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CONTENTS.

	PAGE
1. On So-Called <i>Silene Menziesii</i> , by Edward L. Greene	163
2. An Alpine variety of <i>Cnicus muticus</i> , by M. L. Fernald ..	166
3. A New Goldenrod from the Gaspé Peninsula, by M. L. Fernald	167
4. Some new localities for Canadian Land and Fresh-Water Shells	169
5. The Geological Society of America	171
6. Extracts from the Diary of the late Robt. Elliott ..	173
7. Two rare Fungi	178
4. Nature Study—No. 30, by Prof. W. Lochhead	179

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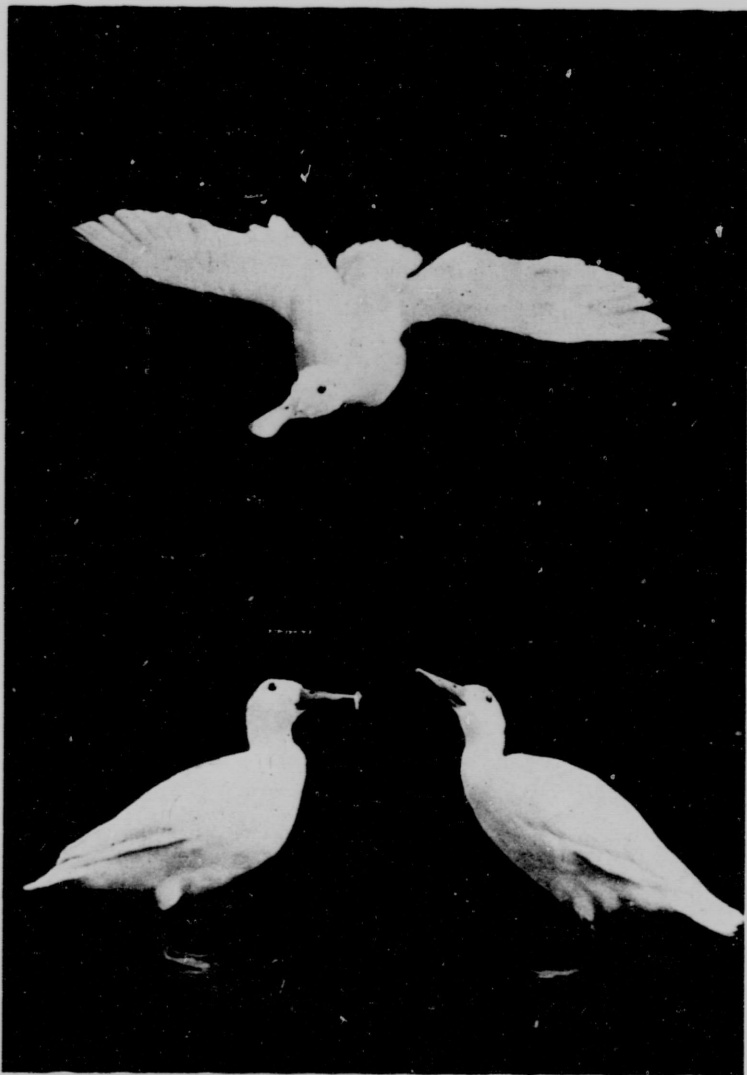
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Three of a flock of five albino Shovellers taken Sept. 3rd, 1904, by ALEX. CALDER, 50 miles S. W. of Calgary, Alta.

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THE OTTAWA NATURALIST.

VOL. XIX. OTTAWA, DECEMBER, 1905.

No. 9

ON SO-CALLED *SILENE MENZIESII*.

BY EDWARD L. GREENE.

The original specimens of what Sir William Hooker in his *Flora Boreali-Americana*, published as a rather dubious member of the genus *Silene*, under the name *S. Menziesii*, were from the shores of Puget Sound. Within the hundred years and more that have passed since Menzies gathered this, plants of just this type have been collected from almost every part of the western half of North America, and all the way from the humid seaboard woods and hills to the banks of little streams coursing down the slopes of desert mountains in the remote and arid interior of the continent; from the level of the sea to near the alpine summits of the Rocky Mountains and a thousand miles inland. No type of higher plant life remains specifically one and the same throughout so vast a range, and so great a diversity of geological and climatic conditions; and, quite as we should expect, these inland plants from one region and another, differ both from the original type, and from one another so widely and variedly that no unbiased mind would ever regard them as being all one *Silene Menziesii*. A low almost matted one from Idaho, at a point 8,000 feet above the sea, looks like Chickweed; another from 11,000 feet in Colorado, looks more like *Arenaria lateriflora*, while a third away up in Assiniboia resembles one of the most upright and delicate of *Stellarias*. A prolonged and careful study of the material of this kind now extant in the larger herbaria has made the distinguishing of eighteen species of this aggregate a necessity; and the characters of them have lately been given in Volume One of my *Leaflets*. The group is out of all harmony with *Silene*, as even Hooker felt, when he had but the one species in hand. It is every way more like either

Arenaria or *Stelaria*, except that the capsule alone is that of *Silene* rather; and I have named the genus *Anotites* in allusion to the absence of those ear-like appendages of the petals seen in *Silene* and in many another allied genus.

The herbarium specimens of the Canadian Geological Survey have been of great service in this study, and about four of the species already described are known to me only as in that collection, and as belonging to the Canadian side only of the International Boundary. That list is now raised to five by virtue of a new one more recently collected by Mr. Macoun, *A. picta*, the first account of which is herein published. With the description of this, I have thought it well to give the essential characters of all the Canadian species as I at present understand them; appending to such a key to the species, the notes of habitat furnished by the labels in the herbarium.

*Stems nearly upright, not slender.

Internodes 1-2 to 2 inches long, the lower retrorse-villous, the upper with spreading gland-tipped hairs; leaves as long as the internodes, elliptic lanceolate, acuminate *A. Menziesii*.

Internodes hardly an inch long, all devoid of gland-tipped hairs and retrorsely pubescent; leaves short and broad, not acuminate but cuspidately acute. *A. latifolia*.

** Stems upright, slender.

Stems terete, almost glabrous below, above glandular-hairy: leaves narrowly elliptical; cyme open, leafy: calyx-teeth detoid-ovate, abruptly acutish. *A. tereticaulis*.

Stems 4-angled, below retrorsely villous, above with gland-tipped hairs. leaves oblanceolate to elliptic, very acute: calyx-teeth triangular-lanceolate, acute *A. tenerrima*.

*** Stems lower, decumbent or even diffusely branched.

Stems terete, sparsely leafy, below scantily retrorse-pubescent, above glandular-hairy only: leaves elliptic-lanceolate, acute; flowers in an open leafy-bracted cyme: calyx-teeth triangular-subulate *A. picta*.

Stems 4-angled, very leafy, all the pubescence glandless and retrorse: leaves lanceolate or lance-linear, very acute. *A. debilis*.

A. MENZIESII (Hook.) Greene, Leaf. i. 98. Along the seaboard and western slope of mountains generally in British Columbia, Oregon and Washington; also apparently in Northern Idaho. Almost the longest species, and with long pointed foliage commonly spreading, when well mature, having flowers and capsules in an ample cyme.

A. LATIFOLIA, t Greene, l. c., known only from woods about

Yale, B. C., as collected by Mr. Macoun, Geol. Sur. N. 61,314, Under ground growth apparently different from that of *A. Mensiesii*, and the leaves short, broad, not long-pointed; flowers few, not cymose but scattered in the axils of leaves.

A. TERETICAULIS, Greene, l. c. 105. Of this I know but a single specimen, Herb. Geol. Surv. n. 10,123, from Waterton Lake, Alberta, 1895, by Mr. John Macoun, but the characters of the species are excellent, the stems with no trace of angularity, and openly dichotomous from the middle, the inflorescence therefore ample, but leafy.

A. TENERRIMA, Greene, l. c. 104. This is remarkable for extremely thin vivid green foliage, and the whole plant, even to the 4-angled stems is very slender and delicate, the scattered flowers on the most slender of pedicels in the axils of the leaves. Notwithstanding its slenderness and delicacy the plant appears to be upright. The specimens are from Medicine Hat, Assiniboia, by Mr. Macoun, June, 1904, the fine herbarium sheet being numbered 3,090.

A. DEBILIS, Greene, l. c. 101. A low small depressed and much branched herb., nearly as delicate as the last, as different as possible as to mode of growth, the angles of the stem almost uncinately-prickly in a very delicate fashion, the very lowest internodes somewhat villous downwards. The species is another of Mr. John Macoun's gathering in Assiniboia, June, 1895, from Farewell Creek in the Cypress Hills, the number, 10124.

A. PICTA, sp. nov. Loosely tufted, ascending 8 to 10 inches high, the stems terete, dichotomous, leafy and floriferous from below the middle but loosely so, the internodes often of more than twice the length of the leaves, the lower with a minute and scanty retrorse pubescence, the upper and the pedicels with as minute but more copious and spreading gland-tipped hairiness: larger leaves little exceeding an inch in length, spreading, elliptic-lanceolate, very acute, sparingly and retrorsely scabro-pubescent on both faces: reduced leaves of the cyme ovate-elliptic, the pedicels short, the lower not exceeding the leaves; calyx small, oval, the triangular-subulate teeth erect or connivent and wholly red-purple: petals small.

Hector, B.C., 4th Aug., 1904, J. Macoun, Geol. Surv., n.

64,707, the type. This species bears a remarkable likeness to the common chickweed as that appears in its later and fructiferous development. It is akin to *A. alsinoides* of Idaho, yet very distinct.

AN ALPINE VARIETY OF *CNICUS MUTICUS*.

By M. L. FERNALD.

Cnicus muticus of our eastern swamps and low woods is a tall loosely branched plant with numerous scattered heads, the involucre of which are whitened with dense cobwebby hairs. This plant is frequent in southern New England, and in the more northern States and adjacent Canada it becomes one of the conspicuous elements of lowland vegetation.

On the alpine tableland of Mt. Albert in the Shickshock Mountains, a low simple-stemmed *Cnicus* abounds in boggy spots. Ordinarily only 3-6 dm. tall and very strict, with the 3 to 5 showy heads sessile in a terminal glomerule, the plant suggests at first sight some species very remote from the tall loosely branched *C. muticus* of low altitudes. In its dark purplish-green nearly glabrous involucre the plant is likewise quite different from typical *C. muticus* with its strongly white-arachnoid bracts.

On Mt. Albert the plant, as stated, is strict and low, but when it occasionally descends from the alpine tablelands and follows the rivers which have their sources in the Shickshock Mountains it becomes very tall. Thus, in alluvial thickets of the Little Casapedia River the plant, retaining its simple habit and glomerulate heads, becomes 1.6 m. high. As far as known to the writer this characteristic plant is confined to a limited area in eastern Quebec, where it is usually constant to the peculiar characters described. Occasional plants from adjacent territory are similar in habit but with the involucre quite as arachnoid as in typical *Cnicus muticus*. On this account and in the absence of any constant character in the foliage or in the form and texture of the bracts the plant should be considered an extreme variation of the widely distributed *C. muticus*, and on account of its great development in the alpine regions of Mt. Albert it may be called

CNICUS MUTICUS (Michx.) Pursh, var. *monticola* var. nov. Caule

simplice stricto fere 3-5 dm. alto; capitulis 3-5, glomerulatis; involucris companulatis, squamis glabris vel glabrescentibus. QUEBEC, boggy tablelands, altitude 900-1,000 m., Mt. Albert, Gaspé Co., August 12th, 1905 (*Collins & Fernald*). Tall plants, becoming 1.6 m tall, from alluvium of the Little Cascapedia River, July 29th and 30th, 1904 (*Collins, Fernald & Pease*) probably represent var. *monticola* washed down to richer soil and more favorable surroundings.

Gray Herbarium, Harvard University.

A NEW GOLDENROD FROM THE GASPÉ PENINSULA.

By M. L. FERNALD.

While ascending the River Ste. Anne des Monts in Gaspé County, Quebec, Prof. J. F. Collins and I found in the gravelly alluvium of the river, about midway between the sea and the Forks, scattered plants of a handsome and to us quite unfamiliar *Solidago*. The occurrence of the plant only as isolated specimens, amongst the everywhere abundant *Solidago elongata*, on the floodplain of the river, suggested very strongly that it had washed down from one of the alpine tablelands or ravines of the Shick-shock Mountains, and we naturally hoped soon to find the real home of the goldenrod. This hope was encouraged by our finding near by and under similar conditions isolated plants of *Arabis alpina*, *Lychnis alpina*, *Vaccinium ovalifolium*, and various other species which we knew to abound in certain regions of the Shick-shocks.

Such exploration as we were able to carry out in the mountains, however,—the study of a limited portion of Mt. Albert—showed us only two alpine goldenrods, *Solidago multiradiata* Ait. and *S. decumbens*, Greene, both abundant in their respective areas, but clearly distinct from the plant seen in the valley below. This plant, known as yet only from the valley of the River Ste. Anne des Monts, is apparently a unique species of the *Thyrsifloræ* nearest allied to *S. multiradiata* and the anomalous plant described by Dr. Gray from the Mogollan Mts., in New Mexico, as *S. multiradiata*, var. *neo-mexicana*. From the former polar species which abounds

on Mt. Albert the plant is quickly distinguished by its narrow elongate thyrsus and bright yellow involucre bracts as well as by numerous other characters. In habit it is a close match for *S. multiradiata*, var. *Neo-Mexicana*. That plant, however, has the cauline leaves more prominently toothed and the firmer greener bracts of the involucre distinctly pubescent along the back, while the bright yellow bracts of the Gaspé plant are thin and glabrous.

I have been unable to find any mention of a plant which seems specifically identical with the yellow-bracted plant of the River Ste. Anne des Monts, which in recognition of its unusual involucre character I propose to call

SOLIDAGO chrysolepis sp. n. Caule erecto simpliciter glabro apice setuloso-piloso; foliis coriaceis, inferioribus spatulatis apice rotundatis petiolatis crenato-serratis, caulinis remotis elongato-oblancoatis acutis subintegris vel rare serratis, superioribus lineari-lanceolatis; capitulis in thyrsum spiciformem confertis; involucre campanulatis, squamis flavis glabris acutis margine ciliolatis medio glutinosis; floribus 12-16, ligulis 6-8; achaeniis setulosis.

Plant 5-6.5 dm. high, the erect simple reddish stem glabrous below, sparingly setulose-pilose above, especially in the inflorescence: leaves leathery; the basal and lower cauline spatulate, with rounded tips, petioled, crenate-serrate, 12-18 cm. long, 2-3.5 cm. broad; the few (3 to 5) remote cauline ones elongate-oblancoate, acute, subentire or slightly serrate, 7-17 cm. long, 1-2 cm. broad; the floral linear-lanceolate, only the lowermost conspicuous: inflorescence a virgate or spiciform compound thyrsus, 2-4.5 dm. long, 4-6 cm. thick, the branchlets setulose-pilose: heads mostly slender-pedicelled, in anthesis spreading or nodding, later becoming suberect: involucre campanulate, 5-6 mm. long: bracts 12 to 15, in 3 ranks; the outer bluntly acute; the inner attenuate, acute; all bright yellow, with a narrow glutinous darker middle, glabrous except the obscurely ciliolate margin: ray- and disk-flowers each 6 to 8, orange-yellow: achenes slightly broadened above, setulose.—QUEBEC, gravel-beach of River Ste. Anne des Monts, August 5th, 1905 (*J. F. Collins & M. L. Fernald*).

Gray Herbarium, Harvard University.

SOME NEW LOCALITIES FOR CANADIAN LAND AND FRESH-WATER SHELLS.

BY J. F. WHITEAVES.

These localities are new only in the sense of not having been previously recorded, as the specimens from some of them were collected many years ago. All the shells referred to in this paper are in the Museum of the Geological Survey of Canada, and the species with an asterisk prefixed to their names were kindly determined by Dr. V. Sterki.

PELECYPODA.

Sphaerium simile (Say.)

Knee Lake, Keewatin, O. O'Sullivan, 1905; one adult specimen. Lievre River, Que., at High Rock, Rev. C. W. G. Edrig, 1905; several specimens. Vermilion River, northern Alberta, J. B. Tyrrell, 1886; one perfect and full grown specimen.

**Sphaerium crassum* ? Sterki.

McLeod Lake, head waters of the Peace River, west of Pine River Pass, B.C., G. M. Dawson, 1879; three good specimens. "These resemble most *S. crassum*, but are slightly different from the typical form and larger. I know of no other published species to which they could be referred, though I have a *Sphaerium*, which is probably undescribed and under which they may range, from a number of States." Sterki.

**Sphaerium stamineum*, Conrad.

Lake Erie, at Port Colborne, Professor John Macoun, 1885; thirteen specimens. Abitibi Lake, W. J. Wilson, 1901; seven specimens.

Sphaerium occidentale, Prime.

Thames River at Woodstock, Ont.; and marsh near Lake Ontario at Leamington; John Macoun, 1892. Hector, B.C., at an altitude of 5,300 feet; and crossing of the Columbia River at Revelstoke, B.C., John Macoun, 1893. A few good specimens from each of these localities.

**Sphaerium Walkeri*, Sterki.

Head waters of the Chibougamau branch of the Nottawa River, Northern Quebec, A. P. Low, 1905; four "living" and perfect specimens.

**Sphaerium (Musculium) Raymondi*? J. G. Cooper.

Head waters of the Columbia River at Upper Columbia Lake, B.C., J. B. Tyrrell, 1883; two specimens.

Pisidium Idahoense, Roper.

McLeod Lake, Peace River drainage system, B.C., G. M. Dawson, 1879; one specimen.

**Pisidium Roperi*, Sterki.

Peat bog near middle branch of Old Man River, Alberta, J. B. Tyrrell, 1883; eighteen specimens.

**Pisidium Mainense*, Sterki.

Jupiter River, Anticosti, John Macoun, 1884; twenty-six specimens. "Generally somewhat less characteristic in shape than specimens from Maine and Michigan." Sterki.

GASTEROPODA.

Amnicola emarginata, Kuster.

Mouth of Red River, Manitoba, J. H. Panton, 1884; several specimens. Shell River, Manitoba, J. B. Tyrrell, 1887; two specimens.

Ancylus parallelus, Haldeman.

Chartron's Island, Aylmer, Que., L. M. Lambe, 1889. eight specimens; and Root River, Keewatin, W. McInnes, 1905, one specimen. Lost Lake, Comox, V.I., John Macoun, 1887, two specimens; and Burrard Inlet, B.C., John Macoun, 1889, seven specimens.

As *A. rivularis*, Gould, is "considered by Haldeman to be this species and not Say's *A. rivularis*," it may be that the Montreal specimens that Dr. B. Bell identified with *A. rivularis* in 1859, are *parallelus*.

Ancylus tardus, Say.

Crane Lake, Assiniboia, John Macoun, 1894; eighteen speci-

mens of a shell which Mr. Bryant Walker regards as a "large western variety" of this species.

Pupilla muscorum (L.)

Mouth of Jupiter River, Anticosti, John Macoun, 1884; abundant on logs. East side of the Cypress Hills, Assiniboia, John Macoun, 1894; several specimens.

**Vertigo modesta*, Say.

Kananaskis, Alberta, John Macoun, 1885; several specimens.

**Vertigo ventricosa*, Morse.

Riviere du Loup (en bas), Quebec; two specimens.

Sphyradium edentulum (Draparnaud).

Swamps near Tobacco Plains, Kootenay River, B.C., J. B. Tyrell, 1883; four specimens. Kananaskis, Alberta, John Macoun, 1885; several specimens.

THE GEOLOGICAL SOCIETY OF AMERICA.

The Eighteenth Annual Meeting of the Geological Society of America, made up of Fellows from various countries of this Western Hemisphere, but chiefly from the United States, Canada and Mexico, is called for Wednesday morning, December 27th, 1905 and will last three days. The officers of the Society for 1905 are as follows:

President: Raphael Pumpelly, Newport, Rhode Island; Vice Presidents: Samuel Calvin, State Geologist, University of Iowa; and Prof. W. M. Davis of Harvard University, Cambridge; Secretary: Prof. H. L. Fairchild, University of Rochester, N. Y.; Treasurer: Dr. I. C. White, Morgantown, West Virginia; Editor: J. Stanley-Brown, New York City; Librarian: Prof. H. P. Cushing, Western Reserve University, Cleveland, Ohio; Councillors: H. M. Ami, Geological Survey, Ottawa; John M. Clarke, State Geologist, Albany, N. Y.; Prof. J. F. Kemp, Columbia University, New York City; Prof. G. P. Merrill, U. S. National Museum, Washington, D. C.; Prof. R. D. Salisbury, University of Chicago.

The circular of information, issued by Secretary Fairchild to all the Fellows, refers to the details of arrangements for the meeting here, including facilities regarding customs as well as railway and hotel accommodation, usually given to the Fellows of the Society, announces a Council meeting for Tuesday evening, Dec. 26th at the Russell House, selected as Headquarters during the meeting. Through the courtesy of Dr. White, Principal of the Provincial Normal School, the Assembly Hall and adjoining rooms of this institution, five minutes' walk from Headquarters, have been placed at the disposal of the Local Committee on behalf of the Society, for the forthcoming meetings, and these are in every way suited for the purpose.

Lantern and other facilities for illustrating papers to be read before the Society have been provided.

Through the kindness of the Commissioner of Customs of Canada all packages, specimens, charts or documents intended, or serving, to illustrate papers read and presented at the Geological Society's meeting will be admitted *free* of duty.

A large attendance is expected at this meeting as many have already signified their intention of being present. A local Committee has charge of details for the Meeting. The evening sessions, when the work of the day is over, promise to be of an interesting nature. To relieve the burden of the day-work a couple of functions have been arranged for already and the Annual Dinner of the Society will be followed by a Reception at which His Excellency the Governor General will be present. The Premier, Sir Wilfrid Laurier, the Hon. Mr. Oliver, Minister of the Interior, and head of the Geological Survey Department, as well as other Cabinet ministers in the Capital are also expected to be guests at the dinner.

The meetings partake of an international character and the Public Lecture to be given on Thursday, Dec. 28th, will be on 'The preservation of Niagara Falls'—a subject of deep interest to all North American citizens.

The following order of events has been practically decided for the evening entertainments :

(1) Presidential address : Prof. Raphael Pumpelly. To be given in the Russell House parlour. Followed by a smoker.

(2) Public Lecture : Dr. J. M. Clarke, State Geologist, of Albany, N.Y. Subject : "The Conservation of Niagara Falls." In the Assembly Hall of the Normal School, Lisgar street.

(3) Annual Dinner of the Society, Russell House, followed by a Reception, when Their Excellencies the Earl and Countess Grey and other citizens will be present.

EXTRACTS FROM THE DIARY OF THE LATE ROBT
ELLIOTT.

The whole of the life of this lovable naturalist was lived three miles east of Bryanston, near the banks of the Thames River. For him every occurrence in nature had its interest, and his acquaintance with the different branches of Natural History was that of the thorough student, no person in his district being so well acquainted with so many branches of Natural History as he. His death at the early age of 44 was a great loss to his friends rather than to the public, as he could seldom be induced to write anything upon Natural History for publication, always demurring on the ground that his knowledge of the subject proposed was too limited.

Some of his many poems have been published in local papers, such as the Farmers' Advocate and the London Free Press, and after his death a small volume of selected verses was printed in London. His health was never robust and the pressure of other duties often prevented him from keeping up his Natural History studies and notes as thoroughly as he might otherwise have done, but there is much of great interest in his diaries, relating mostly to Botany and Ornithology, though also touching on almost all the other branches of Natural Science. These notes are now in the hands of Mr. W. E. Saunders of London under whose selection portions of them are to be published in the columns of the OTTAWA NATURALIST.

April 3, 1887. Heard the first Hyla. Saw Towhee (for the first) two males. Yesterday (Sunday) was a typical spring day, the sun shining—the snow rapidly melting—a soft south wind

blowing—birds singing—frogs croaking, etc. Today is somewhat different. In the forenoon cloudy with a strong west to northwest wind blowing. Tonight, 9 P.M. we are having a veritable blizzard, colder, with snow. What of the birds? The Phœbe that chirped this morning on the barn, or the Robin that sang on the Lombardy poplar at the gate?

April 8. Saw large numbers of *Branchippus stagnalis*, in pools, also caddis-fly larvæ in their curious cases in the same location. Some, perhaps seventy-five per cent, of the cases were made of fine twigs and pieces of grass crossed, the balance was formed of the bark of dead twigs with the wood removed—the larvæ occupying the interior. All appeared alike, head with strong jaws and three pair of legs.

April 14. Saw a Great Horned Owl with three Red-tailed hawks assaulting it; when a dozen or so of crows came to help along the fight the hawks retired. The owl kept low, not more than twenty feet from the ground each time it alighted; twice I saw it in the crotch of a small tree crouching beside a limb, and with tail and wing slightly separated it looked so exactly like a dead branch of a tree hanging there that without knowing for a certainty that it had settled there I would not have suspected its identity. I approached twice within fifteen feet and had an excellent view.

Last Sunday (10th) J. E. saw a racoon that the dog caught as it was attempting to climb a tree. The animal was so poor after its winter fast that it could scarcely stand and was quite unable to climb. The dog did not hurt it and J. E. caught a frog which it ate in presence of the dog.

May 19. Saw Wodchuck in a bare field. When hard pressed he lay flat on the soil and remained motionless; when disturbed his teeth were ground in a very threatening manner. We let him go and he left for the nearest fence working his teeth all the time and displaying to their fullest the hairs on his tail.

June 2. Found nest of Junco in grassy place at edge of woods; placed beneath the half of a hollow log completely covered, with entrance a foot from nest at end of log, contents four young Juncos and one Cowbird. Nest composed of weeds bark strips lined entirely with dry grass leaves.

June 5. Found nest of Redstart among young maples at Model Farm, placed in fork of sapling seven feet from the ground; composed outside of weathered vegetable fibre, inside fine grass stalks, rootlets and a few hairs, contents three Redstart eggs and one Cowbird's, incubated about two days. The latter egg was sunk more than half way down the bottom of the nest and would not likely have been successfully hatched.

March 4, 1888. Dark, cold and dreary. Wind north or northwest, snowing a little A.M., darker P.M. Winter Wrens singing. Brown Creepers and Golden Crested Kinglets very common. From appearances, today may be taken for mid-November. A close glance, however, reveals many reassuring signs of the revival of nature. In the woods innumerable mottled leaves of Erythronium are boldly pushing through the withered relics of last year's vegetation; Jeffersonia is daringly lifting her delicate looking flower buds beside the pond; and in sheltered nooks, reptiles, etc. are freeing themselves from winter's iron grasp.

March 24. Cold and clear. Saw two Pileated at edge of woods not far from house. One would cackle and the other would start the echoes with a ringing caw. They looked very fine, the setting sun striking their brilliant scarlet crests.

April 27. Young Shore Larks on the wing. Saw Water Thrush feeding in shallow water in willows. How quickly nature responds to the warm invitation of the sun. Today plants are springing up in every nook and cranny. Podophyllum is lifting its umbrella to shelter its wax-like blossoms from the glare; Dicentra will soon hang her ear drops in the fresh air; Claytonias are out in all their modesty and sweetness; Hepaticas are very common and already *Erigenia bulbosa* is setting her tiny seeds. Good bye, dear little harbinger of Spring, well have you fulfilled your mission.

April 27. The summer Warbler is singing cheerily from the willows and cherry trees today for first. Young Shore Larks on the wing. Saw Water Thrush feeding in shallow water among willows. How quickly Nature responds to the warmth.

May 2. Hoar frost last night. Morning clearing and

warmer. Pileated at nest, doing what, I can hardly say. Nest is apparently finished, if not, work is going on in a desultory fashion.

May 3. Saw Pileated at nest 5 P.M. Half an hour later saw a Redhead chasing Pileated round and round. Saw six species of Woodpeckers today including Red-bellied.

May 4. W. R. Shrike's nest in *Crataegus* at Hardy's. Nest 9 ft. from ground, 3 ft. from trunk, on horizontal limb with numerous upright twigs, composed outwardly of twigs, strips of bark, wool, strings, and chistle down, lined inside with wool, feathers and a few horse hairs. Contents, six fresh eggs. Male was feeding female on nest when I approached.

May 9. Pileated is seen more frequently around nest. Dug up two specimens of *Cambarus diogenes* from bottom of ditch, placed in a sort of pocket or cell at water line. Found Blue Jay's nest in *Tsuga Canadensis* fifteen feet from ground and ten feet from trunk, on bank of river. First specimens seen today of Black-throated Blue and Black-throated Green warblers, Redstart and King-bird. Saw Cricket for first.

May 18. Cold and wet. Found beneath rotten log in swampy woods a Salamander, length 6 inches. Color dark brown or smoky black, body, back, sides and tail blotched with blue spots. Tail sticky. When placed in spirits it exuded a considerable quantity of milky fluid, mostly from tail. (A Jeffersonianum.)

May 21. Beneath a rotten log in bush found a Salamander $5\frac{3}{4}$ inches long, same situation of one of 18th. Color greyish brown, with rather large quite distinct yellow spots. Near the same place found a smaller Salamander $4\frac{1}{2}$ inches long. Similar in markings to the one of the 18th. On irritating it with a twig it exuded a considerable quantity of a milky fluid from the blotches on the tail. This fluid was extremely sticky.

Found beneath a rotten log in dry beech woods a small Shrew, No 20, length 3 inches, tail $1\frac{1}{2}$, color greyish brown, ears large and open. Long hairs on nose, eyes small. A small tuft of bristles on end of tail. Ate two angle worms and one May bug, then died in bottle.

May 23. Saw Blue Jay's nest in grape vine, underneath veranda at H. H's, four feet from door and exactly opposite to it.

People going in and out every day. Contents, two very young birds and one egg.

May 26. Visited Pileated's nest by means of ladder. About 32 feet from ground. Found young birds in nest. Believe it was occupied last year and intend watching next year in same place.

May 27. About 7 P.M. saw two very large flocks of birds flying north and making a sound like young dogs; probably a species of gull.

May 29. Very warm. At Calamus Point saw two water snakes slip into the water. Captured one and placed it beneath stone on the flats.

May 30. Went for water snake and found it collapsed. It was about 25 inches long. Captured a small one near the same place, alive, and brought it home. It proved to be *Tropidonotus leberis*, Leather snake.

May 31. Found water snake of same size as the first one. The five individuals of this species that I have seen during the last three days were all in moderately deep water—18 inches, among large stones, and in a steady current. One of them settled in the bottom among some decayed plants and seemed inclined to stay there; the others all appeared unwilling to remain underneath the surface for any length of time; all coming to the surface quite close to me at intervals of about three minutes.

They are easily captured and are apparently quite docile. The large ones are darker and the lines on belly are not nearly so distinct as in the smaller ones.

June 6. At Gough's, 6th Con. took set of five nearly fresh eggs of *Accipiter velox*, Sharp-shinned Hawk. Nest was situated in dense Arbor Vitæ swamp, twenty feet from ground, built on a number of small branches; a large collection of twigs of Arbor Vitæ and Larix, mostly the latter; an oblong pile, a foot thick and running half way around the tree. Nest placed on top of one end of the structure. Eggs fresh or nearly so. Bird remained on nest until I got within a few feet; flew off but remained near and was clearly identified.

June 7. A Hairy Woodpecker has come regularly once or twice a day until very lately to an oak post near Gough's door, on

which is placed a strand of wire. He drums on this and the effect is quite musical.

July 10. Fine. Up to Model. *Cypripedium spectabile* with twenty-four decayed blossoms on it in swamp. Tried to imagine how pretty it must have looked in its prime. Five young Ruffed Grouse rose from the sedgy swale nearby—a spirited lot. Crossed the river to gather some Sweet Flag, then passed further north to see *Nuphar advena* lifting their golden crowns to the sun. How exceedingly beautiful this plant is when closely examined.

July 26. Last summer found a plant in seed, in blue clay and gravel at the edge of Plover Pond; name unknown. Sowed the seeds in garden. In bloom today—proves to be *Lamproloma communis*—Nipplewort.

TWO RARE FUNGI.

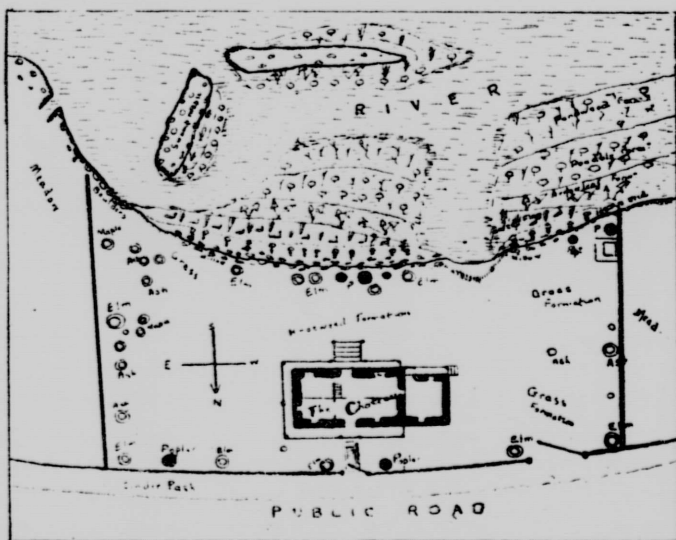
Two very interesting fungi were recently sent for determination to the writer and Dr. James Fletcher, by Mr. Henry Johnson of Simcoe. Neither of us having seen these species before they were submitted to Mr. E. A. Burt for his opinion. One he identifies as *Cyclomyces Greenii*, Berk., the other as *Pleurotus subarcolatus*, Peck., both very rare species and not before recorded from any point in Canada, so far as we know. The *Cyclomyces* was found by Dr. W. A. McIntosh a short distance from the village of Lynnville, in Norfolk Co. It was growing on the ground among some rotten wood, but whether on the wood or in the soil Dr. McIntosh could not say. The *Pleurotus* was found by Mr. Johnson "in Lynnwood Park in the town of Simcoe. It grew on a small maple tree which stood among a clump of pines. Something had taken the bark off one side of the tree and the exposed part had decayed somewhat and here the fungus was growing."

JOHN MACOUN.

NATURE STUDY No. XXX.

NATURE OBSERVATIONS AT HOME.'

By Prof. W. LOCHHEAD, Biologist, Macdonald College, St. Anne de Bellevue, Que.



The observations and suggestions for study indicated in this article have special reference to a well-known property on the banks of a well-known river. This plot of ground, however, is not very unlike other plots of ground, and similar studies may be carried out in nearly all home grounds, more especially those that border on lakes, rivers or smaller streams. By referring to diagram, one will note that the property lies between the public road and the river; that there is a large number of middle-sized, shade-giving trees, most of them along the borders of the lot; that a stone house stands near the middle of the grounds; and that the shallow shore is fringed with plants, while farther out are two small islands, fringed also with plants standing knee-deep in the water.

It may be observed, also, that the property stands at the head of a little bay, or bayou, of the river, where the currents are

not as strong as those farther out, and which the sediment and silt are rapidly filling up. The two small islands stand at the mouth of this bayou and have been formed as bars by the currents of the river.

The white-washed stone house is the first object to attract the eye of a casual visitor, for it has a peculiar appearance, characteristic of many of the old French Canadian houses seen in many parts of the country. Its stone walls are nearly three feet thick, its long concave roof projects far beyond the walls to form the covering of the verandah, and its upper dormer windows stand out half-way up the roof. It was built more than one hundred and fifty years ago, and its age should of itself invite questions. Locally the house is known as "The Chateau," and has been for several generations the homestead of a large French Canadian farm.

The large number of medium-sized trees with abundant foliage make this property a delightful place during the hot days in summer. Unfortunately, no evergreens had been planted by the former owners, so there is little or no protection in the winter from the cold, penetrating winds. The trees were likely planted at different times, for the slow-growing white elms are almost as tall as the more rapid-growing white ashes, soft maples and cottonwoods or poplars. Here are good opportunities for a comparison of the habits of these common trees:—their general appearance from a distance, their manner of branching, their bark, their leaves and leaf arrangement, their fruits, and also their insect and fungous enemies, etc.

Perhaps the most interesting plants flourish in the shallow water along the river bank. There the plants are plainly grouped into formations, or zones, running parallel with the shore, each characterized by certain dominant species. For example, on the low bank are low willows and swamp maples; nearer the water, yet on the sandy beach, are joe-pye weed, elodes and water horehound. In the water along the shore are sweet-flags, cat-tails, bulrushes and arrow-leaves; in deeper water are pond lilies and Indian rice; and in yet deeper water are the pond-weeds and bass-weeds (see diagram where each zone is called after its dominant plant). Such a shore plant-society deserves and well repays care-

ful study, for it is evident that its members must possess special adaptations for such an aquatic life. What are some of these adaptations? In the first place, we observe that most of them are perennial, and have well-developed rootstock systems in the loose soil below the surface of the water. From the rootstocks arise vertical branches bearing the leaves and flowers. Again, the tissues of such rootstocks are spongy in texture, and contain many air cavities, for some provision must be made for the supply of oxygen requisite for the respiration of the living cells. Moreover, the stems have but little need of mechanical woody tissue on account of the buoyancy of the water, or of cork because the plant is compelled mainly to absorb its food directly through the walls in contact with the water.

The leaves of these aquatic plants are also adapted in many ways to the medium in which they live. The floating leaves are oval or shield-shaped, as is the case with the pond-lilies; while the submerged leaves are either dissected or ribbon-like, as in some pond-weeds, water-milfoils and water butter-cups. Often the under surface of floating leaves is purple to absorb as much of the heat as possible. The arrow-leaves have peculiar arrow-head shaped leaves, but occasionally one finds submerged forms that are grass-like.

The reproduction of these plants is interesting. The flowers are all borne on or above the surface of the water, and the pollen is carried by winds, currents of water, or by insects in the case of conspicuous flowers like the pond-lilies. Moreover, the seeds of most of these plants are able to float on account of the presence of air cavities, and are scattered by currents. Bud propagation also is very common. Special buds containing much food drop off into the mud and develop into new plants the following season.

Further, it will be observed that the intricate net work of upright and horizontal branches at the edge of the water collect silt and entangle fallen dead plants. In a short time the mud accumulates to such an extent that the water becomes sufficiently shallow to allow flags and rushes to develop and oust the former owners. These in turn will give place to joe-pye weeds and willows, and so the struggle goes on for possession of the shallow waters and an extension of the shore.

Here are a few additional questions relating to water lilies which the nature student should try to answer. In what respects are the leaves, flowers, and rootstocks of the white and yellow water-lilies alike? In what respects do they differ? What is the function of the air-canals in the petioles and peduncles? Why is the upper surface of the leaf waxy? Determine on which surface of the leaf the stomates or breathing pores are placed. Do the submerged rootstocks bear leaves? What hold the rootstalks at the bottom? Account for the numerous scars on a rootstock. What is the color of the rootstock? In what part of the rootstock are the strengthening tissues located? What differences in the habits of the flowers of the two species? What changes occur to the pistil when it is mature? What insects visit the flowers? What are the insect enemies of pond-lilies?

Other plant formations may be studied in the ground around the house. At the back door where there is abundant nitrogenous waste are knot-weeds, lamb's quarters, chickweeds, large-leaved plantains, burdocks, ragweeds, shepherd's purse, docks, and nettles. All are hardy, quick-growing, and prolific in seeding.

Here again are special adaptations. The stem of the large-leaved plantain is actually pulled down a short distance into the ground by its many contractile roots, and the plant is better preserved from injury than if it lifted its stem into the air. The chickweed leaves have lines of hairs which direct the rain which falls on them down the stem to the roots. The pointed leaf of the nettle, on the other hand, directs the rain away from the stem, and allows it to drip from the tips of the outside leaves to the ground. The roots of the nettle spread widely, and the rain falls where it will be most refreshing. The docks and burdocks have deeply penetrating roots, and they seldom suffer from lack of moisture.

Beneath the trees the plants are mainly blue grasses. There the vegetation is so rank and close that other plants have but little chance to make headway. Sometimes rib-grass, yarrow, and ox-eye daisy establish themselves, but these, it will be noted, have leaves either narrow like the grasses themselves, or dissected so that they can compete with the grasses. The grass leaf shows an adaptation to rain. When rain falls the water running down the

leaf is prevented from passing within the leaf sheath by the ligule, the small scale at the junction of leaf and sheath.

Much could be learned about the insect life of *The Chateau*, but space will allow only a brief notice of a few forms, not to mention the always interesting common white and sulphur butterflies, the swallow-tails, the red-admirals, fritillaries, meadow-browns, and the bluets, which flit here and there and from meadow to meadow, or the bees, wasps, flies and beetles which are on the flowers at the water's edge. Many yellowish maggot leaf-miners inhabit the leaves of joe-pye weed and feed on the soft tissues between the two outer layers.

Plant-lice are abundant on the stems of some of the plants. Those that cluster on the stems of lamb's-quarters are of a greenish color, those on the Canada thistle black, and those on small Balm of Gilead spotted. Ants, too, are there feeding on the sweet honey-dew secreted by their "cows." Small caterpillars form nests on the umbels of the wild parsnips by drawing the flowers together with silken webs, and large black-and-white, plumed caterpillars feed on the leaves of the ash trees, and often make themselves too friendly when they drop from the leaves to the hats and coats of the passers-by.

Insect life is varied enough to allow the close observer a wide choice of subject, and blind he must be who can not find in this great field many and interesting studies.

Down along the shore is a low wall of large stones built by a former owner for a breakwater. To a student with an interest in minerals and rocks, these stones are instructive objects; for there are boulders of gneiss rocks and granite, sandstone almost changed to quartz rock, quartz conglomerate, and dark grey limestone. All of these have stories to tell, and some of them are miles away from their original home, having been carried by the great glacier. All show traces of the action of water and ice; their rough edges are rounded, and their sides are scratched and sometimes flattened.

The public road occupies the summit of the old beach, where the river was both wider and deeper than now. Away across the river the old beach may be seen quite plainly at the same height.

Just as if these evidences were not sufficient to convince us of the fact, another is near at hand, for there are stratified deposits of clay, sand, and gravel exposed in the sides of a small gully which has been made by a little stream flowing across the road not five rods away.

In this home property bird-life, too, is abundant and readily studied. During July and August the warbling vireos whistled delightfully from the tops of the trees, the swallows darted swiftly after the numerous insects which filled the air above the shallow waters, the nuthatches and the black-and-white warblers searched the tree trunks for insect food, and the flycatchers made sallies from their perches on the lowest cottonwood limbs to catch insects on the wing. Besides these were several kinds of water fowl and shore birds down by the river, the woodpeckers, the kingfishers, the catbirds, the American goldfinches, the yellow warblers, the red-winged blackbirds down among the reeds, the phœbes, the chickadees, the domestic sparrows, the song sparrows, the chipping sparrows, and many others, all within a few rods of the observer.

Space forbids further notice of the many other interesting objects of study, and problems which the young student finds awaiting solution about his own home.

This paper is practically a plea for a closer study of our home surroundings, a study too often neglected by our nature students under the impression that nothing interesting or instructive can be found there. As a matter of fact, the home with its garden and lawn is the very best field for Nature study. We require to give more attention to the commonplace things and to understand their real significance in everyday life. And how many commonplace things there are to study when we actually *see* with our eyes and *hear* with our ears, and when we realize that every detail of the structure of a plant, animal or landscape has a history and a meaning, and how few of our commonplace studies are beyond the comprehension of the smallest child!

When we know the things close at hand, we shall understand the things at a distance. When we understand the life-relations of the inhabitants of our yards and gardens, we put ourselves

into a right relationship with the big Nature world about us.—
Study our home surroundings.

Down in a low corner of the grounds the soil is covered with much decaying vegetable matter. Ferns and mosses grow there and the leaf-screen of the trees allows but little sunlight to reach the damp soil. Year after year the organic matter accumulates in this corner, for pieces of limbs and bark are added to the leaf-mould, and year after year the decay continues. It is worth our while sometimes to observe the disintegrating agents at work. The leaves and twigs are often eaten by borers, sow-bugs, and centipedes, and the fungi continue the work on the stems which they have made to fall. Rupturing the bark of the dead limbs black pustules of many kinds of "sac-fungi" may be seen. The fine threads of these fungi have already penetrated the wood of the limb in all directions, and have come to the surface to produce their spores. On many limbs are slimy masses of the "slime-fungi," which also sends fine threads through the wood in search of food.

We may observe, moreover, that the bark breaks down less rapidly than the wood, for bark, we know, is largely composed of corky matter, which absorbs water but slowly; and as the destructive agents require moisture, its break-down is quite slow. The lichens, mosses and algæ that live on the bark, no doubt, hasten the operation, but the main agents are certain larger fungi and the bark-beetles. Moulds and bacteria follow and break down the tissues much farther. Soon this vegetable matter becomes mixed with the soil, forming a new soil from which mushrooms and other similar forms get their food-material. The decay continues through the activity of other delicate underground fungi attached to the rootlets of trees, whose threads explore the ground in every direction. In a few years the vegetable tissue, therefore, is completely broken down and incorporated with the mineral matter to form humus soil.

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1905.

Dec. 12.—The President's Address and Report.

Address, by Dr. J. F. White, Principal of the Normal School.

Illustrated Lecture: *Apparent Consciousness in Plants and Animals*,
by the President, Dr. S. B. Sinclair.

1906.

Jan. 9.—Illustrated Lecture: *The Geology of Strathcona Park and other
Ottawa localities.* Dr. H. M. Ami.

Report of the Geological Branch. W. J. Wilson, Ph. B.

Jan. 23.—*The Migration of Birds.* C. W. G. Eifrig. Illustrated by speci-
mens.

Report of the Ornithological Branch. Mr. A. G. Kingston.

Feb. 13.—Illustrated Lecture: *Trees, Shrubs and Plants for the Adornment
of Home.* Dr. W. Saunders, of the Central Experimental
Farm.

Feb. 27.—Conversational Evening: short addresses on various subjects.

Prof. J. Macoun: *Botany.*

Dr. J. Fletcher: *Collection of Insects for Schools.*

Dr. Otto Klotz: *Gravity.*

Dr. H. M. Ami: *Methods of Work of the Ottawa Field
Naturalists' Club.* Illustrated by lantern views.

Mar. 13.—*Fish Culture.* Prof. E. E. Prince, Commissioner of Fisheries for
Canada. Illustrated by specimens.

Mar. 27.—ANNUAL MEETING.

Address by Mr. A. Gibson: *Method of Studying Insects followed at
Central Experimental Farm.*

All the meetings will be held in the Normal School, at 8 o'clock p.m. sharp.

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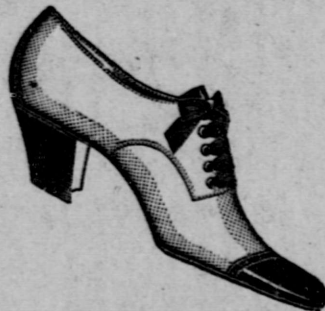
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