

APPENDIX.

THE names of the distinguished persons affixed to the following papers on natural history are of themselves sufficient to command attention to their productions ; but I feel called on again to state that the merit of making the collection of which they give an account is entirely due to Mr. King, who, I am convinced, had our means and opportunities of conveyance been more favourable, would have still added to the number of specimens brought home. We were without the kind of shot calculated for killing small birds, inconvenienced by want of room in our single boat, and assailed by almost constant rain, while the barren grounds afforded little beyond moss for fuel. In such circumstances, much credit is due to him for the zeal and perseverance which he evinced, amid difficulties of so varied a nature.—G. B.

No. I.

ZOOLOGICAL REMARKS,

BY JOHN RICHARDSON, M.D. F.R.S. &c.

FEW people in this country have a correct notion of the magnitude of that part of America which lies to the north of the great Canada lakes ; and it may not therefore be out of place to inform the reader, that the area of the

territory in question is about equal to the portion of the old continent which would be cut off to the northward by an imaginary line running from the Bay of Biscay, through the Gulf of Lyons, the Adriatic and Black Seas, to the Caspian and Lake Aral, and from thence north-eastwardly to the sea of Ochotsk, thus comprising twenty-seven degrees of latitude, and in the sixtieth parallel upwards of one hundred degrees of longitude: or, Captain Back's journey from New York to the Gulf of Boothia may be likened to that of a traveller who should embark in a canoe at Naples, and proceed up or down various rivers, and across portages, until he reach Arkhangel and the entrance of the White Sea. In a country embracing so many parallels of latitude, and presenting a surface so greatly varied by hill and dale, woods and prairies, we may naturally expect a considerable variety in its ferine inhabitants; and those which exist in America are highly interesting to the zoologist, as being less perfectly known than their European representatives,—while, at the same time, their range having been as yet scarcely restricted, or their habits influenced, by man, they offer instructive studies to the naturalist. It is in North America alone that opportunities occur for observing the curious operations of the beaver, which are guided by an instinct almost surpassing human reason: there too we may watch the regular migrations of the bison and reindeer to their wonted feeding-places or remote retreats where they bring forth their young; and note the periodical flights of birds proceeding in immense flocks from warmer and more populous climes to the secluded shores of the Arctic Sea. The ichthyologist too, who shall devote his time to the investigation of the fresh waters of that country, and of its several bounding seas, will reap a rich harvest; and

the entomologist who may travel thither, will be delighted with the unexpected burst of insect life which enlivens the air and fills the waters as soon as winter has passed away.

The distribution of animals has a close connection with climate; and though this is not the place to enter into a lengthened discussion on that important subject, yet a few remarks may be appropriately made on the difference between the climate of Europe, and especially of its sea-coasts, and that of the interior of North America. In the former, the winter is tempered by the warm breezes which sweep over an open sea; and, except in very high latitudes, the ground is seldom covered with snow for a great length of time, or vegetation completely arrested by frosts of long duration. Most of the grass seeds (not objects of culture) that have been matured in the summer fall to the ground in the autumn, and, if the season be moist, have already germinated before the conclusion of winter. The perfection of what has been termed by way of distinction a *maritime climate* may be observed on the west of Ireland, or, still more evidently, in the islets or "holmes" of the Shetland and Orkneys, which, lying between the sixtieth and sixty-first parallels, are green during the whole winter, affording pasture to numerous flocks of sheep: but this mild winter is coupled with a less genial summer. The growth of the cerealia and of the most useful vegetables depends chiefly on the intensity and duration of the summer heats, and is comparatively little influenced by the severity of the winter cold, or the lowness of the mean temperature of the year. Thus, in France, though the isothermal lines, or lines of equal annual heat, bend to the southward as they recede from the coast, the bounding lines of culture of the olive, maize, and vine,

have a contrary direction — that is, incline to the north-eastward,—which is attributed to the low summer temperature along the coast.

In North America, the decrement of the mean annual temperature incident to the increase of latitude is much greater than in Europe; and there is also, especially in the interior, a much wider difference between the summer heat and winter cold,—the increase of vernal heat being sudden and great. On the north shore of Lake Huron, which is nearly in the same parallel with the bottom of the Gulf of Venice, the snow covers the ground for nearly half the year; though the mean heat of the three summer months, amounting to 70° of Fahrenheit's scale, equals that experienced at Bourdeaux. Cumberland House, having the same latitude with the city of York in England, stands on the isothermal line of 32° , which in Europe rises to the North Cape in latitude 71° ; but its summer heat exceeds that of Brussels or Paris. Humboldt informs us that, in countries whose mean temperature is below 63° , spring, or the renewal of vegetation, takes place in that month which has a mean heat of 33° or 34° , and deciduous trees push out their leaves when the mean reaches to 52° ; thus, the sum of the temperatures of the months which attain the latter heat furnishes a measure of the strength and continuance of vegetation. Lake Huron, in latitude 44° , enjoys five of these months; Cumberland House, three; and Bear Lake and Fort Enterprise, both in latitude $64\frac{1}{2}^{\circ}$, only two: all these places have an interior or continental climate. At Winter Island, on the eastern coast, in latitude $64\frac{1}{4}^{\circ}$, and at Igloolik, in latitude $66\frac{1}{3}^{\circ}$, no month in the year attains a mean heat of 52° ; and at Churchill, in latitude 59° , the summer heat does not exceed that of Bear Lake, being 10° less than that which is ex-

perienced in the same parallel in the interior of the continent.

The phenomenon of the isothermal lines sinking on the western coast of Hudson's Bay, instead of rising as they do on the eastern coast of Europe, has been variously accounted for. Dr. Brewster assumes two northern poles of cold, and places one of them on the meridian of 92° , which is the longitude of Churchill; but we think that the peculiarities of the climate of this part of the country may be greatly owing to the configuration of the land. The coast to the northward is deeply indented by gulfs and sounds, and fringed by numerous islands, among which the drift ice is detained until late in the season. This melting depresses the summer heat; while the ice-covered sea has little or no effect in tempering the cold during the winter. The subsoil north of latitude 56° is perpetually frozen, the thaw on the coast not penetrating above three feet, and at Bear Lake, in latitude 64° , not more than twenty inches. The frozen substratum does not of itself destroy vegetation; for forests flourish on the surface at a distance from the coast, and the brief though warm summer gives birth to a handsome flora, matures several pleasant fruits, and produces many carices and grasses.

The direction of the northern termination of the woods shows the gradual ascent of the isothœral lines (or lines of equal summer heat) as they recede from Hudson's Bay. On the coast near Churchill the woods cease about the 60th parallel; but at the distance of fifty or sixty miles from the sea their boundary rises rapidly to the northward, and then takes a nearly straight W.N.W. course until it reaches Great Bear Lake, in latitude 65° . The most northerly tree is the white spruce; but the canoe birch, which is deciduous,

terminates only thirty or forty miles to the southward of it; and we thus possess the means of ascertaining how far to the north a summer temperature of 52° extends. But, in fixing this limit, some allowance must be made for altitude, and the nature of the soil. Thus, on the low alluvial delta of the Mackenzie, the spruce fir reaches the latitude of 68° ; and the banks of that river generally are better wooded than the more elevated rocky tracts which lie to the eastward.

The permanence of the frosts when once they set in is a feature of the climate of the fur countries which requires to be noticed here, as it influences the distribution of graminivorous and herbivorous animals * by modifying their supply of food. The carices and grasses have scarcely matured their seeds before they are frozen up for the season while their leaves are still full of sap; thus they continue to afford good pasturage until the spring, and they drop their seeds only when the melting snow has prepared the ground for their reception. The sparrows and buntings profit by this vernal harvest. In like manner the *Vaccinææ*, *Arbuti*, and several other berry-bearing shrubs, retain their fruits until the same period, when they yield food to the bears, just awoke from their winter sleep, and to large flocks of geese winging their way to their breeding places.

The northern boundary of the woods is the limit of the range of the black bear, the American fox, the pine-martin, the fisher, the lynx, the beaver, several marmots, the American hare, the moose deer, the Canada partridge, the woodpeckers, &c. The "barren

* Beasts and birds of prey depending on these tribes for subsistence are also thus influenced in their distribution by the powers of vegetation.

grounds" to the northward of the woods have also their appropriate inhabitants, such as the brown bear, the arctic fox, Parry's marmot, the polar hare, and the musk ox. The small variety of the reindeer winters within the verge of the wooded country, but travels to the northward in the summer, and drops its young on the sea-coast. The wolf and the wolverene inhabit woods and barren grounds indifferently, and the polar bear seldom travels inland. The "prairies," or woodless plains, which skirt the Rocky Mountains from the 55th parallel down to the Mississippi, and enjoy milder winters than the more easterly districts, have another set of inhabitants, of which the bison is the most important. This animal feeds in countless herds on the grass of the prairies, and furnishes food to a much greater Indian population than the wooded districts can support. The bison exists also in the woods up to the 62d parallel, though in much smaller numbers, but it does not travel to the eastward of the 105th meridian; and a few stragglers only have found their way across the mountains to the fertile and comparatively temperate country which skirts the Pacific. The prairie wolf, the kit-fox, and various marmots are peculiar to the plains; and the ferocious and powerful grisly bear, though most abundant on the alpine declivities, also ranges for some distance over the flat country to the eastward.

The north-west coast which we have just alluded to has a climate more like that of the east coast of Europe in its temperature than any other part of North America: but it is very moist, owing to the vicinity of the Rocky Mountains. The summits of this range are inhabited by a wool-bearing goat named *Capra Americana*, and the declivities by the *Ovis montana*, or mountain sheep. The country nearer the Pacific coast is fre-

quented by a fox more closely resembling the European one than the *Canis fulvus* of the eastern territory does. The moose-deer, reindeer, wapiti, with several others of the genus, known to the traders under the name of mule-deer, jumping deer or cabree, fallow-deer or chevreuil, and the prong-horned antelope, also inhabit New Caledonia and the banks of the Columbia.

The following is a list of the specimens procured by the expedition, with a reference to the pages of the Fauna-Boreali Americana, where they are scientifically described: —

Vespertilio subulatus, F.B.A. 1.	page 3.		
Mustela (Putorius) erminea	-	46.	
vison	-	48.	
Lutra Canadensis	-	57.	
Lupus occidentalis, <i>griseus</i>	-	66.	
Canis familiaris, <i>Canadensis</i>	-	80.	
Castor Americanus	-	105.	
Fiber zibethicus	-	115.	
Arvicola Pennsylvanicus	-	124.	
Georychus trimucronatus	-	130.	
Mus leucopus	-	142.	
Spermophilus Parryi	-	158.	
Aquila (Haliaeetus) leucocephala,			
F. B. A. 2.	-	15.	
Falco lanarius.			
Islandicus	-	27.	
sparverius	-	31.	
columbarius	-	35.	
Buteo borealis	-	50.	
(Circus) cyaneus	-	55.	
Strix otus	-	72.	
brachyota	-	75.	
cinerea	-	77.	

<i>Strix Virginiana</i> , F. B. A. 2.	p. 81.	
<i>nyctea</i>	- -	- 88.
<i>funerea</i>	- -	- 92.
<i>Tyrannula pusilla</i>	- -	- 144.
<i>Merula migratoria</i>	- -	- 176.
<i>Wilsonii</i>	- -	- 182.
<i>Erythaca (Sialia) arctica</i>		- 209.
<i>Sylvicola (Vermivora) peregrina</i>	221.	Lake Winnipeg.
<i>Setophaga ruticilla</i>	- -	- 223. Lake Winnipeg.
<i>Anthus aquaticus</i>	- -	- 231. Fort Reliance.
<i>Vireo olivaceus</i>	- -	- 233. River Winnipeg.
<i>Bombycilla garrula</i>	- -	- 237. Fort Reliance.
<i>Alauda cornuta</i>	- -	- 245. Fort Reliance.
<i>Plectrophanes nivalis</i>	- -	- 246.
<i>Emberiza Canadensis</i>	- -	- 252. Fort Reliance.
<i>Fringilla leucophrys</i>	- -	- 255.
<i>Pennsylvanica</i>	- -	- 256. River Winnipeg.
<i>Pyrrhula (Corythus) enucleator</i>	262.	
<i>Loxia leucoptera</i>	- -	- 263.
<i>Linaria minor</i>	- -	- 267. Fort Reliance.
<i>Coccothraustes (Guiraca) Ludo-</i>		
<i>viciana</i>	- -	- 271. Lake Winnipeg.
<i>Agelaius phoeniceus</i>	- -	- 280. Lake Winnipeg.
<i>xanthocephalus</i>		- 281.
<i>Quiscalus versicolor</i>	- -	- 285. Lake Winnipeg.
<i>Scolecophagus ferrugineus</i>	- -	- 286. Fort Reliance.
<i>Garrulus Canadensis</i>	- -	- 296.
<i>Picus pubescens</i>	- -	- 307.
<i>varius</i>	- -	- 309.
<i>tridactylus</i>	- -	- 311.
<i>arcticus</i>	- -	- 313.
<i>Colaptes auratus</i>	- -	- 314. Fort Reliance.
<i>Hirundo lunifrons</i>	- -	- 331.

Caprimulgus (Chordeiles) Virg-			
nianus, F. B. A. 2.	-	p. 337.	Lake Winipeg.
Alcedo alcyon	-	-	339.
Tetrao Canadensis	-	-	346.
Tetrao (Lagopus) saliceti	-	-	351.
rupestrus, SABINE			356.
(Centrocercus) phasianellus			361.
Columba (Ectopistes) migratoria		363.	Lake Winipeg.
Charadrius vociferus	-	-	368.
pluvialis	-	-	369.
melodus	-	-	River Winipeg.
Strepsilas interpres	-	-	371.
Grus Americana	-	-	372.
Canadensis	-	-	373.
Recurvirostra Americana		-	375.
Tringa Douglassii	-	-	379.
alpina	-	-	384.
Totanus flavipes	-	-	390.
Rallus Carolinus	-	-	403.
Phalaropus Wilsonii	-	-	405.
fulicarius	-	-	407.
Fulica Americana	-	-	404.
Podiceps cornutus	-	-	411.
Larus argentatoides	-	-	417.
Lestris pomarina	-	-	429.
Anas clypeata	-	-	439.
acuta	-	-	441.
boschas	-	-	442.
crecca	-	-	443.
Mareca Americana	-	-	445.
Oidemia perspicillata	-	-	448.
Fuligula marila	-	-	453.
rufitorques	-	-	454.
rubida	-	-	455.

Clangula albeola, F. B. A. 2.	p. 458.
vulgaris	- - 456.
Anser albifrons	- - 466.
hyperboreus	- - 467.
Canadensis	- - 468.
Colymbus septentrionalis	- 476.
Lucioperca Americana, F. B. A. 3.	10.
Salmo namaycush	- - 179.
Gadus (Lota) maculosus	- 248.
Coregonus albus	- - 311.
tullibee	- - 309.
Hiodon chrysopsis	- - 311.

These specimens were all carefully prepared by Mr. Richard King, surgeon to the expedition, who deserves the thanks of zoologists for devoting so much time and labour to the promotion of the science. As it would exceed the limits of an Appendix to give a full account, or even a cursory notice, of each species, we shall merely say a few words respecting those which are objects of chase to the Indian hunter, either for food or for the sake of their fur, adding a few brief remarks on the specimens of the other species when they serve for the elucidation of doubtful points of their history.

SAY'S BAT. *Vespertilio subulatus*. (SAY.) F. B. A. 1.
p. 3.

The specimen resembles the one described in the Fauna-Boreali Americana so much, that we cannot but consider it as the same species, though it has a shorter tail; and the comparative dimensions of some of the other members also differ a little, as the following Table shows: —

	King's Sp.		Richardson's.		Say's.	
	Inch.	lin.	Inch.	lin.	Inch.	lin.
Total length - - - -	3	8 $\frac{2}{3}$	3	4	2	1 $\frac{1}{8}$
Length of head and body - -	2	4 $\frac{1}{2}$	1	10	—	—
— head - - - -	0	8	0	9	—	—
— tail - - - -	1	4 $\frac{1}{2}$	1	6	1	2 $\frac{1}{3}$
Height of ear - - - -	0	7	0	8	—	—
Breadth of ditto - - - -	0	4 $\frac{1}{2}$	0	4	—	—
Height of tragus - - - -	0	4	0	4 $\frac{1}{2}$	—	—
Spread of wings - - - -	8	6	10	0	—	—
Length of thumb - - - -	0	3 $\frac{1}{8}$	0	2 $\frac{1}{2}$	—	—

The discrepancies in the dimensions may be partly reconciled by supposing the body of the specimen taken on Captain Back's expedition to have been rather over-stuffed; while the one got by Sir J. Franklin's party may have been allowed to shrink too much. Mr. Say's example must have been a young individual, if the identity of the species be granted. Say's bat, which is closely allied to the *V. pipistrellus* and *emarginatus* of Europe, has an extensive range, having been found on the Arkansas, at Great Slave Lake, and in the intermediate district.

AMERICAN BLACK BEAR. *Ursus Americanus*. (PALLAS.)
F. B. A. 1. p. 14.

This bear, which is the only one of the genus that produces a valuable fur, may be readily known by a pale yellowish-brown patch on each side of its long and slightly arched nose. It feeds chiefly on fruit and other vegetable matters; and is by no means a ferocious animal, seldom injuring man except in self-defence, and shunning the combat whenever a way of retreat is open

to it. It climbs trees or scales precipices with great facility; and, being very wary, is not easily killed in the summer. But extreme caution sometimes proves the cause of its destruction; for on hearing a noise or apprehending danger, it stands upon its hind legs every now and then to look over the bushes, and, by thus showing its position, enables the skilful hunter to make his approach. The bear is, however, much more frequently taken in its winter retreat; and being always fat when hybernating, with the fur in prime order, it is a valuable prize to the Indian, who, from long practice, acquires an extraordinary skill in discovering its den, by indications that would attract no notice from the eye of an inexperienced person. But though the native hunter never neglects an opportunity of killing a bear, he deems it an honour to be related to an animal possessing so much strength and sagacity; and before he proceeds to skin and cut up the carcass, he shows it the utmost respect, and begs a thousand pardons for the liberty he is about to take with his grandmother. The fat of the bear resembles hog's lard, and is generally considered as a delicacy by the Indians; but its strong flavour is disagreeable to Europeans.

BARREN-GROUND BEAR. *Ursus Arctos?* F. B. A. 1.
p. 21.

This bear, which closely resembles the brown bear of Europe, and is probably the same species, frequents the barren lands lying to the north of the wooded country; and in the summer time haunts the shores of the Arctic sea. It feeds upon roots and berries, and also upon such animals as it can surprise, or that it finds dead — being much more carnivorous than the

preceding species. One that was killed by Sir John Franklin's party in Bathurst's Inlet had a seal, a marmot, and many roots in its stomach. This bear attains a greater size than the black bear, and is dreaded by the Indians on account of its strength and courage. It is said that it will attack man when impelled by hunger, but all that we saw fled from us as fast as they could.

GRISLY BEAR. *Ursus ferox*. (LEWIS and CLARK.)
F. B. A. 1. p. 24.

This is a still more carnivorous animal than either of the preceding species, though not so completely so as the Polar bear. It is the most powerful of the genus, being able to master the American bison, which forms its habitual prey. The Indian hunter will rarely venture to attack the grisly bear, unless he is very advantageously posted; for it does not hesitate to assail a man who, intruding incautiously upon its haunts, comes upon it unexpectedly; and has been known to carry off a voyager from among his companions as they were seated at supper: yet it will usually make off when it scents the hunter from a distance, unless it be stimulated by hunger or incited by the presence of its mate or young to commence the attack. The physiognomy of the grisly bear is very like that of the brown bear (*Ursus Arctos*), but it may be readily known by the developement and curvature of its claws, which are blackish in the young animal, but change to a dirty white as it increases in age.

POLAR BEAR. *Ursus maritimus*. (LINN.) F. B. A. 1.
p. 30.

The Polar bear passes the greater part of its life at sea among ice, in the pursuit of the different species of seal.

It is one of the quadrupeds which ascends into the highest latitudes, being an inhabitant of Spitzbergen, Nova Zembla, Greenland, and Parry's Islands. The gravid females hybernate under the snow; but the males and other females travel over the ice in winter in quest of open water. This fact was established beyond a doubt in 1826-7, when the Dundee whaler wintered in Baffin's Bay. This ship was beset in latitude 74° in September, and got clear in latitude $62\frac{1}{2}^{\circ}$ in April: the pack of ice in which she was enclosed having drifted through Baffin's Bay, and obliquely across Davis' Strait, in the course of eight months. In the beginning of February, when the ship was in latitude $68^{\circ} 45' N.$, a whale being harpooned at the distance of sixty miles from the land, many bears, foxes, and sharks came to feed on the crang, very much to the delight of the crew, who were rejoiced to add to their scanty allowance of provisions the flesh of such bears and sharks as they succeeded in killing.*

THE WOLVERENE. *Gulo luscus.* (SABINE.) F. B. A.
1. p. 41.

The quickhatch, or wolverene, is another inhabitant of the high latitudes — its remains having been found in Parry's Islands, near the 75th parallel. It is a strong cunning animal, of which many marvellous stories have been told; and is greatly disliked by the martin-trappers, on account of the injury it does by carrying off their baits, and thus rendering fruitless the labour of many days.

* Voyage to Davis' Strait, by David Duncan. London, 1827.

THE ERMINE. *Mustela (Putorius) erminea*. (LINN. GMEL.) F. B. A. 1. p. 47.

This active little animal feeds on the white-footed mouse and other small gnawers, hunting, like the rest of the family, in the night, when it frequently enters the dwelling of man in pursuit of prey. The noise that it makes in galloping over the boarded floor, gives the impression of its being a much larger beast. Few of the ermine-skins of commerce come from Hudson's Bay.

THE MINK. *Mustela (Putorius) vison*. (LINN. GMEL.) F. B. A. 1. p. 48.

The *vison* or *mink* preys upon small fish, freshwater muscles, &c., and swims and dives well. La Hontan calls it an "amphibious weazel;" and it is known to the Canadian fur-hunters by the name of "foutereau." Its fur, though darker, is shorter, and consequently of less value, than that of the pine-martin. It is a smaller animal than the latter, with a proportionably shorter and broader head, and a molar tooth fewer on each side. Easily tamed, it shows much attachment to those who pet it.

THE PINE-MARTIN. *Mustela martes*. (LINN.) F. B. A. 1. p. 51.

Inhabits the wooded districts, and preys upon hares, mice, and birds. When surprised upon a tree, its gestures, the attitudes it assumes, and the puffing noise it makes, are very like those of a cat under similar circumstances. Martin fur is very fine, and brings a high

price, being sold largely in England under the name of "sable;" the real Russian sable rarely or never finding its way into our fur-shops.

THE PEKAN, or FISHER. *Mustela Canadensis*. (LINN.)
F. B. A. 1. p. 52.

Notwithstanding the name of fisher, this animal does not seek its prey in the water; but entirely resembles the pine-martin in its habits. Its greater size, the colour and coarseness of its fur, distinguish it from the latter. The skins of the pekan are called "woodshocks" at the Hudson's Bay Company's sales.

THE SKUNK. *Mephitis Americana*. (SABINE.) F. B.
A. 1. p. 55.

A full, bushy tail, long black hair, and a broad white stripe along each side, give the skunk a pleasing appearance; but the odour of the fluid it discharges when in danger is so disgusting that few people can summon resolution to approach it. The early French settlers in Canada evinced their abhorrence of this otherwise harmless animal, by terming it "*l'enfant du diable*." Clothes tainted by the fluid it secretes are but imperfectly purified after they have been buried in the earth for many days. The skunk is said to hybernate under the snow. It runs slowly; and, but for its peculiar means of defence, would be easily destroyed by its numerous enemies. Dogs hunt it eagerly; but when they are just on the point of seizing it, a single discharge of its nauseous liquor puts them to flight.

THE CANADA OTTER. *Lutra Canadensis*. (SABINE.)
F. B. A. 1. p. 57.

The habits of the otter are the same in the New World as in the Old; but there being a difference in the proportional length of their tails, and in some other respects, they are considered as distinct species.* The fur of the Canada otter, which is much more valuable than that of its European representative, resembles that of the beaver; and is applied to the same purposes. A single skin is worth from one to two guineas. The otter is found up to the 66th or 67th parallel of latitude.

THE WOLF. *Lupus occidentalis*. (RICH.) F. B. A. 1.
p. 60.

Wolves inhabit the whole country north of Canada, being, as is natural, most numerous in the districts which nourish the largest herds of the ruminating animals on which they prey. The countenance and general appearance of the American wolf differs greatly from those of its European representative, and its fur is very dissimilar; but it is a difficult question to determine whether it be a distinct species, or merely a variety produced by climate and other local causes. The Indian dog differs also in the thickness of its furry coat, as well as in its aspect, from the shepherd's dog, which is the analogous European race. Indeed, the wolves and the domestic dogs of the fur countries are so like each other, that it is not easy to distinguish them at a small distance; the want of strength and courage of the former being the principal difference. The offspring of the wolf and Indian dog are prolific, and are prized by the voyagers

as beasts of draught, being stronger than the ordinary dog.

The common colour of the American wolf is grey (*Lupus griseus*), changing to white in the higher latitudes, during the winter; but black individuals (*Lupus ater*), dusky ones (*Lupus nubilus*), and pied ones (*Lupus sticte*), are also met with occasionally. A small wolf, which differs somewhat in its habits from the common one, frequents the plains of the Saskatchewan and Missouri in great numbers; and has been described as a distinct species, under the name of the Prairie wolf (*Lupus latrans*).

THE AMERICAN FOX. *Vulpes fulvus*. F. B. A. 1.
p. 98.

This fox differs remarkably from its European representative in its fur forming a very valuable article of trade, particularly the black variety; a single skin being worth from twenty to thirty guineas in some years. The "cross" and "silver" foxes are also much prized, though they differ from the common red or tawny variety in the colour more than in the quality of their fur. This species inhabits the wooded districts only, and hunts much on the borders of lakes for the mice, lemmings, and small birds, on which it preys.

THE KIT-FOX. *Vulpes cinereo-argentatus*. F. B. A. 1.
p. 98.

The diminutive kit-fox, similar in its habits and appearance to the *corsac* of Asia, inhabits the prairie lands of the Saskatchewan, Missouri, and Columbia. This is the smallest of the North-American foxes. Its fur is of little value.

THE ARCTIC FOX. *Vulpes lagopus*. (DESMAREST.)
F. B. A. 1. p. 83.

This playful and handsome animal inhabits the barren grounds north of the woods, being most plentiful on the islands and shores of the Arctic sea, where it brings forth its young. It wanders far in the winter in search of food; and in particular seasons travels into the wooded districts. It also goes out on the ice to a considerable distance from the land, and, according to Fabricius, shows much cunning and dexterity in catching some kinds of fish. The fur changes from grey to white in the winter; but, though very close and long, it is greatly inferior in quality to that of the *Vulpes fulvus*. Many pleasing anecdotes of this simple animal are told by Captain Lyons and other Arctic voyagers.

Coloured individuals, named "blue" or "sooty" foxes, are frequently seen even in the middle of winter.

CANADA LYNX. *Felis Canadensis*. (GEOFFROY.) F. B. A.
1. p. 101.

This animal, which is clothed with a very fine thick fur, inhabits the wooded districts, where it preys chiefly on the American hare. It is commonly termed "the cat" by the traders, and is named *Peeshoo* by the Crees. Temminck considers it as specifically the same with the lynx of the North of Europe, which he calls *Felis borealis*.

AMERICAN BEAVER. *Castor Americanus*. (F. CUVIER.)
F. B. A. 1. p. 105.

The beaver's skin is the staple commodity of the fur countries, and forms the standard of value in trafficking

with the natives. The consequence is, that no animal is more persecuted; and as the admirable works it executes betray its abode, it is not surprising that it should be greatly reduced in numbers. The flesh is much prized by the natives as an article of diet, — a roasted beaver being the prime dish on their feast days. As the food of the beaver consists in a great measure of the bark of deciduous trees, particularly of the poplar, birch, and willow, its range must be restrained within the limits of the woods; but runs to a high latitude on the banks of the Mackenzie. The beaver may be considered as the civil engineer among quadrupeds; and the skill with which it selects the proper situation for its dam, so that it may be constructed with the least labour and the greatest effect for flooding a large extent of ground, and keeping up a proper supply of water during the winter, is very surprising, especially when we consider that the dam is often at a considerable distance from the beaver-house. It also shows great providence in excavating a number of vaults on the margin of the pond, for places of retreat in the event of the dwelling-house being assailed. Its habits, however, having been thoroughly studied by the Indian hunter, its skill is no match for his perseverance; and but for the care taken by the Hudson's Bay Company to preserve the various districts for four or five years in succession, the animal would soon become very scarce. Fifty thousand beaver skins are annually imported into London from North America.

THE MUSQUASH. *Fiber zibethicus*. (CUVIER.) F. B. A.
1. p. 115.

The musk-rat, musquash, watsuss, or wachusk, — for

it has all these names, — resembles the beaver in some respects, particularly in the fur ; but it has a long tail, which, instead of being depressed or spread out horizontally, is compressed and tapering. The musquash is very prolific, producing three litters in a season, and breeding at a very early age. Every swamp or pond with grassy borders is inhabited by it, up to the shores of the Arctic sea ; and notwithstanding the vast numbers that are annually destroyed by numerous enemies, there is no danger of its being extirpated. The import of musquash skins into Great Britain in one year amounts to nearly half a million. The fur is employed in the manufacture of hats, and though inferior in quality to the beaver fur, is very generally substituted for it by the hat-makers.

AMERICAN FIELD-MOUSE. *Mus leucopus*. (RAFINESQUE.)
F. B. A. 1. p. 142.

This mouse, which is the representative of the *Mus sylvaticus* of Europe, is very abundant in the fur countries, taking the place of the domestic mouse, and speedily establishing itself in every new fur post that is erected. It multiplies rapidly, as there is no domestic rat to keep down its numbers ; though that office is occasionally performed by the ermine, as we have already mentioned.

THE AMERICAN HARE. *Lepus Americanus*. (ERXLEBEN.)
F. B. A. 1. p. 217.

This animal, which is named “wawpoos” by the Cree Indians, and “the rabbit” by the resident traders at Hudson’s Bay, is very plentiful throughout the wooded country. The bark of the willow constituting its chief

winter food, it resides mostly at that season on the borders of lakes and in swamps, where that shrub and the dwarf birch grow. Being particularly abundant on the alluvial banks of the Mackenzie up to the 68th parallel, this hare furnishes the chief winter support of the Hare Indians, whose country does not nourish many of the larger quadrupeds. It is taken generally by snares set in the paths it makes through the snow. Its habits are more like those of the rabbit than like the hare of Europe, but it does not burrow, though it occasionally seeks for shelter in a hollow tree. The fur, which is brownish above in summer, changes to snow-white in winter.

THE POLAR HARE. (*Lepus glacialis* LEACH.) F. B. A. 1.
p. 221.

This hare may be considered as the American representative of the *Lepus variabilis* of the Alpine and northern districts of Europe, but being on the whole a stouter animal, and exhibiting some peculiar characters, Dr. Leach was induced to describe it as a distinct species. It inhabits the barren grounds and the islands of the Arctic sea up to the 75th parallel; feeding on the small shrubs which grow in the higher latitudes, such as the arctic willow, alpine arbutus, whortleberry, and Labrador tea plant; delighting in stony places where it can find shelter; and in winter burrowing in the snow. In summer the upper fur is hoary, and in winter pure white, except the tips of the ears, which are black at all seasons.

Another varying hare frequents the prairies up to the 55th parallel; and is said to be common in the mountainous districts of the United States. This has been named *Lepus Virginianus* by Dr. Haslan.

THE MOOSE DEER. (*Cervus alces* LINN.) F. B. A. 1.
p. 232.

The moose deer feeds principally upon the smaller twigs of the willow; and is found from Hudson's Bay to the Pacific, in every part of the fur countries where that shrub grows sufficiently tall, following the Mackenzie river to the shores of the Arctic sea; but never entering the barren grounds. From the extreme wariness of the moose, the acuteness of its senses of hearing and smelling, and its speed of foot, the art of killing it is considered as the chef-d'œuvre of an Indian hunter, except in spring, when a crust has been formed on the snow, and then it may be run down without much skill. It is the largest of the American deer, and furnishes the best and most juicy meat, with the exception of the rein-deer, the flesh of which, when in season, is more delicate. A full-grown fat moose deer weighs 1000 or 1200 pounds. The skin, when dressed, forms the best leather for mocassins.

THE REIN-DEER. (*Cervus tarandus* LINN.) F. B. A. 1.
p. 238.

The rein-deer, or caribou, as it is termed by the Canadian voyagers, is of two kinds: a larger race or variety, which exists in the wooded parts of the country, principally on the coast and near or upon the mountains; and a smaller kind, which frequents the barren grounds, retiring within the verge of the woods in the depth of the winter, but travelling to the shores and islands of the Arctic sea in the summer. The latter eats grass; but its principal food, for a considerable portion of the year, consists of the various lichens which grow

in such abundance on the barren lands. The rein-deer furnishes food and clothing to the Dog-rib and Copper Indians, the Chepewyans, the Swamp or Coast Crees, and to the Esquimaux; but none of the American tribes have domesticated it like the Laplanders. Every part of the animal is eaten, even to the contents of its stomach; and the half-dried tongue, when roasted, is perhaps the greatest delicacy that the fur countries afford. Rein-deer meat, when in the best condition, is not only superior to that of the moose deer and bison, but, in my opinion, it surpasses the best mutton or English-fed venison. When lean, however, which is the case for a considerable part of the year, it is neither nutritious nor palatable, the flesh of a poor musk-ox being, of all the ruminating quadrupeds of the country, alone, of inferior quality. The female rein-deer has horns as well as the male, though they are smaller and much less palmated, and are also shed at a different time. The skins of six or seven young rein-deer, killed in the autumn, form, when properly prepared and sewed together, a robe or blanket which is constantly used by the northern Indians in winter; being both light and warm, exceedingly well adapted to the climate, and affording a sufficient covering for a man in the coldest night.

THE WAPITI. (*Cervus strongyloceros* SCHREBER.)
F. B. A. 1. p. 250.

This animal, the wawaskeesh of the Crees, which inhabits the plains of the Saskatchewan, the neighbouring country, the banks of the Columbia, and New Caledonia, is the American representative of the red deer, and though of considerably greater size, it was long considered to be the same species. There are, at pre-

sent, some very fine wapiti in the Zoological Gardens. The flesh of this deer is considered as much inferior to that of the bison or moose deer; its hide makes excellent dressed leather.

There are several other species of deer, and an antelope, on the prairie lands of the Saskatchewan and Columbia rivers; but the three that we have specified are the only ones that interest the Indian tribes with whom Captain Back had to do. The North American deer are still very imperfectly known to naturalists, and the specific identities of the moose deer and the elk, and of the rein-deer of the new and old continents, have been by no means satisfactorily established. It is probable that further investigation will prove the barren-ground rein-deer to be a distinct species from that which inhabits the woody country.

ROCKY MOUNTAIN GOAT. (*Capra Americana.*) F. B. A. 1.
p. 268.

This very interesting animal inhabits the higher parts of the mountains from California up to the 65th parallel. It is most remarkable for bearing a very fine wool, well adapted for the manufacture of shawls. The specimens that have been brought home have interested the wool-staplers very much; but it will be difficult to procure a sufficient quantity for the purposes of commerce.

ROCKY MOUNTAIN SHEEP. (*Ovis montana* DESM.)
F. B. A. 1. p. 271.

This animal exceeds in size every variety of the domestic sheep, and equals any of them in the quality of its mutton. It is not clothed with wool, but with a close,

soft, brittle hair, like the reindeer. The ram carries very large horns.

MUSK-OX. (*Ovibos moschatus* BLAINVILLE.) F. B. A. 1.
p. 275.

This animal inhabits the barren lands, and the most northern of Parry's Islands, but retires to the verge of the woods in the depth of winter. It feeds, like the rein-deer, chiefly on lichens; and the meat of a well-fed cow is agreeably tasted and juicy; but that of a lean cow and of the bull is strongly impregnated with a disagreeable musky flavour, so as to be palatable only to a very hungry man. The musk-ox does not now exist in Greenland; and though extinct also in Siberia, bones either of the American species, or of one very similar to it, have been found there.

AMERICAN BISON. (*Bos Americanus* GMELIN.)
F. B. A. 1. p. 279.

This ox has lately become well known in England under the name of *bonassus*; and specimens exist in the Zoological Gardens, and in several parks. Its range in the fur countries is restricted between the 10th meridian and the rocky mountains, and it does not go beyond the 62^d parallel of latitude; but it is on the prairie lands only that the numberless herds noticed by authors are to be seen. The pemmican, which is so useful, and in fact almost essential, to the traveller through the fur countries, is made principally of the meat of the bison. The fleshy parts of the hind quarters are cut into very thin slices, dried in the sun, and pounded. Two parts of the pounded meat are then mixed with one of melted

fat, and packed into a bag formed of the hide of the animal. A bag weighing 90lbs. is called a "*taureau*" by the Canadian voyagers, and, in fact, only one bag of pemmican is generally made from each bison cow that is killed. Two pounds of this kind of food are sufficient for the daily support of a labouring man; though, when the voyagers first commence upon pemmican for the season, they will each consume three pounds or more. In the spring they generally boil the young shoots of the *Epilobium angustifolium* along with it; and the Orkney-men in the service of the Hudson's Bay Company add flour or oatmeal, thus rendering it much more palatable. The best pemmican is made of finely pounded meat, mixed with marrow, and further improved by the addition of dried berries or currants. If kept from the air, it may be preserved sound for several years; and being very portable, it might be used with great advantage in provisioning troops that have to make forced marches. It may be eaten raw, or mixed with a little water, and boiled; and, although not much relished by those who taste it for the first time, the *voyageur*, with the single addition of the luxury of tea, requires nothing else for breakfast, and dinner, or supper; the two last meals being generally conjoined on a voyage in the fur countries.

THE BALD EAGLE. (*Aquila leucocephala*.) F. B. A. 2.
p. 15.

The bald or white-headed eagle resides all the year in every part of the United States; but visits the fur countries only in the summer, arriving there in the van of the migratory birds. The comparative lengths of the quill feathers vary in different individuals. Mr. Au-

dubon states, that the second quill is longest: in a specimen obtained on Sir John Franklin's expedition, it was the fourth quill; and in the one now brought home by Mr. King, it is the third that has that distinction.

PIGEON HAWK. (*Falco columbarius.*) F. B. A. 2.
p. 35.

In some specimens the second, in others the third, quill exceeds the others in length: in Mr. King's, these feathers are equal to each other; and the other primaries stand, as to length, in the following order: 4th, 1st, 5th, 6th.

LONG-EARED OWL. (*Strix otus.*) F. B. A. 2. p. 72.

The specimen, though in complete plumage, is very small, measuring only $14\frac{3}{4}$ inches from the point of the beak to the tip of the tail. The latter member is as long as that of an ordinary individual, whose total length is 17 inches.

LITTLE TYRANT FLY-CATCHER. (*Tyrannula pusilla.*)
F. B. A. 2. p. 144.

A bird of this species, obtained on Sir John Franklin's second expedition, at Carlton House, is figured in the Fauna Boreali-Americana (t. 46. f. 1.); and Mr. Swainson, who had obtained a specimen also from Mexico, points out in that work its differences from the *Muscicapa querula* of Wilson, or *M. acadica* of Gmelin and Bonaparte, which it very nearly resembles, the plumage of both being precisely similar. *T. pusilla* has a shorter bill, and shorter

wings than *querula*, and there is a difference in the comparative length of their quill feathers. In the latter, the first quill is equal to the fifth (or to the fourth, according to Audubon), and the second and third are longest; in *pusilla* the first is rather shorter than the sixth, and the fourth is visibly longer than the second, though the third, or longest, very little exceeds either of them. The specimen brought home by Mr. King differs from the one referred to above, solely in being about a quarter of an inch longer from the point of the bill to the end of the tail; but the proportions of the other parts are the same.

THE ARCTIC BLUE-BIRD. (*Sialia arctica*.) F. B. A. 2.
p. 209. t. 39.

A single bird of this species was killed by Mr. Dease at Great Bear Lake, on Sir John Franklin's second expedition. Since then, the same gentleman has sent me four specimens from New Caledonia, where it is pretty common, and is known to the natives by the name of "Thlee-ooday." Mr. King's specimen proves that it goes as far east, on the shores of Great Slave Lake, as the 105th meridian. All the individuals that I have seen agree exactly in the colours of their plumage, as well as in other respects, with the one figured in the Fauna Boreali-Americana. In one specimen only, the first quill feather almost equals the second, but in none does it exceed it, as is the case with *Sialia Wilsonii*.

TENNESSEE WORM-EATER. (*Vermivora peregrina*.)
F. B. A. 2. p. 221. t. 42. f. 2.

Mr. Audubon says that this species is very rare in the

United States; but it would appear to be more common in the fur countries, having been found by Sir John Franklin's party, as well as by Captain Back's, in both instances in the 53d parallel of latitude.

YELLOW-TAILED GNAT-CATCHER. (*Setophaga ruticilla.*)
F. B. A. 2. p. 223.

This singularly-coloured and lively little bird is very common in the Brazils, and in the islands of the Caribbean Sea. It arrives within the limits of the United States early in March; and in May reaches the Saskatchewan, where it may be seen sporting about among the lower branches of the large willows that grow in that swampy district.

REDDISH-BROWN TITLARK. (*Anthus aquaticus.*)
F. B. A. 2. p. 231. t. 44.

Mr. Audubon informs us, that this titlark is met with in every part of the United States; but does not breed there. It was seen on Sir John Franklin's second expedition on the Saskatchewan, and Mr. King obtained two specimens at Fort Reliance on the 3d of June. It probably breeds in the latter quarter, or still farther north.

TREE BUNTLING. (*Emberiza canadensis.*) F. B. A. 2.
p. 252.

Three specimens of this bunting were obtained by Mr. King at Fort Reliance, which is farther north than it was previously known to range; but it most probably goes to the limit of the woods. Its winter quarters

are, according to Mr. Audubon, in the United States, north of the Ohio.

ROSE-BREADED GROSBEAK. (*Coccothraustes Ludoviciana.*)
F. B. A. 2. p. 271.

Mr. King obtained a specimen of this charming bird on Lake Winnipeg, and has made a note of its irides being red. Audubon and Wilson state them to be hazel.

THE SPOTTED GROUSE. (*Tetrao canadensis.*) F. B. A. 2.
p. 347. t. 62.

This bird ranges from the northern districts of the United States to the extremities of the woods on the banks of the Mackenzie (lat. 68°); and from the facility with which it can be killed at certain seasons when game is scarce, is of great service to the Indian hunter. It inhabits thick forests, and particularly swampy places where the black spruce grows, and on this account is called by the Canadian voyagers *perdrix de savanne*. The leaves of the spruce form its food, which gives its dark-coloured flesh a strong resinous taste. Franklin's grouse, an inhabitant of the acclivities of the Rocky Mountains, and the country to the westward of that ridge, differs from the spotted grouse in the twelve upper tail coverts being broadly tipped with white, and, according to Mr. Douglas, their eggs are also dissimilar.

THE WILLOW GROUSE. (*Lagopus saliceti.*) F. B. A. 2.
p. 351.

This ptarmigan is of still more importance to the

Indian population of the fur countries than the preceding grouse, on account of its vast numbers sufficing for the support of many of the tribes for a considerable part of the year. It inhabits the barren grounds and the summits of the rocky hills in the woody country, during the summer season, seeking shelter in the woods in winter; and it is in the latter part of the year that it is most plentifully taken. Ten thousand have been caught by nets or snares in one winter at a single fur post.

THE ROCK PTARMIGAN. (*Lagopus rupestris.*) F. B. A. 2.
p. 354. t. 64.

This species is more peculiarly an inhabitant of the barren lands than the last, never coming into the woods except in the winter, and even then only for a short way. It is very abundant in some districts. Another species, named by Dr. Leach *lagopus mutus*, visits, according to Captain James Ross, the peninsula of Boothia, along with this and the willow grouse, but the rock ptarmigan is the most abundant in the islands of the Arctic sea. There is a smaller ptarmigan than any of these, peculiar to the Rocky Mountains, which may be known by the whole of its tail feathers being white, whence it has received the specific appellation of *lagopus leucurus*.

SHARP-TAILED GROUSE. (*Centrocercus phasianellus.*)
F. B. A. 2. p. 361.

This bird is abundant in the fur countries up to the 61st parallel, both in the prairies and among the woods. Its flesh, though superior to that of any of the preceding ptarmigan or grouse, is not so tender or white as that of

the ruffed grouse, which is also plentiful as high as the 56th parallel. Other birds of this genus inhabit the plains of the Columbia, but those we have mentioned are the most serviceable to the Indian tribes that inhabit the districts through which Captain Back passed.

PASSENGER PIGEON. (*Columba migratoria*.) F. B. A. 2.
p. 363.

This pigeon, which breeds in almost incredible numbers in some parts of the United States, visits the fur countries up to the 62nd parallel of latitude, but not in such quantities anywhere to the northward of Lake Winipeg, as to contribute much to the support of the natives: at the south end of that lake, indeed, for a month or two in summer, when the floods have overflowed the low lands, and no four-footed game is to be procured, a few families of Indians subsist upon this bird. It visits the north after the termination of the breeding season in the United States. Captain James Ross saw a single pigeon of this species as high as latitude $73\frac{1}{2}^{\circ}$ in Baffin's Bay: it flew on board the Victory during a storm, and must have strayed from a great distance. The wind, as we find by a reference to Sir John Ross's narrative, blew from the north-east at the beginning of the gale, shifting afterwards to the eastward. As the Victory was to the northward of the island of Disco at the time, if the bird came in either of these directions, it must have taken flight from the northern part of Greenland, but it is not likely to have found food on that barren coast.

THE PIPING PLOVER. (*Charadrius melodus* BONAP.)

A specimen of this pretty plover was obtained by Mr. King on Lake Winipeg, and that piece of water is

probably its northern limit, as it was not observed on the former expeditions through the higher latitudes. It is consequently a more southern bird than the *Charadrius semipalmatus*, which was seen in abundance by Sir John Franklin's party during the whole route, and by Captain James Ross in the peninsula of Boothia, where it passes the summer in the marshes. The piping plover was described at first by Wilson as a variety of the common ringed plover, but in afterwards figuring the semipalmated plover under the same name, he intimated his suspicion of its being a distinct species. Subsequent authors have pointed out its peculiar characters, and the two species, together with a third named *Charadrius Wilsonii*, and very nearly resembling them, are well described and figured in Mr. Audubon's splendid work. The piping plover breeds as far to the southward as the Keys of Florida, and though it exhibits every where nearly the same plumage, we shall here subjoin a description of Mr. King's specimen, as it is the only one that has been brought from the fur countries.

COLOUR. — Bill, black towards the point, orange at its tip. Upper plumage, light brownish-grey; that is, of a pale tint, intermediate between the yellowish-grey and light broccoli-brown of Werner. Forehead, cheeks, throat, the whole under-plumage and sides of the rump, white; the white being continued round the neck, so as to form a narrow ring behind the nape. A narrow black band extends between the anterior angles of the orbits, behind the white of the forehead; and there is a black patch on each shoulder, with a narrow connecting line crossing the breast; but in this specimen, the black does not cross the neck above, as it occasionally does, on the tips of a single row of feathers, having probably been worn off. The quills, greater coverts, and middle tail feathers, are blackish-brown; but the middle of the shafts and part of the inner webs of the former are white; that colour spreading on the fourth and succeeding primaries to their outer webs; the

tips of the wing coverts also exhibit various degrees of white. Tertiaries mostly like the back; but their tips are darker, and their extreme edges soiled white. Outer tail feathers entirely white; the next pair white at both extremities, the others showing successively less white, and the central ones, as has been mentioned, entirely brown.

FORM. — Outer web of the feet notched, including only the first joint of the outer toe; and merely two thirds of the corresponding phalanx of the middle toe. Inner web scarcely perceptible.

	Inch.	lin.		Inch.	lin.	
Length from tip of bill to end of tail - - -	6	7		Length of middle toe and nail - - -	0	8½
Length of tail - - -	2	3		Length of bill above bill to rictus - - -	0	6 7¼
————— folded wing -	4	8½				
————— tarsus - - -	0	10½				

THE MALLARD. (*Anas boschas* AUCT.) F. B. A. 2. p. 442.

This duck is stated by Mr. Audubon to be rare on the Atlantic coast of the United States, but to be more numerous in the interior, and to breed as far south as Kentucky and Indiana. It is very generally diffused through the fur countries up to the northern extremity of the woods, and is the weightiest and best duck that resorts thither. Of the true ducks (the *anatinae* of Swainson), the shoveller passes through the fur countries in about equal numbers with the mallard, but breeds farther north, on the barren grounds. The gadwall and widgeon breed in all parts of the woody country, though in smaller numbers than the preceding ones; while the green-winged teal, on the other hand, is much more numerous, and breeds on the banks of every river and lake, both in the woody and barren districts. The blue-winged teal is also numerous, to the southward of the Athabasca country; and the summer-duck is rare on the Saskatchewan, and does not travel farther north. These ducks arrive from the south as soon as the snow melts, and

before the ice of the small lakes is broken up. The *fuligulinae*, or sea ducks, are also very numerous in the fur countries, either on their passage farther north, or as halting to breed there. The eider and king ducks are plentiful on the coast and islands of the Arctic sea; and also on the coast of Hudson's Bay to the north of Churchill; but are never seen in the fresh waters of the interior. In their migrations, it would appear that they keep near the open sea, passing along the eastern coast of Labrador. The American scoter (*oidemia Americana*) is also an inhabitant of the sea-coast only, breeding near Churchill. The surf and velvet ducks travel through the interior to the arctic coasts and islands, where they breed: they are very abundant, but not much valued as articles of food, except when better provisions are scarce. The noisy long-tailed duck assembles in still larger flocks than these, and breeds in the same places. It is this bird which the Canadian voyagers celebrate in their songs, under the name of "caccawee." The canvas-back, pochard, scaup, and ring-necked ducks, breed every where to the northward of the 50th parallel of latitude up to the extremity of the continent; but do not appear often on the sea-coast. They associate much with the *anatinae*, seeking their food in the same lakes and ponds, but taking it more generally from the bottom in deeper places, and consequently diving more. The Rocky-mountain garrot, golden eye, and spirit ducks, are still better divers than the preceding, and the two last are very numerous. Their flesh is tough. The harlequin duck is rare, and the very curious ruddy duck, though plentiful on the plains of the Saskatchewan, does not go much farther northwards. This bird has a tail very similar in structure to

that of a cormorant, which it carries erect in swimming, so that at a little distance the body seems to have a head stuck up at each end. The ruddy duck is said to arrive in the fur countries always in the night time, and to be rarely seen on the wing: indeed, its short pinions do not appear to be well adapted for sustained flight.

The mergansers are not rare in the northern parts of America; but they are of comparatively little importance, in an economical point of view.

TRUMPETER SWAN. (*Cygnus buccinator.*) F. B. A. 2.
p. 464.

This swan, the first of the water-fowl that revisits the fur countries in the spring, is hailed with delight by the Indians as the harbinger of plenty, for the geese and ducks shortly follow, and abundance reigns in the encampments of the natives for a few weeks. The trumpeter swan, even on its first arrival, is generally seen in pairs, seldom in flocks, and it frequents eddies under water-falls, and other pieces of open water, until the general breaking up of the ice on the rivers and lakes. Being difficult of approach, it is most frequently killed at a long shot by a single ball. As the down of the swan is of considerable value, the bird is skinned by the hunter, but the carcass even after undergoing that operation is very good to eat, being nearly equal to that of a goose. The breeding places of the trumpeter swan are beyond the 60th parallel, but it is not so northern a bird as the following species.

BEWICK'S SWAN. (*Cygnus Bewickii.*) F. B. A. 2. p. 465.

This is a smaller bird than the trumpeter, and is common to Europe and America. It is plentiful on the

coast of Hudson's Bay, and breeds on the peninsulas of Melville and Boothia, and in the islands of the Arctic Sea. It arrives among the latest of the water-fowl in the fur countries in spring, and stays long in the autumn. The last swans of the season passed over Fort Franklin, lat. $64\frac{1}{2}^{\circ}$ N., on the 5th of October.

CANADA GOOSE. (*Anser Canadensis.*) F. B. A. 2.
p. 468.

The Canada goose, named "outarde" by the early French travellers in the fur countries, and also by the Canadian voyageurs of the present day, breeds sparingly in the interior of the United States as low as the Ohio, and in the state of Maine near the Atlantic coast. It winters, Mr. Audubon tells us, in vast flocks in the savannas of Florida and the Arkansas, and commences its northward migration from the middle and western districts with the first melting of the snows, that is, between the 20th of March and the end of April. Major Long informs us that the great migration of geese commences at Engineer Cantonment on the Missouri (lat. $41\frac{1}{2}^{\circ}$.) on the 22nd of February, and terminates in the latter end of March. The Canada goose breeds in every part of the fur countries, but has not been seen on the shores of the Arctic Sea. It arrives in flocks when the snow melts, and soon afterwards spreads over the country in pairs. The following table of the ordinary dates of its arrival at particular places gives a correct idea of the commencement of spring in the different parallels.

Penetanguishene, Lake Huron,	Lat. $44\frac{3}{4}^{\circ}$ N.	March 24.	April 2.
Cumberland House, Saskat	- - - 54° N.	April 8.	to 12.
Fort Chepewyan	- - - $58\frac{3}{4}^{\circ}$ N.	— 20.	— 25.
— Resolution, Slave Lake	- - - $61\frac{1}{8}^{\circ}$ N.	May 1.	— 6.
— Enterprise	- - - $64\frac{1}{2}^{\circ}$ N.	— 12.	— 20.
— Franklin, Great Bear Lake	- - - $64\frac{1}{2}^{\circ}$ N.	— 7.	— 20.

In the month of July the old birds moult, and may be seen in every river, followed by their young brood, not fully feathered and incapable of flying. When pursued they dive repeatedly, but are soon fatigued, and make for the shore; though, unless they reach a swamp where they can hide themselves among the long grass, they fall an easy prey to the hunter, who knocks them on the head with a stick. A canoe is soon loaded at this sport; and I have, on several occasions, procured a supper in this way for a large party in a few minutes. As soon as the ground begins to harden with the autumnal frosts, and one or two falls of snow have taken place, the Canada goose again assembles in large flocks, and wings its way to the southward. In their flights the geese generally take advantage of a favourable gale; and when their cry is heard in the night high in the air, as they hasten before the wind to warmer latitudes, cold weather is sure to follow. There are certain spots or passes which the geese always visit on their migrations; but they do not frequent the same places in equal numbers in the spring and fall. In the former season they make considerable halts on lakes of the interior, which they pass over on their return, showing a preference in the autumn to the swampy shores of Hudson's Bay, where they linger after the inland waters are covered with ice.

The first appearance of the Canada goose in the spring at a fur post infuses life into the whole establishment. Every gun is put in order; and as soon as the wedge-

formed flock is seen from afar, man, woman, and child rush out, shouting "wook, wook, wook," at the pitch of their voices. The silly birds respond to the call; and, wheeling round the place, generally lose one or two of their number. More are culled from each flock by the skilful Indian hunter, who, concealed from their view among the long grass or thick brush-wood, is able to call the geese to him from a great distance. The first birds he procures are set up on the beach as stales to entice others to alight; and the ordinary rate of his success may be judged by the price which a goose bears; namely, a single charge of ammunition, the chance of killing several at a shot more than compensating for failures. The geese fly high when over the land, but descend on approaching the water, and cross the larger lakes mostly at particular places. It is singular to see how flock after flock passes between the same islands, or through the same gap in the woods, each following as nearly as possible the track of its predecessor. At some of the posts great quantities of geese are salted for winter use; but this method of preserving them is a very bad one, a salted goose being both dry and tough.

LAUGHING GOOSE. (*Anser albifrons.*) F. B. A. 2.
p. 466.

This is a smaller goose than the preceding; and, in the comparative length of the neck and form of the bill, it more nearly resembles our domestic goose, or its wild original. The laughing goose travels in great flocks through the fur countries, eight or ten days later than the first appearance of the Canada goose, and breeds on the coasts and islands of the Arctic Sea, north of the

67th parallel of latitude. Its call is much like the prolonged laugh of a man. Captain James Ross did not see this goose on the peninsula of Boothia, and it does not appear to be common on the coast of Hudson's Bay. The autumn migration southwards of the laughing goose commences early in September; and its return at that season to the fur districts is often the first indication of winter having begun within the arctic circle. It passes on towards the United States, in advance of the Canada goose; and Mr. Audubon says that it arrives before the latter in Kentucky, where many of the species winter; but many also, he is convinced, go entirely to the southward of the United States' boundary. The same gentleman informs us that this species leaves its winter quarters a fortnight sooner than the Canada goose, which is different from the order of their appearance on the banks of the Saskatchewan. Its flesh is superior to that of the Canada goose.

SNOW GOOSE. (*Anser hyperboreus*.) F. B. A. 2.
p. 467.

This beautiful goose has exactly the gait and form of the preceding; and is very little larger, when full grown. The two species, according to Audubon, quit their winter quarters, in the United States, at the same time; but the snow goose generally makes its first appearance in the fur countries a few days later than the laughing goose, though the main flocks of both pass at the same time. The snow goose breeds in vast numbers on the borders of the small lakes near the coasts of the Arctic Sea, on the islands of the same, and also on Melville Peninsula. In its journey northwards,

it reaches the 54th parallel on the 15th of April; the 57th, on the 25th of the same month; the 64th parallel, on the 20th of May; and its breeding stations, in the 69th, by the beginning of June, when the snow is only melted from some elevated spots. The snow goose when fat is a very excellent bird, vieing with the laughing goose in its qualities as an article of diet.

HUTCHINS' GOOSE. (*Anser Hutchinsii*.) F. B. A. 2.
p. 470.

This bird, in the colours of its plumage, strongly resembles the Canada goose, and is often considered as merely a small variety of that species. In its form, however, it is more like the barnacle or brent, with which it will be evidently associated in an ornithological system. Mr. Audubon, who has given the only figure that has been published of this species, thinks that it is known in the state of Maine under the name of winter or flight goose. It migrates along the coast of Hudson's Bay, and breeds in the peninsulas of Melville and Boothia, laying three or four eggs of a pure white colour; and Captain James Ross informs us that its flesh has a most exquisite flavour. It arrived at Boothia about the middle of June.

BRENT GOOSE. (*Anser bernicla*.) F. B. A. 2. p. 469.

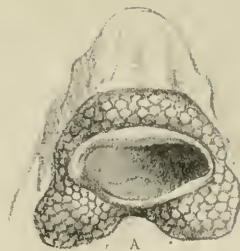
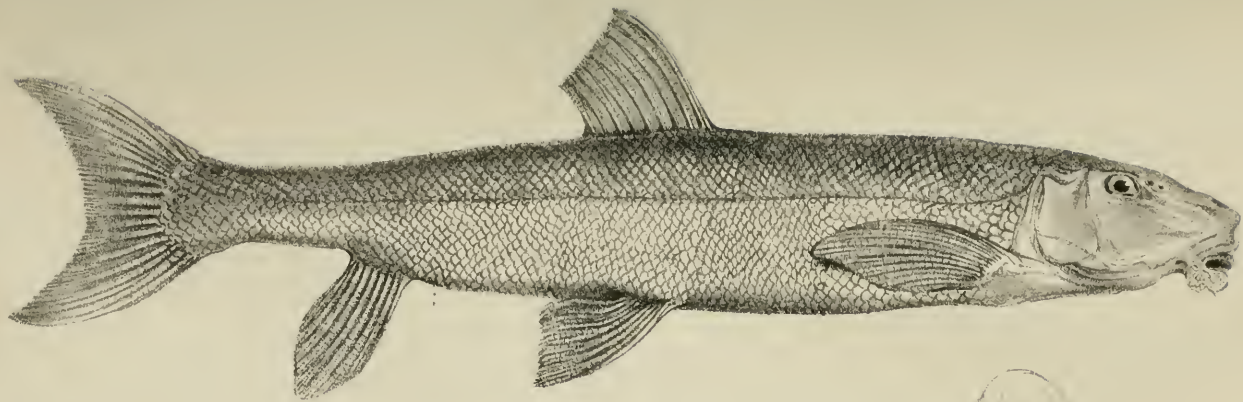
This neat small goose is very numerous on the coast of Hudson's Bay, in its passage to and from the north. Captain James Ross states that it did not remain near Felix Harbour (Boothia) to breed, but went still farther north; and that it is found during the summer

months in the highest northern latitudes that have been visited. It was found breeding on Parry's Islands, in latitudes 74° — 75° .

FISH.

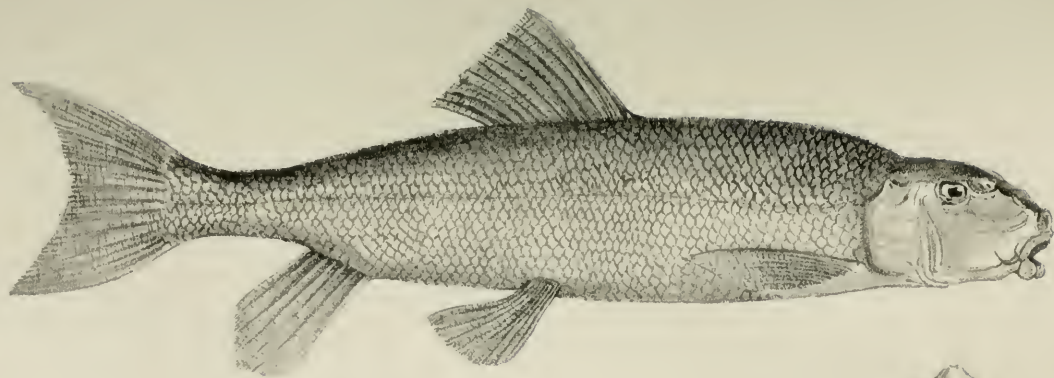
Every part of the fur countries, with the exception of the prairie lands of the Red, Saskatchewan, and Columbia rivers, is intersected in every direction by lakes and their connecting streams, all of them abounding in fish. In those districts in particular where the primitive strata prevail, the rivers are merely chains of many-armed lakes, linked together by narrow rapids or cascades. As it is in these parts of the country, at least as far north as the woods extend, where the furs are chiefly obtained, most of the forts or trading posts are established within their limits; but if it were not for the abundance of fish, it would be very difficult to obtain due supplies of provision, since the larger quadrupeds are not so plentiful in the woods as to furnish a certain subsistence to a numerous party for the whole year. Meat posts, as they are termed, can be formed only in the prairies, where the bison and deer abound, or at certain localities near the northern range of the woods, where the reindeer pass in large herds in spring and autumn. In some quarters, as we have mentioned, large quantities of geese can be procured for a few weeks, and in others vast numbers of grouse are snared; but, in general, no post can be considered as safe for a winter residence unless there be a good fishing station in its vicinity.

Ample details of the various methods of fishing in use in the fur countries have been given by Hearne and succeeding travellers; and also in the third volume



HEAD SUCKING CARP
($\frac{1}{2}$ Nat. Size.)

A & B Nat. Size. C. Scale Magnified.



A

THE FISHES OF THE GREAT BRITAIN

AND IRELAND

BY J. S. MILLER, F.R.S.

London: Printed by W. Clowes and Sons, 1851.

London: Printed by W. Clowes and Sons, 1851.

London: Printed by W. Clowes and Sons, 1851.



THE PICCONO.
($\frac{1}{3}$ Nat. Size.)
A & B Nat. Size C Scale Magnified.

of the Fauna Boreali-Americana; so that we need not enlarge on that subject, but merely mention that at all fishing places, the principal supply for winter use is obtained in the autumn, immediately before or soon after the lakes freeze over. As the fish are taken from the net, a rod is passed through their gills, by which they are suspended to lofty stages, where they are out of the reach of dogs and beasts of prey. Those that are hung up before the frost has set permanently in acquire a putrid taint, but are thought to be rather improved in quality; the others that are caught later are preserved sound by the frost all the winter.

THE ATTIIHAWMEG. (*Coregonus albus*.) F. B. A. 3.
p. 195. t. 89. f. 2. A. & B.; and t. 94. a. b. c.

This celebrated fish is found in every piece of fresh water between Lake Erie and the Arctic Sea; and it may be said that it is through the abundant supply of food which its fisheries yield, that the fur trade is carried on. The attihawmeg, or *poisson blanc* of the voyageurs, grows to the greatest size in the larger and deeper lakes, attaining 10lbs. weight and upwards in Huron, Superior, or Great Bear Lakes; but those generally taken throughout the fur countries average about three or four pounds. When in season, it is a rich, agreeable, and very wholesome fish, that never palls the appetite; and is preferable, even when lean, for a daily article of diet, to any other fish of the country. Though of the salmon family, the European fish that resembles it most, when cooked, is, perhaps, a fat Loch Fyne herring, fresh from the water. The most usual method of cooking it in the fur countries is by boiling, so as to form an excellent white soup; but it is

extremely good when fried, and especially if enveloped in batter.

The other fish that are caught in the several districts of the fur countries, in sufficient numbers to be of importance in an economical point of view, are, trouts of various kinds, of which the principal is the *salmo namaycush*; pike (*esox lucius*); several sucking carp (*catastomi*); and the methy (*lota maculosa*). All the trouts are excellent, particularly the large one we have just named. They answer, however, better as occasional articles of diet than for daily use; and it is only in some months of the year, and particularly on the approach of spring, that they are caught plentifully. The pike is of more importance to the inhabitants of the fur countries, from the readiness with which it takes a bait at all seasons of the year, than from its excellence as an article of diet, for, in that respect, it is inferior to all the trout tribe. It is remarkable that the pike does not exist in the waters to the westward of the Rocky Mountains, though the species which is found in the country to the eastward of that ridge is the same that inhabits the rivers and lakes of Europe, and North Asia, and even the Caspian Sea.

The sucking carp are not much prized for food; but they are very numerous, and are all well adapted for making soup. We have selected three different species for representation, partly because they have never been figured before, and partly because the species being numerous and difficult to distinguish by mere description, the figures cannot fail to be useful to naturalists.

The methy (*lota maculosa*), though not so numerous as the *coregoni*, trouts, or sucking carps, is yet universally diffused through the fur countries; but its flesh

is so disagreeable that it is never eaten except in times of scarcity. Its r oe, however, which is composed of very small ova, makes good bread when beaten up with a little flour; and even when cooked alone, it forms cakes that are very palatable as tea bread, though rather difficult of digestion.

There are other fish not so generally distributed, but which are of importance in particular districts. Thus, the fishery at Cumberland House, on the Saskatchewan, yields, in addition to those we have mentioned, the American sandre (*lucioperca Americana*); the mathemeg (*pimelodus borealis*); the tullibee, a species of coregonus; the naccaysh (*hiodon chrysopsis*, F. B. A. p. 232. 311. pl. 94. f. 3. A. B. C.); and the sturgeon (*acipenser Rupertianus*).

None of the fish named in the last paragraph go so far north as Great Slave Lake; but we find there the *salmo Mackenzii*, which ascends from the Arctic Sea, and does not exist in the more southern waters. This fish, though agreeing with the trouts in the structure of the jaws, differs from all the subgenera established by Cuvier in the *R egne Animal*, in having the teeth disposed in velvet-like bands, which are narrow on the tips of the jaws, and broader on the vomer and palate bones. From the crowded minute teeth, the name of *STENODUS* may be given to the subgenus, of which the inconnu or *salmo Mackenzii* is the only ascertained species. Back's grayling (*thymallus signifer*), and the round-fish (*coregonus quadrilateralis*), abound in the clear rivers which fall into the north and east side of Slave Lake, and in the waters in higher latitudes. They exist, but not numerously, in Great Bear Lake also; but the most abundant fish in that vast piece of water is the Bear Lake herring-salmon (*coregonus lucidus*). The in-

connu does not ascend Bear Lake River, giving the preference to muddy streams.

Salmon of various species spawn in the rivers that fall into the Arctic Sea, and were taken in great quantities by Sir John Ross in the Gulf of Boothia. It is therefore probable that some kinds enter the Thlew-eechoh, though no specimens were brought home.

Notice of the Plates of Fish.

The lattice-scaled sucking carp (*Catostomus reticulatus*, F.B.A. 3. p. 303.), is common to the southward of Lake Winipeg, and in the Albany River district.

The red sucking carp (*Catostomus Forsterianus*, F.B.A. 3. p. 116.).

The picconou (*Catostomus Sueurii*, F.B.A. 3. p. 118.)