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Vol. XX.

OTTAWA, JULY, 1906.

No. 4

SOME CANADIAN ANTENNARIAS.—III.

By Edward L. Greene.

In the May issue of the NATURALIST for 1904, I remarked how plainly British Columbia was being indicated as the centre of distribution for the genus *Antennaria* on the Pacific slope of the continent. And now, another ample collection of these plants, made there in the summer of 1905 by Mr. James M. Macoun, strongly confirms the opinion then expressed. No fewer than three of his numbers seem to represent species quite new; while others of them are almost as welcome as completing our knowledge of some that were hitherto known but imperfectly.

A. EXIMIA. Stems stoutish a foot high more or less, erect, above a slightly decumbent base, the basal stolons short, densely leafy, their leaves not large for the plant, about 1 1-2 inches long, narrowly obovate-cuneiform, mucronate, thinnish, rather loosely and silkily lanate beneath, above bright green, glabrous, minutely whitish-punctulate, very narrowly white-margined by extension of the wool of the lower face; stem-leaves many and approximate, the lowest quite as large as those of the stolons but narrower, oblong-cuneiform; heads many and large, forming an ample compound corymb 2 or 2 1-2 inches wide across the summit; involucre much imbricated, its outer bracts arachnoid-woolly and greenish, with short scarious tips or none; the inner successively obtusely and then acutely or acuminate scarious-tipped. Male plant unknown.

Skagit Valley, 12 July, 1905. Geol. Surv. n. 69,338. Mr. Macoun gives for this the habitat of open sandy woods, through which fire had repeatedly run, at 2500 feet altitude; and I note in the specimens evidence that it grows in beds of moss of the genus *Polytrichum*. It is a handsome species, apparently related to the next, though much larger.

A. CHLORANTHA, Greene, Ott. Nat. xviii. 38. This was originally described from specimens of the year 1901, and much too young. The numbers 69,353 and 69,354 of 1905 together enable one to complete the description of what is a most satisfactory species. In its maturity, as shown in n. 69,354, collected August, 1905, the plant is 7 to 9 inches high, the involucre not sessile, but even quite loosely corymbose-panicled and about twice as numerous as in the originals. The achenes are distinctly though sparsely scabro-hirtellous.

A. ERIGEROIDES. Slender but rather rigid and wiry, the flowering stems 8 to 12 inches high: stolons with small foliage narrowly spatulate-oblongate, compactly silky-lanate on both faces, the upper glabrate only in age; stem leaves narrowly linear-falcate, sharply acuminate, all but the uppermost curving away from the stem; heads distinctly racemose, a few at the very summit only more crowded and subcymose; pedicels of the scattered and racemose ones filiform, 1-2 to 1 inch long and suberect; scarious tips of the involucral bracts all obtuse, pinkish: staminate plant not known.

Skagit Valley, 27 June, 1905, at an altitude of 4,500 feet, Mr. Macoun; Geo. Surv., n. 69,346.

A. MODESTA. Low, the leafy and floriferous stems only 2 to 4 inches high and almost filiform, either monocephalous or with several additional heads on slender pedicels racemosely arranged: stolons short, crowded, densely leafy, their leaves 1-2 inch long or less, oblong-cuneiform, densely whitish-tomentose on both faces; stem-leaves thin, oblong, acute, suberect, more loosely woolly and the wool deciduous from the upper face, the slender stem itself and the pedicels floccose and the wool deciduous, or partly so; involucre small, narrow-campanulate, the bracts dark and brownish, their tips long, acuminate, greenish-brown.

Altitude of 6000 feet in Skagit Valley, 25 July, 1905, Mr. Macoun. Plant of the *A. alpina* group by its involucre but of peculiar habit and a subracemose inflorescence.

Washington, D. C., June, 1906.

THE CARIBOU OF QUEEN CHARLOTTE ISLANDS.

In the issue of THE OTTAWA NATURALIST for February, 1900, Mr. Ernest Thompson-Seton described a new species of caribou from the Queen Charlotte Islands. The species was founded on a fragmentary skull and one horn but the description of the skin given by a gentleman who saw it and a comparison of the skull with that of allied species seemed to warrant Mr. Thompson-Seton's conclusion that the caribou of the Queen Charlotte Islands was an undescribed species. However this may prove to be the more important question of whether there are really caribou on Graham Island or not has been doubted by many residents of British Columbia. This doubt has now been set at rest by Commander Hunt and Lieut. Bills, of H. M. S. Shearwater, whose account of their visit to Graham Island is printed below. It is due to the kindness of Mr. F. Kermode, Curator of the Provincial Museum at Victoria, B. C., that the EDITOR is enabled to supplement the very complete account given by Mr. Thompson-Seton of what was at that time known of the Graham Island caribou by this later information. The tracing of the footprint referred to in Messrs. Hunt and Bills' report has been shown to several gentlemen who have seen caribou tracks and all pronounce it to have been made by that animal. Messrs. Hunt and Bills report as follows:

"For some years past the question of the existence of caribou on Queen Charlotte Islands has been frequently discussed by naturalists and sportsmen. A pair of antlers, supposed to have been taken from a caribou shot on these islands, was sent from Graham Island to Victoria some years ago, but this, we believe, is the only specimen which is known to have come from that island, and sceptics have suggested that the head probably came from the mainland and was traded with the Indians of the islands.

"From time to time various persons who have visited the islands have reported tracks of animals of the deer family, but, in view of the fact that wild cattle are known to wander about inland, it has been thought that these were responsible for the tracks. As far as we can ascertain, no pair of antlers has been taken from the islands for some years, and, apart from the horns mentioned above, over whose authenticity doubts have been cast, naturalists were in doubt as to the nature of the animal which,

reports stated, lived on the islands. We believe that the latest rumor on the subject was to the effect that the animal was a wapiti.

"A favourable opportunity having occurred to investigate the question, we set out on the 22nd February, 1906, from Husan Point on the west side of Virago Sound and struck inland in a westerly direction. The country was timbered, but fairly open, and the going good, thick patches of sal-lal being frequent. After forty minutes packing we emerged upon the open crest of a hill, and here saw tracks of some large animal of the deer family. The open space was about half a mile long and 300 yards broad, covered with a thick carpet of moss in which were dotted numerous small pools of water. A few stunted trees grew about,—for the most part in a withered condition.

"This open space was the first of many which we found in the area of our wanderings and nearly all showed tracks in a greater or less degree. These open spaces crown nearly all the hills (none of which can be more than 400 or 500 feet in height) and between them are patches of bush more or less dense and all containing a good deal of sal-sal. In a few places we came across the tracks in the bush, but the nature of the country doubtless prevented us from noticing many others.

"According to the Graham Island Indians (the Hydahs) snow to the depth of two or three feet had covered the hills up to a few weeks before our arrival, but this had disappeared save a few isolated patches which were fast melting. In three different patches of snow we saw tracks of a deer-like animal, but they were probably two or three days old and the melting of the snow had caused them to lose their original sharpness.

"It was our intention to take photographs of any clear tracks, but those in the moss did not lend themselves to such procedure and those in the snow were too indistinct. A sketch was made of one fresh hoof-print found in the thick moss and careful measurements made. It is by no means one of the largest seen, but was sufficiently sharply defined to enable sketch and measurements to be taken.

"We saw a good deal of dung in the open spaces, and a little in the bush; it was always in small heaps of rounded black substance and appeared to be that of caribou. Some appeared to be fairly fresh, but none was seen that we would consider less than forty-eight hours old. At the edge of one of the open spaces

we found a shed antler lying in the moss, undoubtedly the left antler of a caribou.

"As a result of our investigations we are perfectly convinced that a species of caribou does inhabit the northern part of Graham Island and would give the following reasons for our opinion:—

1. The tracks are plentiful of all sizes, some quite fresh, and are undoubtedly tracks of a large animal of the deer family. In the sketch the distinctive dew-claws of the caribou are perfectly marked.
2. The dung seen was certainly not that of a wapii; the tracks point to a very large animal of the deer family.
3. That the shed antler was deliberately taken into the country and left to be discovered is a point that may be dismissed as very improbable.

We were, unfortunately, unable to actually see a caribou, although we searched for three days in both the bush and open country.

"The Indians living at Virago Sound are quite positive about the existence of caribou, but state that they are never seen on the west coast of Graham Island, and a search over the open plain extending to the west of the area marked on the attached plan failed to reveal any tracks. We could get no information of tracks having been seen south of Naden Harbour, and so have come to the conclusion that the caribou are, for some reason, only found within a small area of the N. W. portion of Graham Island.

"Whether this caribou is of the barren ground or woodland variety must be left to the naturalists to decide, the shed antler appearing to us to favor either variety. From the fact that our continuous search in the open failed to discover an animal, this caribou would appear to prefer the bush to the open.

"We interviewed an Indian (by name George Hallett) who stated that five years ago he had shot three caribou, and his description of the size and appearance of the animals was fairly accurate. As he stated they had no horns they were probably shot out of season. George Hallett also said that another Indian who once accompanied him on a hunting trip had shot a caribou with large antlers: that these antlers had been

sold to the late Mr. Mackenzie, of Massett, who sent them down to Victoria."*

Dr. R.W. Ells, of the Geological Survey who spent the season of 1903 on Graham Island, furnishes the following additional information which though of uncertain value if standing alone, affords strong corroborative evidence when read with what is printed above. Dr. Ells writes in his report:

"During the winter months certain members of the tribe (Haidas) engage in hunting, principally the bear, which appeared to be quite numerous, especially in the country around the Yakoun river and lake and in the southern half of the island. Of other large animals there appears to be a scarcity, though the Rev. Charles Harrison, of Masset, asserts that caribou have been found in the country adjacent to Virago Sound. As very few white people have ever attempted to penetrate the dense forest of the interior the presence of this animal might easily escape notice. During our boat journey along the north shore west of Virago Sound several forms like deer were observed feeding along the beach. It was supposed at the time that these might be wild cattle but as the herd of these is so far as known confined to the area east of Masset Inlet and as no trace of them has been reported from this part of the island, it is quite possible that the animals seen may have been deer. Our boat was at the time too far from land to determine this point definitely."

A CORRECTION.

In Dr. Holm's note on *Eriophorum* in the last number of THE NATURALIST the date of Fries' paper should have read "1844" instead of "1848". Dr. Holm did not see a proof of his note and the misprint was overlooked by the editor.

*This is doubtless the antler described by Mr. Thompson-Seton.—THE EDITOR.

IVY POISONING AND ITS TREATMENT.

Nine years ago the writer was severely poisoned by handling *Rhus toxicodendron* and though he has since taken great care when in its vicinity few seasons have passed in which he has escaped. In his own case many remedies have been tried, that which has proved most efficacious being lead acetate and alcohol. In a paper published in *Rhodora*, (Vol. IV., pp. 43-45). Dr. Franz Pfoff gives the results of a very thorough study of *Rhus toxicodendron* and *R. venenata*. He discovered that the active principal was an oil which he named "Toxicodendrol" which he found in all parts of the plant at all seasons. A sample of the oil kept in an open porcelain dish for over thirteen months proved to be as active as ever before. Dr. Pfoff also found lead acetate to be the best remedy, and as cases of ivy poisoning are very frequent here, his directions for removing the poison and keeping it from spreading may well be reprinted. He says:

"This can be done by vigorously washing the affected exposed parts with soap and water and a scrubbing brush; that is to say by mechanically removing the oil. As the active principle is very soluble in alcohol and gives with lead acetate a precipitate which is nearly insoluble in alcohol, other processes may be employed to remove the oil. The exposed parts may be washed repeatedly with fresh quantities of alcohol and a scrubbing brush. The poisonous oil may be thus removed in alcoholic solution of lead acetate; in this case the poisonous principle would be first transformed in its insoluble lead compound and then washed away with alcohol.

"The washing must be done thoroughly when alcohol is employed, as otherwise the alcohol might only serve to distribute the oil more widely over the skin. The finger nails should be cut short and also perfectly cleaned with the scrubbing brush. Oily preparations, or anything which dissolves the poisonous oil, if used, should be immediately removed, as they may only spread the poison, giving it a larger area on which to work.

"The treatment above outlined can not cure the already inflamed parts which must heal by the usual process of repair, but it does prevent the spreading of the inflammation and may serve to remove the poison before it has had time to produce its characteristic effects upon the skin."

In a later number of *Rhodora*, (Vol. IV, p. 106) Mr. L.E. Am-

midown, who describes himself as being very susceptible to ivy poison, tells of a preventive which makes it possible for him to visit localities in which it is abundant without being affected. He says: "I take with me a bottle filled with a strong solution of saleratus (the common kind used in cooking). When I come out of the swamp I wash my hands, face and neck—wherever it is possible that the poison has touched the skin—with the solution. Since doing so I have never been poisoned and can roam through the place at will. I take no needless risks and am always careful not to touch the dogwood (*Rhus venenata*) if I see it. However, it is so thick that it would be impossible to avoid it altogether."

Everywhere for nearly a mile along the east side of the Beaver Meadow the ground is covered with poison ivy, spoiling for many collectors one of the most interesting fields for botanical work in this vicinity. Rockliffe, too, is a dangerous place to visit for those who are at all susceptible. With proper care and a prompt use of the remedies given above the danger of serious poisoning will be greatly lessened if not entirely removed.

J. M. M.

THE CONNECTICUT VS. THE KENTUCKY WARBLER.

A CORRECTION.

In the report on the sub-excursion of the club to Rockliffe, May 5th, I am inadvertently made to report having seen a Kentucky warbler (*Geothlypis formosa*). While I would have been delighted to again meet this old acquaintance of mine from the south, I must state that it was the Connecticut warbler (*Geothlypis agilis*) I saw. This is a great rarity anywhere and has been reported for Ottawa only once before by Mr. J. Fleming, of Toronto, who saw it also at Rockliffe. The song of this bird is very characteristic and cannot easily be mistaken for that of another. It begins with some very low notes, as though the bird was inhaling, then a few a little louder, exhaling, and then several loud, liquid, bubbling notes, in the pitch of the oven-bird or water-thrush. This song I heard May 2nd from a tree in the city, once on the same day at Britannia and May 5 at Rockliffe, before I saw the bird plainly. So it may, after all, not be so rare here.

C. W. G. EIFRIG.

THE GREAT GRAY OWL.

REV. C. W. G. EIFRIG.

The great gray owl, (*Scotiaptex cinerea*) is one of the rarest and most mysterious visitants to this part of Canada. Its movements, its coming and going are as eccentric and unfathomable as those of the snowy owl, pine grosbeak, Bohemian waxwing, and others of our true Canadian birds. At the same time it is one of the birds concerning which the least data and observations are available. Its range extends from Lake Superior to the Yukon and from Hudson's Bay to the Pacific Ocean. Here it does not live in open country, in the "barrens," as does the snowy owl, (*Nyctea nyctea*), but confines its operations to the large, dense forests of the region. From here it does not stray far, rarely passing the southern boundary of the Dominion. Mr. Donald Gunn states that this owl is to be found summer and winter throughout all the country commonly known as the Hudson Bay Territory. Nor is it abundant even there, in its chosen habitat, as Mr. McFarlane, who has been in the employ of the Hudson Bay Company in the Anderson River district since 1859 or '60, states that he obtained but "very few specimens", although he is a very gifted naturalist and keen observer. No wonder then, that records of their nests are also few and far between. I can find two records only, quoted both in Bendire's Life Histories of North American Birds, and Baird, Brewer and Ridgeway, North American Birds. One nest was found on a 23rd of May, by Dr. Richardson, "on the top of a lofty balsam poplar, composed of sticks with a lining of feathers. It contained three young birds covered with whitish down." The other was found by McFarlane, "on the 19th of July, 1862, near the Lockhart River, on the route to Fort Good Hope; it was built on a spruce pine tree at a height of about 20 feet and was composed of twigs and mosses, thinly lined with feathers and down. It contained two eggs and two young, both of which had lately died." Their food is, according to Mr. Gunn, rabbits and mice, whereas Mr. Dall found in the stomach of one shot in April 20th, in the Yukon, the remains of thirteen redpolls, (*Acanthis linaria*). Of nine stomachs examined by Prof. K. Fisher, of Washington, one contained a small bird, seven mice and four other mammals.

However, the reason for writing this study was not the giving of these data, but rather to record the exceedingly great disparity between the large size of the bird and the smallness of the

body when taken out of the skin and feathers. It is always a matter of surprise to see the small body of all owls as compared to the apparent large bulk of the birds, but the great gray owl beats the other owls, like the barred, great horned and the snowy, all to pieces in this respect. During our last cold season three of these owls, shot near Ottawa, have come to my notice. One was shot last November by a farmer in South March, the second about February 1st, near Templeton, Quebec, and the third about the end of March, locality unknown. All three found their way to a local taxidermist, from whom I procured the second one. Being familiar with the small size of owls' bodies, still I was not prepared for anything like this proved to be, when it was prepared and mounted. The great gray owl is in appearance our largest owl, it measures in length 25-30 inches, extent (wings spread) 54-60 inches, tail 11-13 inches. Its large facial disk, much larger than in other owls, heightens the impression of largeness, besides making it appear somewhat solemn, mysterious and uncanny. The body taken out from this owl, i.e. the trunk, without skin, head and wings, measured only, length 6 1-2 in., depth, i.e., from breastbone to back 3 3-8 in., width across thorax 2 1-2 in., weight 8-10 oz. It was much smaller than the body of the great horned and even barred owls; as large as a half grown ruffed grouse and then not as wide. Of course this specimen was extremely emaciated, but that would not decrease the size of the skeleton. It was so thin as to be transparent in the abdominal region; of intestines there was not much to be seen and the stomach was empty. It is hard to understand how such a tiny body compared to the bulk of the bird could keep up the huge wings, heavy claws and enormous head, whose circumference measures 20 inches, the facial disk alone, 6 inches! There was so little flesh on it, that it did not decay, but only dry up in the winter air. This seems to show also that this owl can eat very little only of a rabbit, if it catches them at all, and it seems much more likely that it confines itself to small birds and small mammals, like mice, for food. No wonder the books express astonishment at the relatively small size of their eggs which are hardly any larger than those of the barred owls, a much smaller bird in appearance. The egg of the latter, as figured in Bendire, measures 2x1-75 in., that of the former 2.125x 1.73 inches. While this seems small when compared with the eggs of birds smaller in appearance, like ducks, grouse, etc., it

seems still almost incredible that a body of the above given smallness can produce an egg of even this size. This owl, now in my collection, measures mounted, with the neck somewhat shortened, 25 inches in length.

CURIOUS NATURAL FREAK.

In the garden of Mr. Cowley on View street, in this city, is to be seen a laburnum tree producing three distinct varieties of flowers, viz:—yellow and pink laburnum flowers and mauve-colored spikes of broom-like flowers. Mr. Cowley made the following statements regarding the tree: About eighteen years ago he bought the plant from the late Mr. Henry Mitchell as a pink laburnum a sport from the ordinary yellow laburnum. It proved true to its name, and produced pink flowers for a number of years. The tree grew quite large, and then Mr. Cowley cut it back when, to his astonishment, it produced a thick broom-like growth, resembling bunches of mistletoe, which produced spikes of rose or mauve-colored flowers, resembling broom, different in every respect from the original laburnum blossoms. Two years ago the tree showed a disposition to hark back to its original form, as it produced a spike of yellow flowers; last year more appeared, and at the present time the tree presents the curious appearance of producing pink and yellow laburnum flowers, and spikes of the broom flowers described.

Mr. C. N. Young, of Duncans, on hearing of the curious freak, wrote as follows:—"I have known a similar case. On the lawn of the rectory at Quainton, near Aylesbury, a large laburnum tree, forked at eight feet from the ground, one half bore yellow, the other pink flowers; while from the fork grew a bunch of cistus bearing purple flowers.

"The late Professor Lindley, then editor of the *Gardeners' Chronicle*, expressed it as his opinion that the original tree was produced by crossing the yellow laburnum with the purple cistus, and that the tree had combined the peculiarities of both parents and offspring."

I send specimens of the flowers for inspection by the curious.

J. R. ANDERSON.

Victoria, B. C.,

1st June, 1905.

REPORT OF THE ENTOMOLOGICAL BRANCH, 1905.

Read March 27, 1906.

The Leaders of the Entomological Branch have pleasure in reporting that during the season of 1905, the entomologists of the Club have been actively engaged; much good collecting has been done and many new facts discovered concerning the life-histories of various species of insects. The season on the whole was an unproductive one in the Ottawa district, the cool nights and damp weather being very discouraging and hindering much in the plans for excursions, etc., which had been made by the Leaders. Notwithstanding the disappointing season, by dint of persistent effort good work was done by some of the members of the Club and many new records of insects were added to the local lists.

The fortnightly meetings held in the early part of the year were very helpful to the members who attended them, and much useful information was brought out in the discussions following the reading of papers. These meetings of course are open to any members of the Club and as they are very informal in nature, all wishing to take up the study of insects are welcome to attend and could quickly gather much useful and interesting information.

No reports of the Entomological Branch have been published in the OTTAWA NATURALIST since that for 1902 which appeared in the September number for 1903, but full accounts of the meetings of the branch have appeared from time to time and furnished the same information as would have been given in a report. A few new members have joined this Branch of the Club but the field is so large and so much of it is yet to be worked that the Leaders sincerely hope that more students will join them during the next season.

Valuable work has been done for the science of entomology by some of our members who have visited or who are living in localities distant from Ottawa. The Rev. G. W. Taylor, of Wellington, British Columbia, has taken up the study of North American Geometridae and has already added largely to our knowledge of those interesting moths. Mr. Jos. Keele and Mr. J. Wilson, both of the Geological Survey staff, have brought back from the far north small but valuable collections of different or-

ders of insects. Mr. Keele explored the Valley of the Mayo River, Yukon Territory, in 1904 and worked along Lansing River, Hell River and Ladue River in the same Territory in 1905, Mr. Wilson was exploring on the Hudson River slope in 1904, and in the Temagami district in 1905. As both of these gentlemen took great care to label their specimens accurately, even the small number they brought back, have distinct and great scientific value. Mr. Andrew Halkett, who was naturalist on the Neptune expedition under Commander Low, in 1903-4, brought back a surprisingly large number of species of insects from the Hudson Bay region. Mr. H. H. Lyman, of Montreal, who joined the Labrador expedition, sent out to observe the total eclipse of the sun, found opportunity to collect specimens and make observations. Mr. Norman Criddle and Mr. T. N. Wiling, two of our Northwestern members, have prosecuted their studies of insects and plants most vigorously and with very important results. Many new species have rewarded their efforts and a vast amount of useful knowledge has been accumulated during the past few years.

Of our local members perhaps Mr. C. H. Young's work among the micro-lepidoptera is most worthy of mention. The exquisite manner in which Mr. Young prepares his material is well known to us all but the value of his work is chiefly due to his skill in rearing large series of insects so as to compare the limits of variation. Mr. W. D. Kearfott, of Montclair, N. J., has been indefatigable and most generous in helping our members with the identification of their captures of these minute and most beautiful moths. Mr. W. Metcalfe has taken up the study of the order Hemiptera and is gradually compiling a complete list of the Ottawa species. His material has been named by the leading specialists and we hope that it will soon be ready for publication.

Our two highly esteemed corresponding members, Messrs. J. B. Smith, State Entomologist, of New Jersey, and Prof. H. F. Wickham, of the University of Iowa, as in the past, have rendered invaluable service to our members by helping with identifications and sending us for the Library their useful publications.

Among many rare and interesting insects which have been taken mention may be made of the following:—

LEPIDOPTERA:

Papilio machaon, L. var. *aliaska*, Scud, an exceedingly rare insect, was taken in the Yukon Territory by Mr. Keele, and on the Nagagami River on the Hudson Bay slope, by Mr. Wilson.

Papilio brevicauda, Saunders. The larva was found at the North-west River post of the Hudson Bay Company, on Lake Melville, Ungava, by Mr. Lyman.

Pontia protodice, B. & L. The second specimen taken at Ottawa, Sept. 27 (Gibson.)

Eurymus boothii, Curtis. Three specimens of this remarkably rare Coliad were taken in the Yukon Territory by Mr. Keele in the beginning of July.

Erora laeta, Edw. Two specimens of this beautiful little Thecla, Meach Lake, Que., May 18 (Young).

Amblyscirtes samoset, Scud. Chelsea, Que., May 28. (Gibson & Campbell).

Pamphila palæmon, Pallas (*mandan*, Edw.) Eastman's Springs, July 1 (Fletcher).

Arithomaster leonardus, Harr. Britannia, Aug. 23. (Baldwin). This skipper is very rare at Ottawa and has not been taken for 25 years.

Utetheisa bella, L. Sept. 25 (Fletcher), the second specimen taken at Ottawa.

Phragmatobia assimilans, Wlk. var. *franconica*, Sloss. Meach Lake, May 16 & 17 (Young); Ottawa, June 3 (Gibson).

Apantesis celia, Saunders. Ottawa, pupa, May 9th, moth June 7 (Baldwin).

Semiophora elimata, Gn. Meach Lake, May 8 (Young).

Semiophora opacifrons, Grt. Meach Lake, Aug. 7 (Young.)

Barathra occidentata, Grt. This rare moth has not appeared for many years at Ottawa but during the summer of 1905 the moths were abundant during the latter half of June and the larvae were noticeably destructive in gardens during late summer. The insect also occurred in Quebec and Nova Scotia. The life history has been worked out and is published in the Report of the Dominion Entomologist.

Polychrysis formosa, Grt. Meach Lake, Aug. 15 (Young), a very beautiful and rare species.

Autographa rubidus, Ottol. Meach Lake, June 5. (Young).

Melipotis fasciolaris, Hbn. Mr. Baldwin took a fine specimen of this West Indian moth in his garden on July 6 last. This is the first Canadian record and it is probable that the insect was brought north in a bunch of bananas.

Stenopis thule, Strk. One of the most important captures of the year was made on July 6 by Mr. Gibson when he secured a perfect specimen of this striking and very local moth near the Experimental Farm. Up to the present time there is no known authentic record of it having been taken at any other place than Montreal.

COLEOPTERA

A few specially interesting captures of beetles have been made at Ottawa during the past season.

Pityobius anguinus, Lec. Six specimens of this fine elater were taken at electric light at the end of June (Gibson and Baldwin), and a female was secured a month later floating in a water barrel, (Fletcher).

Aphorista vittata, Fab. Aylmer, April, (Gibson).

Odontæus cornigerus, Melsh. Ottawa (A. E. Richard).

Pachyta rugipennis, Newm. Hull, Que. About 40 specimens of this very rare longicorn beetle were taken by Mr. W. Metcalfe pairing at the base of a dead pine tree May 29, 1904.

Anthaxia æneogaster, Lap. This little Buprestid beetle, which is frequently found in the flowers of Trilliums in Spring, was observed to be ovipositing on the trunk of the same dead pine tree, and at the same time as Mr. Metcalfe collected *Pachyta rugipennis*.

Phytonomus punctatus, Fab. The Clover Leaf Weevil, which has occasionally done considerable harm to clover fields to the south, was detected at Ottawa for the first time in 1905 when two specimens were caught at the Experimental Farm.

An important work has been accomplished in the examination of the whole of Mr. Harrington's Dytiscidae, by Mr. John D. Sherman, Jr., of New York, who has found in the collection some very interesting species. The members of the Club are urged to make use of this opportunity to get their material identified and also to make a special effort this year to collect these insects.

The following are species of more than usual interest which have been found at Ottawa, and are among those which have not yet been recorded from the district:—

Desmopachria convexa, Aube. *Bidessus lacustris*. Say, *Coelambus turbidus* Lec., *Deronectes depressus* Fab., *Hydroporus pulcher*. Lec., *H. solitarius*, Sharp, *Ilybius pleuriticus*, Lec., *Agabus semipunctatus*, Vichy, *A. reticulatus*, Vichy, *Rhantus sinuatus*, Lec., *Hydaticus stagnalis*, Fab., *H. piceus*. Lec., *Dytiscus hybridus*, Aube, *D. marginalis*. Linn, and *Acilius semisulcatus*. Aube

The publication of a complete list of the Ottawa Dytiscidæ, is most desirable, as that published in Transactions No. V, page 73, is obsolete and several of the determinations were erroneous.

JAMES FLETCHER,	} LEADERS.
W. H. HARRINGTON,	
C. H. YOUNG.	
ARTHUR GIBSON,	

SUB-EXCURSIONS.

Saturday, June 9th.—Seven naturalists took their way to Billings' Bridge on Saturday afternoon. The party being small, they did not separate into different groups, as is customary on these "excursions."

The tempting shade of a beautiful "glen" seemed more inviting than a prolonged walk in the burning sun, to our usual haunt, "Rideau Park." So after a short consultation, we entered "Fairy Realm," and saw the wood-anemone, in all its grace and beauty, dotting the bank, side by side with the lovely fleabane. Nature is always charming with her variety, and contrast of colors.

In some places the ground was carpeted with mocsseed, (*Menispermum Canadense*). It was too early in the season to get the flowers of this pretty vine, although the bud was now forming. It had coiled itself around every unsightly object, such as, old roots, dead branches, etc., "and wreathed them with verdure, no longer their own." After climbing up a rocky way which must have been a foaming torrent, the night before, we found ourselves, a group in the centre of a magnificent picture

where the many waterfalls, and tiny rivulets were again indications of the previous storm.

The deeply indented leaves of the white lettuce (*Prenanthes*), were very conspicuous, interspersed with bunches of a darker hue, showing where the hepatica's blossom had been most luxuriant and sweet cicely's delicate flower added it's charm to this verdant landscape.

All prosaic ideas vanished. Nature inspired, or suggested her own poetic thoughts which were expressed in more joyous tones, we too became one with her, and felt happy, "Where love is all things interest." Therefore everything was interesting to us lovers of nature. Even the grass looked at us from eyes of blue, (Blue-eyed grass), and the birds sang, or busied themselves with their own affairs, unconscious of, and oblivious to our observation.

After a delightful afternoon spent in "Fairy Realm," we entered a grassy lane, like the entrance to some enchanted castle, nor was the spell broken, when Mr. Halkett from his crystal jar pointed out some of the wonders of the "Insect World."

Mr. Clarke picked up a few valves of the marine bivalve mollusk, known *Saxicava rugosa*, whilst walking along the railway track, which had doubtless been conveyed there in ballast, procured at no great distance from the place where found.

Mr. Halkett found some fine specimens of land-shells (Heliocoids), with the living snails, a scarlet arachnid, several caterpillars, including a mature specimen of the tent caterpillar (*Clisiocampa*) which he mentioned as likely to prove a menace to the foliage of trees again, after having been nearly suppressed by the frost a season or two ago; and also said he had observed the day being warm a profusion of insect life representative of various orders.

Some of the flowers collected were: Black snakeroot, with inconspicuous greenish yellow flowers. None of us examined the roots to find out its snakey qualities; everlasting; black mustard; common hound's tongue, (*Cynoglossum officinale*), now beginning to show its dull purplish flowers in the fields; mouse-ear chickweed (*Cerastium arvense*); the Canada violet, (*Viola Canadensis*); small-flowered crow-foot (*Ranunculus*

abortivus); butter-cup, (*Ranunculus acris*); white ba eberry, (*Actaea alba*); blue cohosh, long past its flowering stage; wild ginger; red osier dogwood; wild sarsaparilla, not yet in bloom, r c 's aromatic; we saw bushes of the wild gooseberry and wild black-currant, but the fruit was still too green to be edible. The Heath family was represented only by some few pyrolas.

After a delightful afternoon, and a refreshing drink of pure water, we returned to the city, and felt better fitted for our duties by this excursion with the Naturalists.

ANNIE L. MATTHEWS.

RECORDS OF RARE BIRDS IN THE MARITIME PROVINCES.

I take pleasure in recording the capture of three interesting birds. February 11th, 1905, at Argyle Shore, Prince Edward Island. An albino white-winged female crossbill was secured from a flock of about twenty properly colored birds of the same species, by a Mr. A. F. Calder, of Charlottetown, P. E. I. The specimen is somewhat ashy-white about head and neck, gradually shading to white upon the tail and under parts. The white wing-bars are scarcely perceptible. The specimen is nicely preserved and is now in the possession of the writer.

Another rarity from P.E.I. is a little brown crane (*Grus Canadensis*) taken at Alexander. This bird was a young female, secured Sept. 22, 1905, and is now in museum of Colchester Academy, Truro, N. S. This is probably the only record of a bird of this species being taken east of Manitoba, except one secured in Greenland, as recorded by J. Macoun in his "Catalogue of Canadian Birds." Near Fredericton, N. B., a great gray owl (*Scotiaptex nebulosa*) was secured March 22, '06. This specimen was a beautiful female and measured twenty-six inches in length and an alar extent of sixty inches, yet its entire weight was only two pounds. The stomach and intestines were empty and the body was in an emaciated condition. The specimen is in the writer's collection.

WM. H. MOORE,
Scotch Lake, York Co., N.B.

ERRATUM.

On page 90, line 26, for "Chemical or physical mixture" read
"Mechanical or physical mixture."

NATURE STUDY No. XXXVI.

THE FOUNDATIONS OF CHEMISTRY AS SEEN IN NATURE STUDY.
(FOR TEACHERS ESPECIALLY.)

By JOHN BRITAIN, Woodstock, N.B.

Chemical Union.

In order to teach effectively we must distinguish carefully between the trivial and the important—between the accidental and the essential. We are apt to spend too much of the precious school-time over the details which have little significance—the lifeless husks which enclose and conceal the living germ—thoughts. We think that we must do this in order to be thorough; but we deserve no credit for thoroughness in doing things which should not be done at all or which should be done elsewhere or at another time. Let us rather devote our skill and patience to the development, in natural and logical sequence, of the great facts and principles of nature and of life. Practice and the habit of observation will ensure a sufficient knowledge of details.

At the basis of all the natural forms we see—organic and inorganic—lies the fact of chemical union or combination. To learn to distinguish it, by its effects, from mere mechanical mixture, it is not necessary for the learners to wait until they have become acquainted with the molecular and atomic theories. Only very simple apparatus and cheap material are required for the experiments which follow.

Each member of the class is supplied with a small stick of *dry* white wood. The sticks are held for a few seconds in the flame of a spirit lamp. At once a soft black substance appears in the heated part of the stick—a substance which will mark on paper and which will be found to be insoluble in water. The pupils recognize this as charcoal which they may be told is a form of carbon. Now the question is, where was the charcoal before the stick was heated? We could not see it before that was done.

It will be found, by holding the hand above the flame of the lamp that no charcoal issues from *it*—nor does it come out of the surrounding air. Hence it must have been in the stick at first. But why did the charcoal not then make the stick black?

Heat slowly and carefully a little of the wood, cut into small pieces, in the bottom of a closed test-tube. Clear drops of a tasteless liquid like water form on the inside of the tube above the wood; and as the water gathers, the charcoal appears. The water evidently comes out of the dry wood and leaves the charcoal behind.

It can easily be shown, by means of a hand balance, that a piece of charcoal (from a stove) weighs less than a piece of the dry wood, equal in size, from which the charcoal was obtained.

It is plain then that *dry* white wood contains both charcoal and water, and that when the water is driven out by the heat, the charcoal can be seen. And so it appears that the water in the wood hides the charcoal, else the wood would look black, and the charcoal conceals the water, else the wood would feel wet.

It may now be stated that when two substances—as charcoal and water in this case—are so united together that they conceal each other's properties, the two substances are said to be chemically united or combined; and the substance they form by their union is called a chemical compound. Thus dry wood may be regarded as a chemical compound of carbon and water.

Next mix together, in a bottle, water and powdered charcoal. Do they unite chemically? They do not conceal each other's properties. The black charcoal can still be *seen* and the water *felt*. They now form, not a chemical compound, but a chemical or physical mixture. But how can the charcoal and water be got to unite chemically? They must have been chemically separate before they united to form wood; but we don't know, at present, how to compel them to combine to form wood.

Put finely divided wood, to the depth of about an inch, into a test-tube loosely closed with a cork or the thumb,—and apply heat until the tube is filled with smoky gas; then without withdrawing the heat remove the cork or thumb, and try with a match until you succeed, to set fire to the gas in the tube. How do you account for this combustible "wood-gas"? Since this gas will burn, it cannot be water-gas (steam); so we must conclude, since chemists find that pure wood is composed entirely of carbon and water, that this gas was formed in some way from these two substances in the wood. It should be noted here that the water set free by the heat soon becomes colored by some ether liquid, and that a mass of charcoal remains in the tube after the water and the combustible gas has been all expelled. It will

be found upon trial that this charcoal residue, although it will not burn with a flame like the gas, will slowly burn away with a *glow* when held by a wire in the flame of the lamp.

It seems from this experiment that when wood is heated in a closed space, it breaks up into other substances besides charcoal and water. This will explain too in part, the manufacture of charcoal and wood alcohol by the destructive distillation of wood, that is by heating wood in closed vessels, and the production of coke (carbon) and coal gas from bituminous coal by destructive distillation.

Let the children char small samples of starch and sugar—try whether they contain water—and whether combustible gases are formed when they are decomposed by heat. The last experiment may be performed by heating a little starch and sugar in an iron spoon until they take fire. It will be seen that the solid substance does not burn, but the flame is a burning gas which rises from the solid matter. The starch and sugar are really being heated in a closed space, shut off from the air by the spoon below, and the burning gas above. In like manner, in the case of wood fire, we see that the flames are caused by the burning of the combustible gases, given off from the hot wood.

The children will now be able to describe the results of their experiments with sugar and starch and to state and justify their conclusions as to the composition of both. They will doubtless conclude that, like wood, starch and sugar are probably composed of charcoal and water chemically united. They may then be told that sugar, starch and wood and several other substances of similar composition, are called carbohydrates. The fitness of this name should be shown from its derivation.

In all this work, the teacher is supposed to act only as the director of experiments and as the referee in deciding the validity of the arguments and inferences. His skill is measured by the success he has had in inducing each pupil to do his own observing and thinking independently.

After a careful review of the whole ground, the children should retain a good working idea of chemical union—will see that heat tends to separate substances that have been chemically united—will understand what agricultural lecturers mean by carbohydrates—will know that when carbohydrates are heated in a closed place until they decompose they break up into carbon, water, and other substances liquid and gaseous—will see that

a flame is a burning gas and that a solid, as carbon, burns without a flame—and will be able to form an intelligent conception of many processes in nature and the arts which would otherwise be quite inexplicable.

The main topic in these lessons—for this work covers several lessons—is *chemical union*; but the other topics discussed are important and all of them help in making clearer the idea of chemical union. And this illustrates another method of making our teaching more effective and saving time in the process. I mean that while we keep in view one principal topic we should always associate it with others which are significant and worth teaching in themselves and at the same time are so related to the central topic that they can be used effectively in enforcing it.

OTTAWA SUMMER SCHOOL OF SCIENCE.

Last year a most successful and enjoyable three weeks' session Summer School was held at the Normal School, Ottawa, under the direction of Dr. J. F. White and Mr. J. H. Putman, assisted by Mr. A. E. Attwood and others. The school was well attended by teachers and other students to the number of 160.

We are glad to hear that it has been decided to hold a similar school this summer. The lectures will be given in the Normal school and in the field. The course will open on July 3 and last for three weeks. The arrangements have been handed over to Mr. J. H. Putman whose addresses were so acceptable to all in attendance last year. Mr. Putman will give an Elementary Course in Botany. Mr. A. E. Attwood will help in the field work and will lecture on Animal Biology and Mineralogy. Mr. F. E. Perney will give addresses on Physical Geography. Mr. J. F. Sullivan will help in the botanical field work. Mr. J. S. Harterre will have charge of the Manual Training classes and Miss Gallup of Sewing. Mr. J. A. Dobbie will take charge of the Art work. The course will embrace Nature Study, Domestic Science, Manual Training, Drawing and Colour Work.

In addition to the above, two lectures will be given on Insects and two on Birds, by Dr. Fletcher, and one on Fish and Fish-life by Prof. E. E. Prince.

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