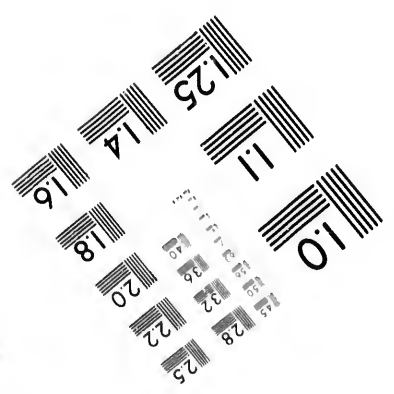
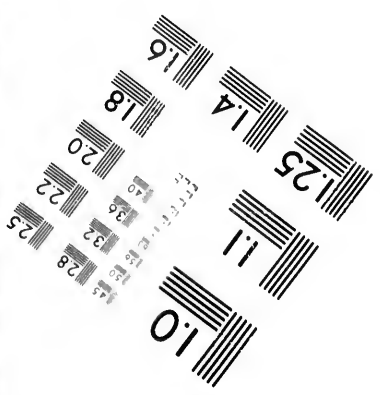
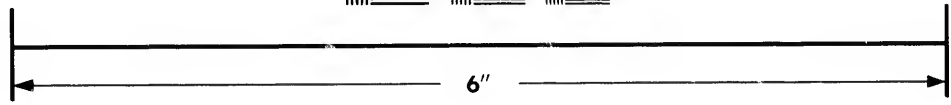
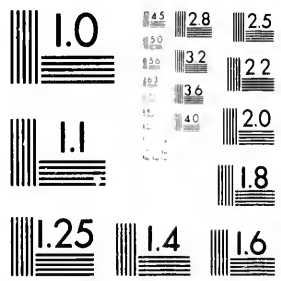


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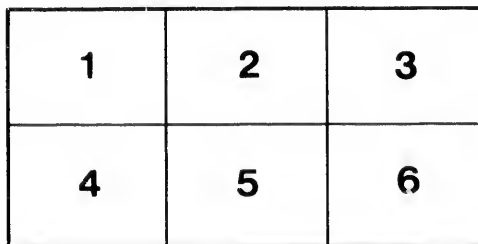
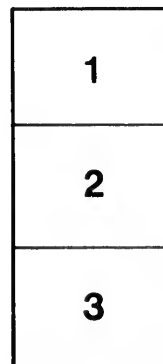
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this rule, or law of nature as it may be called, that met only the age of the Taconic but also the age of the slates, at St. Johns New Brunswick, and of the great series of rocks investigated by Mr. Murray in Newfoundland were determined. The age of a number of other deposits in the Western States and in the Rocky Mountains has been decided by the same law.

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### ON SOME FOSSILS FROM THE PRIMORDIAL ROCKS OF NEWFOUNDLAND.

BY E. BILLINGS, F.G.S.

In Mr. Murray's "Report upon the Geological Survey of Newfoundland for the year 1870," the Primordial rocks of the southeasterly portion of the Island, are estimated to have a thickness of about 6000 feet. The upper 476 feet, constituting Bell Island, in Conception Bay, a short distance from the city of St. Johns, hold a peculiar group of fossils, the exact age of which has not yet been determined. The species thus far collected, consist entirely of *Lingule*, *Cruziana* and fucoids. Among the latter are fine specimens of several species of *Eophyton*, a genus first discovered on this continent by Mr. Murray. The *Lingule*, on a superficial examination, might be taken for those of the Upper Potsdam of Wisconsin. They are, however, specifically, and two of them are, perhaps, even generically, different. These two are distinguished by the remarkable convexity of the dorsal valve. They have their nearest representatives in some species from the "Budleigh Salterton Pebble-bed" of Devonshire, England. The pebbles of this latter formation, which hold the *Lingule*, are supposed to have been derived from the "Armorican sandstone" of Brittany, France, considered to be about the base of the Lower Silurian. In Newfoundland, up to the present time, true primordial trilobites have been collected, only in beds, the highest of which are full 2000 feet below the lowest strata of Bell Island.

I shall therefore describe the fossils of this Island as a distinct division.

## FOSSILS FROM GREAT BELL ISLAND.

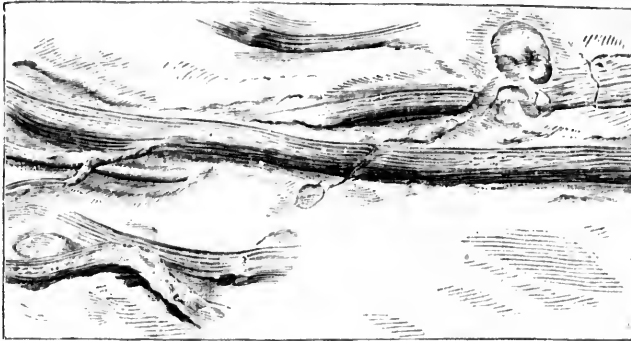
Genus *EOPHYTON*, *Torell*.

FIG. 1. *Eophyton Linnaeanum?* Torell. Part of a slab of sandstone with several fragments supposed to be of this species.

The only specimen I have access to at present, is a slab of sandstone, about 15 inches in length and 12 inches wide, on the surface of which there are about thirty stems of the fossil. Most of these lie across the stone in a direction nearly parallel to each other. They appear to have been, when perfect, slender, cylindrical, straight, reed-like plants, about three lines in diameter, with the surface longitudinally striated; four striæ upon an average in the width of one line. Some of the stems, which have been partially flattened by pressure, are coarsely grooved or fluted; but when the surface of such is perfect, the fine striæ can always be seen on the large ridges and in the furrows between them. When pressed quite flat some of the stems only exhibit the fine striæ. I cannot see that any of the stems are branched. One of them, which is pressed flat, is bifurcated, but I think this due to the pressure, which has split the stem into two portions.

I refer this species as above, because it is impossible to distinguish it from some of the figures of the Swedish form. As it occurs above the *Paradoxides* beds, while the Swedish specimens, have as yet, only been found below, it is most probably a distinct species.

*EOPHYTON* *JUKESI*, spec. nov.

In this species the stems are nine lines in diameter, cylindrical, straight or slightly flexuous. They are longitudinally striated, but the surface of the specimens examined, are not suffi-



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FIG. 3.

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ciently well preserved to exhibit the dimensions of the striæ. It is separated from the former principally on account of its much greater size.

ARTHRARIA ANTIQUATA, gen. and spec. nov.

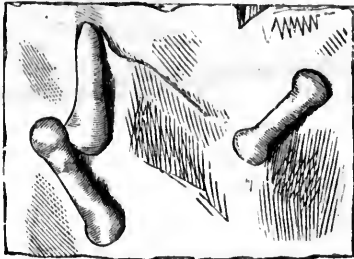


FIG. 2. Part of a slab of sandstone with *Arthraria antiquata*.

The fossils for which the above generic and specific names are proposed, are small cylindrical bodies, with usually an expansion at each end, giving the form of a dumb bell. Those that I have seen, are from six to nine lines in length, and from the manner in which they are grouped upon the surface of the stone, they appear to me to be segments of a jointed plant. Similar forms occur in the Clinton formation.

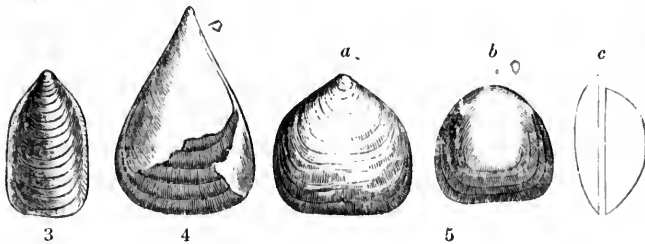


FIG. 3. *Lingula Murrayi*.

4. *Lingulella? affinis*, ventral valve.

5. " *spissa*, a ventral valve; b. dorsal valve; c, side view of both valves.

LINGULA MURRAYI, spec. nov.

Fig. 3.

Shell elongate, sub pentagonal; front margin straight or gently convex for a space equal to about two-thirds the width in the middle; anterior angles rounded; sides somewhat straight or very gently convex and parallel for two-thirds the length, then



converging to the apex, where they meet at an angle of between seventy and eighty degrees. In one of the two specimens collected, there is a flat margin on each side one-sixth the whole width of the shell. Between these two flat margins the remainder of the shell is gently convex. In the other specimen this central space is slightly convex in the anterior part of the shell, but on approaching the beak it becomes an angular roof-shaped ridge. The shell is thin, black and shining with obscure fluctuating, concentric undulations of growth, and with very fine, obscurely indicated, longitudinal striæ.

Length nine lines; width five lines.

*LINGULELLA ? AFFINIS*, spec. nov.

Fig. 4.

Ventral valve elongate, conical or acutely triangular. Apical angle about  $45^{\circ}$ . Front margin gently convex in the middle, rounded at the angles; sides nearly straight, uniformly converging from the anterior angles to the beak. Surface with very fine longitudinal striæ, about ten in the width of one line.

This species is founded upon the single specimen of a ventral valve above figured. The upper two-thirds is partly worn away in the middle, leaving only the outline in the stone. It appears to have been, when perfect, gently convex, the rostral portion near the beak semi-cylindrical. Length about thirteen lines, width nine lines.

The dorsal valve has not been identified.

*LINGULELLA ? SPISSA*, spec. nov.

Fig. 5, a, b, c.

Shell sub-pentagonal, or sub-ovate, length and width about equal, sometimes strongly ventricose. Dorsal valve with the front margin straight or very gently convex for about two-thirds the width in the middle; anterior angles rounded; sides straight or slightly convex and sub-parallel until within one-third or one-fourth the length from the beak, then converging to the apex, where they form an obtuse angle which varies from 100 to about 110 degrees. This valve is generally very convex, sometimes almost hemispherical, the outline on a side view is rather abruptly elevated in the rostral third, depressed convex for a short space in the middle, and then more gently descending to the front margin. Most of the specimens of this valve are eight or nine lines in length, and about the same in width.

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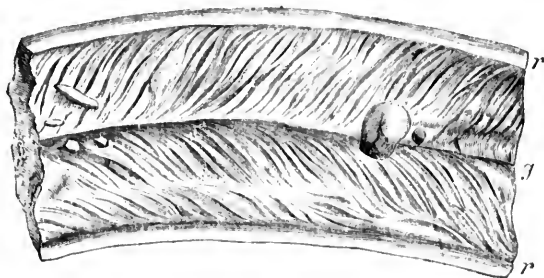
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The shell which is supposed to be the ventral valve of this species, is gently convex, with usually a somewhat flat space extending from the front margin upwards towards the beak. The apical angle appears to be from 90 to 100 degrees. Shell very thick, of a lamellar structure, dark brown or nearly black, and, sometimes, where exfoliated, of an ashy grey colour. Surface with a number of obscure undulations of growth and with fine longitudinal striae, about ten in the width of one line.

*CRUZIANA SIMILIS*, spec. nov.



6

FIG. 6. *Cruziana similis*; *g*, the median groove; *r*, *r*, the ridges at the sides.

The specimens are from twelve to fifteen lines wide, divided along the middle by an angular groove, and bordered on each side by a narrow ridge, about one line wide. The space on each side between the median groove and the marginal ridges, are moderately convex and crossed obliquely by numerous irregular raised lines, with furrows between them. These lines usually have the form of a gentle sigmoid curve, sometimes extending quite across, but are often ~~crossed~~ <sup>crossed</sup> together in a somewhat confused manner, still preserving the general oblique direction. Upon an average there are about ten lines in the length of half an inch. The marginal ridges are sometimes longitudinally striated.

This species has been heretofore referred by me to *C. simplicata*, Salter, but although closely allied, none of our specimens agree exactly with the figures of the British species.

Besides the above six species, many of the beds of sandstone of Great Bell Island, are covered with several species of *Palao-*

*phyceus* and other forms allied to *Eophyton* and *Cruziana*. To describe these would require further collections. In the upper strata there are yet two or three new species of *Lingula*, of which we have only fragments.

#### FOSSILS FROM THE MENEVIAN GROUP.

Below the strata of Bell Island, there are about 2000 feet consisting of sandstones and slates, in which no fossils have been found except a few fucoids. These with the Bell Island rocks may represent the Middle and Upper *Lingula* Flags. They are immediately underlaid by about 2000 feet of slates, sandstones and limestones, holding fossils which prove them to be of the age of the Lower *Lingula* Flags, or the Menevian group of Salter and Hicks. Fossils in some of the beds are abundant but very imperfect. The following are all that are sufficiently well preserved to admit of description.

#### OBOLELLA? MISER, spec. nov.

Shell small, transversely broad ovate, nearly circular, width slightly greater than the length. Ventral valve strongly convex, depressed conical, greatest elevation at about one-third or one-fourth the length from the hinge line. The latter appears to be straight and about one-fifth the width of the shell. In the apex, or the most elevated point of this shell, there is an irregularly circular aperture or depression. The dorsal valve is less convex than the ventral but more uniformly so, the greatest elevation near the centre; beak apparently curved down to the level of the hinge line.

Surface to the naked eye apparently smooth, but when magnified showing very fine concentric striæ. The width of the largest specimen of the dorsal valve seen, is about one line; length a little less. This species occurs at Chapel Arm, in Trinity Bay.

Mr. Davidson has figured and described\* under the name of *O. sagittalis*, Salter, a species from the Menevian group, North Wales, which is closely allied to this, the only difference, (so far as can be made out without comparison of specimens) being, that the English species is about double the size of ours. As I un-

\* On the earliest forms of Brachiopoda hitherto discovered in the British Palæozoic rocks; by, Thomas Davidson, Esq., F.R.S., Geological Magazine, Vol. 5, No. 7, July 1868.

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derstand Mr. Davidson, what appears to be an aperture, in the apex of the ventral valve, is not truly such, but an impression made in the cast of the interior by a tubercle on the inside of the shell.

STRAPAROLLINA REMOTA, spec. nov.

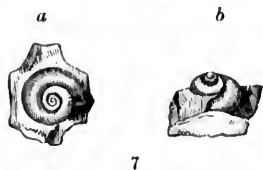


FIG. 7. *Straparollina remota*, a, view of the spire; oblique view of anterior side.

Shell small hemispherical, spire depressed and rounded in outline, height 2 to 3 lines, width 3 to 4 lines, whorls about three, suture deep. The whorls are nearly uniformly rounded, more narrowly so on the upper side close to the suture, and also on the basal side. On a side view the minute apical whorl is scarcely at all seen; the next below it is elevated about half its own diameter above the body whorl. In a specimen 4 lines wide, the width of the aperture is about  $1\frac{1}{2}$  lines, as nearly as can be determined from an individual partly buried in the matrix. Surface nearly smooth.

Occurs at Smith's Sound, Trinity Bay.

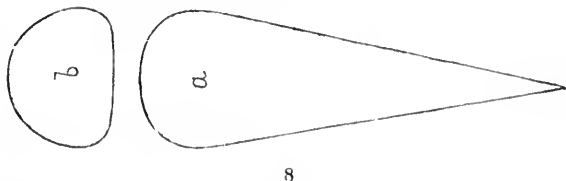


FIG. 8. *Hyolithes excellens*. In these diagrams, a, represents the rate of tapering on the ventral side; b, the transverse section. The dorsal side of b is too broadly rounded.

HYOLITHES EXCELLENS, spec. nov.

Shell usually about two inches in length, tapering at the rate of between four and five lines to the inch. The ventral side is nearly flat or very gently convex; the lateral edges narrowly rounded, in some specimens rounded angular; the most projecting parts of the sides are at about one-third the height; above

this the sides are gently convex, the dorsum more narrowly rounded. The shell is thin, nearly smooth with very fine obscure striae, about ten in one line. The striae curve forwards on the ventral side, forming an arc the height of which is equal to about one-third the width of the shell. On crossing the lateral edges the striae curve backwards, until they reach the most projecting part of the sides, then cross up and over the dorsum at a right angle. On a side view the shell is gently curved upwards on approaching the apex.

A specimen 24 lines in length on the ventral side is  $8\frac{1}{2}$  lines wide and 6 lines in depth at 20 lines from the apex.

Occurs in the red limestone at Smith's Sound, Trinity Bay.



FIG. 9. *Agraulos socialis*. The head without the moveable cheeks. The glabella is too distinctly defined in this figure.

FIG. 10. " *strenuus*.

*AGRAULOS SOCIALIS*, spec. nov. Fig. 9.

Head (without the moveable cheeks) semi-elliptical or conical, width at the base a little greater than the length, gently convex. Glabella conical and (including the triangular projection backwards from the neck-segment) about two-thirds the whole length of the head, neck-furrows all across but obscurely impressed; neck-segment with a triangular projection backwards, terminating in a short, sharp spine. Fixed cheeks gently convex; front margin sometimes with a portion in front of the glabella thickened. Eyes of moderate size and situated on a line drawn across the head at about the mid-length, distant from each other about the length of the head. Surface nearly smooth.

In small perfect specimens no trace of glabellar furrows can be seen, but in some of the large ones four or five obscure furrows are exhibited.

The largest specimen seen is six lines in length and seven in width. It occurs at Chapel Arm, Trinity Bay.

## AGRAULOS STRENUUS, spec. nov. Fig. 10.

Head (without the moveable cheeks) irregularly quadrangular, broadly rounded in front. Glabella rather strongly convex, conical, variable in its proportional length and width, either smooth or with several obscure impressions on each side representing the glabellar furrows; neck segment with a strong triangular projection backwards; neck furrows all across but usually obscurely impressed. In some specimens the front of the head has a thick, convex marginal rim separated from the front of the glabella by a narrow groove. In others this rim is scarcely at all developed. The eyes, shown by the form of the lobe, appear to have been semi-annular and about one-third the length of the head. The surface appears to be smooth. The following are the dimensions of the best preserved specimen:

Length of the head including the large posterior projection, 6 lines; width of the convex marginal rim, 1 line; width of the groove between the rim and the front of the glabella,  $\frac{1}{3}$  of a line; length of the glabella including the projection,  $5\frac{2}{3}$  lines; width of the glabella at the posterior margin, 3 lines; width of the fixed cheek from the centre of the edge of the eye-lobe to the side of the glabella, 2 lines. A line drawn across the head at  $2\frac{1}{2}$  lines from the front margin, would pass through the anterior angles of the eyes. The length of the eye appears to be nearly 2 lines.

As above remarked, this species varies somewhat in its proportional length and width, and hence the dimensions, above given, would not be found to be exactly paralleled in all the specimens.

Occurs in the grey limestone of Topsoil Head and also in the pinkish limestone of Brigus, Conception Bay.

## AGRAULOS AFFINIS, spec. nov.

This species is closely allied to *A. socialis* and is of the same size but differs in the following respects. The glabella is broader and with the sides gently convex. The eyes are somewhat nearer the sides of the glabella. The whole of the anterior portion in front of the glabella is convex. The dorsal furrows are more distinctly impressed all around the glabella.

It occurs at Branch, St. Mary's Bay.

## Genus CONOCEPALITES.

This genus has been used as a general receptacle for a number of groups which, according to several authors, constitute distinct genera. Although it has been found very convenient, there has lately sprung up a disposition to dispense with it altogether. I have no doubt but that this will be done, and I shall therefore dispose of our species as follows.

## SOLENOPLEURA COMMUNIS, spec. nov.

Glabella conical, convex, about two-thirds the whole length of the head, about one-third wider at the neck-furrows than at the front; on a side view considerably elevated above the fixed cheeks; neck-furrow well defined all across; neck-segment thickened in the middle and bearing a small tubercle. The fixed cheeks are strongly convex but not so prominent as the glabella. The dorsal furrows are deeply defined all around the glabella. The front margin has a strong rounded rim, separated from the front part of the cheeks by a narrow, but distinct, groove; between the groove and the front of the glabella, there is a gentle depression, which separates the anterior angles of the fixed cheeks. The eyes are small, situated a little in advance of the mid-length of the head, distant from the side of the glabella a little less than half the length of the head, and are connected with the front of the glabella by an obscure ocular fillet. Surface with a few scattered tubercles, just visible to the naked eye, and between these numerous minute tubercles only seen when magnified.

The glabella exhibit traces of two or three obscure furrows on each side. Length of the largest head collected five lines.

Occurs at Chapel Arm, Trinity Bay.



11

FIG. 11. *Anapolenus venustus*.

12

12. *Paradoxides tenellus*.

## ANAPOLENUS VENUSTUS, spec. nov.

Fig. 11.

*Description*.—Glabella convex, most elevated in front, obscurely angular along the median line widest at the anterior third of

the length; sides gently concave in the posterior two-thirds, and slightly diverging from each other forwards; anterior third and front uniformly rounded. Neck segment with the margin convex and projecting backwards, an obscure tubercle, or rather, an angular elevation in the middle, neck furrows all across. There are four glabellar furrows; of these, the posterior is strongly marked and extends in a nearly straight line all across; the next two are linear, slightly impressed, extend inwards about one-third the width of the glabella and are gently curved backwards, but still almost at right angles to the sides. The anterior furrow is short, extends inwards about one-fifth the width of the glabella, and curves backwards at an angle of about  $45^{\circ}$  to the sides. The dorsal furrow around the glabella is very shallow. The fixed cheeks are triangular, nearly flat, with a small elevation, close to the extremity of the posterior furrow. Front of the head with a moderately convex marginal rim, almost in contact with the glabella or separated therefrom by a narrow space. The eye-lobe starts from a point close to the side of the glabella and just opposite or a little behind the short frontal furrow, and runs with a gently sigmoid curve (at first convex outwardly, and then concave) backwards and outwards to the posterior marginal furrow, which it reaches at a distance from the sides of the glabella, about equal to the length of the neck segment. The facial suture leaves the side of the glabella a little in front of the anterior furrow, and runs outwards, nearly at a right angle, but with a gentle convex curve, to the margin.

The surface is covered with fine rippled striae. These on the marginal rim are irregularly parallel with the margin; on the glabella they curve around the front, but further back, and on the neck segment they have a rudely longitudinal direction, curving outwards in crossing over the glabellar lobes.

Length of the head of the largest specimen examined, 6 lines; length of the glabella, including neck segment, 5 lines; width of glabella at the neck segment, 3 lines, at the front pair of furrows,  $3\frac{1}{2}$  lines; width of the posterior margin of the fixed cheek 3 lines; length of the eye lobe, 4 lines.

When compared with the species figured by Salter and Hicks the following differences become apparent:—*A. Henrici*, Salter, has the eye lobes with a gently uniform curve outwards. In *A. Salteri*, Hicks, the eye lobes are also convex and the glabella proportionally longer, while the neck furrow "is the only one



continued across." (Hicks.) *A. impar*, Hicks, has the flexuous eye lobes of our species, but the marginal rim is more decidedly in contact with the front of the glabella, while the two median pairs of furrows extend further inwards.

Occurs at Chapel Arm, Trinity Bay.

PARADOXIDES TENELLUS, spec. nov.

Fig. 12.

*Description.*—Glabella clavate, convex, most elevated at the anterior third of the length, front and sides in the anterior half, rounded, becoming sub-parallel in the posterior half. Neck segment strongly elevated in the middle, where there is situated a small tubercle, neck furrow extending all across. There are four glabellar furrows, of which the posterior extends across but is very indistinctly impressed in the middle; the next two in advance extend inwards about one-third of the width of the glabella, while the small one in front is somewhat shorter. The furrows are all nearly at a right angle to the longitudinal axis, and about equidistant from each other. The anterior margin of the head, is bordered by a narrow convex rim, which is separated from the front of the glabella by a flat space, varying in width from once to thrice its (the rim's) width. The fixed cheeks are subtriangular and nearly flat. The anterior extremity of the eye lobe is situated at a point nearly opposite, but a little behind, the anterior furrows, and is close to, but not in contact with the side of the glabella. The lobe is slightly sigmoid, its posterior extremity opposite the last glabella furrow. The dorsal furrow is distinctly impressed along the posterior half of the glabella but obscurely marked in front.

The surface is minutely granular. In all of the three specimens collected there is a small straight rounded ridge, which runs from the front of the glabella to the margin. It is situated exactly on the median line.

Of this species we have three specimens of the glabella, two of which retain portion of the fixed cheeks and show the form of the eye. The largest is three lines in length, including neck segment and front margin.

Occurs at Chapel Arm, Trinity Bay.

PARADOXIDES DECORUS, spec. nov.

*Description.*—The form of the glabella of this species is nearly the same as that of *P. tenellus* but the glabellar furrows are

somewhat different. The posterior pair seem to be entirely disconnected in the middle and the next two pairs are rather more curved. The marginal rim of the front of the head, seems to be close up to, and in contact with, the front of the glabella. The surface is ornamented with minutely corrugated, raised lines which, in some places, anastomose so as to present an irregularly reticulated appearance. This at once separates the species from *P. tenellus*, the surface of which is minutely granulated. The surface of *A. venustus* is somewhat like that of this species, but the raised lines are more distant, and besides the posterior glabellar furrow extends all across. The length of the most perfect glabella examined is about thirteen lines. Only three fragments, (all of the glabella) of this species occur in the collection. Form of the eyes and of all other parts unknown.

It occurs at Chapel Arm, Trinity Bay.

Genus IPHIDEA, gen. nov.



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FIG. 13. *Iphidea bella*; ventral? aspect

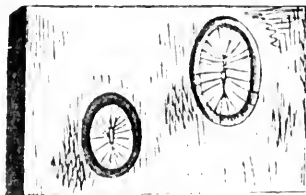
Of this genus we have no specimens showing the internal structure, but the external characters seem sufficient to separate it from any described generic group. The ventral? valve of *I. bella*, is conical, strongly elevated at the beak, hinge-line nearly straight, posterior angles narrowly rounded, sides and front nearly uniformly rounded, forming rather more than a semi-circle. Posterior side with a large false area, and a convex pseudo-deltidium, the width of which at the hinge line is nearly one third the whole width of the shell. The dorsal valve is semi-circular, moderately convex most elevated at the beak. The hinge-line appears to be straight. The form and structure of the posterior side, (such as the area, foramen, deltidium, &c.,) cannot be made out from the specimen, owing to its imperfection. The surface is covered with fine concentric striae, which in the ventral? valve are continued around on the area. Of these striae there appear to be from 15 to 20 in the width of one line, their size varying somewhat in different parts of the specimen. There are also a few obscure radiating striae. Width of ventral valve, 7 lines; length, 5 lines; height, 2 lines.

In the specimen above figured there is an aperture in the beak, but in another there is no appearance whatever of a perforation. This genus resembles *Acrotreta*, but differs therefrom in having a large convex deltidium. It seems to be also closely allied to *Katorgina*. The shell which I have described under the name of *Obolus Labradoriensis* belongs to this genus.

*I. bella* was found by T. G. Weston, in a boulder of limestone associated with numerous fragmentary trilobites, of primordial age, near Trois Pistoles below Quebec. A closely allied species of the same genus occurs in the primordial limestone at Topsail Head, Conception Bay, Newfoundland.

#### FOSSILS IN THE HURONIAN ROCKS.

##### ASPIDELLA TERRANOVIKA, nov. gen. and spec.



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FIG 14 *Aspidella terranovica*, two specimens on a small slab of stone, slightly restored

These are small ovate fossils five or six lines in length and about one-fourth less in width. They have a narrow ring-like border, within which there is a concave space all round. In the middle there is a longitudinal roof-like ridge, from which radiate a number of grooves to the border. The general aspect is that of a small *Chiton* or *Patella*, flattered by pressure. It is not probable, however, that they are allied to either of these genera.

Associated with these are numerous specimens of what appear to be *Arenicolites spiralis*, a fossil that occurs in a formation lying below the primordial rocks in Sweden. These fossils were first discovered by A. Murray, Esq., F.G.S., in 1866. Other specimens were collected by Capt. Kerr, R.N., Mr. Howley and Mr. Robertson.

They occur near St. John's, in the Huronian. A more detailed description will be given hereafter.

## STENOTHECA PAUPER, spec. nov.

*Description.*—Shell small, conical, with the apex incurved, laterally compressed. Aperture ovate, elongated in the plane in which the curvature of the apex occurs. Surface with four or five small engirdling convex ridges. Length of aperture about  $1\frac{1}{2}$  lines; width about 1 line; height of shell about 1 line.

Occurs in the red limestone at Bridgus, Conception Bay.

In the Quar. Jour. Geol. Soc. of May last, Mr. Hicks has described and figured, under the name of *Stenotheca cornucopia*, a small shell which is evidently congeneric with this. To the same genus should perhaps be referred the shell known as *Metoptoma rugosa* of the Lower Potsdam? of New York.

## SCENELLA RETICULATA, gen. and spec. nov.

*Description.*—Shell small, almost uniformly depressed, conical; apex central or nearly so; an obscure carina extending from the apex down one side to the margin. Aperture nearly circular, apex very slightly incurved towards the side opposite the carina. Surface reticulated with fine radiating and engirdling striæ, just visible to the naked eye. Diameter of the aperture of the largest specimen collected, 3 lines; height of the apex, 2 lines.

Occurs at Topsail Head, Conception Bay.

Species resembling this have been heretofore referred to *Capulus*, *Metoptoma*, &c., to which, however, they do not belong. For the present I propose to refer those with a strongly corrugated surface to *Stenotheca*, and the others with a smoother surface to *Scenella*.

(To be Continued.)

## WHAT IS TRUE TACONIC?

BY PROF. JAMES D. DANA.

The true use of the term Taconic should be learned from Prof. Emmons's first application of it when he made his formal announcement of the "Taconic system." In his final New York Geological Report, 4to., 1842, the rocks so-called are those of the Taconic mountains, on the borders of Massachusetts and New York, together with the quartzite, limestone, and slates adjoining on the east,\* and not the slates far west of these mountains; †

\* Professor Emmons opens the subject of the "Taconic System" in his final Report (1842) by saying that it extends north through Vermont to Quebec, and south into Connecticut; but the only rocks he describes as the rocks of the system are those of Berkshire County,

