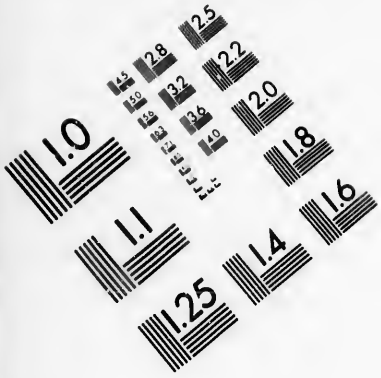

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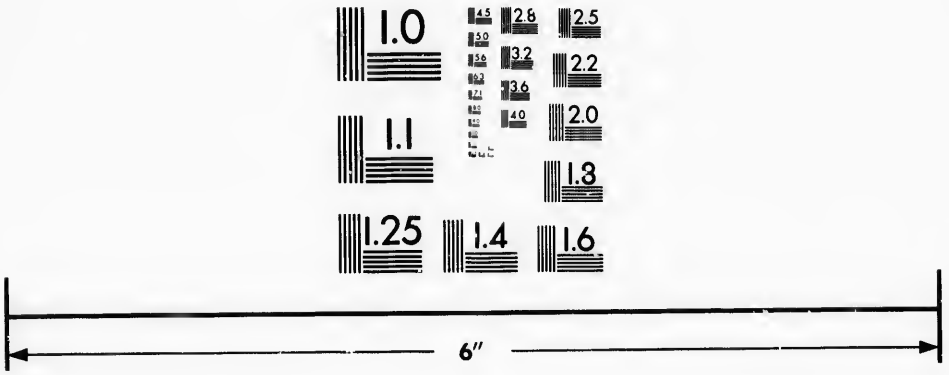

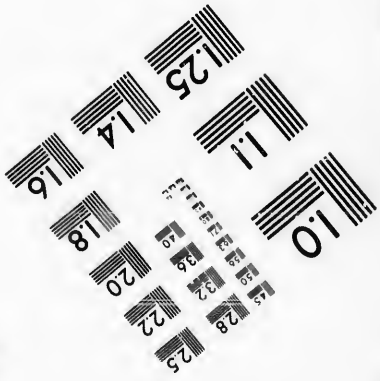

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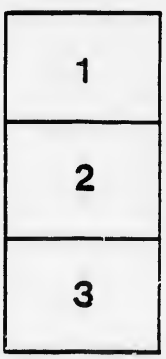
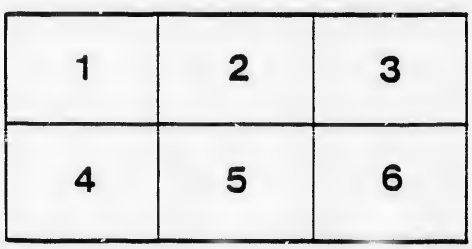
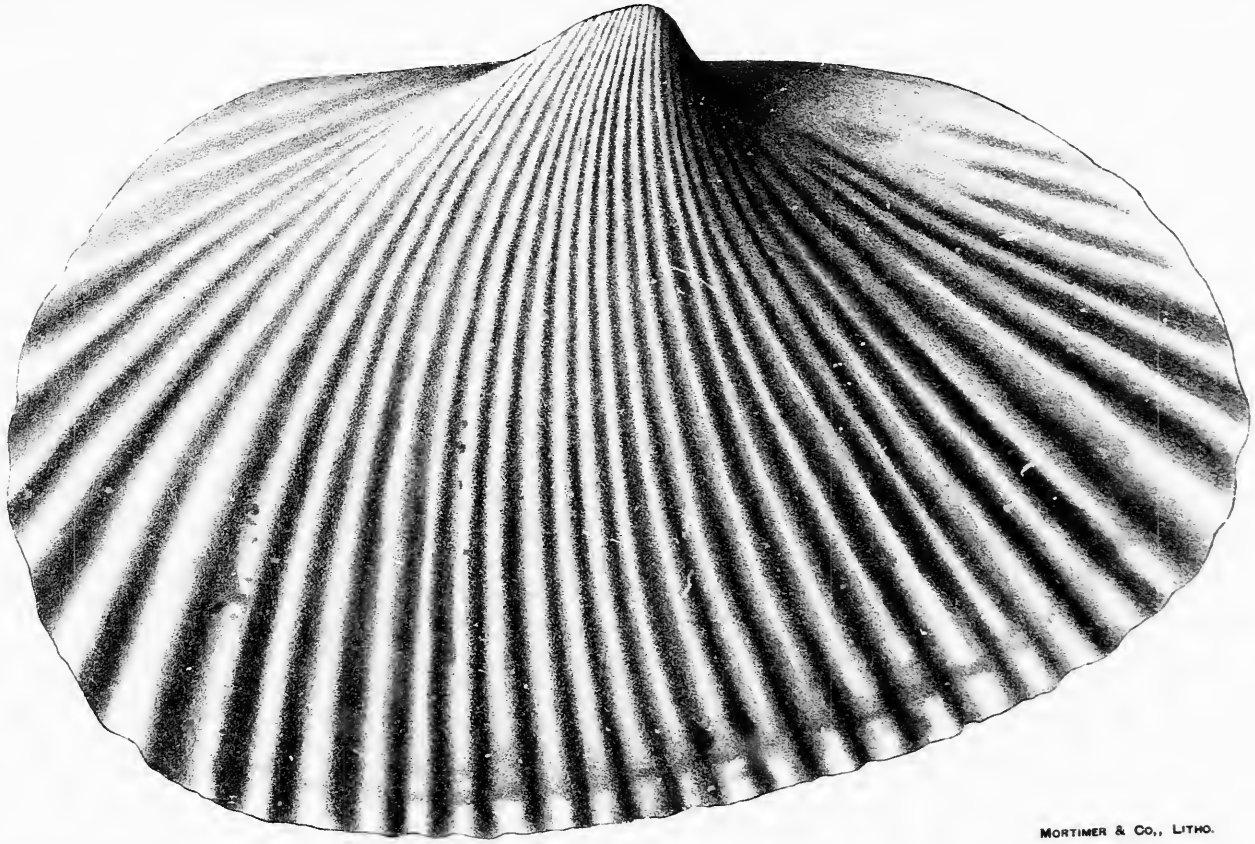




Description of a New Species of Panenka from the Corniferous Limestone of Ontario.

Note on the Occurrence of Paucispiral Opercula of Gasteropoda in the Guelph Formation of Ontario.

By J. F. WHITEAVES.



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PANENKA GRANDIS (SP. NOV.) CORNIFEROUS; ONTARIO.

"*Reprinted from the Canadian Record of Science, December*, 1891."

Description of a New Species of Panenka from the Corniferous Limestone of Ontario.

By J. F. Whiteaves.[1]

(*With Plate.*)

In August last four specimens of the shell of a lamellibranchiate bivalve, of unusually large size, of a compressed, transversely elongated and subovate form, and with the surface marked with numerous coarse radiating ribs, were collected by Mr. L. M. Lambe, of the Geological Survey, in the Corniferous limestone at St. Mary's, Ontario. The specimens consist of two nearly perfect and tolerably well preserved single valves, one a right valve and the other a left, and two imperfect right valves, all of which evidently belong to a single and undescribed species of *Panenka*.

Although not mentioned in the latest manuals of palæontology, the genus *Panenka* was duly proposed and characterized by Barrande in 1881, in the sixth volume of his "Systême Silurien du centre de la Bohême," in which memoir no less than 231 species of this genus were described and figured. The word *Panenka* is there stated to be the equivalent of the Latin *puella*, in "la langue tcheque," *i. e.*, Czech or Bohemian. In Schmidt's Polish dictionary *Panienka* is given as the diminutive of *Panna*, a girl. The genus was regarded by Barrande as peculiar to

[1] Communicated by permission of the Director of the Geological Survey Department.

PANENKA GRANDIS (SP. NOV.) CORNIFEROUS; ONTARIO.

his Fauna No. 3, the representative of the Silurian (Upper Silurian), as distinguished from what is now called the Cambro-Silurian or Ordovician System. In 1885, however, in volume V, part 1 (Lamellibranchiata) of the "Palæontology of the State of New York," Professor James Hall described and figured fifteen species of *Panenka* from the Devonian rocks of the United States. Some of these species had previously been referred to *Pterina* and *Monotis* by Conrad and S. A. Miller, and by Hall himself to *Cardiola*. The names of three additional species of *Panenka* from the Devonian of North America are given in S. A. Miller's "North American Geology and Palæontology," published in 1889.

This genus was, and still is, based exclusively upon the external characters of the shell, the hinge dentition, muscular impressions and pallial line of the interior of the valves being unknown. It is described as having no distinct cardinal area, like that of the *Arcadæ*, but some species are said to show obscure evidence of a ligamentary groove. The systematic position of *Panenka* is therefore quite uncertain. It is placed by Hall in the *Cardiidæ*, but Rudolf Hörnes has constituted a special family, which he calls the *Prævcardiidæ*, for the reception of *Præcardium*, *Panenka* and several other similar and apparently closely related genera described by Barrande. This latter view of its relations, which seems to be the most satisfactory one in the present state of our knowledge, is adopted by Dr. Paul Fischer in his "Manuel de Conchyliologie." In that volume the family *Prævcardiidæ* is placed between the *Gramnysiidæ* and the *Pholadomyidæ*, but its author states that it seems to him to have closer relations with the *Anatinacea* than with any other suborder of the *Dibranchiata*. The species indicated by the four specimens collected by Mr. Lambe may be described as follows.

PANENKA GRANDIS. (Sp. nov.)

Plate 1.

Shell very large, attaining to a length of from six to nine

inches, strongly compressed at the sides, though perhaps abnormally so, subovate in marginal outline, about one-third longer than high and highest posteriorly, the greatest height, exclusive of the beaks, being at or near the posterior termination of the cardinal border.

Anterior side produced and somewhat pointed, its outer margin sloping obliquely and rapidly downward from the cardinal border above, and forming a rather narrowly rounded junction with the ventral margin below: posterior side about equal to the anterior in length, but broader in the direction of its height and much more broadly rounded at the end: ventral margin moderately convex and most prominent posteriorly, nearly straight but ascending very gradually in the centre and anteriorly: superior border nearly straight or but slightly convex on each side of the beaks, curving gradually and somewhat convexly downward at each end, but rather more rapidly so at the posterior end than at the anterior: umbones oblique, [illegible], central: beaks curved inward and a little forwa

Surface marked by from thirty-five to forty la
and rounded radiating ribs, which are nearly st
teriorly, but slightly curved in the centre and poste
also by numerous and unequal concentric lines of growth. In some specimens an occasional intermediate and very much smaller rib is developed between two of the larger ones. Characters of the interior of the valves unknown.

The figure on plate 1 is of the natural size. The specimen which it represents is the most perfect of the right valves collected, and measures 16.2 cm., or six inches and four-tenths, in length, and 10.7 cm., or four inches and two-tenths, in maximum height, inclusive of the beak. It does not happen to show any of the smaller intermediate ribs nor the concentric lines of growth mentioned in the description of the species, these being seen in other specimens. The shell attains to a much larger size than the specimen figured, for an imperfect right valve collected by Mr. Lambe was probably a little more than nine inches in

length, when entire, and not far from seven inches in its maximum height.

OTTAWA, October 9th, 1891.

NOTE ON THE OCCURRENCE OF PAUCISPIRAL OPERCULA OF GASTEROPODA IN THE GUELPH FORMATION OF ONTARIO

BY J. F. WHITEAVES.[1]

Opercula of gasteropoda appear to be of rather rare occurrence in the palæozoic rocks of Canada The best known and earliest described are those of *Maclurea Logani*, from the Black River limestone of Paquette's Rapids, on the Ottawa River, which were first described and figured by Salter in 1851, in the first decade of "Canadian Organic Remains." The operculum of this shell, which has fortunately been found occupying its normal position in the aperture of the shell to which it belongs, is in many respects unlike that of any known gasteropod, whether fossil or recent, both in its internal and external characters. It was described by Dr. S. P. Woodward as "sinistrally subspiral, solid, with two internal projections for the attachment of muscles—one of them beneath the nucleus and very thick and rugose."

A specimen of another species of *Maclurea*, which has since been described and figured under the name *M. Manitobensis*, with its operculum in place, was collected by Prof. H. Y. Hind in the Trenton limestone at Punk Island, Lake Winnipeg, but this operculum is very imperfect and badly preserved.

In 1874-82 several solid, calcareous and multispiral opercula were collected by Mr. Joseph Townsend in the Guelph limestone at Durham, Ont., but none of these were found *in situ*. These opercula, some of which are described and illustrated in a report on the fossils of the Guelph forma-

[1] Communicated by permission of the Director of the Geological Survey.

tion of Ontario,[1] are circular in outline, their inner surface being flat, or nearly flat, and their outer surface convex. They vary considerably in the amount of their external convexity, some being nearly hemispherical and others conical externally, and probably belong to more genera than one. By analogy with similar specimens that have been found in place, in shells of the genera *Polytropis*, De Koninck (=*Oriostoma*, Munier Chalmas), and *Cyclonema*, Hall, in the Upper Silurian rocks of Gothland, these multispiral opercula from Durham are presumed to belong to species of those genera, the *Euomphalus macrolineatus* of Whitfield, and the *Straparollus crenulatus* of the present writer, both of which occur at Durham, being now known to be referable to *Polytropis*, and the genus *Cyclonema* to be represented at Durham by the *C. sulcatum* of Hall, though this latter shell also may be a true *Polytropis*. Both *Polytropis* and *Cyclonema* are referred by Lindström to the family *Turbinidæ*, partly because their shells "have retained the most evident traces of a nacreous layer," and partly on account of their solid calcareous opercula.

About five or six years ago, a few opercula of an entirely different character to any of those already mentioned were collected by Mr. Townsend in the Guelph formation at Durham. These, so far as the writer has been able to ascertain, are so unlike any opercula that have hitherto been described as occurring in palæozoic rocks, that it is thought desirable to place a short description of them upon record. They are rather thin, nearly flat, but slightly concave externally and as slightly convex internally, broadly subovate, about one-fifth longer than broad, obtusely pointed at the end corresponding to the posterior angle of the mouth of the shell whose aperture they closed, *paucispiral* and composed of from two and a-half to three rapidly expanding volutions, the nucleus being subcentral. Only the outer or concave surface of each of these opercula is exposed to view, the inner side being buried in the matrix. The accompany-

[1] "Geological and Natural History Survey of Canada. Palæozoic Fossils," vol. III, pt. 1, Montreal, 1884, p. 33, pl. iii, figs. 10, 10 *a-b* and 11, and pl. vii, fig. 7.

ing woodcut represents the exterior of the best specimen known to the writer, of natural size. Its maximum length is twenty millimetres and its greatest breadth sixteen.

Figure 1. Paucispiral operculum of a gasteropod, genus and species unknown, from the Guelph Formation of Ontario.

It is at present quite impossible to determine to which of the known gasteropoda from the Guelph formation in Ontario these opercula should be referred, if, indeed, they are referable to any. Judging by the shapes of the apertures of the shells into which they may have fitted, the most likely species, perhaps, are the *Holopea gracia* or *H. harmonia* of Billings, or a small and undescribed naticoid shell from Durham, which, so far as can be ascertained from a few casts of the interior, seems to be closely related to the *Holopea nux* of Lindström, from the Upper Silurian of Gothland. The resemblance of the operculum here figured to that of *Litorina* and *Natica* is very striking, and in this connection it is to be noted that Lindström places *Holopea* in the *Litorinidæ*. In the recent species of *Litorina* the operculum is invariably chitinous and extremely thin, while in *Natica* proper it is calcareous and not nearly so thin. The one here figured is so highly dolomitized that it is difficult to estimate its exact thickness, but it gives the writer the impression of being thicker than that of a recent *Litorina*. At the distance of a millimetre from the edge, its thickness, at the somewhat truncated termination of the outer volution, is between one-half and three-quarters of a millimetre, but it seems to increase rather rapidly in thickness inward.

The only other opercula known to the writer as occurring in the Palæozoic rocks of Canada are the depressed multi-

spiral ones of ***Euomphalus Manitobensis***, one of which was obtained in place. These were collected by Mr. J. B. Tyrrell, of the Geological Survey, in 1889, from limestones of Devonian age at Dawson Bay, Lake Winnipegosis, and are described and illustrated in the eighth volume of "Transactions of the Royal Society of Canada."

OTTAWA, October 24th, 1891.