the streams, caused by mill-dams, and accumulations of saw dust, and the passing of boats, are doubtless the reason. Their numbers have very much diminished along our coast, and doubtless will continue so to do. By the government returns for 1861, the total number cured is put down at 12,565 barrels, but this does not include all used for family consumption,—the eastern portion of the province giving by far the greater quantity. Since that date they are not returned separately, but classed with herring. I have not mentioned one power attributed to it, because I think it needs further corroboration,—the power of climbing up perpendicular heights, as mill-dams, by holding on by its sharp serrated belly. The instinct of all fish is to lie flat in shallow places; the climbing fish having a different apparatus. However, I mention it as a very common belief. I would rather hazard the suggestion that their saw points are used in spawning, as the trout uses his lower jaw, in furrowing up the sand.

Note.—Since this article went to press, I have the most undoubted authority that trout possess the power of running up perpendicular sheets of water at least six feet high, and I cannot but accord the same power to the gaspereaux; in both instances by muscular action, and not by the serrated belly. On 2nd August, 1865, the mill dam at nine mile river was filled by young and old gaspereaux, returning to the sea, caught there by the dry summer. Lewis Kirby, Esq. gave me this fact.

In both these facts, I feel pleased to corroborate the statements of our fishermen, which I have always found correct and exact, though doubted by some.

Art. XII. Contributions to the Natural History of Nova Scotia. Reptilia. By J. M. Jones, F. L. S.

(*Read May* 2, 1865.)

The class Reptilia forms no unimportant part of the animal kingdom, and in the present advanced state of zoological knowledge the species known to naturalists are annually becoming more numerous. In the early days of science, when natural history had few students, and even down to a comparatively recent period, the study of reptiles was almost totally neglected; and in the museums of divers countries a few stray bottles full of snakes and lizards, unnamed and uncared for, lying in some obscure corner, and deemed too disgusting for the eyes of visiters, were the only representatives of this singular race of creatures. It is far different, however, now, for in our splendid national museum we possess a collection which for interest can hardly be surpassed by other zoological

departments, while, both in Europe and America, the study of Herpetology has become a prominent branch of scientific research.

In taking a survey of the geographical distribution of reptiles over the surface of the globe, we at once perceive that under the influence of the greatest continued heat they appear to thrive in the greatest abundance, and attain the largest size. The tropical parts of this continent possess more reptiles than those of Asia or Africa according to late returns; but probably when the interior of the latter country becomes better known to naturalists, its forests and morasses may prove the habitats of many species now unknown. As we proceed from the equator to the poles, we find reptile life gradually decreasing until we arrive at the borders of arctic Europe, Asia, and America, beyond which barrier no species have, as yet, been found. Very few reptiles reach the north boundary of the temperate zone, taking the isotherm of 30° for its limit, the frogs and salamanders appearing to go the farthest north. In regard to reptile life in elevated districts, we find that on the European continent the common frog (Rana temporaria) has been found 8,000 feet above the sea level in the alpine districts, in the vicinity of the snow limit; the viper (Pelias berus) five thousand three hundred feet; the mountain lizard (Lacerta montana) at four thousand five hundred feet; and the slow-worm (Anguis fragilis) at six thousand feet; while on this continent, the alligator (Alligator lucius) has been observed in the Andes, about the latitude of the equator, at an elevation of three thousand feet, where the temperature ranges from 63° to 73°.

With this brief introduction, I will now pass on to the reptiles of our own Colony.

In considering the habits of our Nova Scotian reptiles, we can not fail to observe that the ophidians are much influenced by the temperature of the seasons; and from other causes also, which I have not yet been able to account for, they are found some seasons in great abundance, while during others hardly a dozen specimens are observed in the same district. I have had ample scope for observation during the past four years of my residence here, in the forest and cultivated land about my home, and have paid particular attention to the habits of this order, collecting specimens of all sizes, from the embryo taken from the egg to the perfect example of the

largest size. I have had similar opportunities of studying the habits of the batrachians, but with the members of the order *Testudinata* it has been otherwise. Nevertheless, through the kindness of one of our members, I am enabled to fill this blank, and present to you a fair account of the reptiles of our Province.

The first order in the class *Reptilia* is that of the *Testudinata* or tortoise tribe, and of this Nova Scotia possesses three species—the alligator terrapin, or snapping turtle (Chelydra serpentina), painted tortoise (Emys picta), and the wood terrapin (Emys insculpta). The second order *Loricata*, comprising the crocodiles and alligators, has happily no representative in this northern clime. The third order *Sauria*, including the lizards, has also no representative. The fourth order *Ophidia*, to which all the serpents belong, has five well ascertained species—the black snake (Coluber constrictor), the striped or spotted snake (C. sirtalis), the green snake (C. vernalis), the ringed snake (C. punctatus), and the spotted neck snake (C. occipito-maculatus). We come now to the sub-class *Amphibia*, which contains in the first order *Anoura*, the frogs and toads. Of these Nova Scotia possesses seven recognized species—the bull-frog (Rana pipiens), the spring frog (R. fontinalis), the leopard frog (R. halecina), the wood frog (R. silvatica), the American toad (Bufo Americanus), Pickering's hylodes (Hylodes Pickeringii), and the northern tree toad (Hyla versicolor). The second order of amphibians *Urodela*, contains the salamanders, of which we have four species—the violet coloured salamander (Salamandra sub-violacea), the red-backed salamander (S. erythronota), the salmon coloured salamander (S. salmonea), and the crimson spotted triton (Triton mille-punctatus. These comprise the whole of our Nova Scotian reptiles, at least as far as I have been able to ascertain.

Order—TESTUDINATA.

Genus—CHELONURA, Flem.

Chelonura serpentina, DeKay..... Snapping Turtle.

Testudo serpentina—Linn. Syst., p. 354.

Chelydra lacertina—Sch. Monog.

Emys serpentina—Gray, Synops. Rept. apud Griff. Cuvier, vol. 9, p. 14.

Emysaurus serpentina—Dumeril & Bibson, vol. 2, p. 350.

I am indebted to Dr. GILPIN for the following information regarding this species:—"The snapping turtle is found in the larger lakes of the colony, being aquatic in its habits. It has often been observed beneath the ice during winter. It is occasionally taken on land, while travelling from one lake to another, or when depositing its eggs. One caught in the latter position was about two feet long, and boys of twelve years old easily rode on its back by standing on it. The shell scarcely encases the head, legs, and tail. The tail has four or five sharp points on its upper side; the under shell very small, a mere breast plate. In 1833, while with some Indians in a canoe on Lake Rosignol, we came upon a snapping turtle basking on a log. With the greatest caution we floated with a light breeze to within twenty yards of it, when, with a heavy splash it disappeared. Marking the exact spot, in a moment the canoe was swept over it, and an Indian held the turtle to the bottom of the lake by pressing the paddle upon his back, while another Indian drove a stake through its body and lifted the turtle into the canoe. After decapitation the body crawled about for some twenty-four hours or more, and the severed head snapped at wood, and held so tight that force was used to disengage it.

Genus—EMYS, Brong.

Emys picta—De Kay.....The Painted Tortoise.

Testudo picta—Gm. Schneid, Schildk, p. 348.

T. cinerea—Schœpff, Hist. Test., p. 23, pl. 4.

Emys bellii—Gray, Synops., p. 12.

This pretty little tortoise is found in abundance about the small lakes, ponds, and ditches of the colony, where a dozen may be seen together basking on an old log, and when surprised going off with an awkward yet swift plunge. It may easily be kept in confinement in a tub of water, and will, when domesticated, rise to the surface, and take a worm from the hand. In such a position it has been known to lay an egg, which was hard and about an inch and a half long. The young of this species, about the size of a penny piece, may be seen in the lakes resting on the point of a water lily leaf.

Emys insculpta—DeKay.....The Wood Terrapin.

Emys pulchella—Schweig, 303.

E. scabra—Say, Journ. Acad. Nat. Sc. Phil. iv., 204.

E. speciosa—Gray, Syn. 26.

E. inscripta—Mus. Par.

This species is generally found at a distance from water in the forest, but goes into the lakes and burrows beneath the mud during winter.

Order—OPHIDIA.

Genus—COLUBER, Linn.

Coluber constrictor—Linn..... Black Snake.

C. constrictor—Shaw, Zool., p. 464.

C. flaviventris—Say, Exp. Rock. Mount., pp. 167, 337.

Bascanion constrictor—Baird & Girard, Cat. of Serp., p. 93.

Coryphodon constrictor—Dunn & Bibr. vii. p. 183.

C. constrictor—Gunth. Cat. of Col. Snakes, p. 108.

Although this species is very rare in the neighbourhood of Halifax, I imagine it is common in the interior of the colony, from information I have received. A coloured man some time ago informed me, that one of these snakes had chased him when a boy the whole length of a field. I thought at the time that his account was much exaggerated, but I find from the best authorities that this habit of chasing an enemy is fully established, and that its force on such occasions is very great.

This snake appears to be widely distributed on this continent, being known from Canada to Mexico. It is also found in St. Domingo, and, according to Stedman, in Surinam.

Coluber punctatus—Linn..... Ring-necked Snake.

C. punctatus—Lacep., ii. p. 257.

C. torquatus—Shaw, Zool. iii. p. 553.

Homalosoma punctatum—Wagl. Syst. Amph., p. 191.

Spilotes punctatus—Swain's Nat. Hist., p. 364.

Calamaria punctata—Schleg. En. ii. p. 39.

Ablabes punctatus—Dum. & Bibr. p. 310.

Diadophis punctatus—Baird & Girard, Cat. Serp. p. 112.

A specimen of this prettily marked species given to me by Dr Gilpin was taken at Annapolis. Another, given me by Mr. Downs,

captured by some men working at a drain in his grounds on the 7th September, 1863, was marked with a bright orange band round the neck, and the abdomen bright lemon colour. From it I made the following description :—

Length, 11½ inches. Extreme breadth of head at broadest part across base of large occipital plates, 2½lines. Breadth of body 2½lines at a distance of 3in.4lines from frontal extreme, which is not exceeded at any other part. Head, flat. Breadth of yellow collar ¾ of a line. Tail 2in.7½lines.

Colour—Head, above, very dark steel blue; nasal scales brownish. Irides, above, reddish. Immediately behind the head a collar of orange yellow, margined with black, separates the head from the body. Upper jaw edged with yellow; deeper posteriorly. Upper parts, olive brown, fading into light steel blue at the sides. Beneath, bright yellow from neck to base of horny tip of tail. Chin and throat very light yellow. On either side of the yellow belly run a series of dark spots at the posterior angle of each abdominal plate, very obscure and almost absent for a space of 3½ lines from the collar. Under the lens the dorsal scales appear mottled and the occipital plates of pearly lustre. Abdominal plates 156.

This snake is by no means common about Halifax, and may be considered our rarest snake.

Coluber vernalis—De Kay ..... Green Snake.
C. vernalis—Hall, N. Am. Herpet. iii., pl. 17.
C. cyaneus—Shaw, Zool., p. 506.
Chlorosoma vernalis—Baird & Girard, Cat. N. Am. Serpents, p. 108.

This delicate little snake is very common about the grass fields and cultivated spots. Specimens vary in colour, some being of a much lighter green than others. It is very agile in its movements, gliding through the grass when disturbed, with rapidity. According to Baird this snake is northern in its distribution, extending from Maine to Wisconsin in the United States, but no further south than Virginia on the Atlantic coast. I have observed it about as early as the 6th May. Cats appear to delight to catch these snakes as they run through the grass.

Dr. Gunther in his British Museum Catalogue of Colubrine Snakes, appears to object to this species being included in the genus *Chlorosoma*, as Baird & Girard have done; for he states that that genus was established by Wagler for *Philodryas viridissimus*, and that the snakes differ too much from one another.

Coluber sirtalis—Linn..... Spotted Snake.
Tropidonotus tœnia—DeKay, p. 43, pl. xiii., fig. 27.
" *sirtalis*—Holb., N. Am. Herp., vol. iv.,
Eutœnia sirtalis—Baird & Girard, N. Am. Serp., p. 30.
Eutœnia sirtalis—Baird, Serpents of N. York, p. 15, pl. i., fig. 5.

This is by far the most common snake in Nova Scotia, being abundant in all parts of the colony. Although continually observed in the dryest positions in the forest, it nevertheless appears to prefer the neighbourhood of swamps, brooks, and damp places, where it leads a partially amphibious life during the hot season. The largest specimens I have seen were in such places, and one which I killed during the latter part of the summer of 1863, resting on a log in a swampy hollow, measured two feet eight inches in extent. It generally makes its appearance in the forest about the first week in May, but is much more numerous some seasons than others. During the months of June, July, and August, 1864, scarcely one of these snakes was to be seen in my district, but in September of that year they appeared in abundance. A sudden spell of cold weather appears to have a great effect upon them, as they all disappear at once until returning heat brings them forth again. They shed their skins among ground juniper (Juniperus communis) and other shelter in June, and retire to winter quarters after the first cold days of autumn. I have observed them as early as the 4th of May, and as late as the 7th of October. The young, some four inches long, are seen about the beginning of September. The full grown specimens may frequently be seen by the sides of brooks in the forest, greatly distended with recently swallowed prey, the common toad (Bufo Americanus), probably from its sluggish habits, forming their principal food. On the 1st September, 1864, I witnessed the process of deglutition. A spotted snake, about twenty inches long, had just seized a good sized toad by the right hind leg, which it gradually drew into its maw. Then turning its head sideways, after some difficulty, it secured the foot of the left hind leg, and gradually got this down, when it gave a sudden shake and took a firm hold of the hinder parts. Now, moving its head with the jaws greatly distended, first to one side and then to the other, the toad meanwhile holding with all its might by the two fore feet to

the ground, and the snake getting more and more into his maw, the toad's back covered with blood and froth, and the poor captive panting hard. The snake then gradually drew in the distended body of the toad until it reached the head, when, with much apparent trouble, it managed to draw in the fore legs and head. The whole scene occupied about twenty minutes, and was extremely disgusting to witness. The most curious part of the affair occurred at the last, when the poor toad with open eyes gradually receded from view down the throat of the snake.

It is apparently a good swimmer, for the Rev. JOHN AMBROSE informs me that it has been observed a mile or more from the shore at the entrance to St. Margaret's Bay, making for the islands outside.

When greatly irritated by stopping its course repeatedly with a stick, this snake will turn about and show fight, making rapid and repeated bites. It is however perfectly harmless, and its bite would entail no greater suffering upon any healthy person than that of a kitten. It is said that this snake has repeatedly been seen to swallow its young in time of danger, and from evidence received from reliable authority, I have hardly a doubt but that it possesses this curious habit.

This snake appears to be distributed over the greater portion of the North American continent east of the Mississippi, and has been found at an altitude of two thousand feet above the sea in the State of New York. It occurs abundantly in Canada, where it is said to be particularly common in the rocky limestone districts. In Massachusetts it is the most common snake, and it has been observed as far north as Lake Winnipeg by Sir John Richardson.

Coluber occipito-maculatus—Storer....Spotted-neck Snake.
Ischnognathus occipito-maculatus—Gunther, Cat. of Col. Snakes, p. 81.
I. DeKayii—Dunn & Bibr. vii., p. 509.
Coluber venustus—Hallon, Proc. Acad. Nat. Sc. Philad. iii., p. 274.
Storeria occipito-maculata—Baird & Girard, Cat. p. 137.

It appears that this small species was entirely overlooked by North American collectors until within a comparatively recent

period. Storer was the first to bring it to notice. That author states that it has three spots on the neck, but I find a smaller spot below the two side ones, joining with the mottled margin of the underside. I think these spots on the neck are liable to alteration, sometimes being partially absent, and at other times confluent, while in some cases there are no traces of the marks at all. It is liable to considerable change of colour—for two specimens which I took from a heap of weeds were of a bright cinnamon above and brick red beneath. These light coloured specimens may belong to different species, for the scales appear to me to be much wider and shorter, and possess blunter points, than those of the true *occipito-maculatus*. They resemble in some respects the red snake (*C. amaenus*) of DeKay, but the scales instead of being smooth, as in that serpent, are carinated.

They are fond of lying under pieces of wood or stones, where they can feel the sun's warmth, and are common in old heaps of refuse, roots, &c.

This snake is not uncommon near Halifax.

Order—ANOURA.

Genus—RANA, Linn.

Rana pipiens—Harl..... .....Bull-frog.

R. pipiens—Holb. N. Amer. Herpet. iv., p. 77, pl. 18.

R. catesbiana—Shaw, Zool. iii., p. 106.

R. mugiens—Gunth. Cat. Bat. Lal., p. 15.

I have had no opportunity of studying the habits of this species, as it is unknown in the neighbourhood of Halifax, and the only examples I have seen were those exhibited by Captain HARDY at our conversazione last summer in the hall of the Horticultural Society. Captain HARDY informs me that they are common at Grand Lake; and the Rev. JOHN AMBROSE states that they have been known to swallow young ducks.

Rana fontinalis—Le Conte.....The Spring Frog.

R. fontinalis—Holb. N. Amer. Herpet. vol. iii., p. 85 pl. 16.

R. flavi-viridis—Harl. Am. Journ., vol. x.

This species occurs abundantly in Nova Scotia, and may be styled the "common frog" of the country. It frequents the

swampy districts, lakes, and ponds, where its peculiar note, like a half broken croak, is heard all day long. Sitting at the edge of a pond, with its head only exposed, it expands its throat at intervals and gives vent to the well known sound. If suddenly disturbed it instantly dives beneath the surface, and if the water be shallow buries itself beneath the mud and leaves at the bottom. It delights to spend the warm days of summer in company with its fellows, partially immersed in the water, but in the hottest and dryest weather disappears entirely during the day time. I have no doubt but that these hottest days are spent beneath the mud, for I have seen one of my Newfoundland dogs when diving in play bring one up alive to the surface on such a day. I observe that this frog croaks oftener and louder in close wet weather, and that a slight frost has the effect of making it silent. It is rarely seen at any distance from water, and immediately makes for that element when disturbed. It is pretty regular in its appearance in spring, but moves from its winter retreat sooner or later, according to the temperature of the season. In 1862 I heard the first croak of this species in my pond on April 27th; in 1863, on April 25th; in 1864, on April 25th; and this year, 1865, on April 6th, and these first croaks were invariably heard at night. I observed the first spawn in the pond in 1863, on May 3d; in 1864, on April 30th; and this year, 1865, on April 10th. Their early appearance and deposition of spawn this year has been owing to the extreme forwardness of the season, vegetation being fourteen to twenty days earlier than during the four previous years. It attaches its spawn to small twigs or sticks at a moderate depth beneath the surface of the water, and I have reason to believe that the act of deposition occurs only during the hours of night. The tadpoles of this species hibernate in the mud like the parent, and appear about the same time in the spring of the year, some of them full grown, but with the umbilical cord attached.

Rana halecina, Kalm ..... Leopard Frog.

R. halecina—Holb., N. Amer. Herpet, iv., 9, 91, t. 22.

R. Virginiana—Lawr. Syn. Rept., p. 31.

This is by far the handsomest species of frog seen in Nova Scotia. It is generally found in moist places, although I have occasionally taken specimens some distance from water among standing grain.

it is extremely agile and difficult to capture, taking amazing leaps in its endeavours to escape. The half grown young are plentiful on the sides of ponds during the summer, but they have not the brilliant colours of the mature specimens. I have rarely seen them resting in the water like *R. fontinalis*. I have observed them as early as the 29th of April, sitting on the pond side, and as late as the 4th of October in other places. The first specimens seen are of a darker green on the back than those observed later in the season.

The species is common in most parts of North America, and is known from the Hudson Bay Territory as far south as Mexico.

Rana silvatica—Leconte ..... Wood Frog.
R. silvatica—Holb., N. Amer. Herpet, iv., pl. 24.
R. Pennsylvanica—Harl. l. c. p. 60.

The habits of this species are unknown to me, as the only specimen I have captured was a young one during our field excursion at Windsor, in the summer of 1863. I am indebted to Dr. GILPIN for a fine specimen procured.

Dr. Gunther in his catalogue of Batrachians gives this as merely a variety of the European *Rana temporaria*, the tympanum being generally but not always rather larger in the European specimens.

This species has been observed as far north as the Great Bear Lake in the Hudson Bay Territory.

Genus—BUFO, Linn.

Bufo Americanus—Harlan ..... American Toad.
B. Americanus—Holb., N. Amer. Herpet, v. t. 4.
B. musicus—Harl. Ac. Nat. Sc., vol. v., p. 344.

This poor, despised, yet useful creature, looked upon with horror by most people, is one of the farmer's and gardener's best friends. Sallying forth from his mid-day retreat at eventide, he searches the paths and other likely spots where slugs and worms are wont to move, and revels in the gardens where this welcome food is most abundant. Although nocturnal in habit it is by no means exclusively so, for I have often taken them in the day time, both in the forest and clearing. It is not, however, so active in the day time as at night, and I imagine its appearance in broad daylight is more owing to disturbance than a natural desire to seek for food

at that time. It appears to frequent the cultivated districts more than the forest, although the largest specimen I ever obtained was found in the day time in an uncleared spot in a hard-wood grove. This specimen measured four inches and a half in length, including the head, which was one inch and four lines, and three and a quarter inches in breadth of body. About the end of May the young, about an inch long, are often seen hopping about, and then gradually increasing in growth, as the summer advances, continue about until the first sharp frosts of October and November compel them to seek their winter retreats. I have never observed them about later than the first week of November.

It appears to be common in all parts of the North American continent, extending from Great Bear Lake in the Hudson Bay Territory to Mexico.

Genus—HYLODES, Fitz.

Hylodes Pickeringii—Holb. . . . . Pickering's Hylodes.
H. Pickeringii—Holb. N. Am, Herpet, pl. 34.
Acris Pickeringii—Gunth. Cat. Bat. Sal., p. 71.

For three years I laboured under a great mistake in regard to the note of this little frog. Often had I listened at all hours of night to its shrill piping noise, and always gave the common frog (R. fontinalis) credit for the strange nocturnal sound; but Capt. HARDY informed me that the musician was no other than Hylodes Pickeringii, several specimens of which he exhibited at our conversazione last summer. It is by no means easy to collect specimens of this species, for although I have searched and searched again with a bright lantern on summer nights, when they piped loudest, I have never yet been able to procure one. Capt. HARDY states that they are seen attached to the reeds and stems of aquatic plants a few inches above the water, and that the first object which attracts the collector to their resting place is the movement of the throat as each little frog continues its piping noise. The curious cruciform rhomboid of dark lines on the back, and the triangular patch on the occiput at once prove it to be distinct from the young of other species frequenting the same places. In 1863, I heard its first pipe in my pond on the 28th of April; in 1864, on the 25th of April; and this year, 1865, as early as April 7th. I have generally heard

the first pipe of this frog one night later than the first croak of *R. fontinalis*. It is like that species very silent during drought.

Genus—HYLA, Laur.

Hyla versicolor—Leconte. . . . . Northern Tree Toad.

H. versicolor—Holb. N. Am. Herpet. iv., pl. 28.

H. verrucosa—Dand. Rain., p. 33, pl. 4, fig. 1.

Dendrohyas versicolor—Tschudi, Batr., p. 75.

I am enabled to add this species to the list of Nova Scotian reptiles, through the kindness of Capt. HARDY, R. A., who informs me that although he has never been fortunate enough to secure a specimen, yet from the description given him by a young Indian who collects for him, he has not the slightest doubt as to the species. His informant states that he has found it snugly ensconced in clefts of maple trees, where, from its grey colour harmonizing with the lichens growing on the bark of the tree, it was difficult to observe. Capt. HARDY tells me that the pipe of this tree toad is similar to that of Pickering's Hylodes, although much louder, and that it is more vociferous during damp foggy weather.

It is found throughout the whole extent of the North American continent, from the Hudson Bay Territory to Mexico.

Order—URODELA.

Genus—SALAMANDRA, Brong.

Salamandra subviolacea—Harl. . . . . Violet-coloured Salamander.

S. subviolacea—Holb. N. Am. Herpet, vol. iii., p. 105, pl. 24.

S. venemosa—Barton, apud Dand. Hist. Rept., vol. viii. p. 229.

This is a common species, and is found under large stones, in old walls, roots of trees, &c. It is very sluggish in its habits, and scarcely moves when handled.

It appears to be extensively distributed over this continent, being found in the Western States, all along the Atlantic coast, and as far south as Maryland.

Salamandra erythronota—Holb. . . . . Red-backed Salamander.

S. erythronota—Harl. Med. and Phys. Researches, p. 95.

S. cinerea—Id.

Plethodon erythronota—Baird, l. c. 285.

This species is by no means common in the neighbourhood of Halifax. It frequents damp places where it rests concealed beneath stones and other shelter. It is known on this continent as far south as South Carolina.

Dr. Gilpin's *Red-bellied Salamander*.

Dr. Gilpin informs me there is yet another salamander, having the under parts red. This may be the Salmon-coloured Salamander (S. salmonea) which has its sides salmon-coloured. It is known in Massachusetts, and may therefore occur in this Province.

Genus—TRITON, Laur.

Triton millepunctatus—DeKay.....Crimson Spotted Triton.

Salamander dorsalis—Harl. Jour. Acad. Nat. Sc., vol. vi., p. 101.

Notophthalmus viridescens—Baird, Batr. Amer., p. 284.

This species is rare in the neighbourhood of Halifax. The only specimen I have seen being the one in my collection for which I am indebted to Captain Hardy, who obtained it from Mr. J. R. Willis.

Storer, in his Reptiles of Massachusetts, complains that Harlan, in the Journal of the Academy of Natural Sciences, Philadelphia, describes this species as having "a row of whitish coloured oblong spots on each side of the dorsal line." Now, in my specimen, although the white spots cannot be called oblong, they are certainly clearly defined dots of the colour Harlan mentions. It is true, as Storer says, that preservation in spirits may make this alteration, but nevertheless we frequently find descriptions, given even by the best authorities, from specimens of all kinds so preserved, although I think it would be well for every describer to state the condition of the specimen, whether long immersed in spirits or not. The specimen I possess has been in alcohol for about two years.

In concluding this brief account of the reptiles of this colony, I cannot help remarking how thankful we ought to feel that no poisonous snake is found within our borders. Even England, with all her advantages, has a drawback in this respect, for in many parts of that country, on the heathery moors of the north, and in the fertile valleys of the south, the bite of the venomous adder is too well known. Often have I started back with a shudder, when in

searching for birds' nests, in some wild spot, I have suddenly come upon an adder basking in the sun, and one half the pleasure of a day's wanderings in search of specimens was always sacrificed to the fear of this serpent's bite. In the northern States of America, the dreaded rattlesnake swarms in some parts, the bite of which is frequently fatal in twenty minutes; while here, in our little half-island home, our children may ramble wherever they list, and meet with nothing more formidable than the bite of the common striped snake, which at the worst can only inflict a slight wound in no way dangerous to a healthy frame. Therefore, while in other climes which boast of the grandeur of their scenery, the beauty of their vegetation, or the vast area of their fertile lands, deadly foes are ever ready to spring upon the incautious, here in our northern home we may roam through the forests, scale our boulder ridges, or bathe in the limpid lake, without hindrance from any reptile form. Surely we ought, therefore, to consider how blessed we are in this respect, and while considering the blessing let us not forget the beneficent hand that has so blessed us; and as we roam in security amid Nature's pleasantest scenes, let us lift our eyes in gratitude to Him who has spared us the horrors of the serpent's fang.

Art. XIII. Notes on the Economic Mineralogy of Nova Scotia; Part II. The Ores of Manganese and their Uses.

By Henry How, D. C. L., *Professor of Chemistry and Natural History, University of King's College, Windsor.*

(*Read May* 2, 1865.)

A very interesting, and to all present appearances, valuable addition to the mining industry of the Province, has been made within the last three years by the working of the ores of manganese. Having been engaged in examining and reporting on the quality of these ores for those originally concerned, and having visited the scenes of operation, I requested and obtained permission to include such information I had gathered by these means in a general account of the manganese ores of the Province at present known to me. Having been, moreover, kindly furnished with sundry details of interest from various sources, I propose now to continue, on this subject, my Notes on the Economic Mineralogy of Nova Scotia, of