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## CONTENTS.

	PAGE
1. Notes on a Turtle from the Cretaceous Rocks of Alberta, by Lawrence M. Lambe . . . . .	63
2. Cory's Least Bittern ( <i>Botaurus neoxenus</i> , Cory), by W. L. Kells . . . . .	67
3. Contributions to Canadian Botany, by James M. Macoun	71
4. The Algonquin National Park of Ontario—Its Resources and Advantages, by Archibald M. Campbell . . . . .	80
5. Ornithological Notes, by W. T. Macoun . . . . .	89
6. Excursions . . . . .	94

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# THE OTTAWA NATURALIST.

VOL. XV.

OTTAWA, JUNE, 1901.

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## NOTES ON A TURTLE FROM THE CRETACEOUS ROCKS OF ALBERTA.\*

By LAWRENCE M. LAMBE, F.G.S., of the Geological Survey of Canada.

(With four plates.)

In the collection of reptilian remains, made by the writer during the summers of 1897 and 1898, from the Cretaceous of the Red Deer River, Alberta, are parts of two plastrons of a Chelonian, of large size, that evidently belong to Cope's species *Compsemys variolosus*. The specimens are in an excellent state of preservation and throw new light on the generic affinities of the species. Referable also to this species are parts of the carapace, plastron and endoskeleton, belonging presumably to one individual, that were collected in 1881 by Dr. G.M. Dawson on the Old Man River below Fort McLeod, and two marginal bones with some smaller fragments of the shell obtained by Mr. R. G. McConnell on the Red Deer River in 1882. These latter specimens, taken in conjunction with those first mentioned, form a most interesting series that help to elucidate some important structural points.

The rocks exposed on the Red Deer River, from which the specimens of Mr. McConnell and the writer were obtained, belong to the Belly River series which underlies the marine Pierre-Fox Hills (or Montana) formation in this region. The specimens collected by Dr. Dawson on the Old Man River are from a higher horizon, viz., the Willow Creek subdivision of the Laramie.

The original description of *C. variolosus*, Cope, based on material from the Fort Union (Laramie) beds of Montana, ap-

\*Communicated by permission of the Director of the Geological Survey of Canada.

peared in 1876 in the Proceedings of the Academy of Natural Sciences of Philadelphia, vol. xxviii, p. 257, as follows: "One of the most abundant, and the largest species of the Fort Union beds. The carapace is convex and the plastron flat; the marginal bones are heavy and strongly convex on the inferior side. The margin of the plastron is thickened and heavy, characters which also belong to all parts of the carapace. The sutures of the dermal scuta are deeply impressed, and the surface of the bone is strongly sculptured above and below, and even on the superior face of the thickened margins of the free lobes of the plastron. The sculpture consists of round fossæ, which are deeply impressed and are arranged quincuncially, so that their borders never form straight lines. The latter are also more or less angulate on the edge, so that the surface has a more than usually rugose character. The typical specimen equals those of the large land tortoises of the Eocene in dimensions." The specimens that Professor Cope had may not have permitted a more detailed definition of the species, but the style of sculpture and other points of resemblance seem to remove beyond doubt the question of the specific identity of the Montana specimens with those from the Old Man and Red Deer rivers.

The proportions of the component elements of the plastron can be seen by referring to plate III, where a restored outline is given, based on two specimens from the Red Deer River, which are represented in the figure by the dotted portions. The sutures between the bones are shown by the sinuous lines and the boundaries of the shields by the heavy ones. The dotted lines represent the supposed shape of the end of the posterior lobe, the direction of the sulcus defining the front limit of the femoral shields, and the position of a sulcus that probably crossed the xiphiplastrals, whilst the extent of the hypoplastrals is conjectural.

The plastron is flat except at the sides where it bends evenly upward, the lobes are short and broad, and the sternal bridge long. The entoplastral is roughly pentagonal and rather broad. The epiplastrals are of not unusual size and shape, whilst the hypoplastrals are relatively large. A divided intergular shield separates two small gulars, behind which are well-developed humeral shields. The pectorals narrow rapidly toward the sides



where they and the abdominals meet a series of inframarginals that overlap the peripheral bones. All the sulci are deep and very conspicuous except those marking the position of the inframarginals, the inner anterior boundaries of the gulars, and the division of the intergular. These latter, however, are sharply and clearly defined. The sutural line between the hypoplastrals and the xiphoplastrals is shown in the smaller of the two specimens. As regards the sculpture, the original description is accurate and succinct.

Turning to the dorsal or upper side of the plastron (fig. 2, plate III) it is seen that the rugose sculpture extends inward for some distance from the free edges of the lobes, more particularly at the extreme anterior end, where also the bone is very much thickened. A decided thickening also occurs in the axillary region. The oval outlines on the xiphoplastrals (P, plate III) show the position of smooth, slightly raised, flat surfaces that are apparently facets for the articulation of the pubic bones.

In the two marginal bones collected by Mr. McConnell the rib prolongations from the adjacent costal bones are preserved. These marginals, with parts of costal bones collected by Dr. Dawson, show that the carapace had a sculpture similar to that of the plastron, and was covered by well-developed shields. The rib-heads of the costals were apparently also well-developed.

The foregoing characters indicate a Chelonian that cannot be retained in the genus *Compsemys*, which is nearly allied to *Pleurosternon* and possesses a mesoplastral element. The presence of two small gular shields separated by a divided\* or double intergular shield (in reality two intergulars), and of a series of inframarginals, the absence of a mesoplastral and of a sutural union of the pelvis with the plastron, together with an abbreviation of the lobes and a decided lengthening of the sternal bridge are characters that suggest such close affinities to the genus *Adocus* of Cope that this species is here referred to that genus.

Measurements :

	M.
Estimated length of plastron (28½ inches) .....	.720

\*G. Baur. Proc. Acad. Nat. Sci. Philadelphia, vol. xliii, 1891, p. 428. The genus *Adocus*.

Length along median line from anterior end to posterior border of pectoral shield . . . . .	.295
Breadth from median line to lateral suture (= half of breadth of plastron) . . . . .	.280
Length of entoplastral . . . . .	.085
Maximum breadth of entoplastral . . . . .	.123
Thickness midway between gulars . . . . .	.035
Thickness at centre of gular shields . . . . .	.033
Thickness on median line at posterior border of pectoral shield . . . . .	.013
Thickness at posterior edge of hyoplastral near left boundary of abdominal shield . . . . .	.007
Thickness in axillary region near lateral suture . . . . .	.032
Thickness midway between entoplastral and the axillary notch . . . . .	.025

In 1882 Dr. J. F. Whiteaves had labelled the two marginal bones from the Red Deer River with the name *Compsemys variolosus*, and to him belongs the credit of having first noticed the occurrence of this species in Canada.

The writer is indebted to Dr. O. P. Hay, of the American Museum of Natural History, New York, who since the above was written, has compared some of the Red Deer River material, sent to him, with the type of *Compsemys variolosus*, Cope, and confirms the correctness of the writer's specific identification. Dr. Hay informs the writer that in the type there is little, if any, of the carapace represented and that the anterior lobe of the plastron is missing. Also that the specimen shows the central portions of the plastron, and the posterior lobe, which latter is broadly rounded.

#### EXPLANATION OF PLATES.

##### Plate III.

FIGURE 1—The plastron of *Adocus variolosus* (Cope); from the Cretaceous of Alberta. One-sixth natural size. I G, Intergular shield; G, Gular do.; HUM, Humeral do.; PEC, Pectoral do.; AB, Abdominal do.; FEM, Femoral do.; AN, Anal do.; EP, Epiplastral bone; ENTP, Entoplastral do.; HYP, Hyoplastral do.; HPP, Hypoplastral do.; XP, Xiphiplastral do.

FIGURE 2—The upper or inner side of the plastron of *Adocus variolosus* (Cope). One-sixth natural size. P, surface for the articulation of the pubis.

## Plate IV.

Lower or outer surface of specimens represented in plate III; one-third natural size.

## Plate V.

Upper or inner surface of specimens represented in plate III; one-third natural size.

## Plate VI.

The lower surface of the anterior end of the plastron figured in the preceding plates; natural size; to show the sulci of the intergular and gular shields, details of sculpture, etc.

---

CORY'S LEAST BITTERN (*Botaurus neoxenus*, Cory).

By W. L. KELLS, Listowel, Ont.

Many years ago, in the time of the early settlement of the township of Peel, the writer remembers to have seen a specimen of a bird which he has never since seen alive. It was at the time of the spring migration, and the bird, probably wearied with a long flight, was able to fly but a short distance at a time, so that being pursued it was finally captured in a pool of water into which it fluttered in its efforts to escape. When dissected it proved to be a female. It evidently belonged to the family of the Waders, or Shore birds, as it had a long neck and bill and long legs, with a slender body, but some of the colouring of its plumage was very beautiful.

Many years afterwards, when visiting the museum in the University of Toronto, a specimen of the Least Bittern *Botaurus exilis* was identified as similar in size and form, but lacking in some of the handsome hues of the Peel specimen. When again in Toronto, in the spring of 1891, the writer noticed at the store of Thurson & Spanner a mounted specimen of a Least Bittern, which had been collected the season before in the Toronto marsh. In the published "Transactions of the Canadian Institute" for 1890-91, is the following reference to this bird, which was then regarded as the first specimen of the Florida Dwarf Bittern or, as it had been previously called, Cory's Least Bittern, unknown to science, that had been taken in Ontario. Mr.

W. Cross, the writer of the article, says: "On May the 18th, 1890, a very interesting capture was made on Toronto Island, and I afterwards received the bird. It was a small bittern with all the colouring very dark and blended with rich chestnut-brown on the back. It was so unlike any other Least Bittern that I had previously seen that I put it down as a new bird, and soon identified it as Cory's Least Bittern. It is a resident of Florida and Mexico, and is supposed to have wandered here with our *Botaurus exilis* during the spring migration." This bird was a female, and Mr. Cross presented it to the Canadian Institute, where, after being mounted, it now remains. A second specimen of this interesting species was taken on May 20th, 1893, and a report of this capture by Mr. H. Brown was published in the *Auk*. The specimen was sent for examination to Mr. Wm. Brewster, a distinguished American ornithologist, who wrote regarding it: "It agrees very closely with a skin taken at Lake Flirt in 1892. The Toronto bird is a trifle darker on the back, and the chestnut of its under parts is slightly richer, but in other respects the two specimens are exactly alike. It, also, is a female." On May 26th, 1894, a third specimen was shot at Ashbridge Bay, Toronto, by a Mr. Jacobs, who flushed it with a *B. exilis* from a clump of reeds. Both birds were secured and found to be males. On comparing the three specimens it was found that the one shot in the summer of 1893 was identical with the one obtained in 1894, with the exception of the wing coverts, which are a little darker. The female shot in 1893 is black on the crown only, the back of the neck is a dark rufous-chestnut, the back is black with a decided brownish shade, not green as the other two; the remainder of the colours correspond with the exception of one or two white feathers on the legs. It is interesting to know that up to that date this Toronto specimen was the ninth known in collections. Mr. Charles Pickering captured another specimen of this species on the 15th of July, 1894, and has written the following interesting account regarding that event: "While going through Toronto marsh I had the good fortune to find a Cory's Bittern. It was a little east of the south end, and was just in the act of lighting a little behind me when I caught sight of it; I thought at first that it was a Virginian Rail, but on the second sight its long legs showed



clearly that it was not. I therefore pushed my boat as close to the rushes as I dared, and watched it for a quarter of an hour, and then turned to leave it as I had no gun. After going some fifty yards I turned as I thought to have another look at my rare friend when my lady companion suggested to me to hit it with my oar. I took the hint, but as I was about to strike, the bird arose and flew to the other side of the marsh. I followed, and as it allowed me to approach within a couple of yards, I succeeded in knocking it over and secured it. While watching its actions I noted that these were altogether different from those of any other Least Bittern that I had previously seen, for instead of standing erect when being watched, as is the habit of the other members of the family, it would crouch down until it seemed to be only the size of a Virginian Rail, its long neck being altogether out of sight. It had a very slow, sneaky walk, grasping a single rush with one foot and striding as far as possible so as to grasp another. It seemed to be feeding on insects on the lily leaves at the foot of the rushes, as it would every few seconds dart out its neck with great rapidity and take something off the leaves."

In the appendix to Coues' "Key to North American Birds, 1884," the following description of the Florida Dwarf Bittern is given: "Crown, back and tail black, glossed with green; sides of head and throat chestnut, the feathers on the back of the neck tipped with greenish-black, breast and under parts rufous-chestnut, nearly uniform, shading into blackish on the sides, under tail coverts dull black, upper tail coverts rufous-chestnut, the under ones paler chestnut, all the remiges slaty plumbeous. Length 10.80 inches, wing 4.30, tarsus 1.40, bill 1.80; habitat southwestern Florida." It will also be noted by the more advanced students of Ornithology that while these specimens are thus described by Dr. Coues in "The Key" of 1884, *Ardetta neoxena*, yet, in "The Union Check List" of more recent date, the name *Botaurus neoxenus* is used, and by ornithologists it is known by both these names, as well as by the different English names previously mentioned. In the October, 1894, issue of the "Biological Review for Ontario," Mr. H. Brown writes that up to that date nine specimens of Cory's Bittern had been captured at Toronto, and he gives a résumé of its history, from which a few extracts are here given. "A most peculiar circum-

stance in the history of this bird is that it has only been recorded from two isolated and widely separated localities, viz., Southern Florida, and Toronto, Ont., and it is interesting to note that not until 1890 was it observed at Toronto, some four years after it was discovered in Florida. In 1893, another was captured here, and this year (1895) five have been secured. Quite a number have been observed, but only five taken in Florida since the type was obtained.

This fact would lead to the supposition that the species is increasing in numbers; or is it because greater interest has been taken in searching for them? The marshy location at Toronto to which the birds resort and where all the specimens recorded were taken, is only about half a mile square protected from the waters of Lake Ontario by a narrow sand bar a few yards in width, and is situated immediately adjacent to the city of Toronto, so that the bird, though evidently of retired habits, could scarcely have chosen a more frequented piece of marsh. In Florida the habitation of Cory's Bittern extends over a swampy area about 40 by 50 miles in extent. Of the specimens taken at Toronto, the majority were males, and it was found by dissection of three of this number that they feed on small bass and perch, and in one stomach there was found the larva of a dragon-fly. That they breed at Toronto seems evident from the dates at which the specimens were taken, and the manner in which several allowed themselves to be captured, indicates either their stupidity or tameness. Its nesting modes and eggs are similar to those of the other species of Least Bittern.

NOTE.—Since the above was written information has been received of several more specimens of this species being taken at Toronto, and one in the State of Michigan.

W. L. K.

CONTRIBUTIONS TO CANADIAN BOTANY.<sup>1</sup>

By JAMES M. MACOUN, Assistant Naturalist, Geological Survey of Canada.

## XIV.

THALICTRUM CONFINE, Fernald, Rhodora, vol. II, p. 232.

Rootstock 2 to 4 cm. long, bearing 10 to 12 strong roots: stem slender, 3 to 6 dm. high, puberulent, pale-green, often finely mottled with purple, leafy to the summit: the four or five leaves glandular-pruinose, glaucous beneath, the lower, including the short petiole 3 to 4 cm. long; leaflets sub-orbicular broadly obovate or flabellate, coarsely toothed, 0.75 to 1 cm. long, the terminal on slender petiolules, the lateral short-petiolulate or sessile: flowers diœcious, greenish or purplish, the panicles 1 to 2 dm. high, with ascending branches: sepals greenish, oblong-lanceolate, caducous: carpels 6 to 10, glandular-pruinose; stigmatose style lance-subulate, 3 to 5 mm. long; achenes ovate-lanceolate, excluding the persistent style, 4 to 5 mm. long, 2 to 3 mm. thick, plump, subterete, scarcely compressed or ancipital with 8 simple or slightly branched strong ribs, the alternate ones strongest; seed linear-lanceolate, hardly filling the cell.

Thickets, Hemlock Lake, near Ottawa, Ont., in flower, Aug. 8th, 1894. Herb No. 2,956.<sup>2</sup> (*John Macoun.*) Also collected in Maine.

THALICTRUM OCCIDENTALE, Gray.

*T. dioicum purpurascens*, Can. Rec. Sci., 1894, p. 77.

Rootstock slender, elongated: stem glabrous, 1 m. or less high, leafy to the summit, the three to six leaves glaucous beneath, smooth or minutely glandular, the lower including the long petiole 0.5 to 3 dm. long, those of the inflorescence often simple; leaflets thin, reniform or obovate, with coarse rounded lobes, the terminal on slender petiolules, the others

<sup>1</sup> Published by permission of the Director of the Geological Survey of Canada.

<sup>2</sup> These numbers are those under which specimens have been distributed from the Herbarium of the Geological Survey of Canada.

short-petiolulate or sub-sessile: flowers dioecious or polygamodioecious, greenish or purplish, the panicles 1.5 to 3 dm. high, with ascending branches: sepals oblong: carpels glabrous or minutely glandular-pruinose; achene excluding the persistent style 6 or 7 mm. long, 2 or 3 mm. wide, compressed, strongly ancipital, with three strong or somewhat branching ribs on each side: filaments yellowish, greenish, or purplish, elongated, slightly clavellate; anthers linear, mucronate.

Represented in the herbarium of the Geological Survey of Canada by many sheets from the west and by specimens collected at Eel River, N.B., by Robert Chalmers, and on the St. John River above Woodstock, N.B., by John Macoun. Mr. Fernald has examined specimens collected by Mr. G. U. Hay at South Tobique Lakes and St. John, N.B., and by Bourgeau near Lake Winnipeg.

**RANUNCULUS PALLASII**, Schlecht.

Mosquito Bay, Lat. 60° 42', east coast of Hudson Bay. Aug. 18th, 1898. Herb. No. 23,003. (*A. P. Low.*) Not recorded from Eastern America.

**BERBERIS BREVIPES**, Greene, *Ott. Nat.*, vol. xv, p. 42.

Crow's Nest Pass, Rocky Mts., 1897. Herb. No. 18,080. (*John Macoun.*)

**SARRACENIA PURPUREA**, L. var. **HETEROPHYLLA**, Torr.

In bogs, Madawaska River, Algonquin Park, Ont. 1900. (*John Macoun.*) Only Canadian specimens in herbarium of Geological Survey.

**DENTARIA GEMINATA**, Wats.

Koksita, Vancouver Island. (*R. H. Jameson.*) New to Vancouver Island.

**VIOLA MISTASSINICA**, Greene, *Pittonia*, vol. iv, p. 6.

Lake Mistassini, Que. 1885. (*J. M. Macoun.*) Richmond Gulf, Hudson Bay. (*Wm. Spreadborough.*) West branch of Hamilton River, Labrador. (*A. P. Low.*) Banff, Rocky Mountains. (*N. B. Sanson.*) Cassiar Trail, west of Dease



Lake, B.C. Lat.  $58^{\circ} 30'$ . (*Dr. G. M. Dawson.*) The western specimens differ slightly from those from the east, but seem referable here. This plant is readily distinguished from *V. blanda*, *V. renifolia*, and *V. amœna* by its "stout scaly-looking and elongated root-stock and by its notably toothed foliage, the leaves in all the others being crenate, the proper teeth never salient but on the contrary almost obsolete." The lowest petal is not only purple-veined but the purple colour is diffused over the whole petal.

*VIOLA WATSONI*, Greene, *Pittonia*, vol. iv, p. 5.

Boggy meadow near Charlottetown, P.E.I. 1898. (*Larrence W. Watson.*)

*VIOLA CYCLOPHYLLA*, Greene, *Pittonia*, vol. iv, p. 7.

Yellow Head Pass, Rocky Mountains, July 13th, 1898. Herb. No. 19,298. The type. (*W. Spreadborough.*)

*STELLARIA SUBVESTITA*, Greene, *Ott. Nat.*, vol. xv, p. 42.

Common in the Rocky Mountains on both sides of the Bow River Pass.

*STELLARIA MEDIA*, Cyrillo.

Attention is again drawn here to Mr. Theo. Holm's paper on "Allies of *Stellaria media*" in the last number of *THE OTTAWA NATURALIST*. These plants should be carefully studied everywhere in Canada. Among our herbarium specimens labelled *S. media*, *S. neglecta* was found from Victoria, Vancouver Island; Burrard Inlet, B.C., Killarney, Man.; Sable Island, N.S.

*RADIOLA LINOIDES*, Gmel.

Along a ditch near the old fortifications at Louisburg, Cape Breton Island, N.S. 1898. Herb. No. 20,232. (*John Macoun.*) New to Canada. Probably introduced by the French.

*SPIRÆA SALICIFOLIA*, L.

The reading of Mr. Wiegand's note on *S. salicifolia* in *Rhodora* for May, 1900, suggested an examination of the

sheets in the herbarium of the Geological Survey of Canada. This examination has forced me to the conclusion that we have no true *S. salicifolia* in Canada. There are, however, three or four well defined varieties or species of which the most abundant in the east is *S. salicifolia*, var. *latifolia*, Ait., common from Nova Scotia to Lake Superior but not found in the Northwest Territories. The form most nearly approaching *S. salicifolia* is var. *lanceolata*, Ait., represented in our herbarium by specimens from Newfoundland west to Prince Albert on the North Saskatchewan. Though the herbarium material is ample no attempt will be made at present to characterize the other forms as like some other genera of the *Rosaceæ*, *Spiræa* must be studied in the field. The part of the plant which can most easily be made into a herbarium specimen is not always that most necessary for the proper determination of the species.

AGRIMONIA HIRSUTA, Bicknell.

*A. Eupatoria*, Macoun, Cat. Can. Plants, vol. 1, p. 142 in part.

Truemanville, N.S. (*H. Trueman*.) Billings' Bridge, Ottawa, Ont.; Pt. Edward, St. Clair River, Ont. (*J. M. Macoun*.) Belleville, Ont.; Wooler, Northumberland Co., Ont. (*John Macoun*.) Edmonton, Ont. (*Jas. White*.)

AGRIMONIA BRITTONIANA, Bicknell.

Boylston, N.S. (*Dr. C. A. Hamilton*.) Big Intervale, Cape Breton Island, N.S.; Flat Rock Portage, Nipigon River, Ont.; Killarney, Man. (*John Macoun*.) The western specimens in the herbarium of the Geological Survey include several species.

MYRIOPHYLLUM ALTERNIFLORUM, D.C.

Golden Lake, Renfrew Co., Ont. (*John Macoun*.) The western limit of this seldom collected species.<sup>1</sup>

TRIOSTEUM AURANTIACUM, Bicknell, Torrey, vol. 1, p. 26.

Rich soil on the rocky bank of the Nation River at

<sup>1</sup> The geographical limits given in these papers refer to Canada only.

Casselman, Ont. (*J. M. Macoun.*) *T. perfoliatum* is represented in the herbarium of the Geological Survey by specimens from Belleville and Churchville, Ont.

EUPATORIUM BOREALE, Greene, Rhodora, vol. III, p. 83.

Stout, erect, 2 feet high or more, glabrous except as to the inflorescence: leaves ample, very thin, dark-green, feather-veined, the veins not light-coloured, 3 or 4 inches long, often 3 inches broad towards the base, broadly subcordate-ovate, abruptly acuminate, coarsely and evenly serrate, the serratures 20 to 25 on each side, some of the larger with a secondary tooth; petioles  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches long, somewhat ascending: cymes terminal, but with one pair from the axils of the uppermost leaves: peduncles and pedicels rather densely pubescent, but involucre glabrous, their bracts thin, only obscurely striate: tips of the corolla-teeth somewhat hairy: achenes dark-brown, sharply thin-angled, the angles of those of the outer series remarkably setose-hispidulous, the surface glabrous.

Represented in our herbarium by specimens from Bass River, Kent Co., N.B., collected by Prof. J. Fowler. Most of what has been taken to be *E. ageratoides* in Eastern Canada is probably this species.

SOLIDAGO PRUINOSA, Greene, Pittonia, vol. IV, p. 70.

Erect, 3 feet high or more, very leafy up to the dense short, pyramidal panicle of short, spreading or slightly recurved abruptly ending and obtuse racemes of rather large heads: leaves ascending, 2 inches long, elliptic-lanceolate, acute or acuminate, slightly but evenly serrate from near the base to near the apex, distinctly 3-nerved and canescent or almost hoary on both faces with a dense, rather soft puberulence or pubescence: pedicels and branches of the inflorescence almost tomentulose: bracts of the more than middle-sized involucre in about 3 series, the short outer ones subulate-linear, the inner long ones also visibly narrowed from base to apex but obtusish; flowers apparently light yellow.

Moose Jaw, Assa., Aug. 13th, 1895. Herb. Nos 10,892, 10,893 and 10,894. (*John Macoun.*)

EUCEPHALUS MACOUNII, Greene, Pittonia, vol. iv, p. 70.

Along fences, Sea's Farm, near Victoria, Vancouver Island. Herb. No. 447. (*John Macoun.*) Distributed as *Aster radulinus*.

CENTAUREA SCABIOSA, L.

Along the Canadian Pacific Railway at Snellgrove, Ont. (*Jas. White.*) New to Canada and known from only one other locality in America. Determined by Dr. Robinson.

SENECIO OVINUS, Greene, Pittonia, vol. iv, p. 110.

*S. resedifolius*, Macoun, Cat. Can. Plants, vol. 1, p. 267 in part.

Mountain slopes, western summit of North Kootanie Pass, Rocky Mts., 1883. (*Dr. G. M. Dawson.*) High slopes of Sheep Mountain, Waterton Lake, Rocky Mts. Herb. No. 11,619. (*John Macoun.*) Described from the Sheep Mountain specimens.

VACCINIUM NIGRUM, Britt.

*V. corymbosum*, var. *pallidum*, Macoun, Cat. Can. Plants, vol. 1, p. 291.

Point Pleasant, N.S.; Englishtown, Cape Breton Island, N.S.; common in the vicinity of Ottawa, Ont., and at Niagara, Ont. (*John Macoun.*)

LYSIMACHIA VULGARIS, L.

Well established on Toronto Island, Ont. (*W. Scott.*) Only Canadian record.

STEIRONEMA LANCEOLATUM, Gray; Macoun Cat. Can. Plants, vol. 1, p. 313.

Recorded from Ontario, but such specimens as we have seen so named are *S. quadriflorum*, Hitchc.

ACERATES LONGIFOLIA, Ell.

Dry sandy soil, southwest of Sandwich, Ont., 1893. (*Alex. Wherry.*) Our only Canadian specimens. The specimens referred here, Macoun, Cat. Can. Plants, vol. 1, p. 563, are *A. viridiflora* var. *lanceolata*, Gr.



**ASCLEPIAS PULCHRA**, Ehrh.

In Mahone River bed at New Germany, N.S., and at entrance of West River into New Germany Lake, N.S., July 1891. Herb. No. 23,581. (*Dr. C. A. Hamilton.*) New to Canada.

**ERYTHRÆA CENTAURIUM**, Pers.

Very abundant on the old land near the main lighthouse station, Sable Island, N.S. 1899. (*John Macoun.*) Our only Canadian specimens.

**LITHOSPERMUM LATIFOLIUM**, Mx.

Lorette Falls, near Quebec, Que. 1895. (*Mrs. Brodie.*) Not before recorded except from Ontario.

**HELIOTROPIMUM CURASSAVICUM**, L.

Saline soil, McLeod, Alta. Herb. No. 23,971. (*John Macoun.*) Western limit.

**CONVOLVULUS ARVENSIS**, L.

Open prairies, Morris, Man. (*John Macoun.*) Not recorded from Manitoba.

**PHYSALIS IXOCARPA**, Brot.

Roadsides near the hotel, Golden Lake, Renfrew Co., Ont. (*John Macoun.*) New to Canada.

**HYOSCYAMUS NIGER**, L.

Old railway ground, Banff, Alberta. 1900. (*V. B. Sanson.*) Not before recorded from the west.

**BUCHNERA AMERICANA**, L.

Port Frank, Ont., Sept. 8th, 1891. (*J. Dearness.*) Only Canadian record.

**GERARDIA PAUPERCULA**, Britt.

In marshy places near the main station, Sable Island, N.S. 1899. Herb. No. 22,578. (*John Macoun.*) Not recorded east of Quebec.

**LIPPIA LANCEOLATA**, Mx.

Wet places, Leamington, Ont. 1892. Herb. No. 24,270. (*John Macoun.*) New to Canada.

## AMARANTUS BLITOIDES, Wats.

East of Brandon, Man.; Cardston, Alta. (*John Macoun.*)  
Not recorded west of Ontario.

## MONOLEPIS CHENOPODIOIDES, Moq.

Cypress Hills, Assa.; Kananaskis and Banff, Rocky Mts.  
(*John Macoun.*) Western limit.

## CHENOPODIUM BOTRYS, L.

Waste places, Spence's Bridge, B.C. (*John Macoun.*)  
Not recorded west of Ontario.

## CHENOPODIUM LEPTOPHYLLUM, Nutt.

Sandy soil, Spence's Bridge, B.C.; Deer Park, Lower  
Arrow Lake, B.C. (*John Macoun.*) Not recorded west of  
Rocky Mountains.

## CHENOPODIUM LEPTOPHYLLUM, Nutt., var. SUBGLABRUM, Wats.

Sandy woodlands, Pt. Pelee, Essex Co., Ont. 1886. (*Dr.*  
*Burgess.*) Neither the type nor variety recorded from On-  
tario.

## CHENOPODIUM URBICUM, L.

Nanaimo and Victoria, Vancouver Island, B.C. 1893.  
(*John Macoun.*) Not recorded west of Ontario.

## CHENOPODIUM RUBRUM, L.

On brackish flats near the main lighthouse station, Sable  
Island, N.S. Very rare. 1898. (*John Macoun.*)

## SALICORNIA HERBACEA, L.

Borders of saline ponds near Kamloops, B.C. 1890.  
(*J. M. Macoun.*) Not recorded from British Columbia.

## SALICORNIA AMBIGUA, Mx.

Long Arm, Skidegate Inlet, Queen Charlotte Islands,  
B.C. (*Dr. C. F. Newcombe.*) Northern limit.

## RUMEX PATIENTIA, L.

Not uncommon about houses and in fields, Boylston, N.S.  
(*Dr. C. A. Hamilton.*) Not recorded east of Ontario.

SCLERANTHUS ANNUUS, L.; Macoun, Cat. Can. Plants, vol. 1, pp.  
80 and 499.

West of London, Ont., 1890; Komoka, Ont., July, 1892.  
(*J. Dearness.*) Our only herbarium specimens.

## PODOSTEMON CERATOPHYLLUM, Mx.

On stones near the mouth of Eel River, 12 miles below Woodstock, N.B. Herb. No. 22,593, 1899; Petawawa River, Algonquin Park, Ont., 1900. (*John Macoun.*) Our only other specimens are from Hull, Que.

## CYPRIPEDIUM GUTTATUM, Swartz.

Shore of Great Slave Lake, 1899. (*Dr. R. Bell.*) The single specimen brought home by Dr. Bell is the third from the Mackenzie Basin, the others having been collected by Richardson.

## CYPRIPEDIUM PASSERINUM, Rich.

West shore of Great Bear Lake, Lat.  $65^{\circ} 30'$  to  $66^{\circ} 30'$ . 1900. (*J. M. Bell.*) Northern limit.

## ZYGADENUS ELEGANS, Pursh.

West side of Great Bear Lake, Lat.  $65^{\circ} 30'$  to  $66^{\circ} 30'$ . 1900. (*J. M. Bell.*) Northern limit.

## JUNCUS BULBOSUS, L.

In boggy places, east end of Sable Island, N.S. 1899. Herb. No. 22,623. (*John Macoun.*) Only Canadian specimens in herbarium of Geological Survey. Reported from Labrador.

## STENOPHYLLUS CAPILLARIS, (L.) Britt.

Wet sandy fields, Sandwich, Ont. Herb. No. 25,334. (*John Macoun.*) New to Canada.

## FIMBRISTYLIS AUTUMNALIS, R. &amp; S.

Wet sandy fields, Sandwich, Ont. Herb. No. 25,333. (*John Macoun.*) New to Canada. Growing with *Stenophyllus capillaris*.

## CAREX LEOCARPA, C. A. Meyer; Macoun, Cat. Can. Plants, vol. II, p. 110.

Dawson Harbour, Skidegate Inlet, Queen Charlotte Islands, B.C. (*Dr. C. F. Newcombe.*) The second Canadian station.

## CAREX CAPITATA, L.

Additional stations for this species are Northern Labrador. (*A. P. Low.*) Boggy places, Bragg's Creek, Elbow River, Rocky Mountains. Herb. No. 25,447. (*John Macoun.*)

## THE ALGONQUIN NATIONAL PARK OF ONTARIO—ITS RESOURCES AND ADVANTAGES.

By ARCHIBALD M. CAMPBELL, Ottawa.

The Parry Sound division of the Canada Atlantic Railway renders readily accessible for the first time one of the most remarkable regions of lake and stream, primeval forest and rugged rock that can be found anywhere. It lies between the Ottawa River and Georgian Bay, and is a compact territory over forty miles square, with an area of nearly 2,000 square miles, comprising eighteen townships and six half townships in the District of Nipissing, and representing in the aggregate a million acres of land and water. The Ontario Government has set apart and reserved for all time to come, "for the benefit, advantage and enjoyment of the people of the Province," this Algonquin National Park. In it, the citizens of Canada have a possession, the value of which they have not yet even remotely realized. It is in reality a huge game preserve, a fisherman's and sportsman's paradise, a source of water supply, a field for reforestry operations, and a natural sanitarium which bids fair to outdo the Adirondack region and other noted health resorts of America.

### RIVERS AND LAKES.

In the valleys, between the rocky ridges of the Laurentian formation, are the fountain-heads of the Muskoka, Magnetawan, Madawaska, Petawawa, Amable du Fond, and South rivers—all important streams, emptying into Georgian Bay, the Ottawa and Mattawa rivers, and Lake Nipissing. Within the limits of the Park is a large part of the watershed which divides the streams flowing into the Ottawa river from those which empty into Georgian Bay, and there is probably not to be found elsewhere within the Province a tract of country which in the same limited space gives rise to so many important streams. Therefore, one of the principal objects that the Government had in view when establishing the reservation was the protection and maintenance of their water supply. The interests of the lumberman, who annually floats large quantities of timber to market down their waters, of the manufacturer for whose mill-wheels they supply the motive



power, and of the farmer to whom a continuous supply of water in spring, well and stream is an absolute necessity—all required that provision should be made to keep the hills and highlands of this inland plateau covered with a heavy forest growth. The park contains within its boundaries an immense volume of water in lake and river, brook, pond and marsh. The spring and autumn rains and the heavy snows of winter keep the fountain-heads of the important streams rising there continually replenished, the density of the forest retarding evaporation, and the spongy layer of leaves and decaying vegetation which covers the ground, tending to maintain an equable flow throughout the year. The reservation is a veritable lake-land, it being estimated that there are about 1,000 lakes and ponds within its borders. Most of the large lakes find a place on the map of the Park that has been issued by the Ontario government, but many of the smaller ones have not as yet been accurately located. Many of the lakes are of great natural beauty—not too large to be picturesque, nor too small to possess many a mirrored islet. Great Opeongo lake in the south east corner of the Park is the largest body of water, being twelve miles in length. It is a truly noble sheet of many square miles in extent, is very irregular in shape, possesses numerous islands, and presents many picturesque features. At a certain spot on the lonely shore of this lake there are still the remains of an ancient burial ground of the Algonquin Indians, reminding us of that once powerful race, which, in days gone by, held all this northland as its untitled domain. The name of the Park is the only reminder that we have of this primitive ownership, for the white man has displaced the red, the stalwart brave has vanished to his happy hunting-ground, and the pale-face reigns in his stead. The superintendent of the Queen Victoria Niagara Falls Park writes as follows of the lake scenery of the region: "Each expanse of water has some charm peculiarly its own. On every side the forest primeval clothes the hills and mountains with verdure of varying hue down to the very shore; deep shades are thrown across the Park waters of the lake, whose placid surface mirrors to perfection every outline of cloud or hill, tree or rock; while the baby ripples from the bow of the canoe, or the congeries of air bubbles

from each stroke of the paddles, glisten in the sunlight like diamonds, or as the stars on a December night. To the tourist the continual change from lake to river, from river to portage, and from portage to river and lake again, make a delightful panorama which captivates the eye and the senses, and provides abundant opportunity for the cultivation of the tastes in the study of all the varying phases of the landscape, and impels a seeking after more perfect knowledge of the many varieties of animal and vegetable life, which have their habitat in the territory.

#### TIMBER.

This region forms part of the great forest which formerly covered the whole Province, and which here consists of white and red pine, hemlock, tamarac, balsam, spruce, cedar, birch, maple, beech, ironwood, ash and basswood. All the lands embraced in the Park limits are now covered by licenses to cut timber, and on certain of them, pine has been cut for nearly half a century. Bush fires and lumbering operations have made serious inroads upon the supply of pine, but it will still be many years before the Park can, under existing contracts, be freed from these operations. There are no other vested interests in the reservation, so that eventually the Crown will have sole ownership and control of all its products and resources.

#### A FINE CANOEING AND CAMPING GROUND. ~

For canoeing and camping, the Park offers unexcelled facilities and attractions. The rangers have already made over a hundred miles of trails and portages, and have cleared obstructions from, and otherwise improved the navigation of, many of the streams. This work will be continued until the comparatively free navigation of the more important routes through the reservation has been secured. As a rule, the portages are short and easily made, and are generally welcomed by the canoeist, giving him a chance to stretch his legs. Forty or more log huts or cabins have been erected at different points throughout the Park, and this number is to be yearly increased. They are intended to furnish shelter to the rangers and others in their canoe trips through the reserve, and vary in distance from seven to ten miles of each other—the limit being a day's journey on snowshoes in the winter.

A NATURAL GAME PRESERVE.

Mr C. K. Grigg, then a member of the Park staff, in the autumn of 1897, contributed two short articles to the "Ottawa Evening Journal," which contained some very interesting information about the inhabitants of this great game and fish preserve. He also proved conclusively the necessity for such an asylum for our game, and showed how successful the experiment had been. He said that prior to the inception of the Park, scarcely a beaver could be found outside its present limits anywhere in this province south of Lake Nipissing, and that in what is now the Park, only a few straggling and decimated colonies existed. It is estimated that there are now hundreds of colonies of these interesting animals within its boundaries. In many cases, they have not only erected new dams, but have also built upon the ruins of old ones. The beaver houses which dot the edges of the streams and marshes are, like the dams, marvels of engineering and architectural skill. The menu of this industrious little denizen of the forest consists principally of the tender bark of the saplings, and he afterwards utilizes the denuded trunks for his dams. The following extracts from the "Report of the Royal Commission on Forest Reservation and National Park," may be of interest :

"Of the fur-bearing animals, the beaver is by far the most valuable. On the shore of every lake in this district are to be found old beaver houses, and there is scarcely a brook in the whole territory on which at short intervals their abandoned dams may not be seen. Now one may travel for days there without seeing a single fresh beaver sign.

"There are two reasons why this industrious and harmless animal should be preserved from destruction. First, because its skin furnishes us with one of our richest and most valuable furs ; and, second, because from its habits it is perhaps the greatest natural conservator of water. It is probably within the mark to say that were this region again stocked with beaver as it once was. there would be in every township at least a hundred dams and beaver ponds, each with its family or families of beaver, exclusive of the large numbers in the lakes and rivers where no dam building is necessary. In this way the water area would be increased by perhaps a fifth, a very important circumstance from the lumberman's point of view.

“The beaver is a most prolific creature, and, if left undisturbed, the progeny of a single couple would, in a few years, stock a large extent of country. The young beavers remain in the same house as the parents until they are a year old, when they strike off in couples for themselves, and either build a new house on the same pond or select a site on some other creek, and there erect a dam and house. In a few weeks the dry swamp or marsh is transformed into a lake, and the stock of provisions, consisting of a pile of saplings and brush, for winter use, is laid up beside the house, only a few of the limbs showing above the surface of the water. In the interior of the house a dry, warm nest is made, where they remain all winter. Going out at the call of hunger to the pile of provisions, they drag a piece up out of the water and eat the bark, which, together with the roots of aquatic plants, is their only food, thrusting the pole back again into the water. Here they remain until the long, warm days of spring soften the ice, when, cutting a hole in it, they go out for a taste of fresh food. In the beginning of May they bring forth their young, which almost invariably consist the first year of two, after which the average number is from four to six.”

Otter are also now very plentiful, and the marten, mink, fisher and their fur-coated kin are not behind in fecundity. In fact, the net-work of waters that course through the dark tree-avenues of the reservation are becoming thickly populated with these animals, and this region affords grand opportunities for the observation and study of the naturalist. The true sportsman will certainly rejoice that there is now such a sanctuary for our nobler game, and that already the lordly moose, which has been almost totally exterminated in Nova Scotia, New Brunswick and elsewhere, and which bids fair to suffer a similar fate in this Province, is again multiplying. It seems almost incredible with what ferocity and wastefulness such animals as the moose have been hunted and killed in the past. According to an official report, in the spring of 1887, to give an example, the carcasses of not less than sixty moose were found in this district, the animals having been killed for their skins alone. During the preceding winter, between Lake Traverse on the Petawawa and Bissett's station on the C. F. R., a distance of a little over twenty miles, seventy moose were

slaughtered after Christmas. If one-half of these were females, and if they even averaged only one calf each, here was game enough destroyed in one season to stock the Park. Besides affording noble sport to the hunter, the moose is a very valuable animal to the settler and the frontiersman, and it would be a pity to allow him to be exterminated like the buffalo of the western plains without at least affording him every opportunity of survival. A full-grown moose weighs upwards of 1,000 pounds, and will dress 600 pounds of beef, while his skin will make twenty pairs of moccasins, which readily sell at two dollars a pair.

The nimble-footed deer are, notwithstanding the onslaughts of the pot-hunter in the past, and of their natural enemy the wolf, always, growing in numbers. For here, too, the wolf, the fiercest and most cunning enemy of all animal life, thrives, and claims many a victim, especially among the young deer and smaller quadrupeds. The interlocked antlers of moose and deer, which the rangers occasionally find in the Park, tell of forest tragedies where conflicts have been waged to the death and the strife has been ignominiously terminated by the arrival of the wolves on the scene. At the time of his first visit to the Park, the writer was shown (and got an excellent photograph of) two pairs of these locked antlers, which had been taken from the carcasses of two bucks found the previous winter in the woods, and whose inextricable grip of each other caused their mutual destruction. It would, in fact, be impossible to separate them without destroying them.

#### BIRD LIFE.

Bird life is also being attracted to the Park. Owing to the wanton and useless destruction of our feathered friends, by means of guns in the hands of boys and young man, insectivorous birds are every year becoming scarcer in the settled portions of the Province, and had we not a refuge such as the Algonquin Park some species would probably eventually become practically extinct. Partridge are numerous, but are preyed upon by the foxes— which, however, along with the wolves, bears and other destructive and objectionable animals and birds, are being gradually killed off by the rangers. Wild duck are reported plentiful on some of the lakes, and wild rice has been sown with the intention of at-



tracting these birds to other waters. It is said to be the government's intention to introduced black game and capercaillie from Europe, and prairie fowl from our own western plains.

#### FISH, AND FISHING.

The disciples of good old Izaak Walton will find in the streams and lakes of the Algonquin Park an abundance of trout, pike, pickeral, and, in certain localities, white-fish and herring. Eels of large size are plentiful in the Opeongo branch of the Madawaska. Strange to say, both black and rock bass are missing. With the view of introducing these excellent and gamy fish, General Manager Chamberlin, of the Canada Atlantic Railway, offered special facilities for their transportation from other lakes in the Parry Sound District to those of the Park. As a rule, brook trout, considered by many as the "King of fishes," are looked for in rushing mountain torrent or the shining silver brook, but while the waters of most of the brooks in the reservation are dark, it seems to suit the taste and requirements of this loveliest and gamiest of fishes. Mr. George B. Hayes, Prison Commissioner of the State of New York, claims to have fished nearly all the streams of North America, but says that for game qualities as well as beauty of color and form, the brook trout of the Algonquin Park excel all others. Perhaps the biggest of these speckled beauties are caught in the Petawawa river, where they range on an average from half a pound to four and a half pounds in weight, almost, if not quite, equal in size to those of the famous Nepigon. Most of the brook trout are of a superior quality of flesh, being firm, and ranging in color from a rich cream to the brightest salmon tint, while the skin exhibits its glorious rainbow hues. In most of the lakes the salmon trout, commonly called grey or lake trout, abounds. To catch them, spoon or bait is used, as they seldom rise to the fly. To fish within the Park limits, it is necessary to get a permit from the Superintendent, and, even then, the use of rod and line and trowling line only are permitted. Moreover, the angler is only allowed to take such fish as he requires for his own use, within the Park, and is forbidden to carry away or wantonly destroy any piscatorial spoils. It is not likely that the waters within the reservation will ever be choked with the sawdust which has proved so fatal else-

where, so that, with the afore-mentioned restrictions in force, the finny tribes should there have great opportunities for increase.

#### GEOLOGICAL FORMATION AND MINERALS.

The land comprised in the Algonquin Park is in general of little use for agricultural purposes, being, as might be expected from its situation on a watershed, for the greater part rough, broken and stony. There are few high hills, the surface being mostly composed of rocky ridges, alternating with valleys, swamps and marshes. The rough ribs of the Laurentian formation everywhere protrude, and in granite or gneiss dip at all angles to the south-east, the strike of the strata being northeast by southwest. No limestone, so far as the writer knows, occurs, and the indications of mineral hitherto found are few, consisting principally of traces of iron. Mining exploration or prospecting for minerals within the Park is prohibited except under certain conditions and provisions. The working of mines and the developing of mining interests would be regulated in the same way.

#### A FIELD FOR EXPERIMENTS IN FORESTRY.

Much might be said about the possibilities for useful experiment in forestry which such a region affords. The re-planting of burnt areas, the re-filling of gaps in the original forest, the obtaining of accurate information as to the soils, localities and exposures suitable for certain trees, the discovery of the best method of obtaining from a forest the maximum amount of product which it is capable of yielding without at the same time trenching upon its capacity, and the solution of the problem of destroying the branches and tree tops left on the ground by the lumberman during the culling of a pine forest, are all experiments of a great probable value which might advantageously be made.

#### CLIMATE.

The retention of such an extensive block of forest is bound to have a beneficial influence on the climate of the surrounding country. Forests tend to promote humidity, and exert a tempering effect upon injurious winds, preventing the fierce hurricanes and "blizzards" common in unforested lands. They also help to equalize the atmosphere, cooling the summer air and mitigating

its severity in the winter. Consequently, the destruction of a large portion of the forest growth of a country is generally attended by a deterioration in its climate. History proves that many countries which once possessed forests became sterile after having been deprived of them.

#### A NATURAL SANITARIUM.

Owing to the altitude of this region, and its bracing atmosphere—redolent with the resinous odours of the pine and balsam, it is a great natural sanitarium, where consumptives may recover lost health and vigor. The idea has been shown to be well founded that pine forests are of specific value in the cure of lung disease. The old Romans sent sufferers of this class to *Libra*, where, by breathing the balsamic emanations of the pines which there abounded, they are said to have received much benefit. In the Adirondack Forest of New York State a sanitarium has been in operation for many years, with the special object of relieving patients in the early stages of consumption. It offers to such the benefit of climatic treatment, a systematic out-door life, hygienic habits and suitable medical treatment, and its reports show that twenty-five per cent of the patients are apparently cured; while twenty-five or thirty per cent more are sufficiently restored in health to resume their work or support themselves by their own efforts while living in a suitable climate. The Gravenhurst sanitarium on Lake Muskoka is a newer institution, which has also attained a considerable measure of success in this sort of treatment, but perhaps the results obtained by the famous Dr. Otto Walther, at the sanitarium at *Nordrach*, in the *Baden Black Forest*, Germany, are better than those obtained at any similar hospital in the world. However, there can be little doubt but that a sojourn in the pine forests of this *Nipissing upland*, with its pure air, good water and aromatic breezes, would be beneficial to many afflicted with weak lungs.

#### THE PARK HEADQUARTERS.

The Park headquarters were at first situated on *Canoe Lake*, but, for various reasons, *Cache Lake* was considered a more suitable spot for them, and they were removed thither. Suitable buildings for the accommodation of the superintendent and his

staff of six or seven rangers, were erected during the summer of 1897 on the lake shore just south of the railway track. The rangers are supposed to be travelling about most of the time, in order to keep a sharp lookout for trespassers and poachers, and against fires, and to watch especially the waterways and usual entrances to the Park. They incidentally erect shelter-lodges, make other improvements, and wage war on wolves and other noxious animals.

On a rocky point, about fifteen feet above the water, and so embowered in birches and spruces that one might paddle by unconscious of its presence, stands "Fort Necessity"—one of the shelter-lodges. It is a small, rustic, one-roomed cabin, containing a sheet-iron stove, rude stools and table, and a platform bed the width of the building. The latter will accommodate, if necessary, six men, three at one end and three at the other, lying feet to feet.

The inlet of the lake is near by, and a paddle of half a mile up it brings you to White's Lake, in the vicinity of which—and within the sound of the locomotive whistle—a fine beaver-dam and other works of that exemplary animal can be seen.

Enough has, doubtless, been said about the Algonquin National Park to give some idea of its character and resources, and of the great inducements which it offers to the canoeeman, the camper, the sportsman, the seeker after rest and health, and the lover of Nature.

#### ORNITHOLOGICAL NOTES.

By W. T. MACOUN.

As announced in the May Naturalist, several observers in different parts of Canada and Michigan have agreed to send in their notes for comparison of records in the Ottawa Naturalist. This arrangement was brought about by Mr. Wm. Saunders, London, Ont., and Dr. James Fletcher; the notes, however, are being sent to the ornithological editor for tabulation. The gentlemen who contributed the notes are Mr. Alex. Gow, Windsor Ont.; Mr. Wm. Saunders, London, Ont.; Mr. J. Hughes Samuel, Toronto, Ont.; Mr. W. P. Melville, Sault Ste. Marie, Mich.; and Mr. L. McL. Terrill, Robinson Bury, Que.

The records of the common birds should prove of most value as often the rarer species are not seen until some days after their arrival and hence the comparison of records is misleading. Another table of records will appear in a later number of the Naturalist.

COMPARATIVE RECORDS OF ARRIVAL OF BIRDS.

	Windsor, Ont.	London, Ont.	Sault Ste. Marie, Mich.	Toronto, Ont.	Ottawa, Ont.	Robinson, Bury, Que.
Meadowlark, <i>Sturnella magna</i> .....	Jan. 20	March 17	.....	March 26	April 5	.....
Prairie Horned Lark, <i>Otocoris alpestris praticola</i> .....	Feb. 11	Feb. 22	March 18	.....	March 1	March 8
Song Sparrow, <i>Melospiza fasciata</i> .....	" 22	March 17	April 8	March 25	" 23	April 4
American Rough-legged Hawk, <i>Archibuteo lagopus</i> <i>saucli-johannis</i> .....	.....	.....	.....	.....	March 24	.....
Canada Goose, <i>Branta canadensis</i> .....	Feb. 24	April 4	.....	.....	April 22	.....
Robin, <i>Merula migratoria</i> .....	.....	March 9	April 1	March 11	March 22	April 7
Bluebird, <i>Sialia sialis</i> .....	March 31	" 12	" 16	" 16	" 26	" 13
Black Duck, <i>Anas obscura</i> .....	.....	April 1	.....	" 18	.....	.....
Killdeer, <i>Egialitis vocifera</i> .....	April 13	March 17	April 26	" 18	.....	.....
Bronzed Grackle, <i>Quiscalus quiscula aneus</i> .....	" 29	" 19	.....	" 26	March 30	April 16
Red-winged Blackbird, <i>Agelaius phoeniceus</i> .....	March 24	" 19	.....	" 22	April 2	" 28
Pigeon Hawk, <i>Falco columbarius</i> .....	.....	.....	.....	.....	March 27	.....
Flicker, <i>Colaptes auratus</i> .....	April 7	March 19	April 26	April 17	April 21	April 28
Rusty Blackbird, <i>Scolecophagus carolinus</i> .....	" 13	" 24	.....	.....	" 2	.....
Glaucous Gull, <i>Larus glaucus</i> .....	.....	.....	.....	March 26	.....	.....
Cow-bird, <i>Molothrus ater</i> .....	April 14	March 26	April 22	.....	.....	.....
American Woodcock, <i>Philohela minor</i> .....	.....	April 1	.....	" 26	.....	.....
Marsh Hawk, <i>Circus hudsonius</i> .....	.....	" 27	.....	April 5	.....	.....
Red-tailed Hawk, <i>Buteo borealis</i> .....	.....	March 12	.....	March 28	April 16	.....
Red-shouldered Hawk, <i>Buteo lineatus</i> .....	.....	" 17	.....	" 28	.....	.....
Pintail, <i>Dafila acuta</i> .....	.....	.....	.....	" 29	.....	.....
Phoebe, <i>Sayornis phoebe</i> .....	April 14	March 26	.....	" 29	April 9	.....
Vesper Sparrow, <i>Pooecetes gramineus</i> .....	March 31	" 26	.....	April 17	" 13	.....
American Golden-eye, <i>Glauconetta clangula americana</i> .....	.....	April 1	.....	.....	" 13	.....
Towhee, <i>Pipilo erythrophthalmus</i> .....	.....	" 1	.....	April 18	.....	.....
American Goshawk, <i>Accipiter atricapillus</i> .....	.....	.....	.....	.....	April 2	.....



American Goshawk, *Accipiter atricapillus* . . . . . April 2 . . . . .

Savanna Sparrow, <i>Ammodramus sandwichensis savanna</i>	April 16 . . . . .	April 13 . . . . .	May 8 . . . . .
Great Blue Heron, <i>Ardea herodias</i>	" 4 . . . . .	" 10 . . . . .	" . . . . .
Holboell's Grebe, <i>Colymbus Holboellii</i>	April 19 . . . . .	" 6 . . . . .	" . . . . .
Buffle-headed Duck, <i>Charitonetta albeola</i>	" 8 . . . . .	" 13 . . . . .	April 22 . . . . .
Wilson's Snipe, <i>Gallinago delicata</i>	April 28 . . . . .	" . . . . .	" . . . . .
Mourning Dove, <i>Zenaidura macroura</i>	" 7 . . . . .	" . . . . .	" . . . . .
Field Sparrow, <i>Spizella pusilla</i>	" 14 . . . . .	April 12 . . . . .	April 18 . . . . .
Yellow-billed Sapsucker, <i>Sphyrapicus varius</i>	" 14 . . . . .	" 24 . . . . .	May 8 . . . . .
Spotted Sandpiper, <i>Actitis macularia</i>	" 13 . . . . .	" 13 . . . . .	" . . . . .
Fox Sparrow, <i>Passerella iliaca</i>	" 20 . . . . .	April 13 . . . . .	May 8 . . . . .
Tree Swallow, <i>Tachycineta bicolor</i>	April 17 . . . . .	April 16 . . . . .	April 10 . . . . .
American Herring Gull, <i>Larus argentatus smithsonianus</i>	" 13 . . . . .	" 13 . . . . .	" 13 . . . . .
Cooper's Hawk, <i>Accipiter Cooperi</i>	April 13 . . . . .	" . . . . .	" . . . . .
Belted Kingfisher, <i>Ceryle alcyon</i>	" 19 . . . . .	" . . . . .	" . . . . .
White-rumped Shrike, <i>Lanius ludovicianus excubitorides</i>	April 14 . . . . .	April 26 . . . . .	April 13 . . . . .
American Sparrow Hawk, <i>Falco sparverius</i>	" 14 . . . . .	" . . . . .	April 19 . . . . .
White-throated Sparrow, <i>Zonotrichia albicollis</i>	April 29 . . . . .	April 21 . . . . .	April 15 . . . . .
Cedar Waxwing, <i>Ampelis cedrorum</i>	" . . . . .	" 15 . . . . .	" . . . . .
Chipping Sparrow, <i>Spizella socialis</i>	April 17 . . . . .	" 21 . . . . .	April 19 . . . . .
American Bittern, <i>Botaurus lentiginosus</i>	April 23 . . . . .	" 18 . . . . .	" . . . . .
Swamp Sparrow, <i>Melospiza georgiana</i>	April 19 . . . . .	" 26 . . . . .	May 8 . . . . .
American Osprey, <i>Pandion haliaetus carolinensis</i>	" 22 . . . . .	" 18 . . . . .	" . . . . .
Hermit Thrush, <i>Turdus amatuschkae pallasi</i>	" 20 . . . . .	" . . . . .	April 19 . . . . .
Purple Martin, <i>Progne subis</i>	May 16 . . . . .	April 24 . . . . .	April 23 . . . . .
Barn Swallow, <i>Hirundo erythrogaster</i>	" 5 . . . . .	" 22 . . . . .	" 23 . . . . .

## OTTAWA BIRD NOTES.

1901.

- April 10—RED-SHOULDERED HAWK, *Buteo lineatus*. Mr. C. Guillet.  
 19—HAIRY WOODPECKER, *Dryobates villosus*. Mr. Guillet.  
 19—DOWNY WOODPECKER, *Dryobates pubescens*. Mr. A. G. Kingston.  
 23—WILSON'S THRUSH, *Turdus fuscescens*. Miss E. Guillet; April 25,  
 Mr. Geo. R. White.  
 23—BROWN CREEPER, *Certhia familiaris americana*. Mr. Guillet.  
 23—CHIPPING SPARROW, *Spizella socialis*. Mr. Guillet.  
 25—HOUSE WREN, *Troglodytes ædon*. Mr. Kingston.  
 25—WOOD THRUSH, *Turdus mustelinus*. Mr. White.  
 26—WILSON'S SNIPE, *Gallinago delicata*. Mr. White.  
 26—AMERICAN GOLDFINCH, *Spinus tristis*. (Full breeding plumage.)  
 Mr. White.  
 26—RUBY-CROWNED KINGLET, *Regulus calendula*. Mr. White.  
 26—RED-BREASTED NUTHATCH, *Sitta canadensis*. Mr. Guillet; April  
 28, Mr. Kingston.  
 26—SWAMP SPARROW, *Melospiza georgiana*. Mr. Kingston.  
 28—ROSE-BREASTED GROSBEAK, *Habia ludoviciana*. Mr. Kingston.  
 28—WHITE-BREASTED NUTHATCH, *Sitta carolinensis*. Mr. Kingston.  
 28—RED-SHOULDERED HAWK, *Buteo lineatus*. (Nest and three eggs.)  
 Mr. Kingston.  
 28—BROAD-WINGED HAWK, *Buteo latissimus*. Mr. White.  
 28—HERMIT THRUSH, *Turdus aonalaschke pallasii*. Mr. White; April  
 30, Mr. Guillet.
- May 2—CHIMNEY SWIFT, *Chatura pelagica*. Mr. White.  
 2—AMERICAN BITTERN, *Botaurus lentiginosus*. Mr. White.  
 4—CHESTNUT-SIDED WARBLER, *Dendroica pennsylvanica*. Mr. Guillet.  
 4—BROWN THRASHER, *Harporhynchus rufus*. Mr. W. T. Macoun.  
 4—SPOTTED SANDPIPER, *Actitis macularia*. Mr. White.  
 4—MARSH HAWK, *Circus hudsonius*. Mr. White.  
 5—PINE WARBLER, *Dendroica vigorsii*. Mr. Kingston.  
 7—LEAST FLYCATCHER, *Empidonax minimus*. Mr. Guillet.  
 8—SAVANNA SPARROW, *Ammodramus sandwichensis savanna*. Mr.  
 Kingston.  
 8—WHIP-POOR-WILL, *Antrostomus vociferus*. Miss Harmer.  
 9—FOX SPARROW, *Passerella iliaca*. Miss E. Guillet.  
 9—BLACK-THROATED BLUE WARBLER, *Dendroica cerulescens*. Miss E.  
 Guillet.  
 9—WARBLING VIREO, *Vireo gilvus*. Mr. Guillet.  
 9—YELLOW WARBLER, *Dendroica aestiva*. Miss E. Guillet, Miss  
 Harmer.  
 10—BLACK AND WHITE WARBLER, *Minotilta varia*. Mr. Guillet; May  
 11, Mr. White.  
 10—BANK SWALLOW, *Clivicola riparia*. Mr. White.

- 10—CLIFF SWALLOW, *Petrochelidon lunifrons*. Mr. White.  
 10—MYRTLE WARBLER, *Dendroica coronata*. Mr. White.  
 11—WHITE-CROWNED SPARROW, *Zonotrichia leucophrys*. Mr. Macoun;  
 May 12, Mr. Guillet, Mr. White.  
 11—BALTIMORE ORIOLE, *Icterus galbula*. Mr. Kingston, Mr. White.  
 11—KINGBIRD, *Tyrannus tyrannus*. Mr. White.  
 11—COOPER'S HAWK, *Accipiter Cooperi*. Mr. White.  
 12—CAPE MAY WARBLER, *Dendroica tigrina*. Mr. White.  
 12—TENNESSEE WARBLER, *Helminthophila peregrina*. Mr. White.  
 12—BLACKBURNIAN WARBLER, *Dendroica blackburnie*. Mr. White.  
 12—NASHVILLE WARBLER, *Helminthophila ruficapilla*. Mr. White.  
 15—KILDEER, *Egialitis vocifera*. Mr. Kingston.  
 15—WOOD PEWEE, *Contopus virens*. Mr. Guillet.  
 16—CATBIRD, *Galeoscoptes carolinensis*. Miss E. Guillet, Mr. White.  
 16—AMERICAN REDSTART, *Setophaga rutilla*. Miss E. Guillet; May 18,  
 Mr. White.  
 16—OLIVE-BACKED THRUSH, *Turdus ustulatus swainsonii*. Mr. White.  
 16—BOBOLINK, *Dolichonyx oryzivorus*. Mr. White.  
 18—BAY-BREADED WARBLER, *Dendroica castanea*. Mr. White; May 19,  
 Miss Harmer.  
 18—OVEN-BIRD, *Seiurus aurocapillus*. Mr. White; May 21, Mr.  
 Kingston.  
 18—MAGNOLIA WARBLER, *Dendroica maculosa*. Mr. White.  
 19—BLACK-THROATED GREEN WARBLER, *Dendroica virens*. Mr. White;  
 May 21, Mr. Guillet.  
 19—SCARLET TANAGER, *Piranga erythromelas*. Mr. White.  
 19—MARYLAND YELLOW-THROAT, *Geothlypis trichas*. Mr. White; May  
 21, Miss E. Guillet.  
 19—GREAT-CRESTED FLYCATCHER, *Myiarchus crinitus*. Mr. White.  
 21—RUBY-THROATED HUMMING BIRD, *Trochilus colubris*. Mr. White.  
 21—NIGHT HAWK, *Chordeiles virginianus*. Mr. Guillet, Mr. Macoun.

NOTE.—The editor finds that when notes are not sent in until the 20th of the month they delay the publication of THE NATURALIST. Observers will therefore oblige by sending them on the 15th instead of the 20th. Interesting records of the nesting of birds or their habits should be included, and all sent to the Ornithological Editor, Mr. W. T. Macoun, Experimental Farm, Ottawa.

## EXCURSIONS.

APRIL 27TH.—The first excursion of the season under the auspices of the Club was held at Beechwood. About eighty members were present. Under the leadership of Dr. Bell, the president of the Club, and Dr. Ami, those interested in Geology examined the excavations for the main sewer, where 15 species of fossils were collected. Col. White and Dr. Fletcher took charge of those who wished to study birds, plants and insects. Twenty-three species of plants were found in bloom.

MAY 4TH.—The excursion to Britannia was more largely attended than that held at Beechwood a week before, a large number of Normal School students being present. The majority of those who took part in the excursion were interested in Botany, and under the leadership of Dr. Fletcher, Dr. Guillet and Mr. Putnam the woods and fields about Britannia were thoroughly examined. *Petasites palmata*, a rare plant in this vicinity, was collected by Miss Matthews. The geologists, under the leadership of Dr. Ami, studied the rocks of the vicinity securing many interesting specimens. A full report of the geological work done at these excursions will be published later.

SWEET COLTSFOOT.—A few years ago *Petasites palmata* grew at the old race-course south of Patterson's Creek on Bank street, but the draining of the Glebe lots and the partial clearing of "Stewart's Bush" have caused its extinction. It has always been rare in this vicinity, but has been noted in two widely separated localities this spring. By Miss Matthews near Britannia, as recorded in the report of the sub-excursion published in this number of THE NATURALIST, and by the Hon. F. R. Latchford beside a road leading through a swamp from near Mountain View in Hull to what is known as "The Hollow Road." Mr. Latchford's specimens and his diagram showing the exact locality at which the plants were found are in the Herbarium of the Geological Survey. He reports the plant as occurring in considerable numbers were found.

J. M. M.

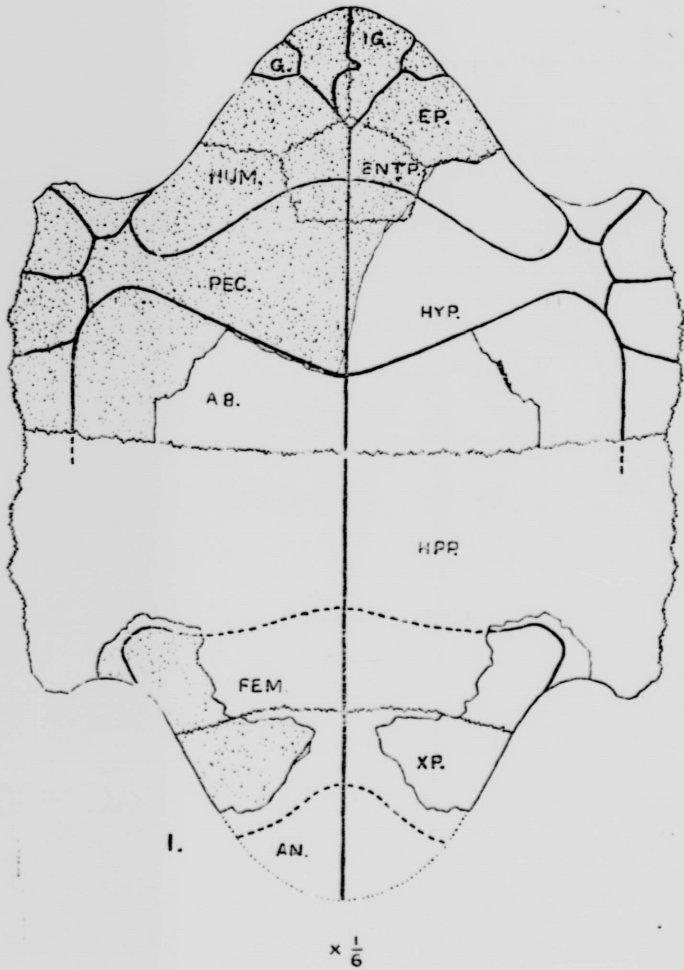
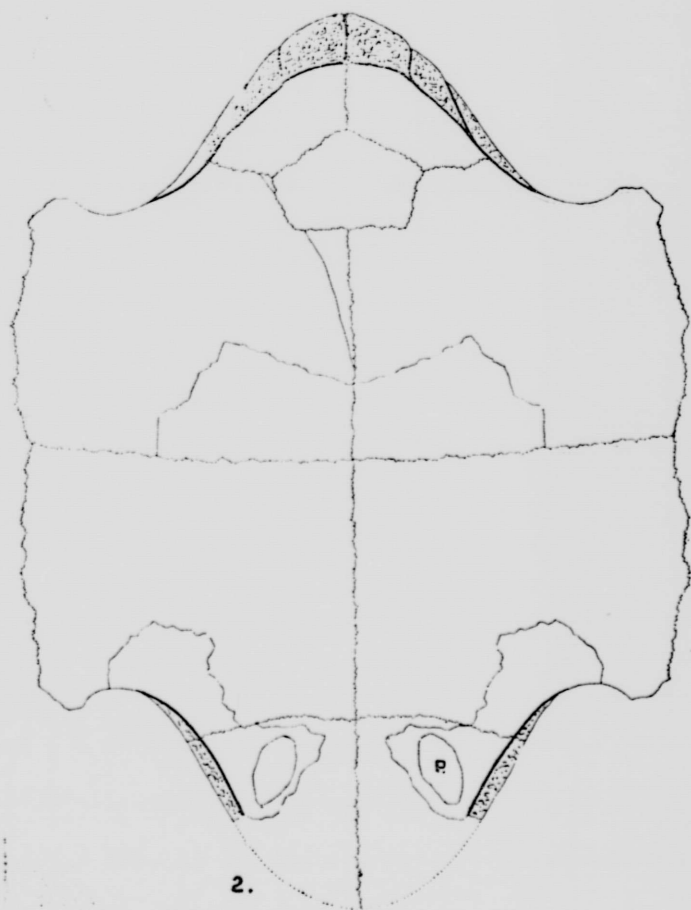


Figure 1. Lower surface of plastron.

ADOCUS VARIOLOSUS, (C)



$\times \frac{1}{6}$

S VARIOLOSUS, (Cope).

Figure 2. Upper surface of plastron.





*ADOCUS VARIOLOSUS*, (Cope).  
Lower surface of plastron; one-third natural size.



*ADOCUS VARIOLOSUS*, (Cope).

Upper surface of plastron ; one-third natural size.



*ADOCUS VARIOLOSUS*, (Cope).  
Anterior end of plastron; lower surface; natural size.

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