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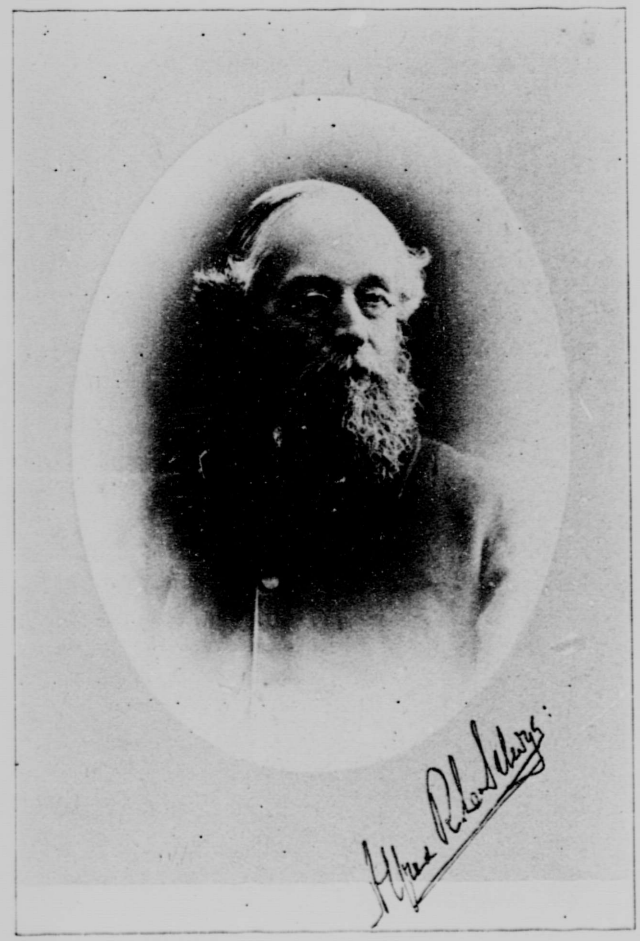

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THE OTTAWA FIELD-NATURALISTS' CLUB.

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

PROGRAMME OF WINTER SOIRÉES, 1902-1903.

	1902.	
In the Assembly Hall of the Normal School.	Dec. 16.	—President's Address: "The Functions of a Geological Survey," by Robt. Bell, M.D., LL.D., Sc.D. (Cantab.), F.R.S.
		Address of Welcome, by the Principal of the Normal School.
		"*Some Ottawa Butterflies and Moths*," by Dr. James Fletcher, illustrated by coloured lantern slides.
		Conversazione, with exhibition of Natural History objects and microscopic slides.
	1903.	
In St. John's Hall.	Jan. 13.	—"*The Scenery of the Rocky Mountain Region*," illustrated by lantern slides, by Dr. R. A. Daly, of the Geological Survey.
		Report of the Geological Branch.
In the Assembly Hall of the Normal School.	Jan 27.	—"*The Wood-pulp Industry of Canada*," by Professor D. P. Penhallow, McGill College, Montreal, illustrated by lantern slides.
In the Assembly Hall of the Normal School.	Feb. 10.	—"*Nature Study in American Universities*," by Dr. S. B. Sinclair, of the Normal School, Ottawa.
		Report of the Entomological Branch.
In St. John's Hall.	Feb. 24.	—"*The Summer Climate of the Yukon and its Effects on Vegetation*," by Professor John Macoun, of the Geological Survey.
		Report of the Botanical Branch.
In St. John's Hall.	Mar. 10.	—"*Whales and Whale Hunting*," illustrated by lantern slides, by Professor E. E. Prince, Commissioner of Fisheries.
		Report of the Zoological Branch.
In St. John's Hall.	Mar. 17,	—(*a*) ANNUAL MEETING. Reports of Council, Election of Officers, etc.
		(*b*) "*Additional Notes on the Geology and Palæontology of Ottawa*," illustrated by lantern slides and specimens, by Dr. H. M. Ami, of the Geological Survey.

The meetings will be held at 8 p.m. on the *second* and *fourth* **Tuesdays** of the month, except in the case of the Annual Meeting.

President: Dr. ROBERT BELL, F.R.S.

Secretary: W. J. WILSON (Geol. Surv. Dept.)

Treasurer: ARTHUR GIBSON. (Central Experimental Farm.)

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THE OTTAWA NATURALIST.

VOL. XVI. OTTAWA, DECEMBER, 1902. No. 9.

DR. ALFRED R. C. SELWYN, C.M G., F.R.S., DIRECTOR GEOLOGICAL SURVEY OF CANADA, 1869-1894.

The subject of this brief notice, who for twenty-five years controlled or advised the undertaklng of all the official geological work performed by the Dominion of Canada, died of paralysis at his home in Vancouver, B.C., on Sunday, Oct. 19th, 1902.

Death doubtless came as a happy release to one who had passed the allotted age of man, and who, owing to weakness and the ever-growing infirmities of age, was deprived from taking that active part to which he had been so long accustomed, and which was so essential to his happiness and well-being. His passing away, however, though not unexpected, came as a shock to his family, and especially to his daughter who resided with him, and on whom devolved the care and attention during these declining years, of him who had been one of the world's greatest geologists. His former colleagues, especially the older members of the Geological Survey, grieved for the loss of one who had been a friend and old-time co-worker, at the same time feeling that science had sustained a distinct loss.

He was born at Kilmington, Somerset, Eng., July 28th, 1824, and was the son of the late Rev. Townshend Selwyn, Canon of Gloucester Cathedral, by his wife Charlotte Sophia, daughter of Lord George Murray, Bishop of St. David's, and granddaughter of John, fourth Duke of Athol. Instructed at home under private tutors, he was afterwards sent to Switzerland, where he completed his education. His early inclination towards the study of natural science, and especially of geology was soon

remarked, and to the end of his life he had abundant opportunity to gratify his desire in many widely separated areas. In 1845, at the age of 21, he was first employed as an assistant geologist on the survey of Great Britain, and received his earliest lessons in field geology, from no less a personage than Prof. A. C. Ramsay, who had the immediate supervision as local director of the work in England and Wales. Sir Henry de la Bèche, with the title of Director-General, had control of the whole organization of the Geological Survey. With Selwyn were associated as colleagues such well known men as W. T. Aveline, Edward Forbes, Sir W. W. Smyth, Sir Joseph Hooker, Dr. Lyon Playfair and others, while Oldham J. Phillips, Murchison, J. W. Salter, J. Beete Jukes and others, joined the Survey before Selwyn's retirement. Of Selwyn's work on the Survey, we find Ramsay saying, "His work there (on the Shropshire sheets) and here (North Wales) is the perfection of beauty," while Sir A. Geikie years afterwards states that "The geological structure is portrayed by Ramsay and Selwyn with a boldness and vigour, and at the same time with an artistic feeling which has hardly been equalled in geological section drawing." Towards the end of July, 1852, after seven years spent in the mountains of Wales, he was chosen by the Secretary of State for the Colonies, on the recommendation of his official chief, Sir Henry de la Bèche, as Director of the Geological Survey of the colony of Victoria, Australia. About the same time he was married to Matilda Charlotte, daughter of the Rev. Edward Selwyn, rector of Hemmingford Abbots, Hunts. To his new duties, Selwyn brought the wide experience gained in unravelling the intricate Lower Silurian rocks of North Wales, with their associated volcanic deposits which greatly assisted him in the mapping of the Silurian strata of Victoria. Under him were such able geological assistants as C. S. Wilkinson, H. Y. L. Brown, C. B. Brown, R. Etheridge, Jr., and others. He was almost continually in the field, and with the co-operation of his assistants, produced an admirable series of geologically coloured maps of the colony, accompanied by reports. At the time of Selwyn's appointment Victoria had just entered upon all the excitement attending the opening up of its wonderful gold-fields, so that almost his first work consisted in mapping out its

gold-bearing rocks and auriferous gravels of different ages, and tracing the relations of the latter to the Miocene of the colony and the older rocks. Two of the most important conclusions arrived at, and which were afterwards amply verified by experience, were the permanence and depth to which the auriferous veins of Australia could, and probably would, be profitably worked. The second was the extension of the auriferous deposits beneath the overlying Tertiary lavas of the plains. In addition to his regular work in Victoria he undertook special examinations of the Tasmanian and South Australian coal and gold fields. He was appointed one of the Victorian Commissioners of Mines in 1856; a member of the Board of Science and of the Prospecting Board in 1858; a commissioner for the Victorian International Exhibition in 1861; a commissioner for the London Exhibition in 1862; a commissioner for the Dublin Exhibition in 1865; and a commissioner for the Paris Exposition in 1866. For seventeen years (1852 to 1869) he was untiring in the discharge of his duties as Director, travelling over the colony and making detailed examinations of its geological structure. In the latter year, however, he retired from this position, the survey having been brought to an abrupt close by the Colonial Legislature refusing to vote the necessary supplies to carry on the work.

Selwyn, however, was not allowed to remain any length of time idle, for that same year (1869), on the retirement of Sir William Logan, he was chosen by the Canadian Government, on the latter's recommendation, to succeed him in the Directorate of the Geological Survey of Canada. He arrived in Canada in October, 1869, and took charge on the 1st of December following. On the 2nd of May, 1870, he issued his first "Summary Report of Progress on Geological Investigations," in which, after making mention of the work of the various geologists associated with him, he announces that "It has been decided to institute in connection with the Geological Survey a systematic collection of records of mines, and of statistics of the production and consumption of minerals in the Dominion." He invites the co-operation of all persons interested in mining to promote the object in view. A form was also printed for circulation amongst mine owners and managers, asking for prompt answers and returns to the Geologi-

cal Survey office. Professor R. Bell, now Acting-Director of the Survey, and Mr. Ed. Hartley, were requested to undertake their collection and arrangement; Professor Bell in Ontario and Quebec and Mr. Hartley in Nova Scotia and New Brunswick. It will thus be seen that an effort at any rate was made to collect and tabulate mining geological information, which, if carried out on the scale originally intended, would have been of immense value to our country. In 1871, Mr. Selwyn was elected a Fellow of the Geological Society of London, and in 1874 a Fellow of the Royal Society. In 1876 he was awarded the "Murchison Medal" by the council of the Geological Society of London in recognition of his services to Silurian geology. In 1876, Mr. Selwyn was assistant to the Canadian Commissioners at the Centennial Exhibition held in Philadelphia, at the Paris Universal Exhibition in 1878, and at the Colonial and Indian Exhibition in London in 1886, and at the World's Fair, Chicago, 1893. All of these appointments involved an enormous amount of labour superintending the preparation of descriptive catalogues and notes of the minerals and rocks exhibited in the Canadian Court on each occasion. At Paris, in 1878, he was chairman of the Jury on Cartography (Chevalier of the Legion of Honour), while at Chicago he was one of the judges in the Department of Mines. In 1881 he received the honorary degree of LL.D. from McGill University in recognition of the eminent services he had rendered to geological science. On the organization of the Royal Society of Canada, he was chosen as one of the original Fellows by the Marquis of Lorne. Under his direction the offices of the Survey were removed from Montreal to Ottawa in 1881. In 1886 he was created a C. M. G. in appreciation of his geological work.

Dr. Selwyn remained in the active discharge of his duties until the 1st of January, 1895, when he was succeeded by the late Dr. Geo. M. Dawson, C. M. G. In 1896, as Director of the Geological Survey, he was elected president of the Royal Society of Canada, and on the evening of May the 19th of that year, delivered his address on "The Origin and Evolution of Archæan Rocks, with remarks and opinions on other geological subjects; being the result of personal work in both hemispheres from 1846 to 1895." This may likewise be called his farewell address, for in the few remaining

years of his life, he added little or nothing to geological literature. In this connection it may be stated that although he had a wonderful command of the English language, being a rapid and accurate writer, he continually affirmed his dislike of "rushing into print." Indeed, in the address above referred to he says: "being conscious of my lack of oratorical or scriptorial qualifications, I have rarely been induced either to talk or to write for publication, or I may have been like Werner, who we are told had an antipathy to the mechanical labour of writing. However this may be, the result was, that I had more time for observation by which I certainly gained, and probably no one lost anything; because whenever I made out, or thought I had made out a fact having a practical bearing, it was at once communicated to the persons who were immediately and directly interested, and could practically test the correctness or otherwise of the observation." This excuse however can scarcely be considered sufficient in itself to account for the fact that there are not more publications credited to him, while director of the Canadian Geological Survey. It must nevertheless be perfectly obvious to anyone who has the slightest acquaintance with the work of the Geological Survey, that the man who undertakes the very arduous duties incident to the administration of a department with functions necessarily so varied, and territory to be covered so vast, must be cheerfully content to live as a geologist through the labours of his staff. Notwithstanding these administrative duties, however, Selwyn generally found time each year to make some special investigation or by travel through wide stretches of territory to gain such an insight into the general geology of the country, as would enable him to supervise more intelligently the work of the other geologists under him. In Canada his influence was perhaps most directly felt in the fresh impulse he imparted to the recognition of the importance of stratigraphical geology. The emphasis he laid on the value of this, to him the most valuable criterion for the determination of the age of the various sedimentaries, may be gathered from his oft-repeated assertion: "If the fossils do not agree with the stratigraphy so much the the worse for the fossils." Another point on which still greater insistance was made, was the certainty of the frequent and

wide-spread occurrence of interstratified volcanic material in the Pre-Cambrian rocks. On this point on Feb. 19th, 1891, we find him writing to the late Prof. G. H. Williams: "I have read with much interest your excellent description of the Sudbury rocks. You will perhaps excuse if I make one criticism on the last paragraph, where you observe: 'The rarity of such rocks,' etc If by this you mean the rarity of what I should call ancient volcanic or eruptive ejectamenta, then I think you should rather say: 'The very recent recognition of such rocks by United States geologists.' It is now more than half a century since they were recognized in these ancient formations by British geologists.....Our Huronian is often largely made up of volcanic matter originally—like those of recent times--molten, muddy and fragmentary, but now unlike those of recent times—all more or less metamorphic."

The Logan Club, organized mainly for the purpose of discussing and criticizing results of field work before their presentation to the public in the shape of reports, always received his warmest sympathy and active support, and he was very rarely absent from any of these interesting and instructive fortnightly gatherings. On those nights especially when the subject of the origin of the Archæan rocks was in debate, he was particularly in his element, and although not a petrographer his wide experience in the field in two hemispheres, caused his opinions to be listened to with much attention and respect.

In this connection, it is a pleasure to state that his classification of the Archæan given in the Report of 1877-78 is, with very slight changes, substantially the same as that favoured by the more recent work.

His firm and always strongly expressed convictions frequently brought him into dispute and occasional antagonism with those with whom he came in contact, while a hasty temper served at times to accentuate and render difficult of adjustment many of these differences of opinion.

His friends and geological associates were, however, thoroughly convinced that those he held in highest esteem were those men with whom he had the most frequent and heated arguments. In one of his last publications, the address as President

of the Royal Society of Canada, he says: "If I have hurt anybody's feelings I must apologize to those who feel it so; my only excuse must be my conviction of its truth."

Some years have passed since he left Ottawa, for in the fall of 1896 he removed to Vancouver, British Columbia, where, after half a century of active service in the field, he enjoyed a few years of well-merited rest. Who can estimate the value of his services to our broad Dominion? The years that have passed have served not only to show the faults but also the general success of his administration.

In the course of his career as a geologist he was spontaneously elected to more than fourteen scientific societies in various parts of the world. The loss of his wife, in 1882, was certainly a cause for deep and lasting sorrow and regret for one who was pre eminently his adviser and help-meet through the various worries of administrative work.

He was the father of nine children, five of whom survive him, four sons and one daughter.

In closing this brief and hurried biographical sketch, the writer can best close with the quotation from Tennyson which Dr. Selwyn himself used at the end of his famous address:

> "But in my spirit will I dwell
> And dream my dream and hold it true;
> But though my lips will breathe adieu,
> I cannot think the thing farewell."

A. E. B.

December 1st, 1902.

NESTING OF SOME CANADIAN WARBLERS.

SECOND PAPER.

By W. L. KELLS, Listowel, Ont.

NESTING OF THE BAY-BREASTED WARBLER.

It is now over twenty years since I began to form my cabinet collection of the oology of Listowel and vicinity. Having first taken specimens of what species I could find near home, I set out one June day into the forest that then existed on the northwest of the town, and soon found myself in a tract of swampy woods, composed mostly of black ash timber, with an intermingling of conifers and some hardwood. Here, a number of species of the warbler family, as well as other birds, some of which were yet unknown to me, were giving vent to their songs; some low down in the brush-wood, others more elevated among the denser foliage. Here the first nest that claimed my attention was one placed on the side of a small birch tree where a tuft of twigs grew out from the ground. I soon reached and secured this ; it contained three fresh eggs ; these were of a white hue, with dottings and patches of a brownish or flesh color, the nest itself being composed of fragments of bark, rootlets and hair. I did not then note the owner, nor could I, at that time, have identified the species, but I gave them a name, and placed them in my collection. Two years after—June, 1879—I was out in a piece of swampy woods south of the town, when my attention was arrested by the actions of a small bird which was constructing a nest among some leafy twigs growing on the small horizontal branch of a little water-elm, about three feet out from the trunk and ten feet off the ground. Some days after I viewed this nest again, it then contained one egg, and three days more, when I revisited it, I found the bird at home, sitting on three eggs, which I inferred were the full set, and that incubation had begun. When this bird flew off her nest and took a position on a branch near by, uttering a few chip-like notes, I identified her as a female bay-breasted warbler. This nest and eggs were exactly like those above described, and of course both belonged to the same species. Some days after this I found another nest of this bird in a

neighbouring *lowland* wood ; this was placed in the top of a small hemlock, about fourteen feet from the ground, constructed of similar materials, and contained four eggs. Since then, no nest of this species with eggs has come under my observations, but I have noted a few others in which young had apparently been raised. One of these was on the side of a small cedar, where a little branch grew out, and about four feet off the ground ; another, evidently a new nest, but after the breeding season when I found it, was placed among some leafy twigs on the side of a pretty large birch tree, five or six feet from the ground. This, with a set of the first eggs of the species that I took, are still in my collection, and a notable feature about the nest of this find is, that the beginning and outside of the nest is ornamented with pieces of birch bark, and usually also with insect cocoons. It much resembles the nest of a chipping sparrow, but there is less hair in the inside, and the foundation is less bulky. Inside it is about two inches across, by one and a half deep.

Of late years much change has been effected in the low grounds where was once the haunt and home of this species; during the summer season cleared fields, over which the binding-reaper is driven, now meets the eye in the harvest time, where twenty years ago the swampy forest stood, and with the disappearance of the soft-wood forest most of our woodland warblers take their departure, and have their summer homes in their ancient haunts no more. In my occasional woodland rambles late in May and early June, I still hear the melody of this warbler intermingling along with others of its family relations, and no doubt some of the species still nest in the remnant of our lowland woods, but into such places I do not now care to penetrate and explore. To reach these places long walks are necessary ; at the nesting time the ground is still wet, logs and brush impose hardships not pleasant to encounter, and the moment a person enters the deep shade he is assailed by swarms of mosquitoes, which, to say the least, is very trying to weak nerves. Then, though the birds whose nest is sought for, may be both heard and seen, there are ten chances to one that no nest is discovered, even though such might exist within a few yards of the searcher's standpoint. Again should a nest be discovered, it may contain eggs well incubated,

which cannot be properly prepared for the cabinet, and it would be a crime to take them. Or it may be that a nest is found just ready for eggs, or containing only a partial set, in this case the collector desiring a full set of fresh eggs, leaves the premises, with the intention of returning after a certain number of days. But on the date intended, some other business, or a heavy rain may prevent the re-visit, or should the return be accomplished after a long and weary walk, it may be that an empty nest or a few bits of egg-shells meet the collector, and rewards his toil. Such has been some of my experiences. Prof Oliver Davie in the 4th edition of his "Nests and Eggs of North American Birds," says: "The Bay-breasted Warbler is known to breed from Northern New England and Northern Michigan northward. Mr. William L. Kells found it breeding in the vicinity of Listowel, Ontario, in low, swampy woods, where is a mixture of evergreens, ash, birch, elm, and other soft-wood trees. The nests are compact, cup-shaped structures, usually placed in coniferous trees from five to fifteen feet from the ground. Mr. Kells found a nest placed between a slender limb and the trunk of a small cedar about five feet up; another was found in a hemlock at an elevation of fourteen feet."

Mr. Thomas McIlwraith in his second edition of the "Birds of Ontario", writing on this subject, says: "Listowel seems a favorite locality with the warblers, and Mr. Kells evidently gives them some attention, for this is another species which he found breeding in a low, swampy mixed bush, not far from his home. Mr. Kells found a nest placed between a slender limb and the trunk of a small cedar, about five feet up. Another was found in a hemlock at an elevation of fourteen feet." An article of mine on the nesting of the bay-breasted warbler, published in The Ornithologist and Oologist, vol. ii, was the source from which Mr. Davie derived his information. Writing of this species H. G. Venner recorded the following paragraph: "This species is much rarer than the myrtle warbler. Very few individuals breed in our vicinity. It is rare all through the United States, and from all accounts must breed further north. Likely they breed in Newfoundland and Labrador. Low thickets and tangling shrubbery are favorite resorts of the species. Sometimes they may be seen running along fence-rails, searching in every

crevice and hole looking for their prey. As this species is not mentioned by any European naturalist, it must be foreign to that continent."

THE BLACK-THROATED BLUE WARBLER (*Dendroica cærulescens*).

The favorite habitat of this species is high hardwood timbered woods, where there is a thick growth of underbrush; and while the male warbles his melody high among the branches, where also he loves to glean his insect food amid the green foliage, the female usually selects a lowland situation for the cradle of her progeny; and in common with other small birds that nest in similar positions she is often compelled to become the foster parent of one or more of the young of that feathered parasite, the cow-bird.

For some years previous to the summer of 1886, I had suspected that this species nested in different tracts of hardwood forest situated to the northwest of Listowel; and this idea rested on the fact that the song-notes of the male bird were often heard and frequently repeated in animating strains at a period when I thought the female should be nesting; but from the elevation at which this melody was emitted, I supposed that the nesting site of the female would also be at a high elevation from the ground, and I therefore had no expectation of discovering its nest among the low brushwood, in any of my wildwood rambles. However, on the afternoon of June 5th, 1886, when out in a tract of low, thick underwood, about a mile to the west of Wildwood, I found a nest with one egg, which at first I took to be one of a chestnut-sided warbler, so much did it resemble the nest of that species in form, size, materials of composition, and situation. The egg also had a much similar appearance; but the different notes of the female owner of this nest soon attracted my attention, and I waited a short time till she came out of the thick foliage where she was concealed and approached the more open space where I was standing. Then I saw that she was quite a different species, and a more close examination of the nest showed that it was a more compactly formed structure than is usually made by the chestnut-sided bird, though the eggs of both species are much similar. The scolding notes of this bird soon brought her mate upon the scene, but he seemed more disposed to sport with her

than assist to drive off the intruder. Both birds, however, came quite close, and I identified them as a pair of the black-throated blue warbler species. Being anxious to secure thls nest and a full set of eggs, I remarked the place, and returned four days after. Then the female was seated on the nest, and when she flushed off I found that it contained three of her own eggs and one of a cow-bird's. These I collected and prepared for my cabinet, but they have since passed to the collection of a gentleman in Philadelphia.

After I had secured the nest and eggs above described, on my homeward way I found another nest of the same species. This was also placed in the fork of a small maple twig, about two feet off the ground, and on the outskirts of a thick patch of low underwood, and then contained three young of the bird's own, two or three days old, and also a young of the cow-bird. I noted in both cases that the old birds on leaving the nests dropped to the ground and made quite a commotion among the dry leaves, evidently with the intention of diverting from the nests.

On the 24th of May, 1889, I took my usual holiday ramble to the high-woods west of Wildwood, where three years before I had first discovered the nests of the black-throated blue warblers. Two weeks before I had first noted the male birds for the season, and on this occasion, as I advanced into the woods, their melodies, intermingled with those of other species of woodland birds greeted my ears, and although the newly acquired foliage of the underwood rendered the view—in some places—quite limited, yet I had not gone far when a rather bulky nest of some small bird attracted my attention and led me to the spot. This was placed in the fork of a small hemlock shrub, about eighteen inches off the ground : the bottom was composed of a quantity of dry leaves, but this interior was formed of various woody fibers, lined with rootlets and a little cattle-hair. At first I thought that this belonged to some new species, but a closer examination of this nest, and the one egg that it contained, caused me to conclude that it was another nest of the black-throated-blue-warbler, and in this opinion I was afterwards confirmed, for on re-visiting it three days after, I found the mother-bird seated on the nest, where she remained till I almost touched her with my hand, and

then as she flushed off, making a rustling noise among the dry leaves on the ground, I fully identified her as a female of this species. To my disappointment this nest contained only two of the bird's own eggs, and one of a cowbird, but as incubation had evidently begun, I removed this nest and its contents, and these have since been in my cabinet. The eggs are of a clear white hue, irregularly dotted on the surface—especially on the larger end—with light reddish-brown spots, and average in size, 68x48 of an inch.

In later years some rather surprising circumstances in regard to the nodification of this species have come under my observations, for a number of seasons previous to the summer of 1895 ; I had noted some pairs of these birds to be summer residents in a tract of hard-wood timbered land on the northern part of Wildwood, and almost daily—if I happened to be in these woods—from the middle of May to the end of June, I was sure to hear their song notes, or see some of the birds themselves : and on several occasions : after the leaves had fallen. I saw some of their nests of the past season, but for a few years I failed to see any, either in the nesting period, or after the leaves had departed from the underwood ; so I came to the conclusion that the species had ceased to nest here, or nested higher off the ground, among the boughs of the hemlocks, a species of evergreen, with which this woodland was intermingled, and this opinion was confirmed by the finding of several nests that had been blown from their summer sites by the violence of the autumn winds. But the finding of a nest placed in the branches of a fallen hemlock, and another in a small brush-pile, gave me to understand that the species choose other nesting sites than either low bushes, or the more elevated boughs of the spreading hemlock, and in confirmation of this conjecture, I was still more surprised by the following cases : In the latter end of May, 1895, I became pretty sure that a pair of these warblers had a nesting site in a small patch of low, thick underwood, in the woodland, above referred to, but for this I searched several times in vain, so as the weather was damp and cold, thought that though the nesting site had been selected, that the nest was not made : but every time I visited that place the birds were not there. At last, after the

middle of June, I determined to make a final effort to find the nest if it was in that vicinity. Soon after I had entered the thicket, both birds greeted my intrusion by notes of disapproval. I then felt certain that a nest was near, and probably contained young : but again though every leafy bush and clump of dry leaves, even of those on the ground was examined, but no nest could be discovered, still the birds continued their excited scold, and came quite near. On one side of the thicket stood the turn-up root of a large fallen tree, and when every other spot likely to contain a nest had been examined in vain, I turned my attention to this, and glancing upwards from my position on the ground, I caught sight of a nest. This was partly suspended, and partly supported among the rootlets of the "turn-up," but quite concealed from the observation of a person standing on the ground—even when close by—by a portion of soil which still adhering to some of the longer rootlets hung downwards, and over the site of the nest. On looking close at this nest I found that it contained four young, almost ready to fly.

In the early days of June, 1896, I found another nest of this species in the same woodland : but in a situation that I would never have supposed this bird would have nested in. In the deepest part of the wood, but near its eastern edge, a large red-maple tree had blown down, and in its fall it took down a smaller hemlock tree that stood in its way, the "turn-up" which was elevated only about two feet above the hollow out of which it had been torn, and beneath this was a small cave-like chamber, such as a winter-wren or a phœbe would chose to nest in. Looking into this one day, I discovered a nest placed on some rootlets, which at first sight I took to be that of the latter-named fly-catcher, but a little examination showed that this nest, and the two eggs which it contained, were those of a black-throated blue warbler. Two days after I revisited this nesting site, but no more eggs had been deposited, and no bird was there, it had evidently been forsaken, but the situation was a very strange one for a member of this genus to select for a nesting place. Up to the close of the season of 1902, no other nests of this species have been noted, and the bird is now quite rarely observed in this vicinity.

In an article on the "Wood Warblers of the Vicinity of Montreal," by H. Venner, that writer speaking of this species, says: "This delightful little warbler is exceedingly rare in Lower Canada. Although nothing of a songster, its colors are very bright and rich, and its plumage in general neat. A small chirup is all that is heard from him as he flies from bush to bush. This warbler is seldom met with in our vicinity; one was shot there about four years ago, and I have not heard of one been seen since. Our museum has a very good specimen of this rare bird. Certainly it does not breed here regularly, if at all. A stray individual may sometimes remain to rear its brood on our mountain, but not often. Audubon traced this warbler through the upper part of New York, into Maine, the British provinces, and the Magdalen Islands in the Gulf of St. Lawrence. According to his account the nest is usually placed on the horizontal branch of a fir tree, seven or eight feet from the ground, and is composed of strips of bark, mosses, and fiberous roots, lined with fine grass and an inner lining of feathers. When this warbler is feeding among the branches of a tree, one can hear quite distinctly the snapping of its bill, as it pursues the insects from twig to twig. It is very active, but as we mentioned before, has no real song. Not even the pairing season does its notes become more musical. Before dismissing this interesting bird, I may be allowed to quote a few lines that Wilson has written respecting it. He says: "It is very probable that they breed in Canada, but the summer residents among the feathered race are little known, or attended to. The habits of the bear, the deer, or the beaver, are are much more interesting to those people; and for a good substantial reason, because more lucrative; and unless there should arrive an order from England for a cargo of the skins of warblers and fly-catchers, sufficient to make them an object worth speculation, we are likely to know as little hereafter as at present.

After reading the above article in the light of more recent discoveries; and scientific facts, the field ornithologist is likely to be considerably surprised at the limited amount of knowledge possessed by "the fathers" of American ornithology regarding many of our woodland birds. The nesting habits of the black-

throated blue warbler has probably not altered much since the days of Audubon, but our knowledge of its habits in this respect become more extensive and varied ; Audubon probably never saw more than one or two nests of this species, and these were probably placed in the situations he describes. Now, it is well known that it nests in various situations ; and from my earliest recollections of this species, I have noted it as a songster, and as warbling its not unpleasing melody as constantly then, as it is now known to do—on an early summer day—in the particular woodland, where it has its haunts and home. And in contradistinction to the time when Alex. Wilson wandered and wrote, there are now many persons in the Canadian provinces devoting the keenest attention—without mercenary motives—to the appearance and life-history of the feathered race : and the results of their observations is considerably effecting the ornithological literature both of Canada and the United States ; and when Venner wrote the article from which we have quoted ; he confessedly knew little of either the habits or the vocal acquirements of this species, or he would not have characterized it as a songless bird.

But though this little wildwood musician emits its song with clearness and animation, especially for the first few weeks after its arrival from the sunny south, yet it must be admitted that its song notes are not remarkable for the sweetness of their melody, for in its refrain there seems a melancholy plaintiveness, as though the little performer was complaining that it was seeking in vain for something that it had loved but lost. Yet, as adding a varying strain to the great orchestra of the wildwood wilderness, it must ever be interesting to the lovers of bird music, and the students of animated nature.

The male of this species is about five inches in length, and in his spring plumage of a uniform slaty blue color on the upper parts, the throat is black and the lower parts white, the plumage of the female is of a duller hue.

BRIEF DESCRIPTION OF THE MAP OF THE "OTTAWA DISTRICT."

By H. M. AMI.

An uncoloured copy of the "Geological Map of the City of Ottawa and Vicinity," prepared by the Geological Survey of Canada, and recently issued by that department of the Government service to illustrate Dr. Ells's report, has been sent to every Canadian member of the Ottawa Field-Naturalists' Club. The scale of the map is one mile to the inch. It comprises an area of some 450 square miles with Ottawa as centre. The Ottawa River divides the district into two practically equal parts, the northern half of which is intersected by the Gatineau and Blanche Rivers, whilst the southern half is divided into two sub-equal portions by the Rideau River and Canal of the same name.

The map was prepared from surveys made specially for the purpose by Messrs. Scott Barlow, James White, R. W. Ells, W. J. Wilson, and other members of the Geological Survey staff, also from plans of the Department of Railways and Canals, and of Crown Lands of Ontario and Quebec. The geological boundaries were laid down from geological and palæontological surveys by Dr. Ells and the writer. The different lines of railways coming into the city from the north, south, east and west are all indicated, likewise the various electric roads, and all the roads surveyed up to the date of issue.

The various islands, light-houses, points, and other features along the channel of the Ottawa from Eardley township to L'Ange-Gardien in Buckingham township are also indicated.

On the Ontario side of the Ottawa, the map includes portions of the townships of March, Goulburn, Nepean, Gloucester, Osgoode and Cumberland, and the Ontario shores represented on the map extend from a point three miles northwest of Shirley Bay to a point two miles east of Danniston post office in the township of Cumberland.

The geological boundaries are indicated by more or less sinuous and finely dotted lines, and any scale of colours could be adopted by the possessor of the map, were it his or her wish to

colour the same as a geological map. Besides indicating the outcrop of the Archæan crystallines to the north of Ottawa, the geological map gives the latest and most accurate information regarding the extent and distribution of the following Palæozoic formations in ascending order : Potsdam, Calciferous (or Beekmantown formation of the New York geologists), Chazy, (both the lower shales and upper limestones), the Black River, Trenton, Utica, Lorraine and Medina. Single copies of the geologically coloured map, however, can be obtained from the leading booksellers at Ottawa : Hope & Sons, Ogilvy, and Thorburn, or from the Librarian of the Geological Survey of Canada, for the nominal sum of ten cents.

Among the principal features indicated are the location of the iron, apatite (phosphate of lime), mica, barytes and other mines of the Ottawa district, besides quarries and brick-yards. The heights or elevation of a number of points, above sea-level, is also indicated. The bore-holes put down for water, oil, gas, salt, etc., at different times in the district, together with the depth reached are likewise inserted.

The leading post offices and railroad stations indicated on the map, and the roads leading to them include the following :

In Ontario :—Billings's Bridge, Merrivale, Chaudière Junction, Bowesville, Gloucester Station, Rideau View, South Gloucester, Leitrim, Hurdman's Bridge, Hawthorn, Ramsay's Corners, Piperville, Edwards's Station, Eastman's Springs, Borromée, Blackburn Station, Blackburn P. O., Cyrville, Robillard, Orléans, Danniston, Notre Dame de Lourdes, Janeville, Cummings's Bridge, Clarkstown, Gateville, Harbord P. O., Bayswater, Hintonburgh, Mechanicsville, McLeanville, Skeads, Westboro', Britannia Station and Village, Bell's Corners, City View, Hazeldean, South March Station and post office.

In Quebec :—Hull, Tétreauville, Aylmer, Kingsmere, Old Chelsea, Chelsea, Kirk's Ferry, Gatineau Station and Village, Ironsides, Wrightville, Ste. Rose de Lima, East Templeton Station, Quinville, Cantley, Cousineau, L'Ange-Gardien Station and Village of Angers.

The Mer Bleue or Peat Bog to the east of the city is also indicated, whilst Meach's Lake, Kingsmere and other smalle

bodies of water, besides the numerous small streams intersecting the plain to the south of the Ottawa, and the hilly country to the north are also given. Such geological phenomena as faults, strikes, dips, glacial *striæ*, and localities where *fossils* have been collected to advantage have also been added.

Such a map is of incalculable value to the Club. It is with pleasure that we learn that the Council has secured copies upon which much of interest can be indicated and accurately located. A forest tree-map of the Ottawa district might well be prepared by the members of the botanical section of the Club, whose observations have led them to take notes on the trees of the Ottawa district whilst faunal maps giving the distribution of certain species or groups of animals of the district could well be prepared by members of the zoological section. A map indicating the distribution of the Pleistocene formations might also be prepared, for besides the notes already published by various members of the Club on the Pleistocene formations of the Ottawa district in THE OTTAWA NATURALIST, there must be a large amount of material awaiting publication. There is no better mode of recording phenomena of nature than upon a map, and when the late Dr. Selwyn devised the scheme of preparing geological maps of the leading cities of Canada, he knew full well the value of such, and to-day, he deserves well of the members of this Club as do his successors, Dr. George M. Dawson and Dr. R. Bell.

The map just issued fills a want long felt by every member of the Club, and whilst it does not profess to be accurate in every detail, still claims to be the latest and best map of the Ottawa district, upon which are indicated all the principal features and occurrences such as would strike the thoughtful observer.

It is hoped that at no distant date a contour-map of Ottawa and its vicinity will be prepared. Its need is greatly felt, and would serve to indicate the topographic forms prevalent within the area covered by the Ottawa district.

Geological Survey of Canada,

Ottawa, November 21st, 1902.

NOTE.—Extra copies of the accompanying uncoloured map of "the Ottawa District" may be obtained from the Treasurer of the Club at the nominal price fixed, ten cents per copy.—EDITOR.

REVIEW.

MACOUN, JOHN. CATALOGUE OF CANADIAN PLANTS, Part VII. LICHENES AND HEPATICÆ, pp. 318. Geological Survey of Canada. 1902.

Since the publication of Part VI of this Catalogue ten years ago there has been no more important contribution to Canadian Botany than the volume recently published by the Geological Survey Department. The author has succeeded in compiling and tabulating all our available knowledge of Canadian Bryophytes and Thallogens, and Parts VI and VII taken together constitute a work upon which all future study of these great classes in Canada must be based. In Part VII, Prof. Macoun enumerates 53 genera and 196 species of Hepatics and 59 genera and 410 species of Lichens, with of course many varieties. In the addendum 243 species of Mosses are added to those enumerated in Part VI.

The greater part of the material examined by Prof. Macoun is included in the Herbarium of the Geological Survey where Canadian cryptogams of the above classes are represented by over 16,000 sheets of specimens, the chief part of which were collected by the author himself. Botanists from all parts of Canada have, however, assisted in making the list complete, and few, if any, printed lists of species have been overlooked. As in Part VI, descriptions of recently described new species have been reprinted, and though called a catalogue the volume really contains an immense amount of information regarding habitat and distribution, and the author's unrivalled personal knowledge of Canada has enabled him to so arrange his matter that the geographical and descriptive parts of the Catalogue contain none of the errors so common in publications of this kind.

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