexes of a particular species. Indeed, one who has never been in the arctic regions cannot properly understand the obstacles to be overcome in studying out those creatures. With us, the best opportunities were in the iglows, or snow-houses, only dimly lighted by the stone lamps when the days were very short, and the sun low down in the heavens.

Seals were observed dotted about here and there in the water at Winchester Inlet, in September, 1903, their heads appearing and disappearing as they sported themselves in this sheltered place. At Fullerton, throughout the winter, seals were frequently seen. One day I observed two frozen-over openings, at places apart, the abandoned holes of seals. In the month of May, seeing a seal resting on the ice far away in the distance, I



walked toward it with one of the firemen in order to get a better view of it, but it disappeared through its hole in the ice. I then walked over to examine the hole but failed to find it. The surroundings disguised its whereabouts, the packed snow of the low rocks being just sufficiently ridged to hide it from view; and this was a clear case of protection to the creature.

Irrespective of difficulties, three species of seals were determined, viz., the Flipper or Ringed Seal (*Pagomys fœtidus*), common at Fullerton, where it was frequently to be seen at the floe or open water during the winter, and it was also seen in Baffin Bay; the Harp Seal (*Pagophilus grœnlandicus*), seen in Baffin Bay, and on the ice near Cumberland sound; and the Hooded Seal (*Cystophora cristata*), seen resting on a sheet of ice in Davis Straits.

The Polar Bear (*Thalarctos maritimus*) can be seen during the short summer, walking about when the ground is carpeted with a low-growing vegetation, and cranberries and blueberries paint the landscape, and when, in certain localities, there is snow only in ravines and deep hollows where the sun cannot penetrate. Sometimes also his bruinship is to be seen on the floating ice in the sea. Bears were encountered as they were walking about on the mountain sides at Eric Cove and at Digges Island, Ungava, and on floating ice off Southampton Island, where walruses were observed. Also among the ice at the head of Hudson Straits, near Cumberland Sound, and in Baffin Bay.

A Barren Ground Wolf (*Canis lupus albus*) was killed with a trap gun in the month of March. If this were the same individual—which is more than probable—it had been seen several times for some days, previously, prowling about near the vessel, and running along over a frozen pond on an island. Its colour was white, the hairs of the back being tinged with black.

The Esquimo Dog (*Canis borealis*) is very wolf-like. This variety of the dog is the domestic animal of the Innuits or Esquimos, and it would fare ill with him were it extinct. It draws his sleigh over the frozen sea, and over the snow inland. Its disposition is that of the dog of a savage, lacking the docility of our civilized varieties; but it has little of the aggressive ferocity which, from descriptions, I anticipated it would have. It remains



quiet as you pass it, but retreats at the slightest sign of molestation. At the same time I am certain that, if kindly treated, it would soon exhibit affection. It is about the size of a collie. In colour it varies: some are black, variegated with white, or *vice versa*, others gray, and others again, but infrequently, cinnamon colour.

The Arctic Fox (*Vulpes lagopus*) is tolerably common in the vicinity of Fullerton, and during the winter months was frequently brought in from the traps. In winter its coat disguises it thoroughly. One day in February I walked to the traps, in one of which was a fox, dead and frozen stiff, which at first I took to be a lump of snow, so much did the creature resemble its surroundings. On another day of the same month the traps were again visited, in one of which was a fox caught by the toes of one foot. It was living, and limped about when approached, but was very easily killed. As soon as it was dead, I examined its iris, and also examined the iris of a living fox which was brought to the vessel in November, and found the colour to be a beautiful brown.

This completes our brief consideration of the carnivorous mammals observed. We have next to consider those belonging to other orders, and will begin with the Polar Hare (*Lepus arcticus*). This rodent, when fully clad in its pure white coat among the frozen ponds and snow-covered rocks of its native haunts, presents a graceful sight. It runs about, sits up, and lies down betimes, and moves rather timidly, somewhat in a semi-circle round about the observer.

Polar Hares were occasionally shot at Fullerton, and any fine day during the winter, when walking over the islands of the channel, their foot tracks might be seen in the snow. Its winter coat is pure white, excepting the ear tips, which are jet black. The Hares have little difficulty in obtaining food, because the stalks of the dried hay-like grass which they feed upon, are often left uncovered by the drifts several inches above the surface of the snow. I frequently came across the places where they had been feeding, and found that besides eating the exposed grass, they also got at the covered-up vegetation by scraping the snow away. Hares were seen in August along the Greenland coast, and at



Cape Sabine, all of them white, there being evidently in those places of the very far north no time for assuming a summer coat.

A few specimens of several kinds of small Rodents, such as lemmings, and marmots or ground squirrels, were found. The males of the Marmots have cheek-pouches for storing food for after use.

The skins, with the heads intact, of six Musk Oxen (*Ovibos moschatus*) were brought to the vessel from the inland. An examination of their skulls is as follows:—Cavity of brain small; very prominent orbital projections, eye sockets full of fat; when thawed out, the iris brown, pupil light blue. The skull of a calf shewed a different contour from those of the mature animals, the occipital opening being larger, and the lower mandibles thicker in proportion towards the middle. Dentition:—Incisors, 6 in each lower jaw; canines, 1 in each side of lower jaw; molars (including pre-molars), 6 in each upper and lower jaw of specimens numbers 1, 2 3, and 6; 5 in each upper jaw of number 4, with a space for a 6th, and 6 in each lower, the back portion of 6th not having the usual flatness of a molar, but conical and canine-like, and received into the vacant cavity of upper jaw; 4 in each upper and lower jaw in number 5 (calf), the last pointed not flat, but low, apparently a tooth in the forming, each 3rd molar in three parts; 6th molar in each lower jaw of the other skulls in three parts. A small branch of crow-berry (*Empetrum nigrum*) was attached to one of the skins.

We were well supplied throughout the winter with the flesh of the Reindeer or Barren Ground Caribou (*Rangifer grælandicus*), the carcasses being brought to the vessel from the island by the Esquimo. The flesh of those deer is excellent, and one might eat it every day of the year without tiring of it. The Caribou are much infested with the large larvæ of an Œstrian dipteron, which are buried in the flesh.

In many respects, more is known about the infinitesimal protozoans than about the Cetaceans, or mammals of the Whale tribe, many of which are the giants of the animal world. As a rule, only certain parts of their great bodies are to be seen at one time, usually when they rise to respire; and, even then, very often at a considerable distance from the observer. For this reason, I



seek to be cautious in speaking with certitude concerning the identity of species, in particular cases, unless the evidence was unmistakable. The bones of Cetaceans, bleached, mutilated and worn, are often to be seen along the shores.

Two Whales, evidently the Right Whale or Bow-head (*Balaena mysticetus*), were seen on the Greenland side of Baffin Bay; the Killer (*Orca gladiator*) was reported seen after leaving Port Burwell in August, and the Narwhal (*Monodon monoceros*), whilst we were sailing along the coast of Greenland. A White Whale or Beluga (*Delphinapterus leucas*) was seen sporting itself leisurely near the shore in a harbour on the Labrador coast, and several White Whales were seen at Fullerton. Certain cetaceans, apparently the Grampus (*Grampus griseus*) and the Common Porpoise (*Phocæna communis*), were seen whilst we were sailing along the Labrador coast.

Bird life is an attractive feature in the Arctic zone. Some, such as ravens, eiders and sea-pigeons, remain in the far north throughout the winter (that is, some of them do); and when the sun gains in the ascendancy, the return from the south, for breeding purposes of insessorials, birds of prey, numerous shore birds, swimmers and divers, is indeed a thing of import. Some unerring instinct leads those immigrants to leave the more genial and wooded temperate parts, to betake themselves to the barrens of the north, where, undisturbed, they may make their nests, and rear their young among the rocks and ponds. Among the earliest arrivals are the insessorials, notably the Snow-birds, and these are soon followed by gulls, terns and shore birds. Whilst removing their skins I found the birds were generally well protected from the cold by fat, and that the swimmers and divers, in addition, were very oily for resistance against water.

Tit-larks (*Anthus pensilvanicus*) were seen at Port Burwell. Lapland Longspurs (*Calcarius lapponicus*) were frequently noticed hopping about among the snow-birds at Fullerton.

Snow-birds (*Plectrophenax nivalis*) were observed among the rocks at Fullerton, when we arrived there towards the end of September, 1903.

(To be continued.)





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