

No. 4. — *List of the Brachiopoda from the Island of Anticosti, sent by the Museum of Comparative Zoölogy to different Institutions in Exchange for other Specimens, with Annotations.*
By N. S. SHALER.

Lingula BRUGIÈRE.

Lingula elegantula SHALER.

Shell large, oblong, transverse diameter a little over one half the distance from beak to border; margin opposite the beak evenly rounded; sides straight for over two thirds the height of shell, suddenly converging to the beaks; apical angle, 110° ; cardinal edges straight; diameter at right angles to valves one fifth the height. Valves moderately, nearly equally, convex. Homologue of toothed valve most convex, depressed near the border; surface with fine concentric lines of growth accumulated in low plications on the sides, no radial striæ. The surface of all the specimens is of a beautiful iridescent blue color, apparently the original hue of the shell.

Height, 1.7 inches; width, 1 inch. — Upper twenty feet of Junction Cliff, west end of Anticosti.

Lingula Forbesi BILLINGS. New species of Lower-Silurian Fossils; Geol. Sur. Canada. June, 1862. — West end of Anticosti.

Strophomena (RAFINESQUE) BLAINVILLE.

Strophomena semiovalis SHALER.

Shell semi-oval, transverse diameter from one fifth to one seventh greater than from the beak to the border; hinge-line straight, slightly alate; sides slightly converging until a little below the middle, thence rapidly converging, sometimes slightly produced opposite the hinge-line. Socket-valve flat or slightly concave, over the surface of the visceral disk, which occupies from one half to two thirds the distance from beak to border, then rather sharply deflected; depth of valve equal to one third the length from beak to border. Surface covered with close-set, irregular radial striæ of several sizes, in irregular alternation, crossed by very fine concentric lines. Near the hinge-line are several irregular undulations, which do not extend to the middle of the visceral disk. Area of socket-valve narrow, almost linear, interrupted by a small cardinal process. Area of toothed valve rather broad, half a line wide in specimens measuring one inch from beak to border. Fissure narrow, with a V-shaped deltidium. — Ellis Bay, Anticosti. Division D, Canada Geological Survey.

***Strophomena reticulata* SHALER.**

Sub-triangular, one third wider than high, greatest width at hinge-line. Toothed valve very convex, ventricose, flattened towards the extremities of the hinge-line, slightly alate, most convex point a little more than half the distance from beak to border, depth equal to one third the length of hinge-line, nearly evenly rounded from beak to border, beak minute, projecting a little beyond the hinge-ledge, area one and a half lines wide in a specimen twenty lines broad, fissure broad, without deltidium. Area of socket-valve about one fourth that of toothed valve; surface deflected to correspond with opposite valve. Surface covered with very numerous, minute, close-set radial striæ, crossed by numerous concentric undulations, which near the umbo are small and even; away from that point they are irregular and larger. — Ellis Bay, Anticosti. Division D, Canada Geological Survey.

***Strophomena arcuata* SHALER.**

Shell obscurely trigonal; distance from beak to border two fifths less than length of hinge-line; greatest width at hinge-line; toothed valve slightly convex, or nearly flat near the beak, suddenly evenly deflected at two thirds the distance from the beak to border; surface covered with rather fine, irregular, radial striæ, branching several times from beak to border, five to seven in the space of one line on the border.

This species is a member of the same group with *Strophomena euglypha* of the Wenlock Lime. — Ellis Bay, Anticosti. Division D, Canada Geological Survey.

***Strophomena anticostiensis* SHALER.**

SYN. *Strophomena alternata* BILLINGS.

Outline rather variable, usually evenly semi-oval; length of hinge-line usually a little greater than from beak to border; sides nearly straight for half the distance from the beak to border; rest of border gradually curved. Toothed valve slightly evenly convex; hinge-line narrow; teeth very slight. Socket-valve flat or nearly so; hinge-line narrow; cardinal process very slight; sockets bordered on the inside by a pointed tooth-like ridge. Muscular impressions at all ages indistinct and scarcely impressed. Surface covered with fine punctate markings. Surface of shell with fine striæ of two or three sizes, alternately disposed.

Very closely related to *S. alternata* CON., from which it differs in being far more regular; by the presence of ridges below the sockets; in wanting the tendency to a sudden deflection, and interior thickening of the borders of the valves. — Heath Point, Anticosti.

Strophomena alterniradiata SHALER.

Shell semi-oval; width at hinge-line about three eighths greater than from beak to border. Toothed valve distinctly convex near the umbo; remainder of valve flattened or slightly concave. Socket-valve slightly concave just below the umbo, slightly convex over the remainder of the surface. Surface of both valves with distinct rounded radii, one half of which originate at the beak, the others coming in by implantation at the border of the umbonal third of the valves; intervals very wide. Hinge area of toothed valve wide, — one line in specimens ten lines broad; that of socket-valve narrow, nearly linear. Fissure wider than high; teeth small and pointed. Brachial supports oblique, meeting at an angle of 90° . Cardinal process very small, slightly projecting. — Southwest Point, Anticosti.

Brachyprion SHALER.

Dental plates transversely much elongated; scarcely distinct from the remainder of the hinge-line; vertically serrated.

Type. — *Strophomena leda* BILLINGS.

Brachyprion leda SHALER.

SYN. *Strophomena leda* BILLINGS. — Near Beccie River Bay.

Brachyprion ventricosum SHALER.

SYN. *Strophomena Philomela* BILLINGS?

Sub-trigonal margin opposite the hinge-line rounded, strongly alate, one side being unusually more prolonged than the other; hinge-line two fifths longer than distance from beak to border; width on hinge-line, 2.30 inches; at one third the distance from beak to border, 1.33 inches; convexity of toothed valve equal to one third the distance from beak to border. Toothed valve strongly evenly convex, much compressed near the alations; highest point two thirds the distance from beak to border; hinge area narrow; fissure very small, triangular, not extending to the beak. Area of socket-valve narrow, cardinal process small. Surface covered with very fine linear radial striæ of two sizes, four or five of the smaller between each pair of larger; smaller striæ nearly microscopic; several indistinct concentric undulations near the hinge-line. — Near Southwest Point, Anticosti. Division E, Canada Geological Survey.

Brachyprion geniculatum SHALER.

Shell semi-elliptical or sub-trigonal; greatest width at hinge-line; hinge-line straight; about one third greater than from beak to border. Socket-valve plane or slightly concave over the visceral disk, suddenly deflected at two thirds the distance from beak to border. Surface of shell with a number of rounded radial striæ (twenty to fifty). Those on the centre much larger than those on the sides; between each pair from five to nine very fine

striae, two or three of which become larger than the others as they approach the border. The finest striae are scarcely visible to the naked eye. — Jumper's Cliffs, near Southwest Point, Anticosti.

Plectambonites PANDER.

Plectambonites glabra SHALER.

SYN. *Leptaena sericea* BILLINGS, Can. Geol. Survey, 1853-56, p. 252.

Shell elongate semi-oval; distance from beak to border about one half as long as hinge-line; hinge-line usually equal to the greatest width of shell; outline evenly rounded. Toothed valve strongly convex; depth about two fifths (sometimes one half) the length from beak to border; most convex point one third the distance from beak to border; a little flattened near the lateral border; strongly ventricose in the middle; umbo rising above the hinge-line; slightly incurved; beak not distinct; area narrow; in the same plane with the lateral margin; teeth small, slightly projecting. Socket-valve curved to fit the toothed valve; area a little less in width.

Surface of valves, with very numerous nearly microscopic radial striae, closely set, of nearly equal size, scarcely distinguishable upon the centre, but distinct upon the borders of the shell. The socket-valve has distinct radial striae of a larger size interspersed among these, like the radii on the toothed valve.

This form differs from its representatives of the Lower Silurian by its great convexity, as well as by many other characters. — Ellis Bay, Anticosti.

Plectambonites arca SHALER.

SYN. *Leptaena transversalis* BILLINGS.

Shell semi-elliptical; greatest width at hinge-line; hinge-line one third longer than from beak to border. Toothed valve in adult specimens very ventricose; depth equal to one third the length of hinge-line; area narrow, almost linear; fissure very small, equilaterally triangular; muscular impressions indistinct. Socket-valve concave, flattened towards the extremities of the hinge-line; area narrow, linear; cardinal process very small; muscular impressions very slight. Surface of shell with twelve to twenty distinct radii, with very fine radii between. — Near Southwest Point, Anticosti.

Plectambonites tenera SHALER.

Very closely allied to the form called by Hall *Leptaena transversalis*, from the Niagara Lime of New York; it is, however, less convex, and more flattened towards the extremities of the hinge-line. The area of the toothed valve is in the same plane as the margin. The umbo scarcely extends above the hinge-line in many of the specimens. Interior has not been compared. — Near Southwest Point, Anticosti.

Leptæna DALMAN.**Leptæna Julia SHALER.**

SYN. *Strophomena Julia* BILLINGS.

This species possesses all the important characters of the group, — sudden deflection of the valves, corrugated surface, together with the ridge around the visceral disk on the internal surface of the socket-valve. — Near Southwest Point, Anticosti.

Leptæna quadrilatera SHALER.

SYN. *Strophomena depressa* BILLINGS.

Shell margin broadly semi-oval; greatest width at hinge-line, which is one half longer than from beak to border. Tooth-valve with the visceral disk nearly rectangular; laterally about two sevenths wider than from beak to point of deflection; disk convex near the umbo, concave near the deflected margin; umbo rather prominent, broadly rounded, scarcely rising above the hinge-line; radii fine, with even interspaces, somewhat irregular on the deflected margin; concentric undulations about six in number, wanting on a space about one fifth of an inch wide near the umbo; hinge area very narrow, almost linear near the extremities; socket-valve nearly flat or slightly convex over the visceral disk, usually with a distinct mesial sinus; hinge area narrow, not over one twenty-eighth of an inch in width; cardinal process minute.

This species may prove identical with the form from the Niagara group of New York, but there are several constant exterior differences. The interiors have not been examined. — Ellis Bay, Anticosti.

Orthis DALMAN.

Orthis laurentina BILLINGS, Report Can. G. S. for 1857, p. 297. — Junction Cliff, Anticosti.

Orthis media SHALER.

SYN. *Orthis elegantula* BILLINGS.

Shell orbicular; hinge-line one half less than width of shell. Toothed valve evenly convex; depth in adult specimens about one fourth the height, in young specimens proportionately a little greater; umbo slightly elevated, rising above the hinge-line one eighth the distance from beak to border, slightly compressed, occupying at the hinge-line about one fourth the diameter of the valve; beak small, distinct, slightly recurved, a little overhanging the area; area small, rather broad. Fissure triangular, one third as wide as length of hinge-line. Socket-valve transversely flattened, a slight mesial depression dividing the surface into two lobations.

Differs from its European representatives, being more orbicular, having a less projecting umbo, less incurvation of beak, much finer radial striæ,

closer approximation of the brachial supports of the socket-valve, and less length of the adductor impressions in the same valve. — Southwest Point, Anticosti.

***Orthis anticostiensis* SHALER.**

SYN. *Orthis porcata* BILLINGS (non MCCOY), Can. Geol. Sur., 1862, p. 135. — Ellis Bay.

***Orthis æquivalva* SHALER.**

SYN. *Orthis hybrida* BILLINGS.

Shell somewhat lenticular; one fifth wider than from beak to border; valves nearly equal in convexity; toothed valve a little the most prominent; hinge-line rather more than half the width of shell. Toothed valve strongly evenly convex, a little depressed opposite the umbo; umbo rising above the hinge-line about one sixth the distance from beak to border, a little laterally compressed; beak minute, scarcely projecting beyond the hinge-line, a little recurved; area about twice as wide as that of socket-valve; width one sixth of length; steeply sloping; most convex point of valve a little nearer the beak than border. Socket-valve nearly evenly convex; very slight mesial depression, extending from the umbo to the centre of valve, where it fades out, and is succeeded by a slight ridge, which extends to the border, beak distinct; not rising as far above the hinge-line as that of opposite valve by the width of socket-valve area. Surface with fine dichotomous striæ, with interspaces as wide as the ridges. — Junction Cliff, west end of Anticosti.

***Orthis rhyconelliformis* SHALER.**

Form varying from sub-circular to pentagonal; usually with the transverse one fifth greater than the diameter from beak to border; hinge-line very short, scarcely one half the width of shell. Toothed valve moderately convex, with a very broad, shallow mesial sinus beginning near the centre, and rapidly widening to the border; umbo somewhat laterally compressed; rising above the hinge-line; acutely pointed; not recurved; beak minute, very distinct. Socket-valve evenly convex; highest point near the middle of valve; usually a faint mesial sinus near the beak, fading out in the centre of the shell. Fissure of toothed valve wider than long, sides curved; teeth small, laterally compressed; muscular impressions extending to or beyond the middle of valve, very lobate; lobes pointed.

Surface with numerous angular radii; bifurcating twice from beak to border; about four in the space of one line on the centre of border; interspaces about as wide as ridges. — Gull Cove, eastern end of Anticosti.

***Orthis alata* SHALER.**

Shell nearly semi-oval, sometimes slightly quadrate; hinge-line a little

less than diameter of shell; both valves slightly, nearly equally convex. Toothed valve a little the deepest. Transverse diameter a little greater than from beak to border. Area of both valves narrow. Muscular impressions of toothed valve broader than long, extending about one fifth the distance from beak to border. Surface with from eighteen to twenty-two heavy, rounded ribs; the interspaces on the border double as wide as the ridges.

This species may be identical with *O. flabellulum* var. HALL from New York, but is certainly distinct from the *O. flabellulum* SOW. — Salt Lake Bay, upper part of Division E, Canada Geological Survey.

Orthisina D'ORB.

Orthisina diversa SHALER.

SYN. *Orthisina Verneuilli* BILLINGS.

Toothed valve usually pentagonal; socket-valve quadrate; hinge-line usually equal to the greatest width of shell. Toothed valve very strongly projecting; depth about one half the width; deepest point about the height of hinge-line; umbo somewhat laterally compressed, usually rising high above the plane of the hinge-line, but very variable in this respect; umbo always laterally inclined, indifferently towards either extremity of the hinge-line. Surface near the extremities of the hinge-line a little depressed and slightly recurved; area very large, nearly half as wide as long. Fissure from one fourth to one third the width of hinge-line; deltidium large, massive, rarely central, with distinct circular or oval foramen. Socket-valve with a broad and shallow mesial fold.

This form is closely related to *O. Verneuilli* EICH., but differs from it in the size of the radial striæ, and in many important internal features. — Ellis Bay, Anticosti.

Platystrophia KING.

Platystrophia regularis SHALER.

Outline much the same as that of the other members of the group. Socket-valve one fourth more projecting than the toothed valve; hinge-line a little less than diameter of shell, three fifths greater than distance from beak to border. That portion of the margin occupied by the fold and sinus is re-entering, the depth of the incurvation being about equal to the elevation of the umbo above the hinge-line. The depression of the sinus is occupied by only two plications, and the ridge by three similar folds. On either side are from eight to nine plications. These numbers seem invariable.

The muscular impression of the toothed valve is long and narrow, length being three or four times its width, extending nearly to the centre of the

valve, — a feature in which this species differs from its representatives. — Junction Cliff, Anticosti.

Atrypa DALMAN.

Atrypa impressa SHALER.

SYN. *Atrypa reticularis* BILLINGS.

Outline of shell obscurely quadrate, sometimes rather sub-orbicular; about as broad as high; diameter from valve to valve about one half the distance from beak to border; valves nearly equally convex, toothed valve usually a little the greater; hinge-line straight, nearly as great as width of shell. Tooth-valve rather convex, side slopes more abrupt than central, slightly flattened or depressed opposite the hinge-line. Point of greatest convexity at one third the distance from beak to border. Umbo projecting above the hinge-line about one ninth the distance from beak to border; laterally compressed; recurved; projecting beyond the hinge-line; beak minute, pointed, distinct. Socket-valve evenly convex; most projecting point a little nearer the hinge-line than border. Originating at the beak there is a distinct, rather abruptly depressed mesial furrow, which grows more shallow towards the centre of valve. Radii branching twice from beak to border, a little larger in the centre of valve than on the border.

The adult condition of this species differs strikingly from any other form included under the name of *Atrypa reticularis*. — Near Southwest Point, Anticosti.

Atrypa flabella SHALER.

Outline sub-orbicular; transverse diameter about one fifth greater than from beak to border; the slopes on either side of the beak form an angle of about 150° at the valve. Toothed valve convex; rather ridge-like in the centre; depressed on the border opposite the beak; slightly compressed near the umbo; most convex point one third the distance from beak to border; beak not distinct from hinge-line. Socket-valve slightly convex; a distinct mesial impression divides the surface into two lobes. Surface with from twelve to eighteen rounded, club-shaped, radial ridges. Near the border of some large specimens there are a few concentric, imbricating lines of growth.

It is not unlikely that this form is specifically identical with the *A. hemispherica* HALL, from the Clinton of New York. There are several points of difference between this form and the *A. hemispherica* MURCH. — Near Southwest Point, Anticosti, upper part of Division E, Canada Geological Survey.

Rhynconella FISCHER.

Rhynconella fringilla BILLINGS. New Species of Low. Sil. Fossils; Can. Geol. Sur., 1862, p. 141, Fig. 118. — Near Gull Cape, Anticosti.

Rhynconella anticostiensis BILLINGS. New Species of Low. Sil. Fossils; Can. Geol. Sur., 1862, p. 142, Fig. 119. — English Head, Anticosti.

Rhynconella glacialis BILLINGS. New Species of Low. Sil. Fossils; Can. Geol. Sur., 1862, p. 143, Fig. 120. — Ellis Bay, Anticosti.

Brachymerus SHALER.

Anterior (dorsal) valve the more convex. Dental lamellæ serrate or lobed on the outside. Septa of anterior valve with two broad, thin brachial plates projecting from them near their junction with the hinge-line; exterior surface plicated.

A member of the same family as *Pentamerus*, to which it is very closely allied.

Type. — *Pentamerus Verneuilli* HALL.

Brachymerus reversus SHALER.

SYN. *Pentamerus reversus* BILLINGS; Canada Geol. Survey, 1857, p. 295. — Junction Cliff, Anticosti.

Pentamerus SOWERBY.

Pentamerus Barrandii BILLINGS; Canada Geol. Survey, 1857, p. 296. — Beccie River Bay.

Athyris MCCOY.

Athyris turgida SHALER.

Shell sub-circular; transverse diameter equal to distance from beak to border; from valve to valve about four fifths the transverse diameter. Toothed valve very convex; most elevated at one third the distance from beak to border; umbo rising above the hinge-line for a distance equal to one fifth the transverse diameter; closely incurved; beak indistinct; socket-valve very convex; most elevated point one third the distance from beak to border; depth equal to one third of the diameter, about two thirds as great as that of opposite valve; umbo rising above the hinge-line a distance equal to one fifth the diameter of valve. Surface with numerous distinct concentric lines of growth. Toothed valve with a narrow, shallow mesial sinus, which produces a flattening for some distance from the border.

From beak to border, seven lines; transverse diameter, seven lines; valve to valve, five lines. — Ellis Bay, Anticosti.

Athyris umbonata BILLINGS. New Species of Low. Sil. Fossils; Canada Geol. Survey, 1862, p. 144. — Junction Cliff, Anticosti.

Athyris prinstana BILLINGS. New Species of Low. Sil. Fossils; Canada Geol. Survey, 1862, p. 145. — Prinsta Bay.

Athyris Julia BILLINGS. New Species of Low. Sil. Fossils; Canada Geol. Survey, 1862, p. 146. — Jumper's Cliff, Anticosti.

Camerella.

Camerella ops BILLINGS. New Species of Low. Sil. Fossils; Can. Geol. Survey, 1862, p. 148.

Spirifer SOWERBY.

Spirifer tenuistriatus SHALER.

Form about the same as *Spirifer radiatus* Sow.; hinge-line straight for four fifths of the diameter of shell, then gently rounding; transverse diameter a little greater than from umbo to border; socket-valve very convex, most prominent point about middle of valve; umbo rising above the hinge-line for a distance equal to one fifth the transverse diameter; strongly recurved; area indistinctly bounded. Socket-valve about two fifths as projecting as toothed valve; umbo rising a little above the hinge-line; evenly rounded; mesial sinus rather shallow; somewhat angular. Surface covered with very fine, almost microscopic radii; eight or nine in the space of one line on the border.

This species differs from *S. radiatus* in the minuteness of the radial striæ. It is possible that this form is identical with the *S. radiatus* of Hall, from the Niagara and Clinton of New York. No comparison of specimens has been made.—Near Southwest Point, upper part of Division F, Canada Geological Survey.

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