

ART. II. ON THE BEAVER IN NOVA SCOTIA. BY CAPTAIN
HARDY.

(Read December 3, 1866.)

THE Beavers, both of Europe and America, have been so often and so accurately described scientifically by modern naturalists, that a recapitulation of their characteristics would be a useless insertion in the proceedings of this Society. With regard to the *Castor Canadensis*, the only and widely distributed species of the American continent, the remarks of Professor Baird of the Smithsonian Institute, in his report of the mammals of the Pacific railroad routes, summing up the evidence of naturalists on the comparative anatomy of the *Castors* of the old and new worlds, appear worthy of note as establishing a satisfactory distinction. The question has been elaborately discussed, and the results of many comparisons shew considerable difference of arrangement of bones of the skull, a slight difference as regards size and colour, and an important one as regards both the form of the castoreum glands, and the composition of the castoreum itself; Professor Owen, Bach, and others, agreeing on a separation of species. Hence, instead of being termed *Castor Fiber* (*Var. Americanus*), the American Beaver now, (and but recently,) is designated as *Castor Canadensis*, so termed rather than *C. Americanus*, from the prior nomenclature of Kuhl.

From its former wide distribution in America, co-extensive with the whole northern continent, it may be readily inferred that a country like Nova Scotia, abounding in all the conditions necessary to its existence—rivers, brooks, and swampy lakes—should have been thickly populated by this interesting animal—a fact borne out by the prevalence of such names as Beaver-bank, Beaver-harbour, and the numerous Beaver-lakes and Beaver-rivers scattered round the Province; but so persecuted was it a short time since, for its fur for the hat-making trade—the market so near, and its haunts so accessible and so easy of observation, that it is strange to find the beaver still living in Nova Scotia, and, since the change of fashion from the use of its fur, to that of silk in hat-making, rapidly multiplying.

Its eastern limitation in this Province, is the Port Medway river, on which, and its tributary brooks, it is found sparsely. On the Liverpool river, six miles further to the westward, and throughout its parent lakes and waters, from Milton to within a few miles south of Annapolis, it occurs more abundantly, and is very numerous on the upper waters of the Sable river, the Jordan, the Roseway, and the Clyde, in Shelburne county. It is no doubt owing to the breadth of the Province here, at its western extremity, and the great extent of wild country left uninterrupted, with innumerable chains of lakes and brooks, that the beaver has been preserved, for it may be safely asserted that to the eastward of Port Medway, not one exists to the furthest cape of Cape Breton.*

The following observations on the Beaver are from notes taken during a recent canoe excursion on Lake Rossignol and its tributary waters, which discharge into the Liverpool river in Queen's county.

Our canoes were placed on a chain of small lakes and connecting runs, called the Sixteen Mile Brook, which, easily reached by a short portage from the post road between Annapolis and Liverpool, communicates with the great lakes; and here I first saw the works of beaver. Passing through a picturesque brook between two of the lakes, completely shaded over by maples, and its banks covered with rank masses of king-fern, and the twining tendrils of the Indian potatoe, (*Apios tuberosa*), now in flower, we came on a large dome of sticks rising from the water's edge, the Indians at the same time exclaiming "there beaver house." It was apparently (for we could not stop to examine it from the swiftness of the current) about four feet high, and about nine or ten in diameter at the base, evidently partly built in the water and partly on shore. So rough looking and loosely constructed did it appear, that I could not repress a feeling of disappointment from all that I had heard of the marvellous construction of a beaver house.

*They were formerly numerous throughout the Province. Sir C. Lyle mentions Beaver cuttings dug up in a peat bog, near the Shubenacadie, which the workmen had supposed to have owed their origin to Indian tools. A few years since the remains of a beaver dam were discovered in the brook running into the North West Arm, by the road to the Dutch village.

Shortly afterwards we passed a slight obstruction in the stream, formed of a quantity of poles and brush-wood, which proved to be an old beaver-dam, partially carried away. Two days afterwards, on the Tobiaduc river, which we ascended after crossing lake Rossignol, we had a better opportunity of examining a dam, as we camped in its neighbourhood for two nights. We had arrived nearly at the head waters of the stream, and were paddling up the narrow channel, enjoying the exquisite scenery presented as we turned the frequent bends, when our progress was suddenly opposed by what appeared an artificially constructed waterfall, about three feet in height. It was a perfect beaver-dam, over which the water poured in an even sheet. The clumps of king-fern on either side were much beaten down by the paths of the animals, whose recent works were fully attested by some fresh bushes with the leaves quite bright, which had been thrown on the top of the dam. The water above, as far as we could see, was still, with a strip of wild meadow grass on either side. Their houses, as the Indians said, were at some distance above. The difficulty experienced in removing a portion of the dam, to allow of the canoes being dragged over, gave evidence to the solidity of its construction, which appeared to be as follows:—poles of poplar, willow, and alder, 8 to 15 feet in length, laid and woven together across the stream, formed the frame, which was stuffed and plastered, especially on the side supporting the water, with mud, grass tufts, stones and leaves. The breadth at the top was three feet, and appeared to increase considerably towards the bottom. The front of the dam was supported by stakes and bushes leaning against it, their ends planted in the bottom of the stream. The whole structure was a model of solidity and strength, capable of supporting as many men as could stand together on the top, and adapted to resist the heaviest freshet. It was apparently kept in constant repair; piles of old decayed poles lay on the bank, which had evidently been removed and replaced; the fresh bushes laid on the top had been cut but a few days. This dam, and one or two others which I had an opportunity of observing, was built straight across the stream; but it is a well-authenticated fact

that in larger works, where the channel is broader, and liable to heavy water, the dam is made convex to the current.

As the beaver residing on the lakes does not build a dam in the vicinity of his dwelling, the reason of the strong instinct implanted in this animal to produce these marvellous constructions under other circumstances becomes apparent. Whenever from the situation or nature of the water, there is a probability of the supply becoming shortened by drought, and to ensure sufficient water to enter his dwelling from beneath the ice in winter, the beaver constructs a dam below to maintain the supply of water necessary to meet either of these contingencies. In former years, when beaver abounded in all parts of the Province, it is evident from the numerous beaver meadows now left dry, that they took advantage not only of valleys traversed by small brooks, but even of swampy lands occasionally inundated by heavy rains.*

Thus doubtless were formed those numerous savannahs, termed wild meadow lands by the settlers, which abound in the interior. A young pair of beavers, driven from some colony to seek a fresh home through scarcity of food, chose some virgin brook, and built their dam. Large spaces in the woods thus became inundated, and heavy rains and freshets continually brought accessions of fine soil from the surrounding hills. At length the beaver was exterminated, and though all traces of his home and defences disappeared, an enduring monument of his industry still survives him, and is eagerly sought by his thankless destroyers, for the rich waving field of wild grass which grows on the site of his former aquatic territory.

With respect to the houses—we had opportunities during the excursion alluded to, to examine several, and in every variety of situation—by the lake shore, on the edge of swampy meadows fringing sluggish waters, far back up some small forest brook, or when built on the brink of a rapid river. They all presented a similar appearance, all equally rough on the exterior

*Crossing a small grassy meadow in a valley in the woods near Liverpool River during the past fall (1866), we found the water standing nearly as high as the knee, and as the depth was not to be accounted for by the recent rains, we passed round to the foot, where a newly constructed beaver dam still unfinished explained the occurrence.

as the first one alluded to, as seen on the sixteen mile brook, and all similarly constructed in the interior; wherefore the following description of one which we unroofed, will suffice to show the general construction of the edifice of the beaver in Nova Scotia.

It is a large and rather rudely constructed pile of sticks, mud, stones, and grass tufts, containing a chamber, and sloping passage or passages leading into the latter from below the surface of the water. The house has a very large diameter at the base in comparison with its height, and instead of the regular conical dome, smoothly plastered over with mud, which we see so frequently drawn in works of natural history as representing beaver houses, it presents the appearance of a great pile of barked sticks, the shape of the mass far nearer resembling an inverted saucer than a cup. The sticks, some of which are of great length, are, on the top and exterior, thrown on rather loosely. As you unpile them, however, and examine further into the building, the work will be found better, and the sticks laid horizontally, firmly bound in with mud-plaster, stones and grass being interwoven throughout. The bed on which they lie is at the back of the chamber, raised above the level of the hall, as it may be termed. The sticks projecting towards the interior are smoothly gnawed off, particularly round the bed, the bottom of which is covered with dry grass, or, where this cannot be procured, with fibres of wood split with their teeth into fine shreds. The chamber, and passage leading into it, have a gentle slope upwards; the bed is never under water though the hall may be flooded. The dimensions of the houses we observed were varied. A diameter of seventeen feet at the base would entail a height of the dome above the water line of four feet six inches, an interior diameter of about nine feet for the chamber, the height of which was about three feet. In all the houses there was but one chamber, though this was connected with the water in some instances by several tunnels and at different levels, evidently intended to suit the level of the water at different seasons, the lowest probably to be used when the thickness of ice should debar entrance to the others. At

plunges into the water, and brings up the mud and small stones from the bottom to the work in progress, carrying them closely under the chin in its fore-paws. The vulgar opinion that the broad tail was used to plaster down the mud in its work, has long since been pronounced as erroneous. Its real use is evidently to counterpoise, by an action against the water in an upward direction, the tendency to sink head foremost (which the animal would otherwise have) when propelling itself by its powerful webbed hind feet, at the same time supporting the load of mud or stones in its fore-paws under the chin.

We had but two opportunities of seeing these animals at Lake Rossignol; once, when passing a steep bank covered with rank ferns and foliage, a rush through the bushes and a splash proclaimed that we had suddenly disturbed beaver—a rare thing during the day-time. The Indians traced his wake to another position on the opposite bank, where we perceived an old house, whence we again heard him plunge into the water as we approached in the canoes.

Another and more interesting sight was afforded us one calm summer evening, on silently paddling up a picturesque cove filled with lilies, at the head of which was a beaver house built at the foot of a large maple. Ensconcing the canoes in the tall ferns which overhung the water, we remained motionless for some time, during which the twilight so deepened that I began to despair of seeing the animals. Presently, however, the Indian's paddle was quietly pointed out on the lake, and following the direction we saw a beaver's head circling round amongst the lilies, and then the back rolling round like that of the porpoise, as he noiselessly dived to the bottom to feed on the lily roots. Then we started with strong though quiet sweeps towards the spot, and again resting motionless saw the animal re-appear and dive without having discovered us. Two or three times was this repeated, until within range, and I fired. "Too low," said the Indian, quickly, to our disappointment, and as it proved. The daylight was too far gone.

One of the principal causes which have nearly led to the extermination of the Beaver,* was the demand for the castoreum,

*The primary cause was doubtless the demand for the fur for hat-making by the Parisians.

and the discovery that it could be used as an unfailing bait for the animal itself. This substance is contained in two small sacs near the root of the tail, in which it is deposited, of an orange colour. Now seldom used in pharmacology for its medicinal properties, (stimulant and anti-spasmodic,) being superseded by more modern discoveries, it is still used in trapping the animal, as the most certain bait in existence. It is said to be likewise efficacious in trapping the wild cat, which is excessively fond of the odour. Mr. Thompson, a Canadian writer, thus speaks of it: "A few years ago the Indians of Canada and New Brunswick, on seeing the steel trap so successful in catching foxes and other animals, thought of applying it to the beaver, instead of the awkward wooden traps they made, which often failed; at first they were set in the landing paths of the beaver, with about four inches of water over them, and a piece of green aspen for a bait, that would allure the beaver to the trap. Various things and mixtures of ingredients were tried without success; but chance made some try if the male could not be caught by adding the castoreum, beat up with the green buds of the aspen. A piece of willow about eight inches in length, beat and bruised fine, was dipped in this mixture; it was placed at the water edge about a foot from the steel trap, so that the beaver should pass direct over it and be caught; this trap proved successful, but, to the surprise of the Indians, the females were caught as well as the males. The secret of this bait was soon spread—every Indian procured from the trader four to six steel traps; all labour was now at an end—the hunter moved about with pleasure, with his traps and infallible bait of castoreum. Of the infatuation of this animal for castoreum, I saw several instances. A trap was negligently fastened by its small chain to the stake, to prevent the beaver taking away the trap when caught; it slipped, and the beaver swam away with the trap, and it was looked upon as lost. Two nights after he was taken in a trap, with the other trap fast on his thigh. Another time a beaver passing over a trap to get the castoreum, had his hind leg broken; with his teeth he cut the broken leg off and went away. We concluded that he would not come again, but two nights afterwards he was

found fast in a trap, in every case tempted by the castoreum. The stick was always licked or sucked clean, and it seemed to act as a soporific, as they always remained more than a day without coming out of their houses.”

Such being the ease with which this much persecuted animal was formerly taken, with a prodigious demand for its skin, it would seem a special interposition in its behalf, when a change of fashion in Paris suddenly substituted silk for beaver hats—“thereby,” as a writer has said, “possibly altering the physical conditions of a continent.” Though from its extreme shyness it retires fast from the neighbourhood of civilization, yet, persecution having in a great measure ceased, it will still exist in those remoter forest districts, which, from their nature, will probably never be cleared by the settler’s axe. May they long remain in undisturbed possession of these their last strongholds, and reward the search of the friendly naturalist by the sight of those wonderful architectural labours and displays of foresight, for which the beaver is so justly celebrated.

ART. III. REMARKS ON THE MINERALS PREPARED FOR THE PARIS EXHIBITION. BY PROF. HOW, D. C. L., *University of King’s College, Windsor.*

(Read Jan. 7, 1867.)

IN making a few remarks on the minerals to be sent to the Paris Exhibition, I may say in the first place, that comparing the present collection with the specimens sent to the last two exhibitions, there is in some directions a decided improvement. This is particularly seen in those minerals which are commercially most important, viz., in gold, coal, and iron; but it is true also as regards some other minerals which may hereafter be found to admit of application; and there are interesting novelties, also, in those minerals which are solely of scientific interest.

The collections made on the present occasion will no doubt interest in a high degree men of science—men whose business is mining or metallurgy—really educated men, and the intelligent of those classes which have not had time or opportunity to make their acquaintance with these objects extensive.