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THE OTTAWA NATURALIST

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# FERN HUNTING IN ONTARIO.

By F. J. A. Morris, Port Hope, Ont.

## III.—The Adder's Tongue Family.

The Virginia Rattlesnake, our commonest Grape Fern, is so familiar a sight in our woods that I suppose no fern-hunter can well help being acquainted with it. It looks much like a Bracken, the sterile frond being more or less tripartite with the divisions compoundly pinnate and much dissected; but the base of the stipe is usually reddish and up from the centre of the sterile frond projects the fruiting spike; this ripens in June or July and soon after begins to wither away. There is another species, stouter and much more fleshy, which fruits in September or October, the Ternate Grape Fern (*Botrychium obliquum*). It was early in August that I first found this plant. Its dark-green fleshy sterile frond is not so finely dissected as that of *B. virginianum* and is more or less prostrate or decumbent on the ground; it grows on a long stalk from near the base of the main stipe; the fruiting spike is also thicker and heavier than that of the Virginia Rattlesnake. Its favorite habitat is at the edge of a wood in short dry turf with a sandy or crumbly soil; often in or about cedar alleys, but not deeply shaded in the woods themselves as the Virginia Rattlesnake usually is. Probably many of my readers have never been lucky enough to find more species of *Botrychium* than these two; but I have had the good fortune to find (I believe) all the species known to boreal America, except the famous Moonwort (*B. Lunaria*).

At the end of June in my first season's fern-hunting (1906), I took two of the schoolboys out to a tamarack swamp near Newtonville, 10 miles west of Port Hope. Our intention was to combine botany with entomology, my pupils being, like myself, interested in coleoptera. In a corner of this swamp is a dense damp cedar wood, forming part of the belt of woodlands enclosing the swamp. Along its inner side, among sphagnum, cranberries and pitcher-plants, grow the *Arethusa*, the *Pogonia*, the *Calopogon* and the *Cypripedium spectabile*; and right in the cedar wood (which contains also a few spruces) I knew were some

plants of the Yellow Lady's Slipper; I was groping about in this wood and had knelt down to examine some vines of the beautiful little Twin-flower (*Linnæa borealis*) when I spied some small spikes of a strange fern; they were not more than 3 or 4 inches high and were evidently a *Botrychium*. I sent some specimens to the late Dr. Fletcher, of Ottawa, who thought they were *B. matricariae*, but he said he had never found the Matricary Grape Fern (now called *B. ramosum*), and my plant might prove a variety of *B. simplex*. This was my own feeling at the time and I was confirmed in it the following season when I found *B. matricariae* (*ramosum*) growing plentifully in the Algonquin Park.

I have visited the colony every season since and have observed the plants closely. They show above the ground early in June; probably soon after the floor of the wood ceases to be inundated and the saturation of the vegetable mould is relieved by evaporation. Well-grown plants attain a height of from 7 to 9 inches (partly under ground) by the middle of July, at which time the spores are shed, by the end of July, or early in August, the plant becomes flaccid and wilts to the ground. Specimens gathered in the middle of June are about 4 inches long, the sterile frond longer than the fruiting, but in the mature plant these relations are reversed, the fertile frond considerably exceeding the barren; the appearance and shape of this latter are remarkably constant—it develops from about the middle of the main stem, occasionally lower, sometimes a good deal higher; it is always long-stalked and ends in a leaf blade of from 2 to 4 pairs of obovate or cuneate, sometimes nearly lunate, sessile lobes; these lobes are nearly opposite, and beyond them a single lobe, boldly notched, forms the apex of the frond. The plant is very fleshy and pale-green, more fleshy and pale than *B. ramosum*, which in turn is not so foliaceous or dark-green as *B. lanceolatum*.

In pressed specimens the bud at the base is rarely, if ever, visible, owing to the stem above the root being wrapped in the dry brown sheaths of previous years; in *B. ramosum* the next year's bud is almost always conspicuous as a dark-green projection in the pressed specimen. In the lobes of the leaf there occurs no mid-vein, just a fan-like spreading of the free, forking veins from their wide indeterminate base in the rhachis; in *B. ramosum* there does seem to be a mid-vein (doubtless lost in ramifying) which governs the growth of the secondary veins through the lobes and subdivisions of the leaf; these in *B. ramosum* consequently tend to terminate in a point, blunter indeed than those of *B. lanceolatum*, but distinct from *B. simplex*, which would seem to be a miniature and close kinsman of the famous Moonwort

(*B. Lunaria*). As exact figures are never out of place, I shall describe a mature specimen as it lies before me at this moment. Height 9 inches; common stem 4½ inches, covered for 1 inch with brown sheaths of previous year's growth; fertile frond 4½ inches consisting of a stem (2¼ inches) and a bipinnate fruiting spike (2¼ inches); sterile frond 3⅓ inches long, consisting of a stem (1⅓ inches) and a leaf (2 inches) narrow-oblong in outline with 9 cuneate, simple, entire lobes; the first pair alternate at a little distance from one another; nearly half an inch higher the second pair contiguous-alternate, the third pair a quarter of an inch higher overlapping-alternate, the fourth pair opposite, and at the apex of the frond a single lobe strongly notched.

The normal form of *B. simplex* is said to grow on dry hill sides and to be very rare. Is it not possible that botanists have been begging the question in deciding that the form found in dry exposed stations was the normal form and that the fern was therefore very rare? In that little cedar wood of some 30 or 40 yards square there is hardly any vegetation apart from *Botrychium simplex*; I have counted half a hundred plants in the shade of a single cedar; it would be a modest estimate to say there were 1,000 plants in the colony. It is surely possible that rich vegetable mould in cedar swamps is the natural habitat of *B. simplex* and that the dwarfed rigid form on dry hill sides is only a variety. Of course, *B. simplex* is closely akin to *B. Lunaria*, which also is rare and has its home in exposed situations, so that the form I have may be a variety; it is of exactly the appearance and habit you would expect in a plant subjected to somewhat abnormal conditions: it is lank, flaccid and pale, like a plant grown in a cellar; but on the other hand its abundant fruiting proves it healthy.

For four years this damp cedar wood remained my only station for *B. simplex* (if I have rightly determined the species); but in September last at the close of my season's botany I got a great surprise while staying in North Burgess at a mica mine near Otty Lake (between Perth and the Rideau). The owner of the mine, an old pupil, was taking me to see a "mud lake" on his property; on our way through cedar alleys growing on an elevated rocky plateau a few feet above marsh level we found a colony of *B. ramosum*; they had shed their spores, but were still rect, living and green; all about the more open turfy parts of this plateau were plants of *B. obliquum*, some of them enormous, others very small and delicate, but all fruiting freely; the Virginia Rattlesnake was also, as usual, abundant.

From there we dropped to swamp level and came out at the upper end of the mud lake; it was unusually treacherous,

and after going almost to the waist more than once in a hole among the bushes of bog-myrtle, Labrador Tea and other shrubs we drew back a little from the lake and entered a narrow fringe of cedars at whose outer edge cropped out the rock that forms the foundation of the raised plateau mentioned before. I was just in the act of exclaiming about the similarity of this belt of cedars to the Newtonville cedar wood, when my pupil shouted to me to come and look at a strange plant he had found. Drooping, faded and yellow, it was the same *B. simplex* as I had found at Newtonville! We agreed to go different ways in search of more specimens along this fringe of cedars only a few yards wide; both of us were successful in finding more plants over a distance of 200 yards or more. More than 100 miles east of the first station, in conditions otherwise almost identical, the appearance of the plants differed not at all; the sterile part having a long-stalk, 3 or 4 pair of sessile, simple and entire cuneate lobes, and ending in a single similar but notched lobe.

Of course, these smaller Grape Ferns are a very variable genus, and for a long time confusion existed between *simplex*, *ramosum* and *lanceolatum*. Some botanists have yielded to the temptation of multiplying species by the separation of varieties, while others have nullified sound distinctions by confusing young immature plants of *ramosum* (for instance) with full-grown plants of *simplex*. From their habitat I have come to the conclusion that these plants of mine are the same as those described by A. A. Eaton as *B. tenebrosum*, and I was therefore greatly interested to find, on looking at the new edition of Gray *tenebrosum* treated as a variant form of *simplex* and not *ramosum*. Many qualities relied on for final identification, such as the vernation or manner of folding in the bud, the venation or form in which the veins spread, are doubtless of secondary importance but the long stalk of the sterile leaf and the shape of its lobes are possibly more essential characters, and there is another point on which I have assured myself; the point relied on by the late D. C. Eaton, author of Ferns of North America; I mean the size of the spores.

I got by exchange a few plants of the normal *B. simplex* (2 – 4 inches high), and I have looked microscopically at the spores of *B. simplex*, *B. ramosum* and my strange plant; through a lens of 1 inch objective, the spores of my plant and the spores of *B. simplex* are both larger than the spores of *B. ramosum*; through a lens of $\frac{1}{4}$ inch objective there is no difference to be detected in the size of spores of the two former plants, but the spores of both are (apparently) as large again as those of *B. ramosum*.

My acquaintance with this latter plant, the Matricary Grape Fern, dates from 1907, when I first went from Ottawa to the Algonquin Park. I was out in a hardwood bush near Headquarters with the Park Superintendent, Mr. Wood, of the "Globe" staff, and the late Dr. Brodie. My companions were busy watching the movements of a pair of the Pileated Woodpecker (cock o' the woods); I walked down a slope of the forest floor towards a hollow filled with New York Fern when I almost set my foot on some plants of this (then) new species of *Botrychium*. It was early in August and the spores had been recently shed or in some cases were just being discharged. The fern varies greatly in size and in shape of frond, but it certainly deserves its title of "ramose," for it tends strongly to continued subdivision. The sterile frond is nearly sessile, never long-stalked; I have found it always in the rich leaf mould of hardwoods, usually near the foot of long gradual slopes, or in the shallow troughs and depressions just above actual swamp level. I have taken the fern as late as the first week of September; the plant was then sturdy and almost erect, having fruited (say) a fortnight or three weeks earlier.

It is the largest of the three species, *simplex*, *ramosum* and *lanceolatum*; I have a few specimens 9 inches high (one of 10 inches), but the average height of the plant is from 6 to 7 inches. I shall describe two plants (A and B) in some detail. A has a common stalk 4¼ inches high; a fruiting spike of 3¼ inches set on a stem of 1½ inches; this fertile spike consists of 8 pair of pinnae, the lowest each an inch long, gradually reduced till at the apex of the fruiting division are 2 or 3 pairs of sessile clusters of sporangia; the barren frond is 2 inches long on a stalk about ⅛ of an inch; it consists of 7 pairs of nearly opposite pinnae, the basal pair each ¾ of an inch long and divided into 5 pairs of ovate to narrow oblong lobes; the pinnae get gradually smaller till they end at the apex of the rhachis in 2 or 3 small sessile lobes. B has a common stalk of 5¼ inches; a fruiting spike of 2¼ inches on a stalk of 1½ inches; this spike contains 5 pair of pinnae, the lowest pair each an inch or more in length, and ends at the apex in several sessile clusters of sporangia; the barren frond is 2¼ inches long and consists of 3 pair of ovate pinnae, the basal ones irregularly cut into about 5 lobes, the upper pair into 3 lobes, and at the apex a single 3 or 4 lobed pinna; this barren frond has a stalk of ½ inch in length.

*B. lanceolatum* is a smaller plant than *B. ramosum* and usually ranges from 2 to 6 inches in height. The barren frond is not at all fleshy, but foliaceous and dark-green, sessile at the very apex of the common stem, or (if you prefer) at the base of the

sessile or short-stalked fruiting spike. In general outline, the fertile part and the sterile both tend to spread into an ovate form, not oblong as is usual in the other two species with the sides nearly parallel. The barren part consists of from 2 to 4 pairs of narrow lanceolate pinnae, subdivided into narrow lanceolate lobes or notched into sharp-pointed teeth; the fruiting part is often not so much a spike as a fascicle of 3 or 4 slender spikes, the central one often very little longer than 2 or 3 of the others; these spread out, often not in the same plane, into an ovate outline, and flanked with their clusters of sessile sporangia suggest the lashes of a knout or cat-o'-nine-tails.

The Lance-leaved Grape Fern is not at all common, as far as I know, in Ontario. I had found *B. ramosum* fairly abundant in the Algonquin Park in 1907 when I first visited that district; *B. lanceolatum* I saw no traces of, and learned only in the autumn from Mr. Ivey, of Toronto, that it occurred in our province; he had found it near Port Sydney in a rich hardwood, occurring with *B. ramosum*, but sparsely, occasional rather than abundant. In 1909, as I was taking an English botanist to the Park and was very anxious to see *B. lanceolatum* growing, Mr. Ivey very generously sent me a pencil sketch of the wood in which the fern had been found.

Owing to the failure of our first attempt to reach the Chain Fern I had only what time I could find before 11 a.m. in which to identify the wood and reach the small space within it occupied by the Lance-leaved Grape Fern. Not wishing to give my friend a second wild goose chase after the previous day's adventures, I got up alone between 3 and 4 a.m., and with my boots in my hand, crept stealthily down the boarding-house stairs in stocking feet. Fortunately it was not Sunday; my movements were not betrayed by my dropping a hob-nailed boot. The day before had been thundery and the sky was dark with clouds, the air heavy and close. It was daylight by my watch when I started out, but even in the open road it was barely dawn, a kind of tricky twilight, and to step into the woods was to shut and bolt the door on day and enter a labyrinth of crepuscular gloom. For nearly an hour I could not distinguish small objects on the ground except by painful straining of the eyes.

After two or three false starts, I satisfied myself that at least I had found the right wood, and a rich hardwood it proved to be. My experience in finding the Matricary Grape Fern led me by a half-conscious process of selection and rejection to a shaded slope and hollow of dead leaves just below some rock ledges; sure enough there was *B. ramosum*, several plants, and fine large ones, and as I knelt to examine them I spied

two plants of *B. lanceolatum* within arm's length. I marked the place, got back in time for breakfast and immediately after guided my friend to the spot.

The relation of *B. lanceolatum* to *B. ramosum* is certainly peculiar; the former being generally found sparingly in colonies of the latter; but it only makes its appearance and ripens after the other has shed its spores; in North Muskoka and the Algonquin Park it matures about the middle of August. I have more than once found a plant of *lanceolatum* with its stem actually contiguous with a plant of *ramosum* and its roots intertwined.

Mr. Raynel Dodge, the author of "Ferns and Fern Allies of New England," in a paper published in the Fern Bulletin of April, 1910, suggests that *ramosum* is a polymorphic plant, producing all the forms known as *ramosum*, *tenebrosum* and (perhaps?) *lanceolatum*. It certainly looks as though, by some mysterious hybridism or through some quality of dimorphism, spores of *B. ramosum* could give rise to *B. lanceolatum*.

On my return to the Park after seeing my friend off for England I spent a week in assiduous search for *B. lanceolatum*; my labours were rewarded by the finding of 10 plants in 3 separate places, both east and west of the Park Station. It seems to like even more shade and richer mould than the Matricary Fern, and often grows under small seedlings of hazel (for instance) in damp leafy troughs where no other vegetation, or very little, is to be found.

The Adder's Tongue is the last fern I have to speak about. Probably not many readers of THE OTTAWA NATURALIST have ever seen this quaint little plant growing; they think it very rare; I thought so, too, till less than a year ago, but since then I have been forced to the conclusion that it is fairly abundant wherever suitable conditions obtain, but so inconspicuous as to be entirely overlooked.

On the 1st of July last I shook the dust of town celebrations from my feet and spent the day in the country ten miles north of Port Hope near Garden Hill. I was lunching in the corner of an old meadow, or rather, upland pasture of sandy soil, when I saw 3 or 4 plants of *Liparis Loeselii* in the grass just where the pasture sloped off into a beaver meadow skirting a cold little trout stream. I had hitherto found this orchid in marshes only, often in the wet grassy padway of winter roads, and I got up on the mound of a half buried old log to survey my surroundings; suddenly among the thin sparse seedstalks of grass I spied some 20 spikes of (surely it couldn't be?) *Ophioglossum vulgatum*. I searched carefully—exhaustively, as I thought—, but only found 3 more spikes nearer the edge of the beaver meadow

I was expecting a brother botanist from England to spend the summer with me, and you may imagine my elation at being able to show him the Adder's Tongue Fern in its native haunt.

The colony was so small that I kept close watch over it and when hay-fields began to be cut I strode sternly out to defend my proprietary rights. Fortunately my corner was arid and sandy, the grass so short and thin that no mowers had been to molest the Adder's Tongue; no mowers, but the devil disguised as a horse had come and cropped the few spikes I had added to the first find. Domestication seems to distort good wholesome animal instincts into unnatural appetites; the horse is bad enough, but for depraved tastes commend me of all things to that clumsy ruminant, the common cow; a creature so prosaic, too, that aesthetic considerations seem lost to it; among its favorite food plants I may mention the Plantain-leaved Ladies' Tresses, the Narrow-leaved Spleenwort (especially when rare in the neighbourhood), and the Adder's Tongue Fern.

About the middle of July the two of us went out to see the colony and inspected the bank of the stream a little further down; we found hundreds of plants, usually near the foot of steep slopes; we then tried the far bank, my friend unsuccessfully, but I detected several colonies, and at one spot some plants newly trodden down; the footprint was my friend's. I called him to me and made merry at his expense, showing where he had walked and trampled under foot fronds 7 or 8 inches long of the fern he was looking for; he rather took the wind out of my sails by pointing out some still larger plants on which I was kneeling. It is a most inconspicuous fern, but far from rare. However, we still clung desperately to the cherished belief that it was rare; true, it was plentiful along this stream, but that was only one station and probably (we concluded) a lucky find.

A week later we had flitted with our botany cans 100 miles or more east to the village of Lanark, north of Perth. We were returning across country to the village from a bluff on the upper part of the Clyde River where the Rusty Woodsia (*Woodsia ilvensis*) grew; our way led across undulating pastures and grain fields, an elevated and rocky stretch; here and there a small wood now lying in a hollow, now hanging on a hill-side or perched on a knoll. In some of these upland pastures near the edges of marshy ground we found great patches of *Selaginella apus*, that pretty little cousin of the club-mosses, with its bright yellow-green prostrate branches forming thick mats in the spongy turf.

We went along a sloping pasture towards a wooded ridge in the distance; and as we surmounted a fence that ran from a little wood tilted half way up the slope to a willow swamp below

we spied a fine sheaf of one of the Osmundas; so fine that we swerved from the path to view it at nearer quarters: *Osmunda claytoniana*, truly a royal group, and hedged about with a body-guard of Sensitive Fern. As I stooped over to enjoy the sight I discovered some spikes thrusting up among the barren fronds of *Onoclea sensibilis*; the body-guard was fairly bristling with spears: it was the Adder's Tongue Fern. Walking carefully about we discovered an extensive colony, reaching back to the fence we had climbed, down the slope to the swamp's edge, and forward a little way round the margin of the swamp.

Three days later we were at the Rideau Ferry, and as we were examining some plants of *Botrychium obliquum* near the Bass Lake Creek, my friend spied the Adder's Tongue near some pines at a fence-corner. We were delighted to find it in a neighbourhood I knew so well and showed the colony to our host, my old pupil. After asking incredulously whether it was really a fern, he said he was sure he had seen it growing at the mine! Of course, if a friend asked me in strict confidence where he was likely to find *Ophioglossum vulgatum*, I should not recommend him to go to a mica-mine. But I knew my pupil was observant and we had meant to go to the mine anyway, so off we went.

In the first swamp edge—just above and outside a narrow swamp filled with sedge-grasses and the Marsh Fern—we found the Adder's Tongue; we found it *in* the swamp too, but only on and about peaty hummocks covered with crumbly turf, old ant-hills or something of the sort. We tried a second swamp that looked likely and found it once more. The illusion of its rarity was vanishing; what we had three times stumbled on accidentally, we were now deliberately hunting for in likely places (guided by experience).

A day or two later we went to the Algonquin Park where there are no clearings, and for a month we dismissed all thought of the Adder's Tongue. But at the beginning of September I returned to the Rideau and went to see the Bass Lake colony of *Ophioglossum*. I found that while nearly all other foliage was green, this fern had faded yellow and was easily detected. The leaves fairly dotted the marsh margins and drier parts of beaver meadows up and down both banks of the creek. I went to the mica-mine and discovered several new stations for the fern there; even a colony in a most unusual habitat, a deeply shaded cedar alley.

In the middle of September I returned to Port Hope and began investigations there. In four weeks I had found more than 20 stations for the Adder's Tongue, many of these stations comprising a large number of colonies and hundreds (if not

thousands) of plants. In many places the ferns were young and still developing their sporangia, but about the middle of October a light touch of frost checked further activity.

This spring I found plants sprouting early in May; by the 20th of June I had found plenty of Adder's Tongue in every station discovered last autumn and had added several new colonies and stations to the list. The plant is, I believe, quite common and almost ubiquitous in country clear of forest where old pastures abound. A fortnight ago I was driven some 10 miles to a trout stream rather beyond the pedestrian's range. As I sauntered up stream I noticed an open hill-side through a clearing in the woods; it looked a likely place and was only a few rods distant; in 10 minutes I had found 30 or 40 plants, about turf-mounds on its slopes.

I almost think myself competent now to find the Adder's Tongue, for anybody who wishes, in any locality whatever, provided it has the right conditions, with as much certainty at least as your water-finder will discover hidden springs with his forked hazel wand; perhaps with the same overweening self-confidence, and (it may be) the same inability to communicate my gift.

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## NOTES ON EUXOA DETERSA WLK. AND E. PERSONATA MORR.

BY JOHN B. SMITH, SC.D.

In 1856, Walker described as *detersa* an American species which he referred with a query to *Charæas*. It came from Nova Scotia and was not identified in our collections until, after an examination of the type, I referred it, in my catalogue of 1893, to the *Agrotis pityochrous* Grote, described in 1873, in the Bull. Buff. Soc. Nat. Sci. 1, 82. This reference has been questioned by Mr. Schaus, I believe; but not very definitely, and it has been followed since then by Hampson in his monographic work. My note was that Walker's type was like an average *pityochrous*, such as was also represented in the Grote collection under the latter name; but Hampson's figure does not represent such a specimen; it is really more like a *personata*.

In 1876, Mr. Morrison described *Agrotis personata* from a single example, in the Proc. Bost. Soc. N. H. XVIII, 238, recognizing its resemblance to *pityochrous* and really differentiating it rather by locality than by any very decided characters. In

1880, Mr. Grote, Can. Ent. XII, 187, definitely referred the name as identical with *pityhrous*, and so it has stood without definite question since.

In 1890, in my Revision of the Agrotids, I pointed out the difference between the *pityhrous* and *personata* forms without questioning their distinctness, and in my catalogue of 1893, I specified the collections where the types were to be found. In the Lintner Collection was that of *pityhrous*, and in the Tepper collection that of *personata*.

Recently, Mr. Arthur Gibson, of the Experimental Farm, Ottawa, Ontario, wrote me concerning *detersa*, now referred to *Euxoa*, questioning whether there were not actually two very distinct species involved. At my request he sent me his material for study and with my own this gives me 49 examples, readily enough divisible into two series, representing two good species.

EUXOA DETERSA WLK. Of this species I have 17 males and 16 females, in good condition. It is a common species along the shore in New York and New Jersey, found throughout September on the flowers of golden rod, in open sunlight. I have taken dozens of specimens in a single afternoon and scarcely two of them alike. The ground color of primaries is a very pale luteous, almost whitish in some specimens, and the variation is to a reddish gray, more or less suffused with smoky, until the entire wing becomes smoky. The females are darker throughout than the males, and tend to become splotchy or mottled.

Taking a good series as a whole, the general resemblance of the *quadri-dentata* type of maculation is obvious. There is a pale longitudinal shade in the sub-median interspace beyond the claviform; the median vein is pale or white-marked; the s.t. space is paler and outwardly indented on veins 3 and 4, and these veins are usually a little emphasized by pale shadings or rayed. The median lines tend to obsolescence, the t.p. usually rigid, and there is rarely even a trace of a median shade. The ordinary spots are paler than the surrounding space, sometimes contrastingly so; the orbicular varies much in size and form, the reniform is rather narrow kidney-shaped, and tends to a little constriction from the outer side.

There is scarcely a feature in this maculation that does not vary to some extent and there are few specimens in which all the features are as described; but that is the general impression given by a series, and which can be traced in the vast majority of all examples that come under inspection. The range of expanse is from 28 to 35 mm. in the series before me, and exceptional examples will reach 1½ inches or 37 mm. The average example is about 31-32 mm. in expanse.

EUXOA PERSONATA MORR. is, on the whole, a somewhat smaller species. The largest example in my series of 10 males and 6 females is 32 mm., in expanse, while the average does not exceed 29-30 mm. The ground color usually contains a distinct tinge of reddish and the surface is coarsely powdered, yet lacks that blotchy appearance seen in the darker examples of *detersa*. Taken as a whole, the series does not suggest *quadri-dentata*, but does contain an approach to the *messoria* type. There is no pale streak in the sub-median interspace beyond the claviform, although there may be a slightly paler area to the t.p. line. The median vein is not white or pale marked, veins 4 and 5 are not rayed, although the s.t. line may be slightly indented at those points. The ordinary spots are less contrasting than in *detersa* and the reniform is distinctly broader, more regularly kidney-shaped, the outer margin never bent inward to form a constriction. Perhaps the most characteristic feature of this form is the completeness and distinctness of the median lines, the t.p. being usually crenulate and broadly outcurved, while in almost all examples there is a traceable median shade line, which becomes obvious in many specimens.

In the series before me the *detersa* come from St. John, New Brunswick, VIII, 18-30; Ottawa, Ontario, VIII 24, IX 8; Webster, New Hampshire IX 8; Cohasset, Mass., IX 3, X 15; Albany, New York, IX; Anglesea and Bayside, New Jersey, late August and throughout September. *Personata* is from Canada, VII 27, IX 14; Denver, Colorado, VI 10; Rounthwaite, Manitoba, no date; Aweme, Manitoba, VII 13, VIII 25.

It is certain, of course, that the distribution of both species is wider; but material of the latter is short because the species is a common one. *Personata* was described from Galena, Ills.

## NOTES.

STILL ANOTHER CASE OF NATURAL GRAFTING.—Mr. H. Groh's note in the June number of THE OTTAWA NATURALIST recalls to my mind that at a field meeting of the Natural History Society, at Chatham Island near Victoria, on the 7th May last, an instance of a natural graft of an oak tree was found at the spot where the excursionists landed. The tree is but a small one and at a point about four feet from the ground a branch has apparently been bent over and become incorporated with the trunk, leaving an oval opening about 18 inches in diameter. One of the ladies of the party, realizing its suitability as a frame,

had her photograph taken in it. The tree Mr. Groh writes about is certainly a curiosity well worth preserving.

J. R. ANDERSON.

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In The Popular Science Monthly, Professor John B. Smith, Sc.D., of Rutgers College, recently contributed a most interesting article entitled "Insects and Entomologists: Their Relations to the Community at Large." In the second part of the paper, which makes mention of some of the men, now all dead, who devoted their lives to a study of insects, the following paragraph will be read with interest by readers of THE OTTAWA NATURALIST:—

"Last of all in this list of those who have been influential in the development of the fight against insect pests, because his loss is one of the more recent, is Dr. James Fletcher, of Ottawa, Ontario. Who of the entomologists attending the annual meeting of the American Association does not remember his hearty and cheering presence? Who does not remember his cordial greeting, his constant good nature and the directness and convincing qualities of his contributions to our discussions and debates? As for the work that he did in Canada—none could have done it as he did. He was widely informed, not a narrow specialist, he was a student of men as much as of insects, and he commanded the confidence of his constituency. It will take two men or more to carry on the work that this one did alone."

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The Treasurer of the Club has had handed to him one dollar which came addressed in typewriting to "The Secretary, THE OTTAWA NATURALIST, Experimental Farm, Ottawa." No letter or name accompanied the above remittance. The Treasurer would therefore be much obliged if the sender would at once correspond with him.

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## CORRESPONDENCE.

EDITOR, OTTAWA NATURALIST:—

The following from the Colonist, of 1st July, is a very faithful account of an occurrence which I believe to be most unusual, and which may be of interest to the readers of THE OTTAWA NATURALIST. I may state that the sparrows, cock and hen, flew down, from the top of a building, at Laddie, the hen leading the attack.

"Homeward bound pedestrians on Yates Street, between

Broad and Douglas, at 6 o'clock last evening witnessed the unusual spectacle of a pair of courageous little sparrows (evidently filled with parental anxiety for their fledglings) attacking an Aberdeen terrier, of whose inquisitive explorations they were apparently in fear. The dog belonged to Mr. J. R. Anderson, late Deputy Minister of Agriculture, and was not once but repeatedly assailed by the cheeky little feathered arabs, which in turn would flutter above it, occasionally darting down to peck at the surprised terrier. When the dog would swiftly pursue one of the pair its mate would attack from the rear, thus diverting the enemy. It was the dog which tired first of the game, in which (the dog being no aerialist) the birds had all the better of the argument."

J. R. ANDERSON.

## BOOK NOTICES.

THE HOUSE FLY, MUSCA DOMESTICA, LINNÆUS—a Study of its Structure, Development, Bionomics and Economy, by C. Gordon Hewitt, D.Sc., Dominion Entomologist, Ottawa, Canada, and late Lecturer in Economic Zoology in the University of Manchester: Manchester, at the University Press, 1910.

This volume of 195 pages which has recently appeared is a most valuable publication. In 1907, 1908 and 1909, Dr. Hewitt published in different volumes of the Quarterly Journal of Microscopical Science, three parts of his paper on the House Fly. These parts have been bound together in the present volume, with many additional facts. Part I. treats of the Anatomy of the Fly; Part II., the Breeding Habits, Development, and the Anatomy of the Larva; Part III., the Bionomics, Allies, Parasites, and the Relations of *M. domestica* to Human Disease. In addition to the fairly complete account given in Part III. the appendices at the end of the volume will be found of particular interest at this time when so much warfare is being waged against this extremely dangerous insect. Such subjects are discussed as "The Relation of Flies to Summer Diarrhœa of Infants;" "Flies and Milk," etc.

A. G.

CATALOGUE OF THE ODONATA OF NORTH AMERICA, by Richard A. Muttkowski. Bulletin of the Public Museum of the City of Milwaukee, Vol. I., article 1, pp. 207.

This well-prepared catalogue, which was issued on June 27th, is a publication which will be widely welcomed by students of the Odonata. Such a catalogue has been much wanted. It

presents in convenient form what purports to be a complete list of these insects from the North American region. The author has had the co-operation of the leading students in this order in the preparation of the catalogue; the classification and nomenclature employed, therefore, represents the more approved and advanced ideas of odonatologists. The publication is an important one, and will undoubtedly be much sought after. It should be in the hands of all Canadian students of these neuropteroid insects.

A. G.

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The Fortieth Annual Report of the Entomological Society of Ontario has recently appeared, and as usual contains much valuable information about the insect pests of Canada, especially those injurious to the crops of the Province of Ontario. As most of the insects, however, are found throughout the Dominion, all can profit by reading the excellent assortment of papers presented.

The report, as formerly, contains a summary of the proceedings of the Annual Meeting, the election of officers, address of the President, reports of different branches, directors, etc., etc., together with the papers read at the meetings.

Among the more important addresses and papers, mention may be made of the following, which appear in the order given: Gibson, Arthur, "Report of Insects of the Year, Division No. I;" Ceasar, L., "Observations on a few Insects of the Season;" Gibson, Arthur, "Nests of the Brown-Tail Moth in Importations of French Nursery Stock, 1909;" Treherne, R. C., "Nursery Work in Ontario;" Morris, F. J. A., "Some Guests at the Banquet of Blossoms;" Hewitt, Dr. C. G., "House Flies and their Allies;" Lyman, H. H., "The Origin and Diffusion of Entomological Errors;" Sanders, G. E., "Conflicts between Ants;" Gibson, Arthur, "The Spruce Bud Worm, *Tortrix fumiferana*, Clem.;" Winn, A. F., "The Snow White Linden Moth," Swaine, J. M., "Notes on Fruit Tree Scolytids;" Bethune, Prof. C. J. S., "Observations on Ontario Insects in 1909;" Lochhead, Prof. W., "Injurious Insects in Quebec, 1909;" Fyles, Rev. Dr. T. W., "Adaptation in the Structure of Insects;" Jarvis, T. D., "The Acarina, with a host index to the Species found in Ontario;" and "The Entomological Record for 1909," by Arthur Gibson, which fully maintains its high reputation.

The report concludes with a portrait of the late Dr. Brodie, of Toronto, and five other full page plates.

N. C.

The sixth annual issue of the Ontario Natural Science Bulletin, published by our sister society, the Wellington Field-Naturalists' Club, of Guelph, Ont., has come to hand, and is a neat seventy-page volume which worthily maintains the fine character of the publication. This year, perhaps even more than usual, a large proportion of its space is devoted to articles and notes which represent the work of Ontario naturalists on Ontario subjects. Many of these contributions are local lists which put on record the results of years of patient collecting and observation, and are real additions to the biological knowledge of the province. Among the groups thus treated are the Orchids, Compositæ, Amelanchiers and Cruciferæ, among plants, and the Butterflies and Cynipidæ among insects. A number of new records and range extensions of birds and plants also appear. Several articles written in a less technical vein are scarcely less welcome in their way, than the foregoing. The volume closes with a report of the winter meetings of the Club, which were evidently of a high order as indicated by the subjects presented.

H. G.

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In a recent number of the Proceedings of the Portland Society of Natural History, Vol. II, Part 8, Mr. W. C. Kendall contributes an article on "The Fishes of Labrador." The paper is based mainly upon a collection of fishes made during the expedition of the Bowdoin College party to Labrador in 1891. Seven of the species recorded, it is stated, have hitherto never been reported from Labrador. Notes are also given on some species collected in other places on the trip. A list of all the species definitely recorded from Labrador follows, with authority and date of each record. This authority and date refer to a chronological bibliography and list of collections, in connection with each of which is given a table showing the nominal species recorded from Labrador, the locality and present indentification of those contained in each work or collection.

This paper should prove of much interest to Canadian ichthyologists. The author states that the aquatic fauna of the region is in many respects similar to that of Greenland and more northern waters, and that it may be reasonably expected that Greenland marine fishes at least, not yet recorded from Labrador, may yet be found there.

The article is the fifth one on the scientific results of the expedition. The third paper of the series, "Some Recent Additions to the Labrador Flora" by Fernald and Sornborger, was published in THE OTTAWA NATURALIST, Vol. XIII, pp. 89, 107.

A. G.

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