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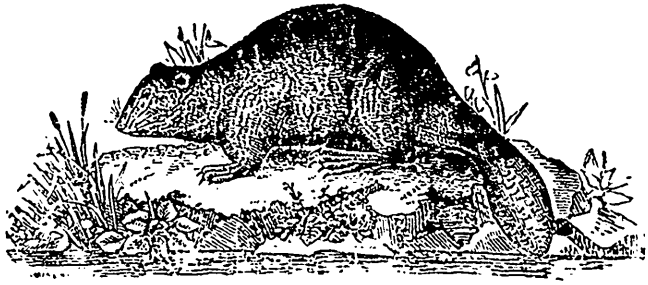

THE BEAVER *(Castor Canadensis*, Kuhl*)*.

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THE EXTINCT NORTHERN SEA-COW, AND EARLY RUSSIAN EXPLORATIONS IN THE NORTH PACIFIC.

By Dr. George M. Dawson, C.M.G., F.R.S., etc.

One object of the meetings of this club, is that of enabling its members and their friends to bring before the Society for explanation and discussion, subjects which they have been engaged in studying, or which may have came under their notice. Thus it has occurred to me that it may interest you, as naturalists, to review the main facts relating to the now extinct Manatee or Sea-Cow of the North Pacific. The collection of these facts has interested me particularly because, in 1891, I had an opportunity of visiting the former resorts of the animal and of procuring there a number of its bones. This animal is one of these—forming a very short list in all—which have disappeared completely within historic times.

The connection established in the title of my paper between the sea-cow and the early Russian explorations in the North Pacific, may appear to require explanation, but this explanation is found in the circumstance that the extermination of the animal chiefly resulted from these explorations, and in the fact that if left to itself, the sea cow,—though evidently in its decadence—would in all probability be still reckoned as a member of the living world.

Everyone here must be familiar with the fact that a principle motive in the exploration and occupation of the northern part of North America was the trade in furs. Missionary enterprises may have actuated many of the early explorers, but some even of the missionaries, were not averse to profitable barter; while in the case of the great fur companies, this was the object of their existence. The Hudson's Bay Company was early in the field, and after the conquest of Canada the Montreal North-West Company superseded the older French trading companies, and first in competition with, afterwards in combination with the Hudson's Bay Company, pushed its trading posts and stations westward to the Pacific Ocean.

Furs and pelts of many kinds were obtained by these traders, but, throughout, the skin of the beaver may be stated to have been their

main pursuit, as it became their standard of value. In a manner precisely similar, the northern part of Asia was overrun by traders moving in an easterly direction. The Russian expeditions of conquest followed in the wake of the Russian fur-traders, and about the beginning of the last century, the Russians began to establish themselves on the shores of the Pacific Ocean.

For the Siberian merchants, the chief quest was that of the sable, and thus it is that the occupation of Siberia has been described as one gigantic sable hunt, beginning at the Ural Mountains and extending to the Eastern Ocean. This ocean--the Pacific—was reached by the valley of the Anadyr River, far to the north, and at Okotsk, on the sea of the same name. Between these places lay the remarkable volcanic peninsular of Kamtschatka. About 1696 its conquest began, and in some fifteen years it had been throughout rendered tributary to Russia; but the great ocean to the eastward, and what it might contain, still remained unknown.

The enormous extension which the Russian Empire had achieved in Asia, naturally attracted the special attention of its ruler, and in the last year of her reign, Peter the Great planned an expedition of explorations from the eastern Asiatic coast toward America. Before the expedition could be despatched the Czar died, but his consort, the Empress Catherine, anxious in all respects to carry out the wishes of her late husband, caused the preparations to be continued, and in 1725 Vitus Behring was despatched on this mission, in conformity with the original intention of the Emperor. Behring was a Dane, engaged in the Russian service. He left St. Petersburg provided with a corps of assistants and all the facilities which the government could furnish, to cross Siberia to Okotsk, which was to be his port of departure for the exploration of the unknown North Pacific.

It is unnecessary to follow his various journeys and the many delays which he experienced, nor is it relevant to the present subject to trace his first expedition from Okotsk by sea, in which he outlined the northern part of Asia toward Behring Straits. His celebrated voyage to the American continent, with which we are chiefly concerned, was not executed till the year 1741, when he left the Bay of Avacha, in

Kamtschatka, with two little vessels which had been built ; one specially under his own command, the other under the command of his lieutenant, Chirikof. The two vessels shortly became separated, but in the end both captains sighted what is now known to have been the American continent.

Chirikof regained Kamtschatka before winter, but Behring and his ship's company of 70 men or more were less fortunate. The part of the coast seen by Behring was near Mount St. Elias, where his people landed on an island, now known as Kaye Island. Little time was given to exploration, for, having delayed long in searching to the south-eastward of Kamtschatka for a mythical land existing only on the maps of the day, the scarcity of provisions on board his ship began to weigh upon the commander. After taking on board some water, and without even meeting any of the inhabitants, sail was again made for the Asiatic coast. It was already past the middle of July, fogs and storms delayed the navigators, and in endeavoring to make a westerly course they encountered the great southward bending chain of the Aleutian Islands. Short stoppages were made at several of these Islands, which it is now difficult to identify exactly, but in the end they passed clear of this archipelago and found themselves again steering westward across a trackless sea. The conditions were becoming desperate. Water was scarce and food was issued at reduced rations, while the crew were all more or less afflicted by scurvy. The commander himself had taken to his bed, and it is related that the two men necessary for the helm were led thither by two others scarcely in better condition than themselves.

Land was at length sighted, and it was assumed to be some part of the peninsula of Kamtschatka. All the difficulties of the return appeared to have passed, and for a brief period it was a time of congratulation and general joy. The vessel was already in a deplorable condition, and at a council of the officers it was decided that is would be necessary to land on the shores in sight whatever they might prove to be. The vessel was brought to an anchor, but before the landing could be effected in any regular way, a storm sprang up in which she was cast ashore, and though none of the crew were drowned, several of those already sick succumbed to the effects of the scurvy in the process of landing.

The distressed crew were once more ashore, but as castaways on an unknown land. They finally arrived at the conclusion that it was an unpeopled region, for the only animals at first seen were foxes, and these showed a complete fearlessness of man, of such a kind as to indicate that they had never before came in contact with him. There was no wood but driftwood on the island—for such it proved to be—and that was scanty. Thus, in order to shelter themselves from the inclemency of the weather, the survivors were reduced to digging holes in the sand, which they covered with sails.

So the winter was spent, and more men died, among them Behring himself. The island which they had reached was that since known as Behring Island, situated some 90 or 100 miles from the Kamtschatkan coast to which they had hoped to return.

Adapting themselves as well as they could to the circumstances, the crew found that the sea-otter which frequented the island afforded a source of food. During the winter a whale was also washed ashore which materially assisted in their sustenance; but before the end of their stay, it was discovered that the sea-cow, which frequented the shores in herds, afforded a much more toothsome and wholesome flesh than that of any of the other animals. A method of hunting the sea-cow was established, and it is largely to the existence of this animal that the ultimate salvation of a part of Behring's crew was due.

This brings us to the main subject of my paper, the sea-cow or manatee of the North Pacific; but before speaking further of the sea-cow itself, it will be in order to state that in the following summer—that of 1742—a new but much smaller vessel was constructed from the wreck of the original one, in which, setting sail in August, the survivors managed in ten days to return to Avacha Bay in Kamtschatka.

With them they brought some trophies from the newly discovered lands; amongst these the skins of the sea-otter, or sea-beaver as it was called by the Russians at the time; the pursuit of which was the moving cause of the numerous Russian expeditions of following years. A new avenue for the enterprise of the fur-traders had been opened up and skins even more valuable than those of the sable allured them to

embark on hazardous adventures among the islands of the Eastern Sea.

The sea cow, which was thus in its last retreat accidentally discovered, is an animal possessed of the greatest interest to the zoologist. Nearly all we know now of its habits and appearances is derived from the descriptions of Steller, a naturalist who accompanied Behring's expedition, and who, though he shared to the full in its hardships and distress, still found time to note and write out his observations on the natural history of the new lands discovered. Muller, quoting from Steller's notes, writes :—

"I return to my design, to show how useful the Manati was to our ship's company with regard to their sustenance. Some of these animals have been caught, which from the snout to the point of the tail were from three to four fathoms long, and weighed 200 pouds, or 8,000 pounds. One was food enough to serve for a fortnight, and the flesh was very savoury like the best beef; that of the young ones was like veal. And the sick found themselves considerably better, when, *instead of the hard beaver's [sea-otter's] flesh, they eat of the Manati*, though it cost them more trouble to catch than one of the beavers. They never came on the land, but only approached the coast to eat sea-grass, which grows on the shore, or is thrown out by the sea. This good food may, perhaps, contribute a great deal to give the flesh a more agreeable taste than that of the other animals that live on fish. The young ones that weighed 1,200 pounds and upwards, remained sometimes at low water on the dry land between the rocks, which afforded a fine opportunity for killing them, but the old ones could be caught not otherwise than with harpoons, fixed to long ropes. Sometimes the ropes were broke, and the animal escaped before it could be struck a second time. This animal was seen as well in the winter as in the summer time. They melted some of the fat, with which, like hogs, they are covered from three to four inches thick, and used it as butter. Of the flesh, several casks full were pickled for ship's provision, which did excellent service on their return." *

* Voyages from Asia to America, Muller. Jeffery's translation, pp. 61-62.

Steller recognized the similarity of the sea-cow of the North Pacific to certain other animals already known; but, being possessed of imperfect information, he assumed that all these belonged to a single species. We now know that this was an erroneous conclusion, that this sea-cow was specifically and generically distinct from others of the group, and it is consequently very often known as Steller's sea-cow.

The sea-cows in fact form a peculiar group of the mammalia, which is now classed as a separate order and which shows little affinity to any other mammals, for though in its aquatic habits and in some other respects it resembles the whales and porpoises it is very different from these in anatomical structure. This is probably a very ancient group, for fossil remains referable to it are found in several geological formations in Europe, Africa and America; but in human times it appears to have dwindled, and to be verging on extinction from natural causes altogether apart from any specific attacks by man.

Within the historic period, this whole order of mammals has had but three living genera. The Manatee proper, which inhabits the shores and estuaries of the Atlantic within the tropics. The Halicore or Dugong, found in the Red Sea, on the East Coast of Africa and in the Indian Seas as far east as Australia; and the Rhytina, of which but one species (*R. Stelleri*) appears to have existed. The last-mentioned is the sea-cow here specially referred to, that of the North Pacific.

It is very often the case, that ancient types of animals which have already played their part in the history of the world, are found in the last stages surviving in a few forms widely separated geographically. It is so in the present instance. The Halicore is separated by the length of the African continent from the Manatee of the Atlantic, while Steller's sea-cow was discovered, as we have seen, on a remote island of the North Pacific.

Early navigators had observed the Halicore and Manatee as animals of a strange and problematical character, and it is supposed that the habit of these animals in carrying the young under the fore limb may have given origin to the fabled mermaid. Thus when systematic names began to be applied by naturalists, those animals belonging to this order were designated *Sirenia*.

In this order the hind limbs are entirely wanting and the tail is expanded to a wide fin, like that of the whale. All its representatives which have come under the observation of man, appear to be slow, and unintelligent, if not actually stupid. They are herbivarous, living on marine algæ, or on aquatic plants growing in the estuaries of rivers. They are without means of defense, unable to escape easily by superior speed in the water, and incapable of locomotion ashore. More than this, in their search for food, they are frequently left stranded by the outgoing tide, when they are entirely helpless; while the flesh is always good for food, the fat produces an excellent oil and the skins are useful because of their thickness and strength. The inducements for their pursuit by man are thus very great.

Both the Manatee proper and the Halicore are provided with teeth, the now extinct *Rhytina* was toothless, the place of teeth being supplied by bony plates upon the jaws which served for the mastication of its soft food.

The discovery of the sea-cow and its utilization for food by Behring's crew have already been referred to. The short story of its extermination must now be told.

No sooner had the survivors of Behring's crew returned with specimens of rich furs, particularly that of the sea-otter, than Siberian traders began to build small vessels to revisit the new islands which had been discovered. These were no well equipped expeditions, for means and materials of all sorts were scarce and very primitive on the shores of the Sea of Okotsk. The craft employed at first were small and ill-constructed. Coxe writes of them:—"Most of the vessels which are equipped for these expeditions are two-masted; and commonly built without iron, and in general so badly constructed, that it is wonderful how they can weather so stormy a sea. They are called in Russian *Shitiki*, or sewed vessels, because the planks are sewed together with thongs of leather." *

In such crazy vessels the Russians by degrees extended their wanderings till the whole of the islands of the great Aleutian chain

* Account of the Russian Discoveries between Asia and America. p. 9.

became familiar to them. The adventurers were often absent for several years on a single cruise, wintering at some island and eventually, when in luck, returning with their accumulated furs to Kamtschatka or to Okotsk. Very frequently they were shipwrecked, and not one but several cases are known in which, like Behring's crew, the shipwrecked men reconstructed a vessel from the poor debris of that which had been cast away and in it returned to the Siberian coast. But whole crews often sailed never to be heard of again, or to be heard of only by subsequent voyagers as having been masacred by the natives.

The adventurers were both hunters and traders. They engaged themselves in the capture of sea-otters, foxes and other valuable skins and besides obtained them by barter from the natives. Under the guise of rendering these people subsidary to Russia, they also exacted a tribute of furs from them; taking as much as they could and giving in return merely a paper receipt to the effect that tribute had been paid for the current year.

Coxe briefly describes the method of trade as follows:—"The Russians have for some years past been accustomed to repair to these islands, [the Aleutians,] in quest of furs, of which they have imposed a tax on the inhabitants. The manner of carrying on this trade is as follows. The Russians go in autumn to Behring's island and there winter; they then employ themselves in catching the sea-cat, and afterwards the Seivutcha, or Sea-lion. The flesh of the otter is prepared for food and is esteemed very delicate. They carry the skins of these animals to the Eastern islands. Next summer they sail eastward to the Fox Islands; and again lay their ships up for the winter. They then endeavor to procure, either by persuasion or force, the children of the inhabitants, particularly of the Tookoos, as hostages. This being accomplished, they deliver to the inhabitants fox-traps, and also skins for their boats, for which they expect in return furs and provisions during the winter. After obtaining from them a certain quantity of furs, by way of tax, for which they give quittances; the Russians pay for the rest in beads, false pearls, goats wool, copper kettles, hatchets, etc. In the spring they get back their traps, and deliver up their hostages. They

dare not hunt alone, nor in small numbers, on account of the hatred of the natives." *

The whole story is a very painful one and most of it has lapsed beyond the possibility of recovery. The Russian traders were scarcely less barbarous than the Aleuts whom they eventually subdued and reduced into a scarcely disguised slavery. They were, however, provided with firearms, while the natives had, whether for defence or for attack, only spears, darts, and such like primitive weapons. We have imperfect accounts from the Russian point of view of these transactions, but none from that of the natives who were the principal sufferers. We gather and with difficulty, only the fact that the Aleutian Islands were originally occupied by a numerous population, which before many years had became reduced by slaughter and by disease, introduced by the conquerors, to very scanty proportions.

The Aleut race was decimated, but the fur trade continued, and has continued in one form or another up to the present day. Meanwhile the sea-cow became extinct, and it is to this fact particularly that I now wish to draw attention.

It soon became habitual for the Russian traders to resort in the first instance to Behring Island in order to lay up a supply of salted meat for the farther voyage to the Aleutian Islands. The good qualities of the flesh of the sea-cow rendered it the chief object of pursuit for this purpose, and thus it happened that this nearly defenceless animal was constantly sought after and hunted. We have already seen that its range was very limited. Within historic times it appears to have been practically confined to the Commander Islands—Behring and Copper Islands.—Tradition speaks of the occurrence of the animal on the Kamtschatkan coast, and investigators have found reason to believe that it at one time frequented also the northern islands of Japan and the northern coasts of China. Its bones have been found on Attu Island, the furthest west of the Aleutian archipelago, but it is not certain that these may not represent merely carcasses which have been washed ashore there. From the accounts of Steller, it would appear

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*op. Cit. pp. 220—221.

that it was already maintaining itself with difficulty in its last unmolested retreat. The winter there was severe, and at that season the sea-cow became so thin that every bone was clearly visible. It appears by nature to have been intended for some less rigorous climate, but from all such places it had already been driven by man and other predaceous animals. Thus it proved easy to extinguish the survivors of this interesting and ancient but nearly effete race, and without any intention or knowledge of what they were about, this extinction was accomplished by the ignorant Russian traders.

In 1755, Jakovlev, a mining engineer who was sent to report on the occurrence of copper on Copper Island, noted that the sea-cow had already disappeared from that island, and according to the best information, the last of the race was killed on Behring Island, (which from the first knowledge had been its chief haunt) about the year 1768. Nordenskjold who visited Behring island in 1879, thought he had ascertained from enquiry among the Aleut people there that a single specimen of the sea-cow was seen on the coast as lately as 1854,* but Stejnejer, who visited the island more recently and who re-examined the same men with whom Nordenskjold had spoken, has shown that this was probably a mistake. †

Thus it happens, that at the present day Steller's sea-cow, instead of browsing still upon the kelp along the shores of Behring Island, is known to science only by its bones. When Nordenskjold visited the island he made a special search for remains of the sea-cow and found that the bones were occasionally discovered by the natives along the shores, generally in a low sandy tract slightly above the present high-water mark. By prodding in this sandy ground with iron instruments the presence of the buried bones might be detected, and in this way he secured enough to make up a nearly complete skeleton. Since that time other skeletons have been collected and a certain number of detached skulls, and there can be no doubt that more will be found from time to time.

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*Voyage of the Vega. English Ed. Vol. II. pp. 272-276.

† Proc. U.S. Nat. Mus. Vol. VII. (1884) p. 181. American Naturalist Vol. XXI. p. 1047. Am. Geographical Soc. Bulletin, No. 4. 1886.

The history disclosed by geological research, apart from its purely physical aspects, is that of the progress of life upon the globe; the extinction of species after species of plants and animals and the introduction of new forms in their place. It is by means of the now ascertained stages of this process of change and replacement that the geologist is enabled to determine the age of any particular fossiliferous series of rocks which may come under his notice. But the scale of geological time is a very extended one, as compared with the progress of human events, and the number of animals which have been actually known to man and have since succumbed to process of change is very small. In almost every known case of the kind, man himself has assisted in giving the *coup de grace* and in completing the extermination of some animal which by reason of natural causes had already became very much restricted in its habitat.

This, as we have seen, was the case with the sea-cow. Its hour had very nearly struck before the appearance of man upon the scene.

A PLANORBIS NEW TO THE OTTAWA LIST.

By Geo. W. Taylor, Victoria, B.C.

While paying a short visit to Ottawa in September last, I was so fortunate as to discover about 40 specimens of a freshwater shell new to the local lists.

The species in question is *Planorbis nautilens* Linn, and the specimens, which are all of the variety *cristatus*, were found in the ponds on the right of the road as you pass the St. Louis Dam on the way to the Experimental Farm. The only other American specimens I have seen of this species (which by the way is common enough in the old country) are two that were found by the indefatigable Mr. Hanham in the neighbourhood of Hamilton.

It would be interesting to know how this species has been introduced at Ottawa, as introduced it must have been quite recently, for it could not have long existed undiscovered in a locality so well searched as the St. Louis' Ponds have been by the Ottawa Conchologists.

HYMENOPTERA PHYTOPHAGA, 1893.

By W. Hague Harrington.

Since the publication of my catalogue of the phytophagous hymenoptera of this locality, I have been able to examine the insects of this group which were captured by me last summer, and the annexed list will serve as a record of the season's work, and, at the same time, as a supplement to the previous paper. My collecting was restricted to the month of June and the first two weeks of August, and even during these periods the unusual number of wet days limited my outings considerably. Sawflies also seemed to be much less abundant than in some seasons, and several even of the commonest species were not observed. It will be seen that there are only 42 species in the list, or only about one half of the number recorded (*Canadian Entomologist*, vol. xxii, page 23) as captured here in 1889. Quite a number of the specimens were secured at the sub-excursions to the Mer Bleue and Casselman, and I find that at the latter place a specimen was taken which proves to be an addition to the published list, viz. *Monophadnus tiliæ*, which, as the name indicates, is known to occur upon the bass wood, in Canada and the United States, and of which the probable larvæ have been observed by me on the trees of this locality.

Trichiosoma triangulum Kirby.—1 female, Aug. 13, Race-course.

Larea inflata, Norton.—1 female, July 31st. The occurence of a second specimen confirms this species which was doubtfully placed in former list.

Hylotoma McLeayi, Leach.—2 females, July 29, Hull, goldenrod.

" *clavicornis*, Fabr.—1 female, June 3, Mer Bleue; 2 do, June 14; 1 do. July 30, Hull.

Nematus subalbatus, Norton?—1 female.

" *corniger*, Norton.—2 males, June 10; 1 female, July 29.

" *erythrogaster*, Norton.—1 female, June 7; 1 do. July 30, Hull.

" sp. near preceding.—1 female, June 6, Hull.

" *Erichsonii*, Hartig.—Several females in tamarack swamp beyond Casselman on June 10th, Larvæ less abundant in this district apparently than in former years.

Nematus ribesii, Scop.—Abundant as usual in gardens.

Nematus mendicus, Walsh.—1 female, June 14, Willow.

Emphytus apertus, Norton.—Females, June 1, 7, July 27, 30; male July 29.

Emphytus canadensis, Kirby. 1 female, June 1, Hull.

" *cinctus*, Linn.—5 females, 1 male, bred in July from larvæ feeding in June upon rosebush in garden.

Dolerus aprilus, Norton.—4 females, June 10, July 29; 1 male, June 18.

" *similis*, Norton.—1 female, June 10.

Monophadnus bardus, Say.—1 female, May 30, city.

" *medius*, Norton—1 female, June 24; 1 male, June 10.

" *tiliæ*, Norton.—1 female, June 10, Casselman.

Phymatocera fumipennis, Norton.—3 females, June 7; 1 male, June 1.

Monostegia rosæ, Harris.—Common in June.

Selandria flavipes, Norton.—3 females, June 10.

Allantus basilaris, Say.—19 females, 5 males; July 29, Aug. 5.

Macrophya albomaculata, Norton.—1 female, June 8; Billings Bridge.

" *trisyllaba*, Norton.—11 females, 2 males; June 14, July 30.

Fachyprotasis delta, Prov.—1 male, June 7; Hull.

Taxonus nigrisoma, Norton.— 2 females, 3 males; June 12.

" *dubitatus*, Norton —2 females, June 12.

Strongylogaster pallicoxus, Prov.—1 female, June 8; 2 males June 1.

" *rufocinctus*, Norton.—1 female, June 24.

" *epicera*, Say.—1 male, June 1; Hull.

" *pallidicornis*, Norton.—1 male, June 17.

" *apicalis*, Say.—4 females, 1 male; June 14, 24.

Poecilostoma albosecta, Prov.—1 female, June 3; Mer Bleue.

Tenthredo rufopectus, Norton.—3 females, June 24.

" *ventralis*, Say.—1 female, July 30.

" *verticalis*, Say.—1 female, 1 male; June 24.

Tenthredopsis 14 punctata, Norton.—1 female, June 6.

Monoctenus fulvus, Norton.—2 females, 1 male. May 31 on ornamental cedars at Experimental Farm.

Pamphilius pallimaculus, Norton.— 1 female, June 18.

Orussus Sayi, Westwood.—1 female, June 17. Poplar.

Xiphydria albicornis, Harris.—1 female, June 17.

Tremex columba, Linn.—1 female, Aug. 5.

ORNITHOLOGY.

Edited by A. G. KINGSTON.

Five specimens of *Uria Lomvia*, Brünnick's Murre, were shot near Ottawa on 20th November last. Four of these were shot on the Ottawa river near Templeton, and the other at the St. Louis Dam. There were about twenty birds in this flock. I learn from Dr. Brodie that several were seen in Toronto Bay.

G. R. WHITE.

Mr. Wintle, of Montreal, also writes us that "large numbers of Brünnick's Murre have visited this neighborhood this fall, and as far up the Ottawa River as St. Andrews." He also says that a correspondent in Toronto speaks of having examined thirty specimens taken there. They have also been reported by Mr. MacIlraith as occurring in some number at Hamilton.

The family of the Murres and Auks are essentially birds of the sea-coast, the above and several kindred species breeding commonly on the rocky shores and islands of the Gulf of St. Lawrence. The sole previous record of any member of the family at Ottawa is that of a Puffin (*Fratercula arctica*) in 1881, and even on the Great Lakes they are only known as rare and straggling visitors. Their invasion of our inland waters in such force as the above reports show is a matter well worthy of note.

BOOK NOTICE.

Monograph of the North American Proctotrypidæ; by William H. Ashmead. Bulletin of the U. S. National Museum, No. 45.

This volume of nearly 500 pages will rank with the most important that deal with the American Hymenoptera, and is an exhaustive and able monograph of a family previously but meagrely investigated on this continent. The systematic position of the family and its sub-divisions have been carefully considered and the arrangement is very skillfully carried out, by means of excellent synoptic tables. To Ottawa Naturalists the work has a special interest as it records about seventy

species from this locality, of which fully fifty are described as new species. The Proctotrypids form a family of more than ordinary interest, because all the members of it are parasites. Many of them infest the eggs of various orders of insects, and thus destroy many injurious forms; others live upon the larvæ of small diptera, etc., and one sub-family particularly infests certain small Homoptera. Notwithstanding the small size of these insects (many being very minute) they exhibit numerous and interesting modifications of structure, and afford in general good characters for the separation of the numerous genera. The American species now known, chiefly through the labours of Mr. Ashmead, are about six hundred in number, placed in about one hundred and fifty genera and grouped in ten sub-families. In Canada but little attention has been given to the collection of these minute forms and but few species are recorded other than those furnished by Ottawa. Many of the smaller species hibernate in moss and can most easily be secured by sifting such material obtained from swampy localities. A bag of moss obtained in Dow's Swamp on Thanksgiving Day, the sifting of which was completed recently, yielded quite a large number of specimens, including several of the very small *Bæus minutus*. It is our intention to prepare a list of the Ottawa species for a future issue. Mr. Ashmead has much enhanced the value of his magnificent work by eighteen plates in which the anatomy of typical species, and the various genera are illustrated by nearly one hundred and fifty beautifully drawn figures. The preparation of these plates and of the voluminous text have required skilful and patient labours which can be best appreciated by students who have themselves attempted the collection, classification and description of similar micro-organisms; labours which have their reward chiefly in the assurance of more accurate knowledge acquired and distributed during the years of their faithful performance.—Ed.

EDITORIAL NOTES.

Soirée No. 1.—On December 12th our talented President, Dr. Dawson, delivered a most interesting Inaugural Address, which we have the pleasure of presenting to our readers in this number. A valuable

collection of bones of the extinct sea-cow, gathered during his explorations, was shown and added much to give those present a just conception of the size of the animal.

SOIRÉE No. 2.—On January 9th the lecturer of the evening was Mr. A. McGill, whose address was entitled "Following a Planet." The subject was introduced in a very happy manner, and skillfully planned to give the listeners a clear idea of the position and movements of the heavenly bodies. Jupiter was the planet selected and his present place in the heavens and the course he takes through the starry vault were indicated by specially prepared charts. The whole lecture was fully illustrated by lantern views prepared by Mr. McGill and shown by Mr. Babbington.

SOIRÉE No. 3.—The next lecture will be by Dr. Wyatt Johnston, of Montreal, on "The Living Matter in Drinking Water" and cannot fail to be of great value and interest to every one. The health of any community is largely dependent on the purity of its water supply, and it is therefore of great importance to know what organisms or substances produce such conditions as render water unfit for consumption.

LIBRARIAN.—It is with great regret that the Council have to announce the departure of our Librarian, Mr. W. Scott, B.A., who has gone to Toronto, where he has accepted a position in the Normal School. During his terms as Librarian Mr. Scott gave much time and attention, not only to the reception and care of exchanges, but to the distribution of the OTTAWA NATURALIST. As an ardent student of botany and a zealous collector he will be much missed at our "outings," and as a capable and forcible speaker and teacher he will also be missed at our "innings." We wish him success in his new duties and hope that he may infuse some life and activity into the Naturalists of the Queen City. During the remainder of the current Club year the duties of Librarian will be assumed by Mr. Cowley who has kindly consented at the request of the Council to undertake them.

CORRECTION.—In the programme (page 150,) the date given for Mr. Macfarlane's lecture should read Feb. 20th, (instead of 26th.) Please change this date on the programme which you have placed in a conspicuous place, so that you and your friends may not be in doubt as to the day.

SUMMARY

—OF—

Canadian Mining Regulations.

NOTICE.

THE following is a summary of the Regulations with respect to the manner of recording claims for *Mineral Lands*, other than Coal Lands, and the conditions governing the purchase of the same.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining a mining location for the same, but no mining location shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location of claim.

A location for mining, except for *Iron*, shall not be more than 1500 feet in length, nor more than 600 feet in breadth. A location for mining *Iron*, shall not exceed 160 acres in area.

On discovering a mineral deposit any person may obtain a mining location, upon marking out his location on the ground, in accordance with the regulations in that behalf, and filing with the Agent of Dominion Lands for the district, within sixty days from discovery, an affidavit in form prescribed by Mining Regulations, and paying at the same time an office fee of five dollars, which will entitle the person so recording his claim to enter into possession of the location applied for.

At any time before the expiration of five years from the date of recording his claim, the claimant may, upon filing proof with the Local Agent that he has expended $500.00 in actual mining operations on the claim, by paying to the Local Agent therefor $5 per acre cash and a further sum of $50 to cover the cost of survey, obtain a patent for said claim as provided in the said Mining Regulations.

Copies of the Regulations may be obtained upon application to the Department of the Interior.

A. M. BURGESS,
Deputy of the Minister of the Interior.

DEPARTMENT OF THE INTERIOR,
Ottawa, Canada, December 1892.