NOVEMBER, 1902.
VOL. XVI, No. 8

THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club.

CONTENTS.

(ISSUED NOVEMBER 1, 1902.)

OTTAWA CANADA.
OTTAWA PRINTING COMPANY (LIMITED).
3 & 5 MOSGROVE ST.

Entered at the Ottawa Post Office as second class matter

THE OTTAWA NATURALIST.

VOL. XVI. OTTAWA, NOVEMBER, 1902. No. 8.

OBSERVATIONS OF ANIMALS NATIVE IN THE ALGONQUIN NATIONAL PARK.

By ANDREW HALKETT.

Some account of how animal life in general is being preserved, under the protective restrictions of the Algonquin National Park of Ontario, cannot fail to be of interest to the readers of THE OTTAWA NATURALIST.

The Park is situated in the District of Nipissing, and covers an area of about 45 miles square.

On alighting one afternoon at the station at Câche Lake, where Mr. Bartlett, the genial Superintendent of the Park, resides, I was pleased to see a collection of wild animals, quite at home in enclosures, such as red-deer, a caribou, and a few racoons. It is remarkable what kindness and care will do. The deer have sometimes got away, but after wandering have returned, to receive at the hands of their keepers their accustomed supply of raspberry leaves and the foliage of various trees.

The very atmosphere of the Park awakens the attention of a lover of nature. In many parts of our country there is a marked destitution of life; but here in manifold forms it continues in plenty. The early morning hours are enlivened with the warblings of different kinds of small birds; and so regardless are our feathered friends of the presence of man that a chipping sparrow had built her nest, only some two feet from the ground, in a small spruce bush, right within arm's length of a daily frequented path; and at the time of my visit was, unmolested, rearing her young.

The day following my arrival I was kindly escorted by Dr. Bell, the assistant superintendent, to Cranberry Lake, a reputed

resort of the salmon trout; and indeed, in this respect, I found the spot all that was claimed for it.

The Salmon Trout (*Salvelinus namaycush*) is an inhabitant of the Great Lake region, and other bodies of fresh water. Its colour is gray, with spots of a lighter gray: the dorsal and caudal fins being marked with spots of a darker hue. It is, however, subject to great variation, and although all the varieties bear the specific name of *namaycush*, there is considerable reason for the popular distinctions such as gray-trout, salmon-trout, Great Lake-trout, and Mackinaw-trout. But structurally it has not appeared to icthyologists that there are sufficient distinctions to warrant the separation of varieties into different species. As to size, individuals of three feet or more long are recorded, but such fish are very exceptional, and one of about two feet or less is a large specimen. The salmon trout prefers the deeper parts of the lake: approaching the shoals, in the fall of the year, for the purpose of spawning. It is carnivorous, preying largely upon other fishes.

We had not been long on Cranberry Lake before two red-deer were seen. First a beautiful doe, which was standing in a bay, having come down to drink; and afterwards a buck, standing conspicuous, with his imposing horns, in an open space of the forest, at the margin of the lake.

The Red Deer (*Cariacus virginianus*) is coloured chestnut-red in the summer time, and is gray in the winter. The horns are proportionately small, curved forwards, having the antlers placed at the hinder edges. As in other deer, the horns are solid, not hollow as in the *Bovidæ*, and are periodically shed. The female has no horns. The young, or fawn, is spotted white.

Next morning we started from Câche Lake on a tour through a part of the Park, made by alternately canoeing the lakes and portaging our canoe and camping outfit over the intervening stretches of forest. At Beaver Pond (where, by the way, we saw a beaver dam), and Little Island Lake, we had the good fortune to see an occasional porcupine—three of those interesting rodents in all, and separately—moving about on fallen trees which overhung the water's edge.

The Canada Porcupine or Urson (*Erethizon dorsatum*) belongs to a family of the *Rodentia* which has the body, in addition to the

ordinary fur or hair, covered with defensive spines. It is blamed for being injurious to dogs, which are said to get its quills into their feet; and for approaching farm buildings in order to suck the eggs of hens; and I am sorry to say in various places in the country I have found these inoffensive creatures wantonly slaughtered. On examining the stomach of one which had been shot in the Gatineau district, I found it to be literally packed with spruce leaves.

The first day's journey took us to the head of Smoke Lake, where we put up for the night in an empty hut. Next morning a merganser with her brood of ducklings was seen in the distance, near the margin of the lake on the opposite side. The mergansers differ conspicuously from other ducks in having the bill cylindrical and serrated, instead of being flattened and laminate. The sexes are unlike. In this species, the Red-breasted Merganser (*Merganser serrator*), the male has the head and neck dark green, and there is a white ring around the neck; the back is black, turning grayish lower down, the breast is tinted salmon colour on a white ground, the feet are red, and the bill and iris carmine; whilst the female has the head of a chestnut colour, the back grayish, the breast white, and the feet and bill duller coloured than in the male. Both sexes in this species have crests; whereas in the Sheldrake or Goosander (*Merganser americanus*) only the female is properly crested. The merganser constructs a downy nest concealed upon the ground, in which are deposited her buff, or yellowish drab, coloured eggs, which may vary in number from six to twelve.

In the same direction where the merganser was seen, a heron kept hovering about, and judging from its actions it is possible that it had a nest in the vicinity, for this bird although usually gregarious in its breeding habits, having extensive heronries, sometimes builds singly.

The Great Blue Heron (*Ardea herodias*) is our typical representative of the *Ardeidæ*, and is often erroneously called the crane.[1] This bird has its own especial way of attracting notice; noiselessly and suddenly it is seen on the wing, flying somewhat clumsily, with its neck folded in, and its long legs stuck out be-

[1] The herons are the true allies of the bitterns, storks and ibises, HERODIONES; the cranes of the rails, gallinules and coots, ALECTORIDES.

hind : heavily it flaps along, finally alighting at the edge of the lake, or upon the branch of a tree, where it remains so motionless as to resemble a piece of water-worn wood, and this deceptive appearance is doubtless of benefit to the bird in procuring its piscivorous food.

In the afternoon of this day we visited Ragged and Porcupine lakes, the latter of these being immediately in the outskirts of the Park ; and the former is connected with it by a rapid and picturesque stream, continued by a long water course plenteously studded with lilies.

In Ragged Lake, in deep water, we found a Ling or Burbot (*Lota maculosa*), which species of fish is the sole fresh water representative of the *Gadidæ*, or the fishes of the cod family, in our Dominion.[2] The ling is elongated in shape, having two small barbels at the nostrils, and a longer one at the edge of the lower jaw. There are two dorsal fins, the first very short and the second very long ; and one anal fin which corresponds with the second dorsal in structure and plan. The caudal fin is barely attached to the second dorsal and anal, and is rounded at the extremity. The ventral fins, as in the cod and haddock, are jugular, or placed before the pectorals. The ling has scales but they are very minute and embedded in the skin, so that casually it might be mistaken for a scaleless fish.

As we were returning to the hut, we saw a skunk at the top of a timber-slide, which connects Ragged and Smoke lakes ; and the pleasure of seeing this beautiful creature in its native haunts was not accompanied with any pestiferous odour, the way, usually, in which most persons are made aware that that unpopular member of the *Mustelidæ* is in the neighborhood. The Skunk (*Mephitis mephetica*) is coloured black,and diversified with white down its sides, behind the head, and at the tip of the tail. It is subject, however, to variation, and this individual was very beautiful, because a great portion of the tail was waved with white. It was not in a hurry to get out of the way, as the porcupines were : the well known reason of this leisurely habit being on account of the

[2]The tomcod (*Microgadus*) might be considered an exception, but it is anadromous (or merely ascends rivers to spawn), its environment, ordinarily, being in salt or brackish water.

confidence the skunk places in its power to eject its strong malodorous secretion for defense against its would-be foes.

Next day we proceeded from Smoke Lake to South Tea Lake, until we reached the head of the Muskoka River, where we pitched our tent.

The Muskoka River is frequented by the Speckled or Brook Trout (*Salvelinus fontinalis*), which species of fish differs markedly from the salmon-trout in the absence of a toothed crest, or bony projection, on the vomer; and in the lack of a band of teeth on the hyoid bone; each of which characters is possessed by the latter. The speckled trout manifests great variability of size and colour, purely regulated, it would seem, by environment, for it inhabits streams, lakes, and even the sea. The sea run variety is known as *immaculatus*, specimens of which were obtained by Dr. Wakeham, at Fort Churchill, when in charge of the "Diana" in her Hudson Bay Expedition. The speckled trout is generally of a dusky green colour, and is ornamented along the sides with bright red spots.

At a bridge, crossing a dam, from which the Muskoka River has its rise, I saw one of those singular rodents called the Ground-hog or Wood-chuck (*Arctomys monax*), which creature, although belonging to the *Sciuridæ*, or the family of the squirrels, is exceedingly unlike these latter, both in general appearance and in its habits. It is thick-set in form, having little of the slender squirrel's nimbleness; and it makes great burrows in the ground, something like those of a fox, instead of spending its time among foliage and at the tree tops. Typically the ground-hog is one of the marmots.

Everywhere among the lakes of the Park the Great Northern Diver (*Urinator imber*), well known as the loon, has its home. This bird inhabits the round of the northern hemisphere, and frequents both fresh and salt water, never venturing, however, far out to sea. I have seen it in Northumberland Straits, and among lakes without number in the provinces of Ontario and Quebec. The more one studies the habits of the loon the more interesting it becomes. One may frequently hear its weird cry by night and suppose that to be the limit of its vocalism; the truth is the number of sounds it utters is very varied. Then although it is most

at home upon the lake, or in pursuit of fishes beneath its surface, it can, once it has succeeded in gaining the open atmosphere, for it is so shapen that to rise from the surface of the water requires an effort, fly at its ease, and is thus enabled to carry on its change of haunt from place to place. As loons are dotted about, singly or in pairs, all over the lakes it is interesting to hear their calls to each other, for in this way they keep track of one another's whereabouts. It is rare to see more than a pair together, but during my visit to the Park—in Ragged Lake—one day I saw four, and as two of them, in the distance, seemed somewhat smaller than the other two, I take it that the four represented the two parent birds and the two of the season's brood, then almost matured, Owing to the posterior position of the legs and feet, after the manner of the penguins, which formerly were classed with the divers by ornithologists, the loon is very awkward on land, and so the nest, often a mere depression, is built close to the water's edge. The plumage and general contour of the loon is beautiful, and the bird is dignified with a brilliant red iris. The head and neck are lustrous greenish black, the neck being marked with white streaks, presenting a ring-like appearance. The back and wings are black variegated with white spots and marks, and the tail is black. The breast is glossy white. The eggs are two in number, occasionally three, olive-brown in colour, and covered with darker brown spots.

Few batrachians were observed excepting Bull Frogs (*Rana catesbiana*), which were basking in numbers along the muddy sides of Potter's Creek, a zig-zag water-way, forming an inlet to Canoe Lake; and I was struck with the vividness of their colours.

Of reptiles I was surprised at the almost entire absence of snakes, and the only representative of the class *Reptilia* which I saw was a large female snapping-turtle : nevertheless Mr. Bartlett informs me that turtles are common in the Park.

The Snapping Turtle (*Chelydra serpentina*) has the shell, or carapace, proportionally small, so that it cannot entirely retract itself. The plastron, or under shell, is still smaller in proportion. The tail is long and beset at intervals with solid and pointed shields or crests. The feet are webbed. This turtle is furnished with strong claws and hooked jaws, wherewith to defend itself; and may

therefore prove, if touched, to be quite a formidable creature.

The most common butterfly at the time of my visit (it was July) was the White-banded Butterfly (*Limenitis arthemis*). Across a dark brown ground colour there is on each pair of wings of this beautiful species a band of white, which at intervals is interrupted by lines of the ground colour. Near the apex of the anterior wings are a few white spots. Beyond the white bands on all the wings are green coloured spots, some of which are crescent-shaped, and the posterior wings are further ornamented with bright red spots All four wings are bordered with white crescent-shaped spots.

AN INTERESTING CATERPILLAR

(*Macrurocampa marthesia*, Cram.)

Two mature specimens of the above caterpillar were found by the writer on the 24th September last, one on the under side of a beech leaf, the other resting on the trunk of another beech tree in the same locality. This caterpillar, which is the larva of a very handsome notodontian moth, is rare in Ottawa, only one specimen having been collected here before, as far as is known, and that by Dr. Fletcher two years ago, a moth emerging on the 22nd June, 1901. In colour the larvæ much resemble the under side of the leaf. The first specimen found was nesting along the midrib. This habit has been observed before, and in view of the fact that the caterpillar possesses a dorsal stripe, which corresponds closely with the color of the ribs, as well also as the general colour resembling that of the leaf, it is much protected from observation. The larva is a rather heavily bodied caterpillar measuring about an inch and a-half in length, with two slender appendages at the anal end. It is said that this caterpillar when disturbed has the power of throwing out, from near the head, a rather copious shower of spray, or vapour, but the above two specimens although irritated many times would not do this.

ARTHUR GIBSON.

OOLOGY.

THE ACADIAN SHARP-TAILED SPARROW.

(Ammodramus caudacutus subvirgatus.)

The Museum of the Geological Survey has recently acquired a set of four eggs of this sparrow or finch, with the female, from Mr. R. W. Tufts, who collected them at Wolfville, N. S., on the second of June last. The label accompanying these specimens states that the nest from which the eggs were taken was built "in long thick grass near a salt marsh," that it was "very bulky, raised three or four inches above the ground, and composed entirely of dead grass." The eggs, which average 21 mm. by 15, are very pale bluish green, profusely sprinkled all over with numerous, close set and very small draggled brownish markings, rather than spots.

The "Acadian" is a local variety of the Sharp-tailed Sparrow, described by Mr. Jonathan Dwight, junior, in the *Auk* for July, 1887, but its nest and eggs seem to have been previously unknown, or at least unrecorded.

In the Survey's collection of eggs the genus *Ammodramus* (literally *sand runner*,) as now understood, and inclusive of the Grasshopper Sparrows (*Coturniculus*), is now represented by the following sets. Two of the Ipswich Sparrow (*A. princeps*) from Sable Island; one of the Savanna Sparrow (*A sandwichensis savanna*) from Toronto Island; four of the Western Savanna Sparrow (*A. sandwichensis alaudinus*) from Assiniboia and Alberta; two of Leconte's Sparrow (*A. lecontei*) from Assiniboia; and one of the Acadian Sharp-tailed Sparrow, from Nova Scotia. But, in one of the sets of Leconte's Sparrow three of the four eggs are Cowbird's.

J. F. WHITEAVES.

A HYBRID OF SHEEP AND DEER.

Having heard of a hybrid born to a sheep owned by a farmer at New Limerick a town in Maine, U.S.A., I wrote for a description of it and received the following account :—

"It was dead when born and the nose was some decayed. Except that it had a tail, there was nothing like a sheep about

it. Its nose was long making a slim head instead of a round head like a lamb's and its ears were long. Its body was covered with hair, just straight deer hair. We did not notice any spots on it and it looked dark, probably on account of being wet. Its feet and legs were like deer's not sheep's. You know a sheep's dew-claws are closer down to its hoofs and we noticed that difference particularly. The neck was long and slim. What I thought it resembled most was a tiny horse. She must have gone a sheep's full time, or the hair and hoofs would not have been so well developed, but it was certaintly a very small lamb."

A similar hybrid was killed for mutton at Fort Kent, Maine, in the fall of 1901. Have been unable to get any description of it.

WM. H. MOORE.

Scotch Lake, York Co., N. B.

CAPTURE OF THE WHITE-EYED VIREO NEAR WOODSTOCK, ONT.

By W. D. HOBSON, Woodstock, Ont.

(Read before the Ornithological Section of the Entomological Society of Ontario.)

About two miles from Woodstock, we have a piece of woodland composed of small cedars, with here and there a little grassy glade, and some patches of hawthorn and second growth maple. It was here on the 25th day of April, I stole up to a thick clump of cedars to listen to the marvellous song of a ruby crowned kinglet. As I sat down on the mossy trunk of an old decaying cedar, in whose branches perhaps the ruby crown sang five hundred years ago, I thought, if Nature had only made the ruby crown as large as the eagle and its voice in proportion would it not have converted its favorite spots into veritable temples of music. As I listened a bird came flitting from branch to branch which I took for a yellow-throated vireo. On securing it I was surprised to find the iris of its eyes white, and on looking it up I found it to be the white-eyed vireo. This identification has been confirmed by Mr. W. E. Saunders, of London, to whom I have sent the specimen. It appears to be the first one recorded for Canada.

THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.*

This Catalogue is an outcome of systematic efforts on the part of a committee of the Royal Society of London together with the co-operation of governments throughout the world to arrange scientific literature both as to subject matter and to authors' names. The first literature to be included is that of January, 1901.

The main purpose of this Catalogue is to furnish scientific investigators with a ready means of ascertaining "most easily what has been published concerning any particular subject of inquiry."

The Catalogue includes the following branches of science :—

A. Mathematics.
B. Mechanics.
C. Physics.
D. Chemistry.
E. Astronomy.
F. Meteorology (including terrestrial magnetism).
G. Mineralogy (including Petrology and Crystallography).
H. Geology.
J. Geography.
K. Palæontology.
L. General Biology.
M. Botany.
N. Zoölogy.
O. Human Anatomy.
P. Physical Anthropology.
Q. Physiology (including experimental psychology, pharmacology and experimental pathology).
R. Bacteriology.

The subject matter is grouped under a number of headings.

A Central Bureau edits and publishes the "Catalogue." Regional bureaus exist with a view of furnishing the Central

*The late Dr. G. M. Dawson, a director of the Geol. Survey Department, during his life-time, did much to assist the Canadian Government and the committee of the Royal Society of London in furthering the objects of the International Catalogue of Scientific Literature.

Bureau with the literature of each region covered by the International Convention. Prof. J. G. Adami, of McGill University Medical School, Montreal, is in charge of the Canadian Bureau.

The International Council meet in convention in 1905, and then every ten years, in London. So far, the following countries are represented on the Council, whilst twenty-nine Regional Bureaus have been established.

The United Kingdom.	Russia.	Germany.
India.	Denmark,	France.
Norway.	Greece.	Mexico.
Sweden.	United States.	Cape Colony.
Switzerland.	South Australia.	Austria.
Victoria.	Holland.	Japan.
Hungary.	Italy.	

An executive committee of seven has been named, with Dr. H. Forster Morley as Director. The price of each volume is twenty-one shillings.

H. M. AMI.

REVIEWS.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE. First annual issue. Two volumes, (D) Chemistry, and (M) Botany. Part I. of each.

D. CHEMISTRY. 468 pages. 1902.

Part I. This Catalogue, like all the others of the same series recently inaugurated by the International Council under the auspices of the Royal Society of London, consists of three parts, viz.:

(*a*) Schedules and Indexes in four languages.
(*b*) An Authors' Catalogue.
(*c*) A Subject Catalogue.

This Part contains records of work done in 1901 by various chemists the world over, and gives the most recent and approved methods of recording the same. The subjects treated include the following :—

Chemistry of the Elements; Laboratory procedure; Organic (Carbon) Chemistry; Hydrocarbons; Alcohols and ethers; Acids;

Aldehydes; Ketones; Amino compounds; Azo-compounds; Carbo-hydrates; Glucosides; Resins; Mixed Cycloids; Organo-metallic and allied compounds; Alkaloids; Protoids, Coloured compounds; Operations in Organic Chemistry; Analytical Chemistry; Theoretical and Physical Chemistry, and Physiological Chemistry.

Notes on the manner in which the various entries are to be catalogued are given, and as in the case of "Theoretical and Physical Chemistry," the following sub-heads are given:—

General; Conditions and laws of chemical change; Mass properties; Mechanical properties; Thermal properties; Electrical and Magnetic properties; Optical properties; Photo-Chemistry.

Such a volume is indispensable to the practical chemist of to-day in whatever department of that comprehensive science he happens to be interested. A list of the journals which publish chemical papers, etc., is appended at the end of the volume as well as a complete Index which adds greatly to its value and usefulness.

M. BOTANY. 378 pages. 1902.

Part I.—This Catalogue of the writings on Botany during the year 1901 contains 378 pages of text and includes, like all the catalogues of the International Catalogue of Scientific Literature, three distinct parts, namely: (*a.*) Schedules and Indexes in four languages. (*b.*) An authors' catalogue. (*c.*) A subject catalogue. The subject catalogue is divided into sections. As this is the first part of the first volume pulished by the Royal Society of London, a number of notes on the methods employed in cataloguing the Botanical works of the year and subsequent years are presented, and are of special value. It shows clearly how very complete the scheme of classification has been drawn.

The primary divisions adopted correspond to the recognised branches of the science of Botany. Both recent and fossil Botany is dealt with in this volume. The stratigraphical grouping of entries relating to fossils will, of course, be left exclusively to Palæontology. Besides works referring to the Philosophy of Botany, there are also those relating to History of that science and Bio-

graphy ; periodicals, reports of institutions, societies, congresses, etc. General treatises, text books, dictionaries, bibliographies, tables, addresses, lectures, pædagogy, institutions, museums, collections, economics and nomenclature. Then follow works on the various sub-divisions relating to External Morphology and Organography (including teratology). Anatomy, Development, and Cytology, Physiology, Evolution, Taxonomy, and Geographic Distribution. Besides general works on Taxonomy entries are made on the following lines, including Dicotyledons, Monocotyledons, Gymnosperms, Vascular cryptogams, Mosses and Hepaticae, Characeae, Algae and Schizophyceae, Lichens, Fungi, Bacteria and Mycetozoa Also plants of which the position is not ascertained by the slip-maker. No index accompanies this Part 1 of the Botanical Catalogue, but a long and useful list of Journals relating to Botany is added on pages 367-368.

H. M. AMI.

Geological Survey of Canada,

Ottawa, October 25th, 1902.

"A PETROGRAPHICAL CONTRIBUTION TO THE GEOLOGY OF THE EASTERN TOWNSHIPS OF THE PROVINCE OF QUEBEC," by John A. Dresser, M A., Principal of St. Francis College, Richmond, Que. Amer. Journ. Sc., 4th Series, Vol. XIII, No. 79, pp. 43-48, July, 1902. New Haven, Conn.

This interesting and timely contribution to the geology of the much disputed region of the Eastern Townships of the Province of Quebec, is accompanied by a sketch-map of that part of the Townships where the three belts of supposed Pre-Cambrian rocks occur. It is gratifying to see the excellent results obtained from the petrographical examination of the igneous rocks which make up these belts as given by Mr. Dresser. These rocks have been variously described as altered sedimentaries, or referred to Pre-Cambrian eruptives.

The Sutton Mountain and the Ascot or Stoke Mountain belts are the two more important of these, and the rocks which make up these hills are described by Dresser in a manner which shows conclusively that we have there well-defined altered igneous rocks. "Quartz-porphyry" and "granite-porphyry" are recorded from

the Stoke Mt. belt, whilst the Sutton Mt. belt reveal the presence of "altered greenstone of an amygdaloidal character." "In the microscopic section, a little primary plagioclase sometimes remains, but in many sections the whole field consists of a secondary aggregation of chlorite, epidote, iron ore and leucoxene. The amygdules usually consist of quartz and zeolitic minerals." Dresser correlates these belts with chains of volcanic rocks described from Pennsylvania by the late Dr. G. H. Williams. After describing the structure of the region, that author gives the summary of his results as follows:

1. That at least the greater portion of the Pre-Cambrian or crystalline belts of the Eastern Townships of Quebec is of igneous, not sedimentary origin, as has been hitherto supposed.

2. That these rocks are allied to the volcanoes of South Mountain, Pennsylvania, especially to the basic types, and indicate the continuance of this class of rocks throughout the Appalachians, as was suggested by Williams.

3. That the sediments of the region, which probably all belong to the Quebec Group, were deposited between and upon preexisting ridges of igneous material, which are now being uncovered by denudation, while the intervening valleys still remain deeply filled.

Principal Dresser confirms the anticline theory of the structure of these mountains, which view was first held by Dr. A. R. C. Selwyn, a former member of the Club. In the January number of the OTTAWA NATURALIST for 1901, Dresser advanced the view that a portion of the Pre-Cambrian belt which forms the Sutton Mountain belt was of igneous origin. Some of the rocks of the area examined by Dresser are important as copper-bearing deposits. This paper is one of the foremost contributions to the true interpretation of the geological structure and origin of the rock formations of the Eastern Townships.

H. M. AMI

NOTE TO MEMBERS.—The winter programme is now being got ready and the chairman of the Soirée Committee will be pleased to receive from members of the Club the titles of the papers they are prepared to read.

ON VERTEBRATA OF THE MID-CRETACEOUS OF THE NORTH-WEST TERRITORY.—(1) DISTINCTIVE CHARACTERS OF THE MID-CRETACEOUS FAUNA, by Henry Fairfield Osborn.—(2) NEW GENERA AND SPECIES FROM THE BELLY RIVER SERIES (MID-CRETACEOUS), by Lawrence M. Lambe.

This important memoir is the second part of the series issued by the Geological Survey of Canada, in quarto form, containing descriptions of Canadian fossil vertebrata. The first part, prepared by the late Professor Cope, contained descriptions of the Oligocene fauna from the Cypress Hills; the issue of a contemplated second part on the Vertebrata of the Laramie formation of the North-west Territory, by the same author, was prevented by his death in 1897. The present memoir contains Mr. Lambe's descriptions of the extensive collections of fossil vertebrata made by him in the Belly River formation in 1897, 1898 and 1901, and an introductory part by Professor Osborn, in which the relations of this fauna to that of the typical Laramie Cretaceous and of the so-called Laramie of Montana is discussed.

The Belly River series is of Mid-Cretaceous age, as is shown by the stratigraphy. It is overlain by marine strata of the Fort Pierre and Fox Hills groups, and these in turn by the Edmonton fresh-water series of true Laramie age.

The geological record gives rather scanty information about the inhabitants of the land areas of the Mesozoic. Considerable is known of the land animals of the Trias, and the Upper Jurassic land fauna is large and varied. Then we have a gap, lasting until the end of the Cretaceous, when the equally extensive and varied Laramie fauna appears. The Belly River fauna, of Middle Cretaceous age, reduces this gap very considerably, and assists greatly in tracing the relationships and lines of descent in the two widely separated faunas of the Upper Jurassic and the Upper Cretaceous. It is much nearer to the Laramie, but some Jurassic groups still survive in highly specialized types, while the groups which belong to the Upper Cretaceous show many archaic characters in this older horizon. It "is distinguished from that of the Upper Jurassic (Como Beds, Purbeckian) by the entire absence of Sauropoda and by the presence of Ceratopsia in great variety. It is affiliated with that of the Jurassic, and so far as we know

separated from that of the Laramie by the presence of highly specialized Stegosauria or plated Dinosaurs, by numerous turtles of the Jurassic family *Pleurosternidæ* and by numerous large Plesiosaurs."

Professor Osborn shows that the Belly River fauna is related to that from the so-called Laramie Cretaceous of the Judith River region in Montana, much more nearly than it is to the typical Laramie of Wyoming, and that there is stratigraphic evidence that a part of these Judith River beds may be considerably older than the true Laramie. He therefore considers that a part of the so-called Laramie vertebrates of Montana are probably of Mid-Cretaceous age. But no certain results can be reached on this point until the stratigraphy is better known.

The fauna described by Mr. Lambe is chiefly of land and fresh-water groups; some marine types, however, are present. There are thirty-four species represented, of which nearly half are new to science. Turtles, especially *Trionyx*, are very abundant. The Dinosaurs are the largest and most important part of the fauna. The slender, long-limbed and long-tailed, swift-running types are represented by a large species of *Ornithomimus* estimated at 22 feet in length. The most characteristic Dinosaurs are of the Iguanodont or duck-billed, and Ceratopsian or horned groups; these show various primitive features when compared with the corresponding forms in the true Laramie. *Stereocephalus* is a new genus of Stegosaur or Plated Dinosaur with very massive skull armour and protective bony rings around the neck, which very much suggest the tail armature of the Edentate *Glyptodon*. Two mammals are also described, a rare discovery in any Mesozoic formation.

Much credit is due Mr. Lambe for the twenty-one excellent plates with which the work is illustrated.

W. D. MATTHEW.

THE OTTAWA FIELD-NATURALISTS' CLUB, 1902-1903.

Patron:

THE RIGHT HONOURABLE EARL OF MINTO,
GOVERNOR-GENERAL OF CANADA.

President:

Robert Bell, M.D., F.R.S., LL.D.

Vice-Presidents

W. T. Macoun. A. E. Attwood, M.A.

Librarian:

S. B. Sinclair, B.A., Ph.D.

Secretary:

W. J. Wilson, Ph. B.
(Geological Survey Dept.)

Treasurer:

A. Gibson,
(Central Experimental Farm

Committee:

Jas. Fletcher.
W. H. Harrington.
F. T. Shutt.
Miss M. McK. Scott.
Miss A. Matthews.
Miss R. B. McQuesten.

Standing Committees of Council:

Publishing: J. Fletcher, W. T. Macoun, F. T. Shutt, W. J. Wilson, A. E. Attwood.
Excursions: W. H. Harrington, W. J. Wilson, A. Gibson, S. B. Sinclair, Miss Scott, Miss McQuesten, Miss Matthews.
Soirées: S. B. Sinclair, F. T. Shutt, J. Fletcher, A. E. Attwood, Miss Scott, Miss McQuesten.

Leaders:

Geology: R. W. Ells, L. M. Lambe, W. J. Wilson, T. J. Pollock, C. F. King.
Botany: J. M. Macoun, C. Guillet, D. A. Campbell, A. E. Attwood, S. B Sinclair.
Entomology: J. Fletcher, W. H. Harrington, C. H. Young, A. Gibson.
Conchology: J. F. Whiteaves, F. R. Latchford, J. Fletcher, R. Bell.
Ornithology: W. T. Macoun, A. G. Kingston, Miss Harmer, C. Guillet
Zoology: John Macoun, W. S. Odell, E. E. Prince, Andrew Halkett.
Archæology: T. W. E. Sowter, J. Ballantyne.

THE OTTAWA NATURALIST.

Editor:

James M. Macoun, Geological Survey Department.

Associate Editors:

DR. R. W. ELLS, Geological Survey of Canada.—Department of *Geology.*
DR. J. F. WHITEAVES, Geological Survey of Canada.—Dept. of *Palæontology.*
MR. F. W. BROCK, Geological Survey of Canada.—Dept. of *Petrography.*
DR. JAS. FLETCHER, Central Experimental Farm.—Department of *Botany.*
HON. F. R. LATCHFORD.—Department of *Conchology.*
MR. W. H. HARRINGTON, Post Office Department.—Dept. of *Entomology.*
MR. W. T. MACOUN, Central Experimental Farm.—Dept. of *Ornithology.*
PROF. E. E. PRINCE, Commissioner of Fisheries for Canada.—Dept. of *Zoology.*

Membership Fee to O.F.N.C., with "Ottawa Naturalist," $1.00 per annum.