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# THE OTTAWA NATURALIST.

Vol. XVI.

OTTAWA, MARCH, 1903.

No. 12.

## DESCRIPTION OF A FOSSIL CYRENA FROM ALBERTA.

By J. F. WHITEAVES.\*

(With one plate.)

In 1888, Mr. T. C. Weston, of the Geological Survey Department, made an interesting collection of fossils from the rocks exposed at Fossil Coulee, Milk River Ridge, in southern Alberta. According to Dr. G. M. Dawson, the plateau through which this coulee is cut is capped by the Pierre shales, and the section in the coulee itself "may be regarded as a representative one of the upper or pale portion of the Belly River series."† The species represented in this collection are apparently as follows: *Anodonta propatoris*, White, several good specimens; *Unio*, three undescribed species, one very large; *Cyrena* a large and previously undescribed species; *Physa Copei*, White, the short spired typical form; *Goniobasis*, two species; all purely fresh-water forms: and a land shell, like *Anchistoma parvulum*. The *Cyrena* in this collection may be thus named and described:

### CYRENA ALBERTENSIS, sp. nov.

Shell quite large for the genus, moderately convex, ovately subtrigonal in marginal outline, a little longer than high, and very inequilateral.

Anterior side short, rounded; posterior side longer and more pointed, most produced in the postero-basal region, the posterior extremity being subtruncate rather obliquely above and narrowly

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

† Geological Survey of Canada, Report of Progress for 1882-83-84, pp. 50 and 51C.

rounded below. Ventral margin broadly rounded in front of the midlength and straighter behind it; superior border sloping rapidly, obliquely, and somewhat concavely downward in front of the beaks, and more gradually and convexly so behind them; umbones rather narrow and moderately prominent; beaks curved inward and forward, placed in advance of the midlength.

Surface marked with numerous concentric lines of growth; test thick and apparently not nacreous.

Hinge dentition and muscular impressions unknown.

Approximate dimensions of the specimen described and figured, which has both valves preserved though slightly displaced: maximum length, 72 mm.; height, 64 mm.; greatest thickness or convexity of the two valves when closed, about 41 mm.

Judging by its external characters and by analogy with other fossil and recent species, this specimen would seem to be referable to *Cyrena* rather than to *Corbicula*. If it is a true *Cyrena*, it is the first species of that genus that has been recognized in Canada. But according to Mr. Meek, "it is quite probable that a critical study of the numerous extinct species that have been described under the general name *Cyrena*, by those who are not very particular in regard to generic distinctions, would bring to light sufficient reasons for the separation from that genus and *Corbicula*, of several groups, either holding the rank of distinct genera or subgenera."\* And, in reference to *Cyrena*, Mr. Meek had previously remarked that "Mr. Prime has called attention to the fact that, in the existing American species of this genus and *Corbicula*, the pallial line is always distinctly sinuous, the sinus being comparatively deep and sharply angular; while in foreign species it is but slightly, or sometimes not at all, sinuous." "So far as I have had an opportunity to determine," Mr. Meek adds, "all of our far-western fossil species, excepting *C. Dakotensis*, have a more or less distinctly sinuous pallial line; but, in no instance have I seen the sinus so deep and sharply angular in the latter, as represented by Mr. Prime in some of the recent species."† In a future re-

\* Report of the U. S. Geological Survey of the Territories, vol. IX, p. 160.

† *Idem*, p. 157.

vision of the Cyrenidæ, *C. Albertensis* may have to be placed in a new genus, but at present it cannot be satisfactorily separated from *Cyrena*. Unfortunately, the pallial line is not visible in the only specimen of that species that the writer has seen.

The genus *Cyrena* was constituted by Lamarck in 1818 for the reception of a number of fresh or brackish water bivalves, with ovately subtrigonal or nearly circular shells and a greenish epidermis, which differ from *Unio* in their porcellanous or non-nacreous test, and comparatively short lateral hinge teeth. Dr. Paul Fischer, in his *Manuel de Conchyliologie*, says that there are about 80 recent species of *Cyrena*, which live in (the warmer parts of) Asia, America and Oceania. On this continent living Cyrenas are not found north of the Southern States.

In a fossil state, species of *Cyrena*, as that genus is now understood, are said to range from the Jurassic period up to the present time, and to culminate in the Eocene. The fossil species of Cyrenidæ, however, are found much farther to the northward than the living ones have been, the former occurring also in Northern Europe, including the British Islands, and in Canada. Including the one now described, four species of Cyrenidæ have so far been recognized as occurring in the Laramie and Belly River formations of Alberta and Assiniboia. These are *Corbicula occidentalis* and *C. cytheriformis* of Meek and Hayden, *Corbicula obliqua* (nobis), and *Cyrena Albertensis*.

Ottawa, Feb. 5, 1903.

#### EXPLANATION OF PLATE IV.

- Fig. 1.—*Cyrena Albertensis*. Outline of left valve of the specimen described.
- Fig. 1A.— „ „ Dorsal view of the same specimen, slightly restored, to show the amount of convexity of the two valves when closed.

## OTTAWA SATYRINÆ.

By A. E. RICHARD, Ottawa.

During the warm days of summer, grayish and dark brown butterflies may be seen flying in a characteristic slow and uncertain way ; they are called Satyrs, and like their namesakes of old may be found in our fields and forests.

The Satyrinæ are medium-sized butterflies, their wings usually adorned with ocelli or round eye-like spots ; in their larval state they feed on grasses and sedges. Some genera occur only in the cold wilderness of polar regions or on the snow-capped summits of mountains in warmer latitudes ; these lonely insects are believed by naturalists to be the remnants of the large numbers which existed during the glacial period ; the climate of the valley has become too warm for them. All the Satyrs, however, are not inhabitants of the cold north ; the greatest number of species, in fact, and we may say the most beautiful, are found in tropical countries.

Six species occur in Ottawa and its surroundings, namely : *Neonympha Eurytus* (Fabr.), *Satyroides Canthus* (Bd.-Lec.), *Satyrus Nephele* (Kirby), *Debis Portlandia* (Fabr.), *Chionobas Jutta* (Hbn.), and *Cœonympha Inornata* (Edw.) ; of these, the first three are common, while the latter three are of rare occurrence.

Mention may also be made here of two other rare Satyrs which may possibly be taken in this vicinity ; one of which, *Erebia Discoidalis* (Kirby), has been taken at Sudbury, Ont., by Mr. J. D. Evans, flying in May ; and the other, *Chionobas (Æneis) Macounii* (Edw.), perhaps the most remarkable species of the whole genus to which it belongs, was discovered at Nepigon by Prof. John Macoun, flying in July. The life history of this insect has been worked out from the egg by Dr. Fletcher ; this butterfly differs from all the other known species of the genus by the absence of the peculiar band of dark special scales or androconia which are such a conspicuous feature of the fore-wings of the males of the genus *Chionobas (Æneis)*.

After the snow has melted, *Neonympha Eurytus* is the first species to appear ; this Satyr flies at the end of May and through-

out the month of June under the shade of quiet woods. It is of a soft brownish-gray colour with markings of a darker shade; there are two large ocelli on the fore-wings and one large and a few small ocelli on the hind-wings; there are two silvery spots in the centre of each large ocellus. *Neonympha Eurytus* measures about one inch and a half in expanse of wings.

The next to appear, *Satyrodes Canthus*, of a paler colour than the preceding species, is also larger in size, with four ocelli on the fore-wings, and about five on the hind-wings; it is our commonest Satyr and can be seen everywhere in low fields and on the weedy shores of rivers and lakes. Appearing on the wing at the beginning of July, it flies in large numbers for a month or so and may even be found in August, though in a crippled condition.

By this time a rarer butterfly has appeared, *Debis Portandia*; it is seldom seen on the wing owing perhaps to the secluded spots it prefers. I have found it in the vicinity of Ottawa City only in the shady parts of woods, resting on the bark of trees or on the nearby fence railings. Somewhat larger than *Satyrodes Canthus*, it resembles it somewhat in its markings but is of a darker colour; there are three ocelli on the fore-wings and five on the hind-wings; the underside is of a paler colour, shaded with delicate lilac and ornamented with beautiful marble streaks of a chocolate-brown shade. I have captured several specimens of this rare insect near Beechwood Cemetery, one being taken on July 10th, and another on August the 6th; this may give an approximate idea of the time the butterfly is on the wing at Ottawa. It has also been taken at Hull, P.Q.

*Satyrus Nephele* flies in the meadows in August; first comes the male, of a dark brown colour with two black ocelli on the fore-wings and one ocellus near the outer margin of the hind-wings; each ocellus is centred with a bluish-white dot. The female appears a few days later than the male; it is of a paler brown shade, the two large ocelli on the fore-wings are very conspicuous in a band of a paler color than the rest of the wing.

*Satyrus Nephele* is very common and may be captured in great numbers on thistle blossoms together with the large species of *Argynnis* and *Grapta*.

*Chionobas* (*Eneis*) *Jutta* reported from the Mer Bleue by Dr. Fletcher is a very delicate brownish-gray insect, with three ocelli on the anterior wings and two or three on the hind-wings the underside of the wings is marbled with grayish and brown markings. This boreal Satyr flies in swamps and wet meadows. I have captured a specimen in a wet wood at Langevin, Dorchester Co., P.Q., some fifty miles south of Quebec city.

While strolling in the fields east of Rockcliffe Park on June the 14th, 1902, I observed a small butterfly which seemed strange to me. I succeeded in capturing it with my hat, and comparing it with the coloured plates of "Holland's Butterfly Book," I supposed this insect to be *Cænonympha Inornata* (Edw.) but as I was not sure of its identity I submitted the specimen to Dr. Fletcher, who kindly determined it as a true *Inornata*, and I understand it is the first time this butterfly has been seen in this vicinity.

*Cænonympha Inornata* is a small species expanding about  $1\frac{1}{4}$  inches; the wings above are of a uniform warm ochreous yellow, the margin of both fore-wings and hind-wings is gray; on the under side the fore-wings are ochreous yellow from the base to the middle or end of the discal area, and then light, shading into gray towards the outer margin; the hind-wings are gray with a whitish band transversely across the wing. This species is abundant on the western prairies, and has also been taken at Hudson Bay and in Newfoundland.

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#### ENTOMOLOGICAL BRANCH.

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By invitation of Dr. Fletcher, one of the leaders of this branch, a meeting was held at his residence on Thursday, Jan. 22, 1903, the following members being present:—W. H. Harrington, T. J. MacLaughlin, A. Halkett, W. Simpson, A. Gibson, C. H. Young, W. R. S. Metcalfe, A. E. Richard and J. D. Evans (Trenton). The convener stated that his object in calling them together was to discuss the work of the branch and to see if some steps might not be taken to stimulate and develop research, as the

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number at present interested in entomology was small. He thought that periodical meetings of the members for discussion would result in benefit to all, and would advance the work of the Club. The papers which might be prepared for the meetings would be available for the Editor of THE NATURALIST. Those present were unanimous in the opinion that the suggested reunions would be of great value, and that regular sub-excursions should also be held during the collecting season. Mr. Harrington was elected secretary in order that records might be kept regularly, and it was resolved that each member should act as chairman in turn. By request, Mr. Harrington read a note, which had been prepared for THE NATURALIST, on *Necturus maculatus*, a batrachian not rare in the Ottawa and Rideau, and which lives partly on insects. Dr. Fletcher described the operations of a small scarabeid beetle, *Canthon simplex*, Lec., which he had taken at Fort McLeod, and pointed out that much that had been published relative to allied ball-rolling beetles was inaccurate or incomplete. Hardly anything had been written of the life-histories of American species. *Canthon lævis*, Drury, occurs in Western Ontario (London) and in the Northwest (Medicine Hat). An enquiry was made by Mr. Halkett as to the antennæ of *Belostoma americana*, the Giant Water Bug, or Electric Light Bug, which has these organs so concealed in ear-like pockets under the head as to be invisible except on close examination. Among the exhibits may be mentioned the following:—Mr. Gibson: an exhibition tablet of *Plusia bimaculata*; with upper and lower glass, so as to show both sides of specimens; also specimens of a fine Pieris from Burmah, white above, but very strikingly coloured beneath. Mr. Young: a series of bred noctuids beautifully mounted. Mr. Harrington: several American species of *Canthon*, *Phanæus* and *Copris* and a few from Europe and Japan. Dr. Fletcher: a pair of *Hylecæus lugubris* from Rigaud, Que., and a plate of melanic forms of *Argynnis lais* painted by Mr. Cridle. Mr. Metcalfe: an interesting series of Arctians.

The second meeting was held on Thursday, Jan. 29, at Mr. Harrington's, who read a short paper on "Neatness in Collections," giving some hints as to pinning and setting insects of the

different orders so as to make an attractive collection, and at the same time to have the specimens best adapted for study. Dr. Fletcher and others discussed the points raised, and gave some valuable ideas as to the preservation of various forms. Mr. Richard read an excellent paper on "Ottawa Satyridæ" giving descriptions of the species found, and the localities where captured. He recorded a species new to Ottawa, viz., *Cenonympha inornata*, which he had taken on Rockliffe Rifle Range last summer. Dr. Fletcher spoke of the value of Mr. Richard's work, and of the distribution of *C. inornata* and of the western form *C. ochracea*. He also discussed *Chionobas jutta* and *C. Macounii*, the latter occurring only at Nepigon and the foot-hills of the Rocky Mountains. Mr. Gibson described the occurrence of *C. jutta* in the Mer Bleue and read a note on the occurrence in the same locality of a new moth, *Semiophora Youngii*, Smith, which had been first captured by Mr. Young. Two specimens were shown, and also inflated larvæ and pupa cases. A parasite reared from a pupa proved to be a new species of Anomalon. Mr. Metcalfe mentioned finding tachinid eggs upon potato beetles, but had not succeeded in obtaining flies. Three dipterous larvæ had emerged from a female Walking Stick (*Diapheromera femorata*) which lived for some time afterward and deposited her eggs. He exhibited a specimen of *Thecla Ontario* taken at Grimsby, the only previous records being Port Stanley and Toronto. A larva feeding upon table figs was shown by Mr. Harrington and identified by Dr. Fletcher as that of *Plodia interpunctella*, which infests dried fruits, nuts and other products. The following recent books were examined: Dr. Dyar's "List of N. A. Lepidoptera," a valuable work just published; "Caterpillars and their Moths," by Miss Soule and Miss Elliott; "A Nature Wooing," by Blatchley, and "Our Common Spiders," by Emerton.

W. H. H.

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## NOTE ON THE BLUE-TAILED LIZARD.

Several summers past, beginning with the summer of 1897, I have observed a very pretty little lizard on an island of Stony Lake in Peterboro' County, Ontario. As true lizards are not common in Ontario (though newts and salamanders, which are popularly called "lizards," are fairly common) and as this is the only Canadian lizard I have ever seen, I have been the more interested in it.

At noon on a bright, warm day in August, 1899, with the aid of a little boy, I secured a specimen in the shallow water on the flat rocky shore, made a sketch of it, and then let it go. I am loth to kill animals, even rare ones, or rather especially rare ones; for I regard such animals as the very ones to be most encouraged in the locality. This proved to be the Blue-tailed Lizard, *Eumeces fasciatus*, one of the skinks. It was very nearly four inches long, black, with five yellow stripes along the back, the middle one being forked at the head; and it had an iridescent blue-green tail. One summer I found one dead on the shore. Last year as I was clearing the shore of drift-wood, I saw one come out of an old stump. It was within arm's length of me, and we remained looking at each other for some time before I made an unsuccessful effort to catch it. I have at other times caught glimpses of them as they darted under a rock or log; and this summer my sister saw one under the corner of the house.

In all cases the animal was seen in the middle of the day; it must therefore be, to some extent at least, diurnal. It is no wonder that the lizards are rare and consequently little observed in Canada; for, being at once cold-blooded (or rather poikilotherm) and terrestrial, they like a warm climate, and are found in abundance only in tropical climes. Of the other reptiles we have, for the same reason, no alligators or crocodiles and but comparatively few species of snakes and turtles.

As Professor Macoun knows of no previous record of this lizard in Canada, I have thought it worth while to make this note of it.

CEPHAS GUILLET.

Nov., 1902.

## PALÆONTOLOGY.

## CRANIA OF EXTINCT BISONS FROM THE KLONDIKE CREEK GRAVELS.

During the last five years, four skulls, or portions of skulls, of extinct bisons from the auriferous gravels of the Klondike district, have been received at the Museum of the Geological Survey. It will be convenient to distinguish these specimens as Nos. 1, 2, 3 and 4.

Nos. 1 and 2 are skulls that are larger and much longer horned than those of the woodland or prairie race of the recent American Bison. Both of them are apparently referable to the form which Mr. Rhoads describes and figures as the "Great Alaskan Bison," *Bison Alaskensis*, Rhoads, in the Proceedings of the Academy of Natural Sciences of Philadelphia for 1897. But, in a paper on "The Fossil Bison of North America," published in 1899, in volume XXI of the Proceedings of the U. S. National Museum, Mr. F. A. Lucas places *B. Alaskensis* among the synonyms of *B. crassicornis*, Richardson.

No. 1, like the type of *B. Alaskensis*, is a "large cranium of a long horned bison" . . . "in which the frontal and occipital portions, with their horn cores, are intact." The margins of the orbits and the "basal suture of the nasals are also preserved." This specimen was collected by Mr. R. G. McConnell in 1900, fifteen feet below the surface, at Gold Run Creek, Claim 17.

No. 2 is a still finer skull than No. 1, with the whole of both horns remarkably well preserved, and the nasals, as well as the frontal and occipital portions. It was collected by Mr. W. G. Luker in 1902, thirty feet below the surface, at Dominion Creek, Claim No. 83, below Lower Discovery.

No. 3 is the basal portion of a skull, with most of the right horn core and half of the left preserved, collected by Mr. Luker in 1902, forty-five feet below the surface, at Bear Creek. This skull is much smaller than that of either race of the now nearly extinct American Bison, and has comparatively short and not very much curved horn cores. Still, it seems to correspond better with Lucas' recent descriptions and figures of the young or "spike-

horn" stage of *Bison crassicornis*, than it does with those of his *B. occidentalis*.

No. 4 is a portion of a horn, with its core, which is too imperfect to be determined specifically, collected by Mr. W. Ogilvie in 1898, eighteen feet and a half below the surface, at Bonanza Creek, Claim 39. above Discovery.

It would appear therefore that Nos. 1, 2, 3, and possibly No. 4, are referable to the *Bison crassicornis* of Richardson, as that species is understood by Mr. Lucas. They are all obviously of no very great antiquity, and show no traces of mineralization.

Mr. Ernest Thompson Seton has advanced the theory that the bison of the plains is a "degenerate modern offshoot of the woodland stock," and it may well be that both are degenerate descendants of the great extinct bison of Alaska and the Klondike.

J. F. W.

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#### SOIRÉES.

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At the second of the Club's Soirées in St. John's Hall, Jan. 13th, Dr. R. A. Daly lectured on "The Scenery of the Rocky Mountain Region." A brief summary will indicate the ground covered by the address.

The variety of form and colour in mountain scenery is practically infinite. But in the same way that a more or less complete understanding of plants and animals is possible through the recognition of the existence of species and of higher classes, notwithstanding the immense number of variations in individuals, so an intelligent view of scenic forms as seen in mountain ranges is possible because of the fact that those forms are reducible to types. A second valuable aid in appreciating the elements of mountain scenery is found in the fact that the types recur because they are the product of general laws in the formation of the actual mountains seen by the tourist. It was pointed out that the lantern-slide illustrations of the evening might thus have more value if they were regarded as so many examples of processes character-

istic of mountain formation and also examples of forms which are repeated over and over again in other mountain ranges of the world. As the foundation of the subject as treated in the lecture, the parallel was drawn between man in his artistic productions and Nature in her fashioning of existing mountains. The lecture thus fell into three divisions corresponding to Nature's activity as an architect, as a sculptor, and as a painter.

The raw material with which Nature works in mountain-building is derived from stratified rock-material originally deposited in thick and extensive layers on the sea-floor. The methods by which the once flat-lying submarine strata are elevated into a mountain-range, include the folding and faulting of those beds, due to great lateral pressure at right angles to the axis of the range. In the process of folding, the width of the belt of rock so engaged is diminished and the thickness is correspondingly increased. As one consequence the lower parts of the greater folds become so deeply buried as to feel the influence of subterranean heat and of hot water and gases circulating within the earth's crust. The folded marine strata are in this way subjected to alteration and crystallization: from them many kinds of crystalline schists, so characteristically developed in great ranges throughout the world, have been derived. Again, the mountain folds may be partially displaced by molten granite or allied rock-material rising from the earth's interior and invading the overlying formations. The importance of this kind of raw material used by Nature in producing her mountain architecture, is recognized by the tourist visiting, for example, the Yosemite Valley, perhaps for its area affording the grandest bit of scenery in the world. The "central granites" of most great mountain ranges usually furnish much of the scenic magnificence of those ranges. Finally, the fractures opened by folding and faulting in the rocks composing a range, may permit of the overflow of molten rock from subterranean sources; the result has been to form in the west, Mt. Baker, Mt. Rainier and other huge volcanoes, among the grandest units in the scenery of the Rocky Mountain Region. In summary, folding, faulting, metamorphism, granitic intrusion and volcanic eruption were briefly noted as the methods by which mountain architecture has been determined.

The lantern-views of the evening, selected from the Bickmore collection, kindly placed at the disposal of the lecturer by Professor Penhallow of McGill University, and from the likewise valuable (commercial) collection of E. R. Shepard of Minneapolis, were, for the most part, intended to illustrate the natural sculpturing of the rock-formations exposed to destructive forces so soon as those masses have become elevated to mountainous heights. The influence of running water in cutting out valleys, the importance of streams of rock débris or rock-waste in explaining the wearing away of the mountain massifs, the destructive activity of snow and ice, especially in the form, respectively, of avalanches and glaciers, were outlined and explained by reference to views from southern British Columbia and Montana. It was pointed out that the actual ridges, domes, peak and cliffs seen during a journey through the Canadian Cordillera, are more directly due to Nature's sculpture controlled chiefly by these agencies, than to upheaval of the earth's crust. The proximate cause of the individual mountains is, in reality, the excavation of the intervening valleys, sunk as these are in rock-piles once much higher than the mountains of to-day.

The colouring of mountain scenery is of course partly to be referred to the natural pigments characterizing the constituent rocks, but, in general, still more to the influence of the sky, of the clouds and of the atmosphere itself, and, again in important degree, to the forest and to the artificial changes incident to man's inhabiting, clearing and cultivating valleys and higher slopes. The coloured Bickmore slides served to illustrate this third part of the lecture. The special control of the subjective element in scenery exerted by the presence or absence of man and his works in mountain-landscape was touched upon by the lecturer, and a comparison drawn in that regard between Switzerland and the Cordillera of America.

After the lecture the Report of the Geological Branch was read.

Prof. Penhallow's lecture on "The Wood-pulp Industry in Canada," in the Normal School, Jan. 13th, attracted a large number of lumbermen and others interested in the manufacture of pulp and paper, and there was the usual large attendance of Normal School students and members of the Club. The lecture was illustrated by many beautiful lantern slides showing the many varieties of pulp that had been used in the manufacture of paper from the earliest times to the present. The manner in which the ancient papyrus and the felted Japanese papers are made was clearly explained. The greater part of the lecture was devoted to describing the various processes employed to-day in manufacturing pulp and paper from the products of the forest. From the cutting of the trees in the forest to the turning out of the finest paper from the mills of the St. Maurice and Sault Ste. Marie rivers, every step of the process was illustrated by lantern slides specially prepared for this lecture.

The most timely lecture of the winter course was that delivered by Dr. S. B. Sinclair, Feb. 10th, on "Nature Study in American Universities." Nature Study will soon be one of the chief branches taught in our public schools, and the teachers who listened to Dr. Sinclair must have been impressed with its importance. Taking Chicago, Clark and Cornell Universities as typical he traced the development of the Nature Study movement during the last thirty years, and said that there was now an almost universal opinion in favour of a certain amount of such study in every grade from the Kindergarten forward. A detailed statement of the points covered by the lecturer will appear in the May number of THE NATURALIST. The lecture was discussed by Prof. Macoun and Dr. Fletcher, who endorsed all that was said by Dr. Sinclair.

The Report of the Entomological Branch was read at the close of the lecture.

On February 24th. Prof. Macoun lectured in St. John's Hall, on "The Summer Climate of the Yukon and its Effects on Vegetation." After briefly referring to the route from Vancouver to Skagway, and from Skagway to White Horse and so to Dawson,



the lecturer described the natural vegetation of the Yukon and Klondike River valleys. The abundance of fruit was especially note-worthy. Red and black currants, blue-berries and rasp-berries were everywhere abundant, and cultivated varieties of all these fruits will do well. Vegetables of all kinds, except corn, do well, and though potatoes are said not to mature, new varieties more suitable to the soil and climate will doubtless be planted. There is nothing unsuitable to the growth of potatoes in the climate itself. Cabbage, turnips, etc., grow to an extraordinary size.

Careful meteorological reports have been kept for five years, and these indicate that there is an average temperature of  $70^{\circ}$  or higher on 46 days each summer, and of  $80^{\circ}$  or higher on 14 days. These temperatures with bright sunshine and no frost for three months, amply account for the successful growing of vegetables. Spring opens about the end of April, the usual date for the last frost being May 23rd, and the first about August 23rd. Oats, barley and wheat, were secured on the latter date, and though the wheat was not ripe it ripened afterwards, and of 100 grains planted at the Experimental Farm none failed to grow and all were vigorous. Prof. Macoun made it clear that though the reports about frozen ground were in a measure true, the causes to which this condition was due are easily removeable, and they apply only to a part of the region. The physical features of the Yukon district were described, and the lecturer expressed the belief that in the very near future the district would be self-supporting. As a proof that the climate of Dawson was much the same as that of Ottawa he cited the fact that he collected a rose (*Rosa acicularis*) in bud at Aylmer, Que., on the 3rd of June. When he reached Dawson he found that Mr. Tyrrell had collected the same species in full bloom one day earlier, and other species collected by Mr. Tyrrell were found to be as early in blooming as at Ottawa. Prof. Macoun's address will be printed in full in an early number of THE NATURALIST.

The report of the Botanical Branch was read before Prof. Macoun's lecture was delivered.

## REVIEWS.

NATURE STUDY AND LIFE. By Clifton F. Hodge, Ph. D.  
Ginn & Co., Boston, 1902.

NATURE STUDY AND THE CHILD. By Charles B. Scott, A. M.  
D. C. Heath & Co., Boston, 1900.

As a result of Mr. Attwood's paper on "Nature Study," published in the January number of the OTTAWA NATURALIST, and Dr. Sinclair's recent address on "Nature Study in American Universities" at one of the Club's soirées, a lively impetus has been given to the growing interest in Nature Study, and there is a demand for books on the subject. Of the great number which have been recently published, the two selected for notice are among the best, and either will prove of immense value to the student. Nature as a subject for popular study has been treated from so many points of view that students who propose to become teachers of this fascinating subject, have a large list of books from which to select those best suited to their needs. For those who have never systematically studied Nature, either of the above books will open up a field of unending interest and delight, and such knowledge as is obtained from them may be augmented by attending the excursions and sub-excursions of the Ottawa Field-Naturalists' Club. Students of Nature are exceptionally well situated in Ottawa as we have in our midst leaders in every branch of natural science, who are ever ready to give time and knowledge to help the working student. At every excursion of the Club there are those able and willing to resolve any of the difficulties that are likely to confront the beginner, and for the advanced student the more difficult steps are made easy.

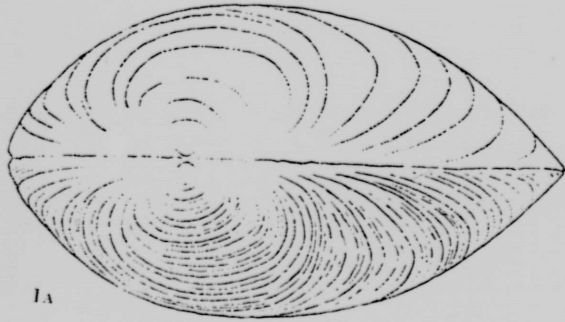
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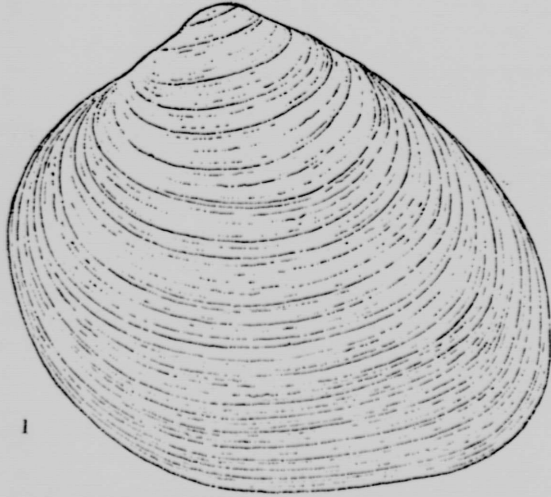
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