

IV.—NOTES ON A COLLECTION OF SILURIAN FOSSILS FROM  
CAPE GEORGE, ANTIGONISH COUNTY, NOVA SCOTIA, WITH  
DESCRIPTIONS OF FOUR NEW SPECIES.—BY HENRY M.  
AMI, D. Sc., F. G. S.

(Read May 14th, 1894.)

INTRODUCTORY NOTE.

The fossil remains herein described were collected by Messrs. Hugh Fletcher and J. McDonald, in October, 1886, at the extremity of Cape George, Antigonish Co., Nova Scotia. In age they correspond most probably with those of Divisions "C" and "D" of the Arisaig Section in Nova Scotia, and to the Niagara and Lower Helderberg of New York State and Ontario. They are therefore referable to the Silurian epoch. Some of the forms examined appear to be closely related to species from various localities in the State of New York, whilst others seem to be more nearly related to well-known European forms of Wenlock and Ludlow age. Those forms, which to us appear to be distinct from both the American and European species already described, are herein briefly described and their characters pointed out.

ANNELIDA.

1. SERPULITES LONGISSIMUS, Murchison. N. var. Under this designation there have been placed the remains of a large annelid which is undoubtedly very closely related to the above Ludlow species of Britain. It attains a great *length* and measures *ten* millimetres in breadth. The surface appears to be smooth, however, in which respects it differs somewhat from Murchison's species. In breadth, the Canadian form is also perhaps less broad, and on the whole may be considered a variety of the European *Serpulites longissimus*.

2. TENTACULITES NIAGARENSIS? Hall.

3. *TENTACULITES CANADENSIS*, N. SP. Shell minute, elongate, very gradually tapering. Annulations thread-like and numerous, there being *seventeen* in the space of *five* millimetres. Intermediate spaces marked by very fine transverse lines, of which there are from six to seven present between two annulations. Diameter of tube at greater extremity: 0.5 mm. Inasmuch as the specimen examined has its apex and portion of the initial portion of the tube broken off, it cannot be ascertained whether this portion of the shell was annulated or smooth.

#### BRACHIOPODA.

4. *DISCINA NOVA-SCOTICA*, N. SP. (Form A.) Shell broadly elliptical or sub-circular in outline. Dorsal or free valve very convex. Slope of the shell from the apex to the anterior extremity of this valve, regularly and evenly convex, whilst the slope on the posterior side of the apex, excentric, incurved, pointing posteriorly, and situated at about one-sixth the length from the posterior margin.

Surface of the dorsal valve, black and shining—marked by numerous concentric lines or rounded wrinkles of growth which are crossed by more delicate and very numerous thread-like lines, radiating from the apex to the outer margin. These radiating lines are obsolete or well-nigh so on the apex. Lower or attached valve, unknown.

Dimensions of the dorsal valve of one specimen as follows:—*Length*: 10 millimetres; *Breadth*:  $7\frac{1}{2}$  millimetres; *Height* of apex above lower valve:  $3\frac{1}{2}$  millimetres.

5. *DISCINA FLETCHERI*, N. SP. Shell almost circular in outline, the diameter but slightly elongated in one direction. Dorsal or free valve very moderately elevated. Slope of the shell from the apex to the anterior margin, broadly and evenly rounded, whilst the slope from the apex to the posterior extremity is gently concave.

Apex excentric, situated about one-fifth the length from the posterior margin and pointing towards the posterior extremity of the shell. Surface marked by numerous lamellar lines of

growth which are crossed by much finer and much more numerous radiating lines which are only visible with the aid of a lens.

Lower or attached valve, unknown. Dimensions of the cast of the interior of a fine specimen, as follows: *Length*,  $17\frac{3}{4}$  millimetres; *breadth*,  $15\frac{1}{2}$  millimetres; *height* of the free valve, nearly 2 millimetres.

6. *DISCINA ORIENTALIS*, N. SP. Besides the two foregoing species of this genus examined from the limestones of Cape George, there occurs also a comparatively small ovate-elliptical form in the collection.

The shell is moderately elevated, and the exocentric apex is situated at about one-fourth the length from the posterior margin, and forms a curve round from that margin to the side. Surface is marked by obscure concentric lines of growth, and faint radiating lines from the apex.

This form differs from either of the two just described, in being more narrowly elliptical, in the position of the apex, and in its peculiar twisted or curved character, as above indicated.

In some respects it approaches *Discina Morrisii*, Davidson, from the Wenlock limestone of England.

7. *LINGULA RECTILATERA*, Hall.—There are several specimens and fragments of a *Lingula* in the collection, amongst which some are tolerably well preserved. They agree in every respect with Prof. Hall's species (*L. rectilatera*) described in his "Palæontology of New York, vol. 3, p. 156, figured on plate 9—figs. 6 and 8.

8. *LINGULA* sp.—This form resembles *Lingula perovata*, Hall—described from the upper green (Clinton) shales of Rochester, N. Y. Only one specimen of this species occurs in the collection. It agrees fairly well with Hall's descriptions given of *Lingula perovata*.

9. *ORTHIS ASSIMILIS*? Hall.—There is the cast of a species of *Orthis* in the collection, which cannot be satisfactorily distinguished from the above as described by Prof. Hall, and has therefore been referred to it, but with some degree of uncertainty.

10. *RHYNCHONELLA FORMOSA*, Hall.—Possibly this species, or else a very closely related one. The specimen in question, though imperfectly preserved, presents such characters as make it agree well with the descriptions and figures given by Prof. James Hall in his "Palæontology of New York State," vol. III., p. 236, figs. 6, a-y, on plate XXXV.

#### LAMELLIBRANCHIATA.

11. *ORTHONOTA EQUILATERA*, Hall. sp. *Tellinomya* ? *equilatera*, Hall, and *Tellinites affinis*, McCoy, are very closely related to each other. One form abounds in the Lower Helderberg rocks of America, whilst the other is not unfrequent in the Ludlow rocks of Britain. The characters of both species agree very well, and the Cape George specimens resemble the figure of *Tellinomya* ? *equilatera*, Hall, so much that they have been provisionally referred to this. The Canadian specimens are somewhat smaller than the New York specimens.

12. *MODIOLOPSIS EXILIS* ? Billings. A form which agrees tolerably well with Mr. Billings's species from the Arisaig Silurian rocks.

13. *NUCULITES (CLIDOPHORUS) ERECTUS*, Hall.

14. *NUCULITES*, sp. INDT. This form is most probably a *Nuculites*; but is too imperfectly preserved for specific identification.

#### GASTEROPODA.

15. *BUCANIA* sp. A species of *Bucania* referable to *Bucania profunda*, Hall, seems to be present in the collection.

16. *HOLOPEA REVERSA*, HALL.

#### CEPHALOPODA.

17. *ORTHOCERAS* sp., cf. *O. annulatum*, Sow. This is a well-known Wenlock limestone species in Britain, and a Silurian form in America.

18. *ORTHOCERAS* sp. indt. An imperfectly preserved specimen which cannot be referred with certainty to any species already described. Nor is it sufficiently well preserved to warrant describing as new. The septa however appear to be closely

arranged, there being some *fourteen* of them visible in a length of *twenty-two* millimetres.

#### OSTRACODA.

19. LEPERDITIA sp. There are several specimens of a small reniform species, 1.5 mm. long and 0.6 mm. broad. Rather tumid, and sharply rounded at both the anterior and posterior extremity.

#### VERTEBRATA.

##### PISCES.

20. ONCHUS (?) sp.—Two or possibly three spines or organs of defence of one of the earliest types of vertebrates appear to be present in the collection. They are tolerably well preserved, and present no salient features. Cross-section, sub-circular to rhomboidal. Longitudinally, these spines are nearly straight, and, being broadly and very gently curved in two directions, gradually taper from the base to a more or less acute point.

*Dimension.*—Length of one of these spines (which is slightly imperfect), *ten* millimetres ; breadth, *one* millimetre.

*Additional note on the Fossils and the horizon they indicate.*

These fossils from Cape George seem to indicate a zone or horizon which differs considerably from those of the Arisaig Coast collected by Mr. Weston in 1886, and which have also been examined. This is probably due to local causes

The presence, in tolerable abundance, of shells of the genus *Discina* is in itself quite characteristic, and a fact to be noted. Besides the twenty forms described or enumerated in this paper there are numerous fragments and obscure remains of fossils which, although too imperfect for specific identification, nevertheless may serve to point out the occurrence and association of the following genera. They are: *Lingula*, *Strophomena* or *Chonetes*, *Rhynchonella*, *Retzia*, *Murchisonia*, *Homalonotus* ? The presence of a number of Ludlow and Lower Helderberg fossils tend to indicate an horizon well up in the SILURIAN SYSTEM.

HENRY M. AMI.

Determined at Ottawa, June, 1887.