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THE OTTAWA NATURALIST.

VOL. XVI.

OTTAWA, MAY, 1902.

No. 2.

NEW NORTHWESTERN PLANTS.

By EDW. L. GREENE.

ACTÆA CAUDATA. Evidently tall, the stem probably solitary, the young petioles and rachis villous-puberulent, the leaflets when young minutely villous along the veins beneath, the upper face sprinkled with minute rigid shining hairs more or less appressed: leaflets from rhombic-ovate to lance-oblong, doubly and sharply incised, but with a long lance-linear perfectly entire acumination: raceme short, obtusely low-conical, its bracts ovate to ovate-lanceolate, acuminate, of one-fourth the length of the pedicels: petals 2 or more, of about two-thirds the length of the stamens, the elliptic blade passing gradually into a flattened claw of its own length: berries not seen.

Margin of a rivulet, Chilliwack Valley, B.C., July 11, 1902, J. M. Macoun, No. 33,550, at least in part, and as to the flowering specimens; for the branches taken by Mr. Macoun later by a few days, and at a lower altitude seem to represent a different species, probably *A. arguta*, Nutt., the leaves of which are not at all caudate-acuminate as in this new species and the next following.

ACTÆA ASPLENIFOLIA. Stems perhaps several from the root, $1\frac{1}{2}$ feet high at early flowering, with leaf and inflorescence near the summit; a very sparse, somewhat villous hairiness along the veins of the leaves beneath, and an equally sparse succession of minute rigid hair-points along veins and veinlets above; leaflets of somewhat deltoid-lanceolate outline, incisely lobed and the lobes serrate, the leaflet ending caudately as in the last: raceme very short and few-flowered; bracts thin, distorted, almost scarious: petals usually 2, of less than half the length of the stamens, and

consisting of a round-obovate or almost orbicular blade and equally short claw : fruit not seen.

Of this species, so well marked in the cut of its foliage and in the character of its petals, the type specimens are Funston's No. 14, from Yakutat Bay, Alaska, 1892, and one from some unknown station also in Alaska, obtained by my friend Mr. A. W. Gorman. There are other Alaskan specimens of *Actea* very different from these, and perhaps representing *A. arguta*; these, however, from southerly stations.

ACTÆA CALIFORNICA. *A. arguta*, Greene, Fl. Fr. 310; Man. Bay. Reg. 6, not Nutt. This *Actea* of the California Coast Range, and which in the north passes over to the Sierra Nevada, is very distinct from *A. arguta*, not only by its rhombic-ovate acute petals (commonly 3 or 4), but by its peculiarly broad and almost obtuse leaflets, which are also not much incised. They are, indeed, abruptly acute, but as to general outline, quite rounded at both ends. In this species the stems are often several from the same root.

DELPHINIUM CHILLIWACENSE. Stems solitary, slender, 1 to 2 feet high from a not deeply seated rounded tuberiform small root, or from a small condensed cluster of several such; the whole plant sparsely leafy and with one or more short and very lax few-flowered racemes; lower part of stem somewhat retrorsely villous-hirsute with white hairs, this indument more sparse and not retrorse as continued up to the summit of the petioles, the leaf-blades more pubescent with somewhat appressed short hairs: sepals rather narrow, deep-blue; petals white; spur long and straight, acuminate: follicles short and stout, moderately divergent, appressed-pubescent even in maturity.

Dry rocky banks, Chilliwack Valley, B.C., 19 June, 1901, J. M. Macoun, No. 33,573. Not a showy species, but very well marked in habit, and in the character of the root. It is related to *D. bicolor*, though not very intimately.

CERASTIUM SUBULATUM. Perennial, the sub-erect flowering stems 6 to 10 inches high, ending in a peduncled and few-flowered cyme, this in age almost equalled by the upright very leafy sterile

shoots; the leaves of the latter linear or subulate-linear, twice the length of the internodes, spreading or the lowest recurved, less than a line wide, puberulent, or marginally somewhat villous, the stem retrorsely villous: bracts of the cyme short, broadly subulate; calyx glandular-hirtellous and with some scattered villous hairs: capsule short, only the teeth exerted and bent upward.

Chilliwack Valley, B.C., J. M. Macoun, 20 June, 1902, the specimens in mature fruit; the label bearing the number 34,023.

CERASTIUM ALSOPHILUM. Perennial, the slender and sparsely leafy flowering stems a foot long or more, ending in a rather strict many-flowered cyme, the sterile shoots few, long or short, only loosely leafy, weaker than the others; the whole herbage green and apparently glabrous, a lens disclosing hirtellous hairs on all the parts, but most obviously on the stems: leaves all spatulate-linear, acute, thin, spreading: bracts of the cyme subulate: pedicels filiform, the primary ones an inch long or more, minutely glandular-hirtellous: sepals very acute, thin and rather faintly 1-nerved, sparingly glandular-villous; petals thrice the length of the sepals: capsule unknown.

This species, very well marked in habit, foliage, pubescence, etc., is also from the Chilliwack Valley, by Mr. Macoun. There are two sheets of it, one bearing the number 34,020, the other 34,021. The thin foliage and loose habit indicate it to be an inhabitant of shady places.

CERASTIUM NIT DUM. Perennial, 6 inches high, slender, sparsely leafy, the younger stems often purplish, the older whitish, shining and quite glabrous below, above more or less pubescent in lines: leaves oblong-linear, acute, mostly less than $\frac{1}{2}$ inch long, suberect on the flowering stems, spreading on the sterile shoots, glabrous in every part except for occasional long hairs at the very base: inflorescence scarcely cymose, the flowers often solitary, sometimes 4 or 5: sepals thin, scarious tipped, sparingly pubescent, faintly nerved: petals thrice as long, obcordate: capsule not seen.

Habitat of the foregoing, though of a subalpine altitude (5,500 ft.); collected by Mr. Macoun, 29 Aug., 1901. (No. 34,022.)

CARDUS MACOUNII. Perennial, slender, simple or branched above, 1 to 3 feet high, the stem and also the leaves beneath arachnoid-hoary; leaves of oblong outline; deeply pinnatifid and with open sinuses, the lobes toothed and spinescent, upper face green and sparsely scabrous, or some of the scabrous points developing a hair: peduncles slender, mostly monocephalous; heads about $1\frac{1}{2}$ inches high, campanulate, the many bracts long-subulate, slenderly spinous from near the base and blackish, but, almost to the tips embedded in loose arachnoid wool: corollas rose-purple to dark-violet: anther-tips very acute, white: pappus-bristles very finely and loosely plumose except at the tip.

Chilliwack Valley, B.C., 13 June, 1901, collected by Mr. James Macoun (numbers 26,451 and 26,452). The species is well marked by the characters of its involucre, and more so by its perennial duration; the roots of almost all American species of this genus being strictly biennial.

ERIGERON ACUTATUS. Stems solitary, 4 to 6 inches high from an ascending rootstock, without distinctively basal clustered leaves, but leafy up to near the solitary short-peduncled large and showy head; stem canescently pubescent with short villous appressed hairs, the foliage green but pubescent on and along the margin; lowest leaves oblong linear, 2 inches long, abruptly acutish, short-petiolate, the others lanceolate, acute, usually apiculate, sessile, an inch long more or less: involucre hemispherical, its numerous equal somewhat biserial bracts linear, tapering to a slender recurved purple tip, not at all pubescent, but glandular-viscid: rays many, broad as those of an Aster, pinkish or purple.

Chilliwack Valley, B.C., at about 5,000 feet, 29 July, 1901, J. M. Macoun, number 26,469. A small-sized relative of *E. saluginosus*, though of different underground growth, and inhabiting damp mossy places partly in shade.

ERIGERON OBTUSATUS. Smaller than the last, as to stature, only 3 or 4 inches high, much less leafy and with more showy heads; lowest leaves from round-obovate and retuse to oblanceolate and obtuse, $\frac{1}{2}$ to 1 inch long, short-petiolate, glabrous on

both faces, but the margins finely pubescent : cauline leaves few and scattered, subulate-lanceolate, acute : bracts of the hemispherical involucre more numerous, less acuminate, more distinctly glandular-pubescent : rays many, rather broad, pink or rose-purple.

Growing on rocky slopes, dry at time of collecting but wet earlier in season; altitude 6,000 feet, being Mr. Macoun's number 26,470; from the Chilliwack Valley, B.C., 29 August, 1901.

PENTSTEMON GORMANI. Less than a foot high, the firm basal leaves spatulate-oblong, obtuse, entire, 2 inches long including the short petiole, glabrous, the cauline oblong-linear or spatulate-oblong, sessile, the uppermost of these, as well as the inflorescence villous or hirsutulous with gland-tipped hairs : sepals lanceolate, acute, villous-hairy : corolla purple, about $\frac{3}{4}$ inch long, little bilabiate, their rounded lobes spreading, the orifice very hirsute within ; the sterile filament strongly bearded almost throughout.

Dry gravelly slopes of hills in Yukon Valley, 9 June, 1899. M. W. Gorman.

LAPPULA ANOPLOCARPA. Annual, erect, with the numerous ascending branches loosely racemose and bracteate ; herbage cinerous and softly hirsute : nutlets ovate, with rounded base, the dorsal disk very small, ovate-lanceolate, circumscribed by a thick obtuse cartilaginous entire and wholly unarmed margin, the surface of it, however, muricate-tuberculate ; that of the dorsal part, or disk, minutely so.

Spence's Bridge, B.C., 25 May, 1889, collected by Mr. John Macoun ; number 17,038 of the Canadian Survey Herbarium. This is allied to *L. montana*, Greene, Pitt. iv., 96.

RECOLLECTIONS OF THE PASSENGER PIGEON.

Being remarks made by the Rev. Dr. C. J. S. BETHUNE, and the resulting discussion at the February meeting of the Ornithological Section of the Entomological Society of Canada.

In my student days, while attending the University in Toronto, I started a Naturalists' Calendar, in which I recorded not only entomological items but also notes of prominent occurrences among the birds, such as first arrivals of song sparrow, robin, etc. On turning up these notes I find two records only of the wild pigeon, one in the last week of March, 1858, and the other the 8th March, 1860; both of these notes were made in Toronto, and they refer to the large quantities of pigeons which were then seen. I remember most distinctly the occurrence in 1858, as I had been detained in Toronto during one week of the Easter holidays for a special examination, and at that time flock after flock of pigeons crossed from the south at Toronto. All of the flocks were fairly long, from east to west, and some of them reached farther each way than one could see, but all were of short dimensions from north to south. I could not, of course, give the exact depth of these flocks, but it would be something like 100 yards or less. In the distance the birds looked like a black cloud, and as there were no trees in front of my room, and but few buildings between it and the lake, I had a very good chance to observe them. The position of my window was so commanding that on a clear day I could discern Brock's Monument, and sometimes on a dull day the spray of Niagara Falls could be seen. Years before, as a child, when living at Cobourg, these birds were seen in immense numbers. In early summer, probably June or late in May, as the trees were in leaf, enormous flocks would come over the lake going north, and the people who were so inclined would then turn out with shotguns, and an incessant firing ensued. As those in the streets of the town fired up into the air, the shot would fall back on the heads of those standing by, and the rattling of the shot as it fell on the shingles of the houses was almost constant. The term "pigeon-shot" was applied to the size used, in the same way as we now speak of duck-shot. Back of Cobourg lay a range of hills perhaps a couple of miles from the lake, and when the flight was

on the men used to go back in the early morning to the brow of these hills, and wait for the pigeons there. The birds would rise but very little when they came to the hills, and consequently, would very often be within range of sticks in the hands of the men, but afterwards as they saw that the country remained constant at the new level they would gradually rise to a greater height. As a rule they did not fly closer than about 100 feet from the ground, and sometimes would be entirely out of gun range; on such occasions the people would get up on the house-tops and shoot from there. These flights would occur day after day, the flocks being 20 to 30 minutes apart as a rule; during the part of the day when the flight was on and number of pigeons was of course simply incalculable. They would then disappear in the north country, but during the summer quite frequently in the morning one of the children would run in to say that there was a pigeon in the garden and immediately whoever was considered the best shot would take the gun out and kill it. These birds were very tame in the trees; one could walk immediately beneath them without putting them to flight. The unavoidable result of such slaughter was that every person became thoroughly sick of pigeon pie and stewed pigeon before the flights ceased. I do not suppose that the pigeons crossed the lake always at the same place, as the whole country for hundreds of miles was covered with them in these early days. On one occasion in 1858 or 1859 while holidaying west of Dundas, I drove some twelve miles towards Guelph with two companions, for trout fishing. Part of the road lay through a pine forest so dense that in the early hours of the morning it was cold, even in August, and the shade was so thick that the road was dark. Beyond this forest lay an immense swamp through which ran a corduroy road about one mile in length, and just before entering the swamp there was a stubble field of about ten acres on the north side of the road. As we emerged from the forest we could see that this field was literally blue with pigeons, so that one could hardly see the ground in any place. The birds were feeding on the grain which had been shelled out before it was harvested. Of course we had a gun with us, and my uncle got out and went over to the snake-fence to get a shot, but before he succeeded, the sentinels who were stationed at the outskirts of the field, gave the alarm, (which

however was not detected by the boys) and all at once the pigeons rose to some little height and went over the woods. The tail feathers of these birds, have a large handsome brick-red spot on inner web, and the children were in the habit of picking up these pretty feathers shed by the birds as they flew over. Although these tremendous flights going north, were an annual occurrence for days at a time, I cannot remember that I ever saw a single large flock going south. The reason for this has always been a problem when one considers the enormous numbers which come from the south each year.

The motion of these flocks was far more swift than that of any other bird I had ever seen, so swift in fact that one could detect that a flock was moving as soon as ever it came in sight—as a cloud in the distance; and as they passed by, one flock following another, it gave one the impression of battalions of soldiers following each other on the double.

Dr. Bethune then read some extracts from the *Canadian Naturalist*, Volume I, for 1857, prefacing them by a few remarks about the appearance of that magazine. Mr. Elkanah Billings, the editor, it seems had permission from the son of Audubon, and from some other naturalists, to use their writings in his magazine. Many very interesting details were brought out from these articles, one of which was rather startling when carefully considered; this was a calculation by Wilson of the number of birds which he saw pass a certain point in a given time one day in Kentucky, in which his final estimate was that the birds he had seen would consume seventeen million bushels of grain in a day. Wilson's writing referred to the nest of the pigeon as containing but one egg as a rule, but Mr. Billings, in a note, stated that the nests usually contained two eggs. Some of the members present had read definite reports each way, and Mr. Keays has a single egg which constituted the whole set, and was taken by his brother in Minnesota years ago. Dr. Bethune had never heard of breeding grounds being near the localities where he had lived, although stragglers were to be seen all summer.

Mr. J. J. Baker said that it is not over thirty years ago since roosting places existed about thirty miles northeast of Toronto.

These were called rookeries, but he believed they were not only roosting places but breeding grounds also. At the time of his youth, near Brougham, east of Toronto, pigeons were plentiful at all times after the wheat was cut, and when hunters went out looking for pigeons they felt certain of finding them in almost every field of wheat stubble. Some years before there had been a rookery a few miles north of Brougham, where there were plenty of young to be seen, and no doubt the birds nested. The migrations took place in the same immense flocks as Dr. Bethune had described; some of them would darken the sky, but he could not recall the shape of them.

Mr. T. C. Scott, said that in the summers of '69 and '70 in Halton County, there occurred the last flights that he could recollect. He remembered counting as many as twenty flocks passing while he was on his way from the house to the school; all of these flocks were widely extended east and west, but not many yards in depth. On the mountains near Milton, there was a large pine forest, and old hunters said that during the regular spring flights, the pigeons rested on the mountains after having crossed the lake, alighting on the trees so thickly that the limbs would break with their weight. This occurred every year as though it were a settled habit with the pigeons to rest in this place. He, too, had noticed the great width and short depth of the flocks.

Mr. J. E. Keays had heard his father describe how the farmers used to salt several barrels of pigeons breasts for winter use.

Mr. Saunders read from his note book the records he had kept of the flight of the pigeons, showing that the last regular flocks he had seen near London were in 1876. After that, five or ten birds at a time were seen, for two or three years, and then no further regular migration was noted in the spring at all, but occasional birds in ones, twos or threes, have been seen near London up to as late as '95. At Point Pelee small flocks of 5 to 20 were seen in August 1882, which may have bred there.

The latest record of birds that probably bred in the London District is that of 3 or 4 birds, a male, female and young, which were seen and the female and one young shot, about 15 miles east of London, on September 24th, 1885.

These two skins and a male taken at Point Pelee in 1882, were examined by the members present, and the large brick-red spots on the tail feathers were found as Dr. Bethune had stated.

In the Rockwood Review for November 1898, published at Kingston, a breeding colony of about twenty birds is reported in that part of the country, and similar small colonies, in various parts of the more remote regions of eastern Canada and Manitoba are occasionally heard of. It is to be hoped that these bands will be sufficiently protected to prevent the utter extermination of this bird.

CONTRIBUTIONS TO THE NATURAL HISTORY OF THE NORTHWEST TERRITORIES.

By EUG. COUBEAUX, Prince Albert, Sask.

II.

BIRD NOTES.

Since the publication of my list of birds of Southern Saskatchewan,* I made a number of observations during the fall of 1899, the winter of 1899-1900, the summer of 1900, and this winter, 1900-1901. I give the following as among the most interesting additions to that list :

1. *BOTAURUS LENTIGINOSUS*. Frequently met with last year during the whole summer, probably on account of the drought of the southern regions and the unusual rainfalls here for two years, that filled up throughout the country the numerous drains, marshes, ponds and lakes.

2. Noticed and captured during the last fall the four following species :

1. *Tringa Bairdii*.
2. *Tringa fuscicollis*.
3. *Tringa maculata*.
4. *Gallinago delicata*.

3. *CANACHITES CANADENSIS*. On February 8 of this year (1901) I received to prepare one splendid specimen ♂ of the Canadian grouse ; and according to inquiries I made about that bird, it seems to be rather rare.

* OTTAWA NATURALIST, Vol. XIV, pp. 24-31.

4. *DRYOBATES PUBESCENS*. On October 25, 1900, I captured a male of this small species. I had noticed it before only three times without being able to secure a specimen to verify my observation and I supposed it rather rare.

5. *TROCHILUS COLUBRIS*. I had the pleasure for the first time to note on August 6, 1900, that living gem fluttering about poppies and sunflowers in my garden. Several persons noted it too that year, at that time, but, I consider, nevertheless, it as a very rare straggler.

6. *OTOCORIS ALPESTRIS PRATICOLA*. As I saw this species roaming in the town last year on June 21, and several times subsequently, I believe I may infer now that it is breeding in the country.

7. *CYANOCITTA CRISTATA*. Prince Albert:—More common here in the vicinity of the coniferous stations the garruli like particularly than south, the south branch of the Saskatchewan.

8. *COCCTHRANSTES VESPERTINA*. At the beginning of this winter, (November 27) I noted for the first time in the town this beautiful grosbeak, which I enumerated in my list with doubt. Then all through the season I noted it in great numbers, in flocks of 8 to 20 with always a preponderance of males (7 males for 1 female, 9 males for 2 females, etc.). The last I noticed was on May 20.

9. *ZONOTRICHIA ALBICOLLIS* & *Z. QUERULA*. First noticed in company with *Spizella monticola*, *Junco hiemalis* and *Passerella iliaca* on September 2, 1900.

10. *JUNCO HIEMALIS*. Noticed on July 23, 1900, roaming in the town in small flocks of 6 to 10, and I guess I may infer that it must breed too in the country.

11. *AMPELIS CEDRORUM*. Observed several times last year in July plundering the berries of a *Lonicera tartaricum* I have in my garden, and in the bush. Common in the vicinity of the coniferous stations.

12. *PETROCHELIDON LUNIFRONS*. First observed on May 30, last year; then in great numbers building their nests in the town.

13. *AMMODRAMUS CAUDACUTUS NELSONI*. One specimen, August, 1899.

Prince Albert, March 18, 1901.

BIOLOGICAL STATION OF CANADA.*
A REVIEW OF ITS THREE YEARS' WORK.

The issue of the first fasciculus of scientific papers from the Marine Biological Station of Canada gives occasion for some account of that important institution and its work. The papers, which contain the results of the biological researches carried on by Canadian specialists at the Station, form the Supplement to the 33rd Annual Report of the Fisheries Department, Ottawa. The Supplement is not only of unique scientific interest, but a glance at the nature of the subjects treated of demonstrates its immense practical value to the Government and to the public. It is stated that the French, German and other foreign Governments have specially applied for copies of this publication, and the fact is not surprising in view of the technical value and practical bearing of the six or seven reports included in this Blue Book.

The Station was founded by the Dominion Government in 1898, the Order in Council authorising its erection being dated May 9th of that year. The steps which led to its foundation may be briefly told, and, for the details, reliance has been placed upon Professor Prince's article on the origin, equipment, and work of the Station, which forms the first of the seven scientific papers now presented to the public.

Professor Prince, as Dominion Commissioner of Fisheries, was rightly selected as head and director of the Station by the Canadian Committee of the British Association for the Advancement of Science, and he gives in a concise report, a rapid outline of the progress of Marine Biology in Canada onward from 1835, when Sir William Dawson began, as a youth of 15, to collect marine specimens in the vicinity of Pictou, Nova Scotia. It is an interesting story, and should be told in full detail some day, for Professor Prince's sketch was evidently written *currente calamo*, and there are many omissions of important zoological work done, which should find a place in a complete sketch of Canadian marine biology. The Station resulted, as Professor Prince tells us, from

* Contributions to Canadian Biology, being studies from the Biological Station of Canada, 1901. Supplement to the Ann. Report Mar. and Fish. Dept., Ottawa, 1900.

the action of a Committee of the British Association appointed in 1896. During the sittings of that august scientific body, in Toronto, in 1897, this Committee, under the chairmanship of Professor Louis C. Miall, President of the Biology section, formulated a scheme, and chose a Canadian Board consisting of Professors Prince, Macoun, A. B. Macallum, E. W. MacBride, T. Wesley Mills, Dr. Thistleton Dyer (of the Royal Gardens, Kew) and Professor Penhallow (Secretary). These gentlemen organised an influential deputation who waited upon Sir Louis Davies, then Minister of Marine and Fisheries, and in 1898 a Parliamentary grant was made, resulting in the erection and equipment of a Biological Station which commenced work at St. Andrews, New Brunswick in 1899. Prior to the movement inaugurated by the British Association, the scheme had been warmly advocated, first by Professor Prince himself in his report as Commissioner in 1893,* and by Professor Knight, of Kingston, two years later.† In 1896 the Royal Society discussed the matter and adopted a resolution (in Section IV) relating to the founding of such a marine biological station, the proposal being made by Dr. T. J. W. Burgess, of Montreal.

In the summer of 1899 scientific researches were actively commenced at St. Andrews, N.B., in the building described by Professor Prince as "a neat one-story structure of wood, well-lighted from the roof and sides, and somewhat resembling a Pullman car, with a row of eight large windows along each side," and having a total length of 50 feet. Besides a spacious main laboratory containing workers' tables, aquaria and glass tanks supplied with fresh and salt water, wash-basins, bottle racks, bookshelves, etc., there are six small rooms for the accommodation of the Director and staff, for the attendants, and for chemical and scientific apparatus, books, memoirs, etc. The nucleus of a valuable library has been already collected, including "the fifty magnificent volumes of the report of H. M. S. *Challenger*, a munificent gift, obtained through the kind offices of the Rt. Hon. Joseph Chamberlain, His Majesty's Principal Secretary of State for the

*See 26th Ann. Rep. Mar. & Fish. Dept., 1893. Special Appendix by the Commissioner of Fisheries, pp. clxxxviii—cxcv.

†Proc. Royal Soc. of Can., 1895, pp. xiii and xiv.

Colonies." This costly gift from England, with its elaborate encyclopædic treatises and superb colored plates, is a library in itself; but a large series of English, German, French, and American memoirs and works, has been also secured. The Station is well-equipped with nets, dredges and deep sea tackle, including a beam-trawl, besides possessing a small launch, row-boat and appropriate gear.

The management of the Station was placed by the Government in the hands of a Board of nine members, a distinguished company, including some of the most brilliant scientific men in the Dominion. As already stated, at their head is Professor Prince, Commissioner of Fisheries, and a former President of our Society, while Professor Ramsay Wright is Assistant Director, and Professor D. P. Penhallow is Secretary, and the remaining members are Professors Bailey (Fredericton, N.B.), A. P. Knight (Kingston, Ont.), A. B. Macallum (Toronto), E. W. MacBride (Montreal), the Rev. Abbé Huard (Quebec), and Dr. A. H. Mackay, Superintendent of Education (Halifax, N.S.). A number of these eminent authorities have conducted original investigations in the Station for longer or shorter periods, during its three years of existence; two years of which it was located at St. Andrews, N.B., and one year (1901) at Canso, N.S. Of other scientific workers who have occupied research tables, mention may be made of Dr. R. R. Bensley (Toronto), Dr. Joseph Stafford (Montreal), Mr. B. A. Bensley (Toronto), Dr. F. Slater Jackson (Montreal), Miss Ganong (St. Stephen), Mr. Bower (Kingston), Dr. F. H. Scott (Toronto), Prof. Fowler (Kingston), Mr. C. Maclean Fraser (Toronto), Mr. G. A. Cornish (Toronto), and Dr. Linwood, of New York. The Government enjoined that scientific work should be carried on, as far as possible, with practical objects in view, in return for the pecuniary support granted from the public funds (\$5,000 for construction, and \$2,000 per annum for current expenses). That this understanding has been abundantly fulfilled is apparent from the papers now printed, and it may be questioned if any marine station in the world has within three years from its foundation, furnished results so extensive, so valuable in a utilitarian sense, and so interesting, scientifically, as this Canadian Station. To take some concrete examples,—for over a hundred

years the vexed question of sawdust and fish-life has been discussed, and Professor Knight has, for the first time, conducted exact scientific experiments and made tests in regard to that all important matter. His report is certain to attract wide attention, and the results which he reports, appear to show that sawdust is not fatal to adult fishes, but affects mainly their food, eggs and young; a result very much at variance with the views of loud-voiced theorists, who have spoken of fishes as being choked and killed in large numbers by that kind of pollution. Dr. Knight also gives details of his exact and thorough study of the effects of the other water pollutions. He states that a report of Professor Prince, published in 1899, stimulated him to take up the investigation, and he was much assisted by the chemical analyses of Mr. F. T. Shutt, who, like Professor Prince, is an ex-President of the Ottawa Field-Naturalists' Club. An account of the sand-clam (*Mya*) and of the New Brunswick fishery for that valuable mollusk by Dr. Joseph Stafford, is of great interest, covering 21 pages and illustrated by four beautiful plates. The paper is of much practical importance though the detailed description of the shell and internal organisation seems somewhat redundant and out of place in a series of original papers. Nothing very new or original can be said on that phase of the subject. Indeed, every scientific student can find a full account in the current class-books of zoology. The pages, however, dealing with the food, reproduction, etc., are both original and valuable, and important additions to science. The fourth paper, by Professor Fowler, is open to criticism. The flora of St. Andrews might have been made extremely valuable by incorporating in it some account of the algæ and microscopic plants of Passamaquoddy Bay: but as Dr. Fowler's list stands, it adds little or nothing to the very excellent reports already published by Dr. G. U. Hay, Mr. J. Vroom and other New Brunswick botanists. The three last reports are creditable in every way, for they add to our knowledge, and they show how valuable work can be done by busy men in a short time at a properly equipped Station. Dr. Scott gives us some very unexpected results in his study of the sea-urchin's food. Many authorities have stated that the sea-urchin lives on shell-fish and the like, an opinion apparently supported by the powerful

jaws and teeth possessed by Echinus: but Dr. Scott tells a different story. It is to be regretted that he did not at the same time study the food of the star-fish. We should have then learned if these two Echinoderms are identical or differ in their food. Professor Prince and Dr. MacKay furnish a most interesting, though too brief, paper on an anatomical subject of very great importance. They studied the remarkable breast-fins of the mackerel shark (*Lamna*). The fins of fishes are not less interesting than the wings of birds, perhaps more so, and the three plates illustrating paper No. VI. are commendable for clearness and accuracy. It is to be hoped that the two authors will continue their joint-papers on a subject of such uncommon scientific interest. The last paper, on the Sardine Fishery, by Mr. Bensley, is attractive and valuable so far as it goes. It appears unquestionable that these sardines of commerce, caught by Canadian fishermen but practically all canned in Eastport, are not sardines at all, being simply immature herring 5 in. to 9 in. in length. Thousands of hogsheads are caught every summer, and it is a grave question what effect this is likely to have upon the Bay of Fundy herring supply in the future. Mr. Bensley's paper is invaluable on that account.

Professor Prince and his brilliant and learned colleagues are to be congratulated on this first publication from the Marine Biological Station. It is a valuable and most creditable report; but it is permissible to hope that some place in future reports will be given to faunistic work, and that Canadian zoology will gain by additions to its marine animals and fishes at each location selected for biological study as the station moves northward along the Atlantic shores.

Zoologists have, of course, learned with interest of some of the interesting forms, vertebrate and invertebrate, which have already been secured by the staff of the Station. Thus, the blue or sand shark (*Carcharias littoralis*, Mitchell) which Dr. Jordan separates from *Carcharias glaucus*, was brought to the Station last summer, and this record extends the range of the species 400 or 500 miles further north than was specified by the United States' authority mentioned. Sharks are, however, of essentially wandering habits, and other records of southern species of fishes taken by the staff of the Station at Canso are more surprising. Thus

the Spanish mackerel, or chub mackerel (*Scomber colias*, Gmelin), resembling and yet unlike the common mackerel, was captured on several occasions, while the interesting *Scomberomorus maculatus*, Mitchell, usually called Spanish mackerel by United States writers, was also secured. Neither species is generally regarded as occurring so far north as Canso. Specimens of *Lycodes*, a curious eel-pout, probably *esmarki*, were got at St. Andrews, which was surprising, and also at Canso, both being an entirely new records. On many occasions enormous skulpins of a rich orange colour were caught, quite different in size, and other features, from *Hemitripteris americanus*, which they most closely approached. A ponderous sea-wolf was also added to the collection of the Station. It was not *Anarrichas lupus*, being of a dirty lead colour, and in dentition far less formidable than the common brown or yellow, barred species. An old naturalist says of *A. lupus*: "Its ferocious-looking cat-like head, and exceedingly coarse skin, covered with slime, gave it a hideous appearance"; but when he adds: "The voracious and savage character of the wolf-fish . . . is apparent from its formidable array of teeth, and its vicious propensities," the description does not so aptly apply to the large specimen examined at Canso, in which the teeth were far less prominent. It no doubt belonged to the Arctic species, *Anarrichas latifrons*. Amongst other noteworthy captures was a swordfish (*Xiphias gladius* L.) which exhibited several parasites (*Penella*) of unusual size, projecting like long dark whip-lashes from the skin of the fish, each provided with a brush or feather-like terminal appendage. Amongst the invertebrates collected were many Protozoans and Annulates which may turn out to be new to Canada, and possibly new to science, so that the faunistic work has already assumed an important character.

It is exceedingly interesting to learn from the Director's report that the tables have on the whole, been fully occupied during the three years of the Station's work. That shows, if such evidence were needed, that Canada has no lack of able and original workers, whose brains and talents have found congenial opportunities, hitherto, in the biological stations and laboratories of the United States. Most of the American Stations give lectures and elementary instruction, and demand fees; but the Canadian Station is

devoted solely to original research, and offers its advantages to qualified naturalists without fee or charge. There is no field so vast, so inviting, and so unexplored as the waters off our Canadian shores, and the Government Marine Station has a bright future before it.

WINTERING OF BEES.

The wintering of bees, in this latitude is, I know, a question of some anxiety to the bee-keeper, and for the benefit of those who are at all concerned in the subject, the following experiment, I think, will be of some interest :—

Last autumn, I had six hives of bees, and instead of putting them all away in the cellar as usual, I left four of them outside, where they remained during the entire winter.

I had to prepare them however for the ordeal, by putting on each hive an empty super to take off the moisture, which I believe accumulates from the cluster of bees hibernating during the winter months.

I then placed the hives close together on an elevated piece of ground some foot or so above the rest of the garden, and quite sheltered by the house on the north and west sides. I also took the precaution to place three or four boards over the top, to serve as a roof, over which I laid a carpet. I also placed a board all along against the hives and in front of the entrances, to prevent the snow from drifting into and closing them up—so that they could have all the ventilation necessary. And of course when the winter came on, everything would be covered with snow, and it was intended that with this shelter and covering they would keep sufficiently warm.

This spring, these four hives of bees came out much stronger than any bees that I have yet succeeded in wintering, and much better than the two hives put away in the cellar, one of which latter, I may say I lost from some reason or other which I have not been able to account for, as the hive was quite full of honey and seemed perfectly healthy.

A. H. LAMBART.

NOTES ON SOME WINTER BIRDS.

By W. E. KELLS.

PINE GROSBEAKS. On New Year's day, 1902, I noted, for the first time this winter, a flock of some fifteen individuals of this species. When first seen they were flitting among the fruit and shade trees in the gardens and the streets, and occasionally feeding on the berries of the mountain ash—which, while these lasted, appeared to be their principal food. Among them, when first seen, were a few red-polls, and as the crossbills continued to be observed every day for the next seven weeks, a few red crossbills were at times seen among them. The last time the grosbeaks were noted was on the 21st of February; there was then only six in the flock. It has been stated that these birds make their appearance in Ontario every five years, but I think that it is over ten since I last noted them in this vicinity. It is probably the lack of food in their more northern haunts, rather than the severity of the weather, that causes them to migrate towards the east and the south. All the members of this species that came under my observation this season, were in the dark plumage, though a few had reddish shading on the upper parts. These visitants appear to have been noticed by all observers throughout the province.

EVENING GROSBEAKS. No specimens of this species came under my observation in this vicinity this winter, but correspondents in widely distant localities have reported their appearance, yet in rather limited numbers. Mr. A. Macalister, formerly of Guelph, writing from Harperville, Manitoba, Jan. 23rd, says: "I have seen the snowy owl a number of times, and also a flock of evening grosbeaks, the first I had ever seen." And writing from Guelph, Feb. 24th, Mr. F. Norman Keating states: "I have noted a number of evening grosbeaks, and taken one specimen, a male. Prof. Doherty also secured a fine male."

GOLDEN EAGLE CAPTURED. On Tuesday, Feb. 11th, Mr. A. Cole, of the township of Grey, west of Listowel, captured a large black or golden eagle, that had been feeding on the carcass of a horse which was exposed in the woods on lot 24, con. 13. When discovered, there were two of the species devouring portions of the dead beast, and Mr. Cole in firing at the birds wounded the larger one in one of its wings, so that it was unable to fly. The

other specimen, a smaller and apparently a younger bird, arose on the wing and made its escape. The wounded eagle was secured, and is still living in captivity. It measures seven feet from tip to tip of its outspread wings. It is now very rarely that a specimen of this species of the feathered race makes its appearance in these parts.

OWLS. The appearance of snowy owls has also been reported from various localities, but no specimen of this species came under my notice during the past season, indeed it is a number of years since any of the species have been seen here. All the family are rare in this locality, but Mr. S. McGeorge, my son-in-law, who resides some five miles west of this town, reports that a "little horned" or mottled owl, which is in the habit of visiting his barn every winter, again made its appearance there the present season, and remained about two months. He also states that three years ago he saw in a piece of swampy woods adjoining his farm a nest of this species containing three young. This nest was placed on the horizontal branch of a small swamp elm, ten or twelve feet off the ground, and was probably the deserted nest of a crow.

SNOW-FLAKES. These birds usually make their appearance here in large flocks with the first snow-fall, and are frequently seen hovering over the fields and along the roadways, until the winter is nearly over, and the first members of the thrush family—the true harbingers of spring—make their appearance. With these exceptions, and the ever-present English sparrows, the only other species of the avifaunian race noted in this vicinity the past winter, were bluejays, chickadees, and some woodpeckers.

SPRING BIRDS. On the 17th of February, the first horned lark was noted, and a week later this species had become common. On the 24th the first crow was observed, and in a few days these were also common. On March 11th, robins, blue-birds, song sparrows, and bronzed grackles were seen. Next day a pair of red-wing blackbirds were seen, and again on the 14th and on the 15th the notes of the killdeer plover and the song of the meadow lark were heard. On the morning of March 17th a cold "nor-wester" set in, and for a time put a stop to bird migration; yet it was surprising amid the arctic coldness to hear how sweetly a number of song sparrows gave vent to their song notes.

BIRD NOTES.

THE LONG-TAILED JAEGER IN ONTARIO. On October 2nd, 1900, at Rondeau (Lake Erie), Ont., Mr. F. D. Bates saw a pair of strange birds and shot them both. Being an old hunter, he felt sure they were rare, and sent them to London, where they eventually fell into the hands of Mr. H. Gould and myself. They proved to be young specimens of the long-tailed jaeger (*Stereorarius longicaudus*), the habitat of which is given in the A. O. U. list as "northern part of the northern hemisphere, breeding in far northern countries. South in winter to the northern United States." This is, I believe, the first capture of this bird in Ontario, their usual line of flight being doubtless along the ocean shores.

THE WHITE PELICAN AT BELLEVILLE, ONT. The following particulars of the capture of a specimen of this bird at a ducking ground on the Bay of Quinte, eight miles from Belleville, have been furnished by Mr. P. C. Jones, who shot it. The bird flew over the decoys, thus giving an opportunity for a shot. It weighed 20 pounds and measured 8 feet 3 inches from tip to tip of the wings. Through the kindness of Mr. Jones, an excellent photograph of the mounted specimen was shown at the February meeting of the Ornithological section of the Entomological Society at London, when the above facts were presented.

The present winter has been notable, in southwestern Ontario, for an influx, not only of pine grosbeaks which are to be found everywhere, but also of evening grosbeaks and snowy owls. The latter have been fairly well distributed, but appear to have been especially numerous not very far north of London; for instance, there have been many of these seen at Guelph, one taxidermist there having had as many as eleven in his shop at once. In the township of Biddulph, north of London, a taxidermist has had over twenty brought to him, and others have been reported from different stations, such as five or six at the west end of Rondeau, two at Kirwood, one at Walford, etc. These birds are usually very scarce in this locality.

The evening grosbeak is even more noteworthy than the owl, as it has only been seen once before in the recollection of the present race of ornithologists. It also is reported as quite common near Guelph, flocks containing over forty having been seen. General reports are not in concerning this species, but a few have been seen near Ridgway in the Welland peninsula, and three have been seen at London. Doubtless they will be reported from many other stations, particularly those in the north.

W. E. SAUNDERS.

SOIRÉE.

The fifth soirée was held in the Assembly Hall of the Normal School, February 25, when Prof. E. W. MacBride lectured on "The present position of Evolution."

The lecturer commenced by pointing out that the century which had just passed away had witnessed a great revolution in our ideas on many things, and notably on our conception of our relation to the universe. This had been largely brought about by the acceptance of the doctrine of evolution as laid down by Darwin. This doctrine had profoundly influenced not only biology but sociology and historical science, as was candidly admitted by one of the latest writers on the New Testament. It was of importance, therefore, to define first what exactly is asserted by the doctrine, second on what evidence it rests, and thirdly what light it has thrown on the history of the human race. The root idea of evolution as expounded by Darwin was to explain the present state of the world of animals and plants as the outcome of its past condition under the operation of orderly laws. The idea that various types of animals might have descended from a common ancestor was as old as the Greeks; so long, however, as the transformation could not be shown to be a possible out-

come of causes at present operative, evolution was an unscientific hypothesis rightly rejected by leading comparative anatomists such as Cuvier. Darwin, however, showed (1) that every species tends to multiply at such a rate as would, if unchecked, completely fill the world in a short space of time; and that so long as the relative numbers of members of the various species inhabiting the globe remained about the same, on an average only two of the young produced by a pair of parents survived; (2) that no two of any brood or litter were ever exactly the same, and that these individual peculiarities were often inheritable; (3) that in the struggle for existence which must necessarily ensue between the too numerous progeny of every species some of these slight individual peculiarities would often determine the survival of their possessors and so be handed on to posterity, and in this way the whole species would slowly change its character. If the species were to spread into two localities where the conditions were dissimilar, different peculiarities would be advantageous in the two cases, and the species would split into two divergent groups or new species. Three main objections had been made to Darwin's view—(1) that species were separated from one another by a barrier of mutual infertility, whereas the breeds of domestic animals produced by artificial selection were all mutually fertile; (2) that geological evidence afforded no evidence of gradual transitions such as he postulated, and (3) that if organs were derived originally from small rudiments, such rudiments must have been at first useless, and therefore could not have determined the survival of their possessors. All three difficulties had been completely cleared away by subsequent investigations; in answer to the first, it had been shown that two extreme varieties of the common European frog refused to breed together though each would breed with intermediate types, so that infertility was of various grades and that no sharp line could be drawn between races and species; with regard to the second difficulty, continued investigation was continually bringing to light series of fossils which exactly agreed with Darwin's postulates, and lastly, it had been shown that organs were never developed out of useless rudiments but out of simple organs and ultimately out of undifferentiated protoplasm in which all the

properties manifested by the special organs were latent. Biologists now considered the evolutionary doctrine proved and were occupying themselves with the question as to the origin of the individual peculiarities which were the bricks with which evolution worked. This difficult problem was as yet far from being solved, but the trend of the evidence was to show that they were due to chemical influences acting on the germ in the first period of its existence. The evidence that man was descended from a monkey-like ancestor had since Darwin's day become overwhelming. The unborn baby was provided with a short tail and with a thick covering of hair, and the skulls of the oldest known fossil men were intermediate in capacity between those of the highest ape and the lowest negro. Evolution had not, however, ceased when man had become man; by its continued operation the human race had been split into a black, a yellow, and a white division. The Anglo-Saxon race belonged to the last, which was essentially an arctic type and had originated where the struggle against nature was fiercest. In consequence of this the white race was possessed of superior virility and human history largely consisted of a series of raids carried out by the white race on the less vigorous race lying to the south of them.

In conclusion the lecturer pointed out that the nature of the human spirit, that most fundamental of all problems, could not be determined by zoological methods; for to attempt to resolve the soul into the results of the congeries of atoms, when atoms themselves were its own conceptions was a manifest absurdity. It was better to frankly admit that a consistent scheme could not be constructed out of our knowledge of eternal nature and our knowledge of our inner life—and with Harnack to live in the faith that this apparently irreconcilable contradiction would one day receive its solution.

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