OCTOBER, 1901.
VOL. XV, No. 7.

THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club.

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(ISSUED OCTOBER 12, 1901.)

OTTAWA, CANADA.
OTTAWA PRINTING COMPANY (LIMITED).
3 & 5 MOSGROVE ST.

Entered at the Ottawa Post Office as second class matter

THE OTTAWA NATURALIST.

VOL. XV. OTTAWA, OCTOBER, 1901. No. 7.

SOME OF THE BIRDS OF ALGOMA.

(Read before the Ornithological section of the Entomological Society of Ontario.)

By C. T. SCOTT, Aylmer, Ont.

We were a party of four who had planned to spend our summer vacation in the wilderness of Algoma. We took boat at Collingwood for Killarney, and during this twenty-four hour trip, not the least of our pleasure was in watching the gulls which sailed around the boat with an air of proprietorship. When doing justice to the excellent *menu* of the boat, we did not forget these birds, but invariably carried off some tid-bits to make sport for them. When a morsel was dropped into the water, the nearest gull turned in a short but graceful curve until he stood just tip-toe on the waves, deftly picked up the food, then rising would almost regain his place at the head of the flock. When the birds were close together there would be a race for the food, and some of them would drop with a hovering movement of the wings striking the water with a splash in their eagerness to be first. But never could we deceive them. They could distinguish a chip or a piece of paper at the highest altitude. Occasionally some noisy one would straighten out his neck, open a capacious mouth, and utter a cry decidedly irritating to the nerves. One gull, of dark gray colour—so dark as to look black when at a distance—seemed particularly anxious to exhibit his musical talents. At nightfall they dropped behind resting upon the water, but they were following us again in the morning with the earliest streaks of day.

When at Killarney we learned why the Ontario Government have imposed a fine of $20 upon anyone convicted of killing a gull. Along the shores of Georgian Bay the fishermen are prohibited from throwing refuse into the water. All the offal left from a "clean-up" of the fish is dumped into barrels placed along the shore, where it is speedily devoured by the numerous gulls and the almost equally numerous ravens, which are ready to dispute title to the dainty feast. These two birds form the natural scavengers to this region, and doubtless are to be credited with helping to preserve the splendid fisheries around Georgian Bay.

We stayed just long enough at Killarney to change travelling for camping suits, to rent a large birch bark canoe, and to engage a small steam launch to tow us, with our impedimenta, five miles out into a cove on the northwest shore of Killarney bay. Here we pitched our tent on a portage path leading back to an inland marsh, and prepared to spend our first night in this pleasing solitude. Whist! What was that? A wild duck! But our guns were not at hand, so we couldn't determine the variety. As we lay around the camp-fire that night, our voices subdued almost to a whisper by the impressive silence of the forest, suddenly a shrill, weird cry just above our heads nearly froze the blood in our veins. It was the cry of a loon coming into our cove, but we scarcely knew how to interpret it. Was it a laugh or a wail? We debated the question, and concluded that much depended on the mood of the listener. More loons passing over our camp wakened us in the morning. After breakfast, and the more difficult task of dish washing, we strolled over the trail into wooded gullies and up ascending terraces of quartzite rock. Who knocked just then? We looked in the direction, when lo! I caught my first glimpse of the pileated woodpecker. It was but a moment, then came a flash of red and black in the sunlight, and he was gone. We followed in his direction, but our pursuit was in vain. We tramped all forenoon, but one or two golden-winged woodpeckers, conscious of intruders, were the only other feathery friends we chanced to meet.

Whilst trolling down the bay in the afternoon a wild-duck passed us again. This time we felt sure it was a wood-duck, and

we concluded it might have a family somewhere in the vicinity. We forgot all about the duck until some hours after when, passing an inlet, we saw something moving in the reeds. Through the field glass we distinguished them as a whole family of young duck. Thinking to approach them by guile we passed the inlet, landed farther up on the shore, and stealing over the rocks, careful to step only on the moss so our approach could not be heard, we sought a closer vision. No duckling was in sight. We afterwards entered the inlet and searched for some trace of our game, but again the birds proved themselves too wary for men. Paddling up the cove to our camping-ground a solitary kingfisher passed us uttering his rubber doll squeak.

The second day we paddled up the bay for two miles in search of a portage that would take us into a chain of lakes which lay north of the mountain range. Several wild ducks passed us, but flying too high for identification. The only portage we crossed was one that led up precipices so steep as to preclude the possibility of carrying the large canoe across. Climbing this path we were suddenly halted by a covey of partridge who with ruffled neck feathers seemed to ask us to get out of their way. They finally concluded to give us the road and moved aside with no more fear than so many chickens. It was in climbing this elevation that we noted the singular absence of small birds through this region. No other birds met our eye until we were pushing off our canoe to return to Killarney, when we disturbed a small sandpiper who evidently felt he was the sole possessor of this long-stretching beach.

The next morning, having exchanged our one large canoe for two smaller ones, we paddled out on a heavily rolling sea to cross four miles of Georgian Bay into the entrance of Collins' Inlet. After three hours paddling we made the lee of the first island where we landed to caulk our canoes and dry our water-soaked cargoes. This island known as One Tree Island, proved a perfect rendezvous of the gulls, who protested against our lighting a camp fire. The castings of the birds showed that they frequently lunched on the blue-berries, with which these rocks abound. We cooked our supper five miles up the inlet, and whilst gathering some blue-

berries a couple of chickadees took an interest in our work, and a hairy woodpecker rapped out his compliments from some neighboring trees. We proceeded up the Inlet by moonlight. The almost oppressive silence hushed our conversation, and only the swish of our paddles woke the echoes of the nearly perpendicular walls which closed us in. Once some heavy animal, probably a deer, broke the branches in the dark forest of the right bank; again we saw a porcupine move up from the waters' edge from the left, but for hours these were the only sounds that broke the stillness. Just as we were looking about for a landing place, two whip-poor-wills on opposite sides of the inlet struck up a cheery duet. This music brought us back to the world of reality. We landed, made camp, and not even the droning of the mosquitoes could rob us of the pleasure of this midnight litany from the whip-poor-wills.

We rested Sunday, and on Monday portaged past Collin's Mills, paddled up the Mahzenazing River, and by dinner time had had put the last habitation ten miles behind us. Whilst eating our lunch at a dam, made to raise the water in the river for logging purposes, we enjoyed the company of about a score of cedar waxwings. Up the river we went, finding that this six-foot dam had made miles of marsh, and "drowned" land. Nothing could be more desolate than this marshy stream bordered everywhere by dead trees holding their bare arms rebelliously towards heaven. Repeatedly a large crane got up in front of us and moved lazily on in advance. Black ducks, singly or in pairs, would start up at our approach and quack the announcement of others hidden in the reeds. Once a bittern, startled by the noise of our gun, flew away southward as though determined to leave the region forever now that man had invaded the solitude. We reached the shore of Johnny Lake at midnight, tired, thirsty and wet, for the rain had commenced to fall. To add to our discomfort the little clearing where we were trying to get some wet wood to burn, was literally choked with mosquitoes. No wonder the garrulous chatter of a flock of crow black-birds roused our wickedness. We resolved on a black-bird pie. They must have suspected our intentions, for we never got within gun range.

From this point on for several days we had uniform experience of travel through lakes and portages, full of interest as a canoe trip, but almost void of ornithological specimens. An occasional duck on the lakes, with partridge and golden-wings on the portages composed our whole experience with the feathery tribe. Once when two of us got lost in the forest and had spent the greater portion of the day without food, we counted it a providential thing that we stumbled on a little lake where two small saw-bills were sailing around. We killed one and wounded the other, but failed to reach the wounded one. When we got back to camp at eventide, nearly exhausted, a loon was laughing at us from across the bay.

Passing out of Lake Panache on Saturday—a large lake beautifully indented with promontories and sprinkled with islands—we entered a marshy lake known as Lake Levasse. Here ducks were abundant. A coot gave us so much trouble in identifying him, that we didn't stop to classify any other specimen. Besides, there seemed to be so many miles of this lake, and it was so overgrown with rushes that it became difficult to find the channel and we must get through before dark. Pushing on, we entered a a picturesque river which brought us, after an hour's paddling to the falls of Round Lake. Here a few cedar wax-wings that had not yet gone to roost watched us pitch our tent and prepare for another Sunday's rest.

Sunday morning found a gale blowing from the east, and there, riding majestically above us, was a beautiful fish-hawk. That day whilst sauntering over rocks and tracing the boundaries of a great diorite upheaval, we disturbed a pair of hairy woodpeckers. But what was that larger woodpecker beyond? The field-glass showed us that he had a bright orange-yellow crown and black back. To us this arctic woodpecker was such a novelty that we thought of collecting him. But then it was Sunday, and we had no fire-arm with us but a 44 calibre rifle. We concluded that to kill and skin a bird with one shot was too delicate an operation, so we only aimed our field-glass until he went dipping away into the depths of the forest.

Two days more and we reached the C. P. R. line. We put our canoes on the train sending them east to Wahnapitae station, whilst we got off at Sudbury to visit the mines. Here the ubiquitous English sparrow had followed the settlers in great numbers. The surrounding country, made almost as barren as Gehenna by sulphur fumes from the mines, seemed all the more desolate by being infested with great flocks of the common crow.

At Wahnipitae station, where we rested for a day, my attention was arrested by great numbers of the barn swallow. At times they seemed to fairly cover the telegraph lines for the distance of six or seven posts. Here, too, we saw the only attempt at farming we had met in our journey. Between two great granite ridges one man had brought about forty acres of land under cultivation. Yet such familiar birds as the robin and bluebird did not come under our observation even here. Though personally not in a fit condition for observation during this day's rest, owing to sudden illness, none of the party noted any representatives of the warbler or sparrow families. In the twilight, as I lay on my back with my face to the sky, I saw the swallows gradually withdraw and an occasional night-hawk skim through the gathering shades. Now and then the whirr of a duck passing up the river made a pause in the supper preparations, but soon the stars came out and camp-fire stories took the place of Nature's quiet delights.

We had left ourselves but three days and a Sunday rest to cover the sixty miles which lay between us and French River port on Georgian Bay. Passing down this river with its varying panorama, its sudden turns enabling us to startle deer and moose, we found only monotony in the study of ornithology. Ducks, more ducks, and ducks again, at every bend of the river. Amongst these we identified the larger saw-bill, grey duck and blue-winged teal as well as black duck in abundance. These black ducks seemed to prefer a diet of snails, for each one we opened had a number of snail shells in his crop. Whilst examining one, some twenty miles down the river, our attention was drawn upward by a passing shadow. There was a bald-headed eagle sailing leisurely past. About dusk on Saturday evening a large bird crossed the river silently in front of us. We paddled

close to the shore to get a better look. As he sat on a tree far above us he looked like a snowy owl, so we thought we would put the matter beyond dispute by "collecting" him. The gun made a noisy report, but a few feathers scattered in the wind were not enough to confirm our identification.

Sunday whilst resting near an interesting waterfall on the river I saw two flycatchers plying their calling. A dull haze made accurate observation impossible, from size and form I judged them to be olive-sided flycatchers. Here the sense of my ignorance made me dejected. Whether from this cause, or the exciting rapids we had to run, or the exhausting portages we had to make, I found no other bird I could enter on my list for the districts of Algoma and Nipissing.

When we turned into the middle channel of French River we were in the land of the loon and the gull once more. Crossing our last portage just before entering French River village a whole covey of partridges stood on the tramway chuckling defiance at our attempts to "Shoo!" them into flight. About midnight we stepped aboard the "Atlantic" with tickets for Killarney port, but we were such doubtful looking "birds" ourselves that the steward hesitated about giving us respectable berths.

ENTOMOLOGICAL NOTE.

PIERIS PROTODICE. While walking along the "perennial border" in the botanical garden at the Experimental Farm at Ottawa on September the 21st last, I was surprised to see a fine specimen of the Checkered White butterfly (*Pieris protodice*, Bdv.) I had not a net with me but was lucky enough to catch it in my hands. It is a fine female and this is the first time the species has ever been taken at Ottawa or as far as I know so far East in Ontario by a hundred miles. The caterpillar, like those of most of the white butterflies feeds on the various cruciferous plants including occasionally the cultivated cabbage.

J. FLETCHER.

RATTLESNAKES AND SCORPIONS.

During a recent trip in the interior of British Columbia I fell in with an old acquaintance, Mr. E. Bullock-Webster, from Keremeeos, on the Similkameen River, near the southern boundary of the province, on the mainland. This part of the country seems to be a continuation of the desert regions which extend through the adjoining States and California down to Mexico; the theory being borne out by the existence of some of the plants and reptiles peculiar to those regions, for instance, *Purshia tridentata* as well as various members of the *Artemisia* family, burrowing owls, horned toads, rattlesnakes, scorpions, &c.

Being aware of the existence of scorpions in the hot rocky hills in the vicinity of his ranch, having seen one from there in captivity some years ago at New Westminster which had been kept in a glass jar with only some gravel, and without food or water for several months, I asked my friend if he could obtain a specimen for me. He promised he would do so when opportunity offered; but the season, he said, was past for obtaining them to the best advantage. He then explained that during the dormant season the scorpions shared the dens of rattlesnakes, *Crotalus lucifer* (Baird and Girard) and in the spring time when the sun began to attain some power, the snakes come out to the mouths of their dens, in horrid coiling masses, the scorpions running over them on apparently quite friendly terms. Mr. Webster described several of these dens in the rocky defiles of the mountains of Similkameen very graphically.

One, which from accounts received from Indians, seems to be the headquarters of all the rattlesnakes, is situated in an ideal inferno, a weird defile that would have appealed to the imagination of Doré. It appears that the Indians from superstitious motives do not kill snakes, and from the same motives do not go near their dens. Mr. Webster, however, induced an old Indian to conduct him to the spot, which he did, but would not go nearer than about two hundred yards. Mr. Webster entered the horrid place alone. He says it is indescribably weird, the entrance of the den proper being partly stopped up with bunch-grass, apparently carried there by the snakes, presumably for protection against cold. It

was too late in the season, however, the snakes having all left for summer quarters, and all that was to be seen were some skins that had been shed and a dead snake, probably an interloper, which had apparently been killed by the others. Mr. Webster expressed the belief that the snakes belonged to different communities, and that an individual who attempted to force its company on a community to which it did not belong, suffered the penalty of death at the fangs of the members of the invaded colony.

The bull snake (so-called), *Pityophis catenifer*, a harmless variety, is described as being a deadly enemy of the rattlesnake, which the former devours whole. The bull snake is therefore carefully preserved. Mr. Webster says that since the advent of miners and settlers the number of rattlesnakes has sensibly decreased.

A curious account of a snake fight was described by Mr. Webster, the witness being a Mr. Richter, a man well known to him, and of whose veracity he can vouch. It appears that during a cattle hunt Mr. Richter, feeling tired, dismounted, and fell asleep, but was awakened by a rustling noise in the grass near him. He raised himself carefully and saw a bull snake holding on to a garter snake, a species of *Eutænia*, by the head. The latter was making frantic efforts to get away by winding itself about the body of the larger snake, nearly succeeding several times, when the bull snake loosened his hold in the attempt to get the smaller snake "end on," so as to begin the swallowing operation. At length the bull snake, apparently tired of this way of trying to capture its prey, reared itself on its head and began twirling itself violently with a spiral motion. This continued for about a minute, after which the garter snake seemed quite paralyzed, and the bull snake proceeded to swallow him at his leisure.

J. R. ANDERSON.

Victoria, B.C., 1901.

BOTANICAL NOTES.

ACER DASYCARPUM.—I have for seven years kept a careful note of the time of blooming of a healthy tree of the Silver Maple (*Acer dasycarpum*) which stands on the north side of James street, Ottawa, in front of my house. Thinking that these dates might be of interest to others as well as myself, I send them to THE OTTAWA NATURALIST. On the following dates the tree was fairly well covered with blossoms :

1895—April 18th.
1896— " 16th.
1897— " 11th. First flowers April 8th.
1898— " 2nd.
1899— " 20th.
1900— " 15th.
1901— " 15th.

W. J. WILSON.

A NEW MEADOW-RUE.—Mr. M. L. Fernald examined the Geological Survey specimens of *Thalictrum* a few months ago and among them found a new species which he has named *T. confine*, and described and figured in *Rhodora* for Dec. 1900. It was collected by Prof. Macoun in thickets at Hemlock Lake near Ottawa, in flower Aug. 8th, 1894. Fruiting specimens of this species were collected by Mr. Fernald in Sept., 1900, in Maine. *T. occidentale* has also been found to be common in the Maritime provinces, and it is not unlikely that it too will be found at Ottawa where *T. dioicum* and *T. polygamum* are common. The meadow-rues should always be collected in fruit.

AGRIMONY.—The two species of Agrimony, *A. hirsuta* and *A. Brittoniana* should both be found in the Ottawa district though only the former species is represented in the herbarium of the Geological Survey. *A. hirsuta* has short, turbinate fruit, the dilated marginal rim of the convex disk bearing numerous reflexed spreading hairs ; in *A. Brittoniana* the disk is flat or concave, the bristles short, crowded, inflexed and connivent over the sepals, the fruit is long-turbinate. In the former species the leaves are thin with the margins and nerves beneath ciliate, in the latter species the leaves are thickish, rugose and softly pubescent beneath, the margins finely scabrous-ciliolate.

J. M. M.

REVIEWS.

CATALOGUE OF THE MARINE INVERTEBRATA OF EASTERN CANADA. By J. W. Whiteaves, LL.D., F.G.S., F.R.S.C. Geological Survey of Canada, pp. 271. 1900.

The publication of this catalogue will be hailed with genuine delight by zoologists the world over, and especially by marine biologists on this continent. Dr. Robert Bell, the eminent head of the Geological Survey, in his introductory note, modestly expresses the hope that it may stimulate to renewed activity Canadian naturalists, who have taken up marine researches, and he very appropriately refers to the opportuneness of the appearance of this catalogue soon after a Marine Biological Station has commenced its work on our Atlantic shores.

Dr. Whiteaves would be the first to disclaim for this catalogue its title to be considered a *magnum opus*, yet such it is, and as such it will be regarded by American naturalists in the future. Hitherto reliance had to be placed on scattered and fragmentary lists and notices by Canadian workers, or to the memoirs and catalogues published in the United States, and professedly dealing less with Canadian than with United States' local faunas. Now we have a faunistic list of our own so far as marine invertebrates are concerned. Two features at once strike the appreciative reader on perusing this catalogue,—first, the extensive geographical area it covers, and the large amount of material it embraces (the species enumerated being over a thousand in number) and second, the care and accuracy revealed on every page of the publication. This latter characteristic the scientific world has long recognised in all Dr. Whiteaves' work and any one familiar with the reports, now somewhat venerable for they date back thirty years, in which Dr. Whiteaves summarised the results of his dredging expeditions in the estuary and Gulf of St. Lawrence, the Bay of Chaleurs, and the Bradelle and Orphan banks as well as parts of the coast of Cape Breton and Prince Edward Island during the years 1871, 1872 and 1873, which reports were published by the Department of Marine and Fisheries, will experience no surprise at the extent of the coastal waters covered by Dr. Whiteaves in the present catalogue. What an infinite amount of labour is represented by

the 271 pages of this work only those who have attempted faunistic lists can realise. True, it is largely drudgery: but it is pioneer work without which no future progress is possible. That a large proportion of the species of Sponges, Echinoderms, Worms, Hydroids, Mollusks, Crustaceans, Ascidians, etc., have passed through the author's own hands—a considerable proportion dredged by himself, is clear from the references: but in the preparation of so ambitious a list as that covering the invertebrate fauna of our Atlantic coast, reliance has also been placed upon the reports published by various United States workers, and many of the determinations of these workers are already undergoing revision. It seems, for instance, hardly credible that our Atlantic waters can boast at least nine distinct species of *Spirorbis*, the sedentary, almost ectoparasitic, habits of this Polychæte, when adult, favouring variations in the form and physical characteristics of its coiled tube, which may not justify the creation of so many species. As Verrill has pertinently remarked, and Dr. Whiteaves quotes the observation on p. 68, "The animals of the various species of *Spirorbis* are still very imperfectly known, and many species have been described from the tubes alone. Accurate descriptions or figures of the animals are necessary before the species can be determined satisfactorily." The Marine Biological Station founded in 1898 by the Dominion Government, freely opening its doors to all qualified scientific workers in the Dominion, will no doubt render substantial aid in confirming or in correcting current diagnoses of such species, a station of this character facilitating the study of the animals in a living or, at least, in a fresh condition, and providing the needed facilities for the accurate determination of species. It is revealing no secret to say that several marine invertebrates and vertebrates secured by the staff of the Canadian Station at St. Andrews, N.B., in 1899 and 1890, and at Canso in 1901, are not referable to any recognized Canadian species, and will of necessity be announced as additions to our marine fauna. A *Priapulus* dredged at Canso last August did not appear to resemble any known Canadian species.* But while such additions

* Dr. Whiteaves appears to be in doubt as to the identity of the specimens he secured in adjacent N. S. waters, and places a query after *Priapulus caudatus*. Lmk. (p. 89).

are to be expected for some years to come, there is every probability that many lengthy lists of species will be cut down, when the life-history of the young, and the anatomy and morphology of the adult stages, of many species have been studied in detail by Canadian zoologists.

The following enumeration gives a tabulated summary of the species set forth in Dr. Whiteaves list :

	No. of species.
PROTOZOA.	
Foraminifera, 63 species	
Radiolaria, 1	
	64
SPONGES.	
36 (exclusive of 2 Hudson Bay species	36
CŒLENTERATA.	
Hydromedusæ, 66 species	
Scyphomedusæ 5	
Anthozoa, 44	
Ctenophora 4	
	119
ECHINODERMATA.	
Crinoidea, 3 species	
Holothurioidea 15	
Asteroidea 29	
Ophiuroidea 21	
Echinoidea 3	
	71
MARINE WORMS.	
PLATYHELMINTHES	4
NEMERTEA	21
CHÆTOPODA	106
GEPHYREA	7
BRACHIOPODA	428
POLYZOA	3
MOLLUSCA	115
Pelecypoda, 100 species	
Scaphopoda, 5	
Gasteropoda, 164	
Cephalopoda, 13	
	282
ARTHROPODA.	
Crustacea	198
ARACHNIDA	11
CHORDATA.	
Urochordata	27
	1064

Our Atlantic waters, it cannot be doubted, abound with animal life, indeed in some localities there is a plethora which is almost incredible. Those naturalists who were privileged to pursue researches in the new marine station at St. Andrews, during the two seasons when it was located there, were familiar with the spectacle which Dr. Whiteaves describes in a passage from Dr. Stimpson on p. 44. The large reddish or blackish purple sea-cucumbers, resembling the garden vegetable in shape, but soft, slimy and elastic to the touch, were so abundant that the dredge often came up heavy and packed tight with their plump and writhing bodies. Considerable areas in the waters of Passamaquoddy Bay are indeed black with the crowded assemblages of these curious Echinoderms. The delicacy so much coveted by the Chinese called "trepang" is really the dried and prepared bodies of these interesting animals. In our utilitarian age a catalogue such as this may even stir some enterprising business man to create a "trepang" industry on the Atlantic coast. Hyrtl it was who showed a visitor a stained section of a kidney under the microscope, and the visitor straightway designed an attractive wall-paper based on the stained histological section shown to him. Dr. Whiteaves need not be alarmed if, while his valuable catalogue is of infinite worth to his brother scientists, it prove also an incentive to a new fishery enterprise! In contrast with the large fleshy *Pentacta frondosa* is the small delicate and transparent *Pentacta minuta* of Verril, a species first distinguished as *Cucumaria minuta* by Otto Fabricius in 1780, but which there is every reason to believe, now, is the small immature stage of *P. frondosa*. Dr. Martin Duncan and Mr. Sladen suggested this, as Dr. Whiteaves mentions on page 44, and the numerous specimens examined alive at St. Andrews in 1899 and 1900 support the suggestion. The curious "Sea Orange," *Lophothuria Fabricii*, Duben and Koren, a congener of the sea-cucumbers, is recorded by Dr. Whiteaves as occurring all the way from Grand Manan to Temple Bay in Labrador. Its somewhat flattened shape, (not unlike a small shoe with the opening for the foot closed up) and covered with dense overlapping scales, renders it one of the most peculiar of littoral prizes; but it is strange

that the much more familiar *Psolus phantapus* is recorded only from Grand Manan, at 40 fathoms depth, and at Eastport and in the St. Lawrence estuary. Of the Sea Urchins, three Canadian species are here placed on record, while the Starfishes embrace eight species, Dr. Whiteaves rightly concurring in the view that the huge specimens of "Five fingers," measuring 12 or 15 inches across are simply over-grown *Asterias vulgaris*, which usually measures 4 or 5 inches across. The six-rayed Starfishes, abounding below Rimouski, have been by many observers regarded as abnormal "five-fingers," but they are referable to *Asterias polaris* Müll. and Trosch, and range from the Nova Scotia banks to Cape Chidley in Labrador. Of special interest are the three species of *Antedon* occurring in Nova Scotian and southern New Brunswick waters. Future dredgings may add to this list of species, as well as extend their Canadian distribution, though the Crinoidea belong to a past epoch, and of the 1500 species existing in Palæozoic times a meagre remnant now remains in our seas. Their stalks and ovate or globular bodies abound in the rocks upon which Ottawa stands and testify to their abundance in the old-time seas.

It is impossible in a short notice like the present to refer even in the briefest way to many of the suggestive thoughts aroused by a perusal of Dr. Whiteaves' catalogue. One point, however, may be referred to as possessing a very general interest. It bears directly on the fascinating problems of animal distribution. A great proportion of species named in this list are Unistoniam, to adopt the Dominion Statisticians' uncouth yet expressive adjective (as a substitute for the misused term American), or at any rate they are regarded as peculiar to this continent. Our lobster is *Homarus americanus* not the *H. vulgaris* M. Edw., of Europe, yet the differences would be difficult to define. Prof. Knight of Kingston found that a small cephalic gland present in our lobster is absent in Scottish specimens, and Prof. Herrick states that the European lobster's stages of larval development have been abbreviated, so that it is of larger size at a corresponding age than our species. Further study will show whether the differences are essential and specific, or unimportant and varietal merely. Certainly the common whelk of our shores though called *Buccinum undatum*, L., may

ultimately justify Reeves' name *B. labradorense*, for features shown in the egg-masses, and in early stages of development exhibit differences quite marked as compared with the British form. Dr. Whiteaves' comparison of living adult specimens, however, from both sides of the Atlantic showed them to be practically undistinguishable from each other. The ten species of *Buccinum* mentioned in this catalogue would well repay renewed study, especially if the study included the ova and the embryonic stages. Curiously enough the small Dog-whelk (*Purpura lapillus*, L.) arouses such question. Its adult stage as well as its characteristic vase-shaped egg cases are identical with those of the European form, nor does the periwinkle (*Litorina litorea*, L.) stir up any doubts. Indeed its identity with the East-Atlantic form has been so long recognized that Nova Scotian naturalists have for more than a quarter of a century supported its non-indigenous character. Dr. Whiteaves (p. 173) seems inclined to favour the view that it has been introduced from Europe. If so its dispersion and its local abundance everywhere are most astonishing. There are few rocky spots on our Atlantic shore where the periwinkle does not occur in countless myriads. The allied species *Litorina rudis* (Maton) is recorded only for our more northern coast extending into Hudson Bay, but no doubt it will be yet found further south.

Just as so many of our mammals, birds and fishes correspond to but are not identical with European species—our moose differing from the European elk, though not extremely so ; our whitefish, sturgeon, pike and trout unlike, yet in many respects resembling, the corresponding species in Europe, and our eastern salmon being according to the authorities not distinguishable from the British salmon (*Salmo salar*, L.), so our invertebrate forms differ in so many respects yet may in some cases be essentially undistinguishable.

A recent remark by the famous British zoologist, Professor McIntosh, to whom Dr. Whiteaves was indebted for diagnosing the Annelids, emphasizes this point and shows how much our naturalists have to do before the determination of many zoological species can be regarded as final. Dr. McIntosh says : "The exact relationships of the American Phyllodocidæ to European forms have yet to

be more rigidly determined. Further, more accurate figures of the bristles and other parts are required." In a recent paper in the "Annals of Natural History" (London, September, 1901) Prof. McIntosh publishes some notes on at least six species of marine worms procured by Dr. Whiteaves, and though the British authority is the most eminent expert in that group of invertebrates, and has diagnosed myriads of specimens from all parts of the world and established numberless new species, yet of these specimens of Canadian Phyllodocidæ only one species is in every detail identical with a European form, viz., the ubiquitous *Phyllodoce grænlandica*, Œrsted," taken abundantly on Bradelle Bank and 15 miles southeast of Bonaventure Island. Other specimens closely resembled *P. laminosa*, Sav., and others again differed from both. Of three species of Eteone, one, *E. spetsbergensis*, Mgrn., was unquestionable, but two other species approached either *E. lentigera*, Mgrn., or *E. cinerea*, Webs. and Bened. An appropriate means of escape from the dilemma so often presented by Canadian species is to call them *Canadensis* or to do as Professor McIntosh did in the case of the graceful Polynoid worm, *Malmgrenia whiteavesii*, or as Professor Verrill did in naming a pretty shell *Cerithiella whiteavesii*, and a unique zoophyte *Actinopsis whiteavesii*.

The author in his prefatory remarks points out that most of the invertebrates were obtained on the floor of the sea or collected in littoral regions, hence such widely scattered species as the aberrant Chætognath *Sagitta* does not occur in the catalogue, though pelagic Ctenophores like *Pleurobrachia*, *Bolina* and *Idyia* are mentioned on the authority of certain United States observers, and the interesting occurrence of the lovely sea-butterfly (*Clione limacina*, Phipps) is recorded near Belle Isle Straits on the authority of Dr. Deeks, other specimens being also referred to, from more northerly regions.

The usefulness of this catalogue, if it is permissible to make the suggestion, would be vastly increased by the addition of an index. An index would save time and would certainly facilitate reference to its pages by those not familiar with marine zoological nomenclature, and many such, it is to be hoped, will use this excellent work of reference.

Dr. Whiteaves in the early pages of his work adverts to the faunistic regions indicated by the distribution of species included in the catalogue. We know too little of the local disposition of the marine vertebrate and invertebrate life of our Atlantic waters to arrive at any satisfactory solution of this interesting problem as yet. The influence of the Gulf stream on the one hand, and of Arctic currents bearing their annual burden of icebergs, on the other, complicates the problem greatly. The occurrence of *Clio limacina* within the Gulf and the capture in the Gut of Canso of Scomberoids and other fish belonging to a southern range almost Mexican in its limits, sufficiently indicates the complexity of the conditions presented.

It is however the difficulty and complexity of the problems to be solved which stimulate scientific inquiry, and within the next decade more will he done in marine biological research in Canada than has been done for half a century. The scientists who will carry on valuable and luminous work and who will reveal to us more and more fully the marvels of life in our Canadian seas will have no basis so ample and trustworthy—none so indispensable as Dr. Whiteaves' Catalogue of the Marine Invertebrata of Eastern Canada. It is a work in Canadian Zoology worthy to mark the first year of a new century.

E. E. P.

A CHAPTER ON THE PLEISTOCENE GEOLOGY OF NORTHERN ASIA. RECENT GEOLOGICAL CHANGES IN NORTHERN AND CENTRAL ASIA. By G. Frederick Wright. Quart. Journ. Geol. Soc. London, Vol. 57, pp. 244-250. 1901.

This paper is the result of an examination of "those portions of the Asiatic continent which most nearly correspond in general superficial conditions to the glaciated portions of America." Prof. Wright has ascertained that the actual agency of wind in the deposition of the loess is evident throughout the mountainous track to the east of the border of the high plateau; further, that there were other areas of loess so large and so level that wind

would seem incompetent to produce them as the writer adds, "it seems therefore necessary," from the occurrence of strata of gravel and pebbles in the loess, "to invoke both wind and water, in order to fully explain the distribution of that formation." This loess, over Eastern China, Prof. Wright states was deposited "at a very recent geological date."

"*The period of the loess in China corresponds roughly with that of the continental glaciers in Europe and North America.*" No signs of glacial action were found in south-eastern Mongolia. The Amur River is compared with the St. Lawrence, which it resembles very much, besides being in nearly the same latitude. Prof. Wright concludes "that there was no general glaciation of the lower Amur Valley south of the 53rd parallel." The region about Lake Baikal was also examined. It is surrounded by mountains "rising from 3000 to 4000 feet above it, except at one narrow depression through which the Angara River carries off its surplus waters." Around Samarkand and west, evidence of a submergence was present. Lake Balkash, 1000 feet above sea, and the Sea of Aral have no outlets. The waters of the former are said to be nearly fresh, "those of the latter are only brackish." The saltness of the Caspian Sea is only one-third that of the ocean.

These and other associated phenomena observed furnish valuable data for the interpretation of the problems of post-Pliocene geological movements in that part of the world. At Nebizond on the Black Sea, Prof. Wright found direct evidence of the great continental submergence. Regarding the discovery of stone implements below the loess at a depth of 53 feet, the author remarks that "thus it appears that the continental submergence which aided in the wide distribution of the loess was subsequent to the appearance of man, and so another chapter is added to those which connect the ancient history of the human race with the more recent phases of the geological story." The author thinks it likely that "the depression of the land in Asia was coincident with the elevation in America."

H. M. AMI.

ON A NEW OSTRACODERM (*Euphanerops longævus*) FROM THE UPPER DEVONIAN OF SCAUMENAC BAY, PROVINCE OF QUEBEC, CANADA. By A. Smith Woodward. Annals and Mag. Nat. Hist., 7th Ser., Vol. V, No 29, pp. 416-419, pl. X, figs. 1, 1*a*, 1*b*, May, 1900.

This new Ostracoderm is based on an imperfect specimen in the Jex collection from the *Scaumenac* formation (Neo-Devonian) of Gaspé Peninsula, at present in the British Museum. Of the head, "a pair of small skeletal rings" appear to indicate orbits. Shagreen-like granules are seen within these supposed orbits. The abdominal region shows small, narrow and deep scales in straight rows, inclined forwards and downwards instead of backwards and downwards, as is usually the arrangement in fishes. There is also a suggestion of calcified neural spines of an endoskeletal axis. No traces of paired fins or supports are present. The caudal region is well preserved in side view and is covered with scales disposed as in abdominal region, scarcely overlapping, "invested with enamel and marked with a few antero—posteriorly—directed ridges and grooves." There is a small remote dorsal fin, low and triangular. This species is related to *Cephalaspis*, but is distinguished by absence of a continuous head-shield. It is the latest survivor known of the earliest type of Ostracoderm armour. It is the "first example of an Ostracoderm in which traces of the axial skeleton of the trunk have been detected. Dr. Woodward erects the family "Euphaneropidæ usually referred either to the Osteotraci or to the Anaspida."

H. M. A.

BUTTERCUPS.—The only typical specimens of *Ranunculus acris* in the herbarium of the Geological Survey are from Newfoundland and Greenland. The common Buttercup found in Canada is *R. Steveni* but it is doubtful whether this plant should rank as a species though it is so considered in Europe. In *R. acris* the leaf segments are linear; in *R. Steveni* they are broad. Both species may be common in Canada but among thirty sheets examined only the two mentioned above were typical, *R. acris*.

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