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THE JAMES FLETCHER MEMORIAL FOUNTAIN.

THE OTTAWA NATURALIST

VOL. XXIV.

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No. 5

UNVEILING OF THE JAMES FLETCHER MEMORIAL FOUNTAIN.

The unveiling of the James Fletcher Memorial Fountain took place at the Central Experimental Farm, Ottawa, on Tuesday afternoon, the 19th July, 1910, at the hour of 4.30 p.m. The ceremony was a complete success in every way. Several hundreds of people came out from the City, and some distinguished visitors from a distance were also present. The Ottawa Field-Naturalists' Club, under whose auspices the Fountain was erected, was largely represented from its local membership. Official representatives from the Royal Society of Canada and the Entomological Society of Ontario were also present, and took a prominent part in the proceedings.

Before introducing the speakers, Mr. E. R. Cameron, K.C., the Chairman of the Fletcher Memorial Committee, outlined briefly the steps that led to the erection of the Fountain, instancing facts in regard to the work of the Committee, the soliciting of subscriptions and the decision, after the most careful enquiry and consideration, to place the work of the memorial in the hands of Dr. R. Tait McKenzie, of the University of Pennsylvania, Philadelphia, U.S., an artist of wide repute who has won a high place in the salons of London and Paris for his work in bronzes.

The Honourable Sydney A. Fisher, Minister of Agriculture, who unveiled the Memorial Fountain, spoke in the very highest of terms of the late Dr. Fletcher and his work for Canada. He referred to his early associations with him, and in a charming manner described how the personal friendship which began many years ago continued up to the time of his death. He said that Dr. Fletcher was one of the first, if not the very first, person to welcome him to Ottawa on his election as a Member of Parliament. He then went on to speak of his relations with him as Minister of Agriculture. Dr. Fletcher, he said, represented the ideal type of a public servant. The work which he did throughout the whole of Canada was of the greatest benefit to the country at large. Entirely forgetting himself in every way he gave up his whole time to the work in which he was placed in

charge, as Entomologist and Botanist of the Dominion Experimental Farms. He was a very hard worker and one who never spared himself. There was no doubt in his mind that if he (Fletcher) had taken a much needed rest, some few years ago, that he might have been with us and doing his work to-day. His investigations and lecture courses took him to every part of the Dominion and the experience he thus gained respecting agricultural conditions, was of extreme value to him in his work. His whole thought was to benefit Canadian agriculture, and the wide reputation he made, not only in his own country, but throughout practically the whole world where economic problems in agriculture are studied, will last as long as time itself. Of a genial and enthusiastic temperament he made friends wherever he went and his name to-day is known in every part of Canada where agriculture is practised. His delightful personality brought him in close touch with farmers, horticulturists and others, and his talks and lectures on insects and plants were always eagerly listened to.

Dr. Bethune, Professor of Entomology at the Ontario Agricultural College, Guelph, expressed his gratification at seeing so many young people present to do honour to the memory of the late Dr. Fletcher, who was so deeply interested in children of all ages and so ready at all times to help and instruct them. He said that he came as a representative of the Ontario Agricultural College where Dr. Fletcher was always a most welcome visitor. Whenever it was announced that he was to give an address at the College, the hall was sure to be thronged with both young men and women who were eager to hear him. He also represented the Entomological Society of Ontario, of which Dr. Fletcher had been a very active member for a great number of years. On the appointment of Dr. Saunders to be Director of the Experimental Farms he was obliged to give up his active co-operation in the work of the Society, and happily his place was very satisfactorily filled by our lamented friend. For nearly thirty years he was a member of the Council of the Society and did a very great deal to advance its interests in various directions.

The speaker then went on to describe his own intimate friendship with Dr. Fletcher and his admiration for his ability as an entomologist and in other respects as well. While we could not regard him as a man prominent for discoveries in science, while we did not exalt him to the same position as a Darwin, a Huxley or an Agassiz, still he had a very scientific capacity for discerning minute distinctions in the objects of his study, and with his wonderfully retentive memory was able to do a great deal of most valuable work. We do not, therefore, erect this memorial as a tribute to his scientific attainments, but

rather as a token of our love for the man himself and the devoted affection in which we all held him. While he was widely known and respected all over the country, and was regretted as a true friend of a great variety of people, there was another side to his character which was not so generally known: he had a very deep sense of religion and was a man of unobtrusive piety which only revealed itself to those who were on the most intimate terms with him.

Dr. Bethune then read a letter from Dr. L. O. Howard, Chief of the Bureau of Entomology, Washington, and therefore considered to be at the head of the entomologists of North America. He wrote as follows: "I regret more than I can tell that I am unable to come to Ottawa for the unveiling of the memorial. Dr. Fletcher was one of my dearest friends and I had the greatest admiration for him. His services to Canada were very great. He had a wonderful capacity in a very broad field in entomology and was one of the best informed men of his time on the intricate and manifold aspects of economic entomology. His reports were sound and practical, and as a public speaker before assemblages of farmers and gardeners he was unexcelled. He was known and admired, and loved also, throughout the United States. In fact I have never known a man who had so many absolutely devoted friends as Dr. Fletcher. His energy, his enthusiasm, his absorbing interest in everything that lives and grows, his warm heart, his perfect lack of even a suspicion of egotism attracted everyone who knew him and bound them to him in friendship, and even love, forever."

Dr. Wm. Saunders, C.M.G., Director of the Dominion Experimental Farms, spoke very feelingly of his long association with Dr. Fletcher, which commenced before his appointment on the staff of the Experimental Farms. The value of his work as Entomologist and Botanist to the farmers of the Dominion was very great and he has been much missed. At meetings of farmers and fruitgrowers his clear statements regarding subjects under discussion made his presence a great benefit. He was blessed with a child-like optimism and cheerfulness of spirit which made his society always welcome, and instances of his wide and kind sympathy can be recalled by all who had the privilege of his acquaintance. Dr. Saunders said he had hoped to enjoy his co-operation in the work of the Experimental Farms as long as he held the office of Director. An all-wise Providence decreed otherwise, however; but although deprived of his society and help, he would always look back to the pleasant intercourse of the years they spent together. Such a life as his was will be a lasting influence for good. Having by this memorial striven to show our appreciation of our late friend's character and work,

we may honour him still further by endeavouring to maintain and advance those sciences to the promotion of which so much of his life was so enthusiastically devoted.

Dr. W. D. LeSueur, Hon. Secretary of the Royal Society, in paying his tribute to the late Dr. Fletcher said that the ceremony in which we are engaging to-day, the duty we are fulfilling towards the memory of our departed and deeply-lamented friend, is one in which the Royal Society of Canada may very fittingly take a part. It was early in the history of the Society—at its third annual meeting in the year 1885—that the name of James Fletcher was enrolled in its list of members. His zeal and his attainments as a practical botanist and entomologist had already attracted the attention of the leading men of Section IV, the Section devoted to the biological sciences; and they gave him a warm welcome to their ranks. It is almost needless to add that he did not regard his election in the light of an idle decoration; he saw in it rather a call to work and duty, and he took at once an active part in the labours of his Section, of which nine years later he was elected President. The address which he delivered in that capacity dealt with the subject of practical entomology. The turn of his mind was at all times practical. He was one of those men who see things to do, and who do them. He was not a man to undervalue or depreciate scientific theory, but his talent lay rather in the region of the visible and tangible. The living, breathing world was his domain. He had the quick eye, the retentive memory, and, above all, the responsive, sympathetic heart.

In the year 1901 we find him reading a paper before the Society on "The Value of Nature-Study in Education." This was a subject after his own heart. He could not understand education apart from nature-study.

His executive abilities were quickly recognized, and for many years he filled most efficiently the office of Honorary Treasurer. In the year 1906, he succeeded Dr. S. E. Dawson, then elected vice-president, in the more difficult and laborious office of Honorary Secretary. Here his talents of industry, tact and management found abundant exercise. The office had previously been held but by two individuals, Sir John Bourinot for the first twenty years of the Society's existence (1882-1902), and Dr. Dawson for the four succeeding years. These were the distinguished predecessors in whose steps he had to walk; and it was agreed by all that, in his hands, the best traditions of the office were fully maintained. He worked while it was day faithfully and well. Feeling testimony is borne to his services and character in the Proceedings of the Royal Society of Canada of last year: and in the galaxy of noble men whom that Society

has lost, the name of James Fletcher shines, and will shine, with a radiance all its own.

Mr. R. B. Whyte spoke on behalf of the Ottawa Field-Naturalists' Club. He told of the early days in the history of the society and of the keen interest which Dr. Fletcher, who had been worthily styled its "father," always had in its welfare. When the Club was organized in 1879, about 40 gentlemen joined its ranks, largely through Dr. Fletcher's influence. No one at that time ever expected the Club to develop in the remarkable way it has done and to do the great amount of work it has since accomplished. From that year until his death, during which period the membership has increased to over 300, he was at all times the chief mainstay, so to speak, of its varied branches of work. As a field-naturalist, there was probably no one in America who was his equal. He had a deep love for boys and girls, and many well-known naturalists in Canada to-day owe their early interest in plants and animals to him. At the excursions of the Club he was always the leading centre of attraction. Everyone wanted to go with Dr. Fletcher through the woods and into the meadows and get from him some of his enthusiasm and knowledge about the forms of life which occurred everywhere.

Mr. Frank T. Shutt, Chief Chemist of the Dominion Experimental Farms, said that to those who knew James Fletcher personally no monument in stone or bronze is needed to keep his memory green. The charm of the true, kindly, cultured gentleman, which we all felt when in his company, will not readily be forgotten. But we have done well in the erection of this Fountain, a tribute to his memory—a tribute, as has been happily expressed upon the stone, of affection from his friends, that may speak to those who come after of the love and the admiration we had for him; to tell them that James Fletcher was a man who did much good in his day and generation. His work was of incalculable benefit to the farmer and fruit-grower of this country in combatting weed, fungus and injurious insect. Probably of even more value, however, was his inspiring enthusiasm, that power to awaken in others an interest in the study of animate nature. And in this connection we of Ottawa were particularly fortunate. Whether on the excursions of the Field-Naturalists' Club or on the lecture platform of the winter series of lectures, he was the teacher that all listened to with pleasure. We do honour to-day to the memory of a busy man called away in the prime of his life, in the midst of his work. So far as we know he had made no startling or brilliant discovery in the realm of pure science, but that fact—if fact it be—does not in the least detract from the honour that is rightly his. We are rather apt now-a-days to

save our applause for those who legitimately or illegitimately can startle us. But Dr. Fletcher was none such. He was a hard worker—but one who looked upon his work as his pleasure—and he was a phenomenal success in that special work to which he devoted his life. He left us a splendid example; may we all try in some measure to follow in his footsteps.

We may all take great satisfaction in knowing that this Fountain, now entrusted to the care of the Experimental Farm and the public, has been erected as a free-will offering by his admirers. In not a single instance was personal canvassing resorted to. We shall rejoice to reflect in the days that are to come that this memorial was the spontaneous tribute of those who knew and loved James Fletcher.

The following letter from Dr. T. J. W. Burgess, Medical Superintendent of the Protestant Hospital for the Insane, Montreal, was read by Mr. Shutt:

"I cannot tell you how sorry I am to be obliged to say that I shall not be able to be present to do honour to dear old James Fletcher. No more lovable man ever breathed. It is one of my proudest boasts that, for over thirty years, I was counted by him on his list of friends. Never had science a more ardent votary than the late Dr. Fletcher. His whole thought was given to it and not only his personal intimates, but Canada as a whole should cherish the memory of one who offered up his entire time and energy to her service, making for himself thereby a fame that it will be difficult for anyone to eclipse. As Longfellow says:

'His heart was in his work and the heart
Giveth grace unto every Art.'

Peace to his ashes!

'He rests from his labours, and his works do follow him.'"

FERN HUNTING IN ONTARIO.

By F. J. A. MORRIS, PORT HOPE, ONT.

II—ABOUT THE RIDEAU AND OTHER ROCK DISTRICTS.

When I went from Port Hope to the Rideau Ferry in my first season's fern-hunting, I was curious to see what new species, if any, awaited me in a rocky district. I told myself not to expect more than 2 or 3 additions to my list of 20, and I kept assuring myself (and others, too, when I could find a willing ear) that I should be satisfied with 24 species in all. I was noth-

ing short of jubilant when I ended the season with 30 species; this number rose in 1907 to 34 and in 1909 to 37.

Ferns have a great liking for limestone, and almost my first expedition was to a creek flowing from Bass Lake to the Lower Rideau. Its course is little more than a mile long, first through beaver-meadows and then through pastures, where the stream is shaded with trees and flanked on one side by limestone cliffs ranging from 2 or 3 to 20 feet in height. Refreshing myself at a natural well in the rock on the near bank of the stream, I stepped across, scrambled up the loose talus and examined the shaded wall of limestone above. If you are not a fern lover you cannot share my feelings when I tell you I was standing within arm's length of 3 new species.

On the upper side of the topmost ledge stood a dense mass of Polypody, forming a natural coping-stone, as it were, to the rock wall. Beneath some lower ledges and in the horizontal seams were tufts of Black Spine-wort (*Asplenium Trichomanes*); while further in the shade, beneath some cedars that grew above the rock and behind two maples that grew up from below was a mass of tangled leaves—what could they be? some sort of dock? no! there were lines of spore-cases on the under side; it was the Walking Leaf (*Camptosorus rhizophyllus*), and, as though to put itself beyond suspicion or a doubt, it was actually walking; I got a plant three of whose fronds had regained the moss on the face of the cliff, rooted and given rise to plants of their own.

The Walking Leaf must have shade. It is fond of limestone, but in deeply-shaded damp woods I have found it growing on sandstone, and if you slash the woods and mutilate its sylvan bowers, letting in the sunlight, it will soon disappear even from its favorite limestone shelves. Its foliage has not the glossy finish of its congener, the Hart's Tongue, but its quaint growth and a certain local rarity about it will always attract attention.

The tendency of the long tapering frond with its sensitive tip to regain the mossy bed from which it sprang, seems like an instinct closely analogous to the blind groping movements of certain lower forms of marine life; true the tentacle thrust forth by the plant to search for the wall of its sea-cave swims in a more palpable element, the ocean of air, but it serves the same purpose. The act is doubtless not a conscious one in either case, but in both alike sensation is involved. Not seldom when the frond has reached outwards to a distance from the rock and takes a long time to return, the auricles at the base of the frond are found stretching out blind hands in the shape of similar sensitive tentacles. The great blocks of limestone that fill the Niagara gorge are often densely carpeted with the Walking Leaf, the

plants growing in interwoven masses, a tangle there is no unravelling.

The little Black Spleenwort I had never seen growing in its native wild before. But I recognized in it at first glance the plant that I had seen as a boy of 10 years old in the pedlar's pack of a veteran fern-hunter in Perthshire; he had lifted it out with pride to show me as part of the spoils at the end of his long day's tramp to Glen Almond. He called it the Scotch Maidenhair and told me it was getting scarce in our neighbourhood of Crieff. It has a close kinsman in the Green Spleenwort, which is found in Ontario about the Bruce Peninsula. In size and shape of frond the ferns are indistinguishable, but the stipe of the Black Spleenwort is a shining ebony at the base and dark brown above to the apex of the rhachis; in the Green Spleenwort the stalk is brownish at the base and green above. I have found both species fairly abundant about mountain torrents and shaded glens in Argyllshire and high up on the hills of North Wales.

Altogether, along about half a mile of this little stream I have found 24 species of fern. The Christmas Fern is not nearly as common about the Rideau as at Port Hope, and I have not found the Narrow-leaved Spleenwort or the Goldie's Shield Fern at all, but on the other hand the Polypody is abundant; its favorite home is on top of a shaded rock wall.

Later in July I was on a picnic excursion, to the Big Rideau, that landed on the north shore nearly opposite Sand Island. This shore at one place rises to a high cliff of exposed rock; here I found an abundant growth of the Rusty Woodsie (*Woodsia ilvensis*): it seems to enjoy exposed situations and will fill up the rock seams in tufts as dense as those of the British Parsley Fern in the slate ledges of the Lake District. A peculiar feature about it and two or three other species of *Woodsia* is that the stipe is jointed; an inch or so above the base you will see an obscure thickening of the stalk; when the frond dies it breaks off at this joint.

Just behind the shore, a good deal higher than the level of the lake, the country consists of rocky open woods, chiefly poplar and oak. In these woods I found much to interest the naturalist: the Fragrant or Canada Sumach, and on it, feeding on its leaves and breeding there, large numbers of a Chrysomelid beetle, *Blepharida rhois*; the Steeple Bush or red spiraea (*S. tomentosa*); the Red Cedar (*Juniperus virginiana*); also, on the sun-baked surface of great weather-worn rocks, the *Selaginella rupestris*; in the shaded recesses of the rocks, the Black Spleenwort and near it the beautiful Ebony Spleenwort (*Asplenium platyneuron*); this last usually not in the rock ledges, but in stony ground a little way out from the Black Spleenwort's favorite haunt. It has much the appearance of the Christmas Fern, but the frond

is somewhat more slender; the pinnae, however, are strikingly like those of *Aspidium acrostichoides* and often auricled at the base; the dark brown or ebony stalk and the nature of the fruiting make it easily identified; the barren fronds, as in many ferns, are smaller and less rigid, with wider pinnae. It is not a common fern in my experience, and this is the only station so far known to me. A curious coincidence about finding it there was that one of the fern authorities (I think Mrs. Dana) says she has found it among red cedars; I had rarely, if ever, seen the red cedar growing, but it was noticeably abundant in the rocky open wood where I was exploring that day.

Towards the end of July I had planned to stay for a few days in Lanark, north of Perth, and just before going there I paid a visit to a tamarack swamp near Smith's Falls. On my way there I skirted a somewhat rocky pasture with straggling groves of maple and hemlock; in one of the wooded alleys near the roadway I saw some large masses of a light green fern which struck me as peculiar in its habit of growth; the fronds appeared to be very long and to droop outwards, the clumps as a whole looking like gushing fountains or spreading geysers of green; the pinnae, I noticed on drawing near, were very finely cut like filigree work; it proved to be the Hay-scented Fern (*Dicksonia punctilobula*); it is far from common about the Rideau, but its beautiful spreading sheaves are a noteworthy feature of North Muskoka, near Port Sydney. I found some more of it near Lanark in a rich maple wood, which provided me also with a second station for the Narrow-leaved Spleenwort. The *Dicksonia* does not like to be heavily shaded; it was in an open glade that I had first found it; it was growing in a clearing of the Lanark wood; in Port Sydney it is abundant at the sides of the roads, and in the Algonquin Park it usually occurs in disused lumber roads and on the trails.

Just north of the Village of Lanark I found under some cedars by the roadside my first colony of the Narrow Beech Fern (*Phegopteris polypodioides*); some of the specimens I got were at least as wide as long, but they were not the Broad Beech Fern which I have never found; for some time, however, I thought my find was *Phegopteris hexagonoptera*, but my first visit to the Algonquin Park settled any doubts I had.

During my few days at Lanark I drove to the head of Lake Dalhousie, where the Mississippi rushes into the Lake from the High Falls a little further up. The rock cliffs at the foot of the gorge are some 200 feet high and pretty sheer. I scrambled up the steep bank of talus to the foot of the cliff and made my way along the side, facing up stream; after an hour's slow survey of niches and crannies, and rummaging about among caves and

alcoves, I made a find that greatly pleased me; in some wet rock fissures I found growing the Slender Cliff Brake (*Pellaea gracilis* or *Cryptogramma Stelleri*). The books say it is rarely, if ever, found away from limestone; these cliffs, however, are granite or sandstone. There were two stations for the fern along the cliff, about half a mile distant from one another; one station contained 2 or 3 colonies some yards apart, the other only a single colony. The Slender Cliff Brake is the most delicate and frail fern I know. The stalks are almost threadlike in their thinness and very brittle; there is quite a marked difference between the sterile and the fertile fronds; the frond in fruit has its divisions narrow and pointed, the margins being recurved over the sporangia; in the sterile frond the pinnae have not recurved margins, and the 5 or 6 lobes into which they are divided instead of being a narrow lanceolate are wide spreading, ovate to orbicular, with a crenate margin. The fern grows in tufts out of rock seams with a habit like that of the Brittle Bladder Fern; the fronds when pressed are of so filmy a texture that the mere act of breathing over them will waft them off the sheet on which they lie.

In order to make myself familiar with the genus, I paid a special visit that autumn to Niagara Glen, where, on the sheer limestone cliffs above the gorge, the Purple Cliff Brake is abundant. It presents as remarkable a contrast to the Slender Cliff Brake as can well be imagined. The stipe is stout and woody, the foliage thick and leathery, bluish green in colour. Of course the kinship of the two is close and obvious, the sporangia being clamped beneath the reflexed margins of the pinnules; but in the true *Pellaea* the difference between fertile and sterile fronds is slight, in the *Cryptogrammes*, such as *Steller's Cliff Brake* and the *Parsley Fern* it is quite marked.

My next trip of any consequence was a visit to the Algonquin Park by way of Ottawa. Like all visitors to the Park, we first called on Mr. Bartlett, the Superintendent. In addition to his intimate knowledge of this fine tract of forest and lake, Mr. Bartlett has a great love of natural history, and the *flora* and *fauna* of the Park interest him quite independently of his official position. Hearing that I was specially fond of ferns he handed me over a small plant growing in a box and asked me what it was. I looked carefully at it and decided it was a Shield Fern, but the species was beyond me. I was then told to smell it; there could be no mistaking that sweet spicy fragrance; when I found that the Fragrant Shield Fern grew in the Park and was obtainable not far from Headquarters, I could scarcely wait till next day. The scent from the resinous glands on the under side of the frond is indescribably delicious.

The fern was not abundant in the neighbourhood, but was

found at 3 or 4 stations on the dry brittle rock; generally shaded, but not densely; its usual companions, the Polypody, the Beech Fern and the Rusty Woodsia. It grows in large compact tufts, a dozen or more green fronds projecting from a mass of brown shrivelled fronds of the previous season. The frond is in outline oblong lanceolate, its pinnae a narrow oblong, consisting of narrow oblong pinnules, mostly opposite, and serrate at the tip and along the margin more remote from the rhachis; the base of the tuft is densely chaffy with large flakes of light-brown scales, which extend up the stipe to about half-way up the rhachis. The upper side of the frond is dark green, the under side is almost covered with the large circular indusiums, silvery-grey in appearance; the stipe and the frond, when the plant is fresh, are sticky and clammy moist with the resinous glands. The fern is so rich on the under side with this fragrant resin that it adheres tightly to the sheet of blotting paper in the press. The largest fronds on a well-grown plant are about 11 inches from base to tip, 3 inches of this being stipe; the extreme width is about 2 inches.

From the Algonquin Park I made a trip by rail to Port Sydney on the north branch of the Muskoka River. The chief object of this trip was to see the Virginia Chain Fern which had been found growing in abundance along one margin of a mud lake. Its companion was a fringed orchid I had never seen before, *Habenaria blephariglottis*.

We had only two days' stay in Port Sydney before my companion had to go east on his return journey to Liverpool, and the nicely calculated less or more of time for the trip proved almost our undoing. We left the Park Station at 6 a.m. and were met, as pre-arranged, shortly before noon by a wagon; this conveyed us to a bush from which we were to proceed on foot with our host and guide to where the Virginia Chain Fern grew. On the next day we were to go in a different direction to a wood where the Lance-leaved Grape-fern was to be seen.

Unfortunately our host and guide, a local naturalist with a reputation for never having lost his way in the bush, lost his way and his reputation both that first afternoon. The wagon-track ended suddenly at the edge of a marsh shortly above a beaver dam. Its sudden disappearance was due to the activity of some beavers. The marsh was drained down its centre by a small creek; round the edges of the marsh grew many poplars; coveting these for food the beavers had dammed the creek at its exit from the marsh, converting about half a mile of beaver-meadow into a standing lake. At first we thought of crossing this obstacle by the dam, but our guide's son found this narrow pass jealously guarded by a colony of "Yellow-Jackets" and we decided to keep to the wagon-track above; this led across the swamp by

a now submerged corduroy road and we had to feel our way along the track in water that in places reached the waist. The track then led up into a wood and from it diverged on the right a doubtful and tortuous trail in the direction of Twin Lake where the Chain Fern grew.

In an evil moment our guide tried a short cut to avoid an awkward slash in the woods. He lost his way, and we floundered along for more than an hour; during this time we crossed three slashes (apparently) far worse than the one we had avoided; they were really one slash and the same; as usually happens in the bush to those who use no compass and disregard the sun, we were walking in a series of eccentric circles. We drew up at last on the edge of a creek which our guide failed to recognize as the one we had first waded across; to make confusion worse confounded, we seemed to have got somehow onto the wrong side of this creek, but how or where we had crossed it we could not make out. Following down the creek a little way we came out on a lake. Our host had then to make the humiliating confession of having gone in a circle; instead of reaching Twin Lake, (two miles above the beaver dam, we were nearly a mile below the dam. It was then so late in the afternoon that we had to postpone our expedition to next day.

This time we chose a longer but more certain route and reached the colony of *Woodwardia virginica* without mishap. The first sight of this fern was quite impressive; the fronds stood rigid and erect, in long lines, all facing one way; the upper surface of the frond faced the water, the backs were away from the lake and most of them heavily fruiting; I do not mean to imply that the water caused their direction of growth; it was probably sunlight, as it was more open towards the water and shaded behind by the edge of the woods.

The fern is about as large as a medium-sized Cinnamon Fern and its pinnules are very similar in shape; the veins, however, are not free but areolate, forming a network; in the barren fronds the pinnules are seen to be minutely serrulate, but in the fruiting fronds the edge is apparently smooth and entire; this is due to the serrulate edge being reflexed; if you look at the under side of a fruiting pinnule, you will find the edge distinctly rimmed. The only other noticeable difference in shape between the frond of the Chain Fern and that of the Cinnamon Fern is that in the former the frond is narrowed considerably towards the base and above is lanceolate up to an acute tip; this character is repeated and even emphasized (as so often) in the pinna, which is strongly contracted in one or two pairs of pinnules at the more or less sessile base. The peculiar fruiting is, of course, unmistakable: the oblong sori running in parallel lines like the links of a chain

along each side of the pinna's midrib and similarly up each pinule. The fronds are thrown up at intervals from long underground rootstocks which occasionally attain a length of 9 or 10 feet. These long loose lines of ferns, like regiments in extended order, looking all in one direction, focussed on some unseen point of control, were standing thus to attention deep in the sphagnum moss of their subterranean root-stocks, running horizontally and branching down below, still lay in the same everlasting bed of sphagnum.

When I had first seen them, about the 5th of July, they were just beginning to rear their forms to stately height, the tips of the frond and the pinnae still partly furled, the whole foliage of a lush-coppery softness. Now, in the middle of August, they were mature, standing stiffly on stout woody reddish-brown stipes, the fronds thick and coriaceous. I said they were as large as an average Cinnamon Fern. With a view to the size of my press and the usual botanical mount, I chose the smaller specimens; they are from 20 to 30 inches long; but our guide insisted on my taking one frond, the largest he could see: it measures 52 inches, 21 of stipe and 31 of rhachis; the length of the longest pinnae is $6\frac{1}{2}$ inches, but as they point upward at an angle following the line of growth of the stem, the greatest width of the stem is 11 inches or thereabouts.

I have now brought my account of Ontario Ferns, so far as they have come within my limited experience, down to the last family, that of the *Ophioglossaceae*, with its two genera of the Grape Fern (*Botrychium*) and the Adder's Tongue (*Ophioglossum*).

EXCURSIONS.

BEAVER MEADOW, Hull, May 14, 1910. About thirty members of the Club, including a representative number of students from the Normal School, were in attendance, and fairly good collections were made in the various branches.

The party met about 5 o'clock, and under the direction of the President, Messrs. McNeill, Brown, Wilson, Kingston and Groh spoke briefly on what they had observed.

The geological branch visited the quarries on both sides of Beaver Meadow—on the east several fossils were noted principally corals and brachiopods, and on the west several crinoid stems, one over a foot long. Both these quarries are in the Trenton limestone. The one on the west side is not far from the fault which is the boundary of the adjacent wedge-shaped area of Black River limestone. Numerous pot holes and other evidences of the action of running water were seen. The relative position

of the Trenton rocks to the Chazy and Utica formations, as observed at Blueberry Point and Billing's Bridge, was pointed out by Mr. Wilson.

Mr. Groh, after calling attention to the abundance of Rosaceous plants in the locality, illustrated the fact by means of specimens collected, as follows: The two wild strawberries (*Fragaria virginiana* and *F. vesca*), Barren Strawberry, Dwarf Raspberry, Wild Red Raspberry, Purple Flowering Raspberry, Bird Cherry, Choke-cherry, Wild Plum, Juneberries, two species (*Amelanchier canadensis* and *A. spicata*), and Wild Rose (*Rosa blanda*.) The Wild Plum and Dwarf Raspberry were particularly noticeable.—T.A.B.

HOG'S BACK.—The excursion to Hog's Back on the afternoon of June 18th was favored with excellent weather, but was rather poorly attended, owing to heavy rains which had fallen earlier in the day and threatened to spoil the afternoon. The party assembled at the Experimental Farm and proceeded across the Arboretum and along the Rideau Canal to the interesting locality named, the leaders being Messrs. Kingston, Wilson and Groh. Messrs. J. W. and A. Eastham, of the Wellington Field-Naturalists' Club, of Guelph, were welcome visitors with us.

The geological features of the place are very striking, and particular notice was taken of the nature of the rock formations, which are limestone and Chazy shale, and of the unusual amount of dipping and folding of the rock strata. Mr. Wilson stated that the anticlinal fold, or "hog's back," which gives the locality its name, and which occupies a prominent position in the middle of the rapids, is one of the finest examples of its kind to be found anywhere.

The botanists of the party found no lack of interesting material for their attention. All along the canal and at the Hog's Back the hawthorn flora is comparatively rich, both in numbers of individuals and in species, and the afternoon's collecting in this genus resulted in the securing of six species as follows: *Crataegus submollis*, *C. Jackii*, *C. Grayana*, *C. flabellata*, *C. macracantha* and *C. pedicellata*. Some curious fungous and insect injuries of plants also attracted attention.

H. G.

NOTES.

THE IMPERIAL MOTH, *BASILONA IMPERIALIS* DRURY.—Captures of this large handsome insect in Canada are always interesting. During June and July of the present year no less than

eight specimens were collected in the Ottawa District and the upper wing of another seen on the ground beneath an electric light. The first of these specimens was shown to the writer, and was collected around an electric light on the Experimental Farm, on 24th June, by Mr. D. Gibson, an employee of the Farm. On the following day the undersigned saw the wing above referred to.

The six Ottawa specimens were all taken around electric lights, five at the Experimental Farm, and one at Britannia, (H. Groh, 19th July); the other two specimens collected in the district were captured in Hull, Que., by Mr. W. H. G. Garrioch, also at electric light, one on 22nd June, the other on 26th June, and reported to the writer by the Rev. Dr. Thos. W. Fyles.

The Imperial Moth is rare in Canada. The only published Canadian records, which I know of, are the following:

Belleville, Ont., 1880, June, (J. T. Bell).

Orillia, Ont., 1900, and June 24, 1901, (C. E. Grant).

Ross Mount, Ont., 1906, (T. W. Ramm).

Kingston, Ont., Aug. 12, 1907, (A. B. Klugh).

Simcoe County, Ont. Larva found feeding on red and white pine, Sept. 15, 1907, (E. J. Zavitz).

Go-Home-Bay, Ont., July, 12, 1909, (J. B. Williams).

Trenton, Ont., June 27, 1909, (J. D. Evans).

Besides the above a specimen was collected at Port Hope, Ont., on July 25, 1900, by Mr. W. Metcalfe. At the same place the Rev. Dr. Bethune found the larva on pine.

In Packard's Monograph of the Bombycine Moths of North America, Part II, (1905), the geographical distribution of *Basilona imperialis* is given as follows: "New Hampshire; Claremont, N.H., (F. H. Foster); Cambridge, Mass., (Harris); Providence, R.I., (H. L. Clark, J. Bridgham, Deardon); Plattsburg, N.Y., (Hudson); Ithaca, N.Y., (Slingerland); New York City, (Joutel); Pennsylvania, (Strecker); New Jersey, 'usually common throughout the State'; Newark, in July, (Smith); Columbus, Ohio, (Tallant); Springfield, Alton, Ill., (Riley); St. Louis, Mo., (Riley); Cordova, Mexico, (Packard); Jalapa, (Druce); Race *nobilis*, Texas, (Neumoegen)."

If any other collectors in Canada know of captures of the Imperial Moth during the present season, I should be glad to get notes on the same.

ARTHUR GIBSON.

AN INTERESTING MILLEPEDE.—The large millepede *Arctobolus onondaga* Cook, is not uncommon in the Ottawa district. Specimens have been exhibited at several of the Spring excursions of the Club under the name of the Canadian *Julus*, *Julus*

canadensis Newp. The largest specimen I have seen was collected by me at Chelsea, Que., on May 30th, a few years ago at a general excursion of the Club. It was crawling up the trunk of a large hardwood tree and when measured it was found to be $5\frac{1}{2}$ inches long when extended, and almost three-eighths of an inch in width. The species is described by Cook in Vol. VIII., p. 64, of the Harriman Alaska Expedition, the type having been collected at Kirkville, Onondaga County, New York, in June, 1895. In the description it is stated that the "species is abundant in favorable locations in central New York. It differs from the more southern *Arctobolus marginatus* Say, in the smaller size, more slender body, more uniform and darker colour and in the more distinct punctations of the surface of the segments. The basal joint of the gonapod is sinuate or emarginate laterad, instead of evenly convex as in *A. marginatus*." *Julus canadensis* is a much smaller species, being only about 20 to 25 millimeters long. The specimens of *A. onondaga* above mentioned were found in dampish locations in the rather thick wood north of the grove at Chelsea.

ARTHUR GIBSON.

BOOK NOTICE.

A TEXT BOOK OF FIELD ZOOLOGY—INSECTS AND THEIR NEAR RELATIVES AND BIRDS, by Lottie E. Crary, assistant Professor of Biology and Geology, Kansas State Normal College, Emporia, with 117 illustrations: Philadelphia, P. Blakiston's Son & Co., price \$1.25.

This text book of xii + 364 pages makes a splendid companion book to Dr. Galloway's new book, a notice of which appeared in the July number. It is much the same in general make-up; the paper used is good and the type and printing all that could be desired. The book is intended primarily for students who have had little previous knowledge of insects, or animals of any kind. Common animals have been chosen for discussion. The illustrations used, with one or two exceptions, are excellent. The book is divided into three parts: Part I, Insects; Part II, Arthropoda, exclusive of Insects and Crustaceans; Part III, Birds. Altogether there are thirty-eight chapters. In Part I, the different orders of insects are characterized and suggestions given for field work. Part II discusses the near relatives of insects—myriopoda, acarina, spiders, etc. Chapter xix is a key to the families of spiders. Part III on Birds gives directions for field work, and much information on their physical features, habits, food, etc. Chapters xxvi to xxxviii treat briefly of the different orders of birds.—A. G.

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