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MORGAN EXPEDITIONS, 1870-71.
CH. FRED. HABIT, IN CHARGE.

ON THE
DEVONIAN TRILOBITES AND MOLLUSKS
OF
ERERE, PROVINCE OF PARA, BRAZIL.

BY PROF. CH. FRED. HABIT,
AND
RICHARD RATHBUN.

[Reprinted from the Annals of the Lyceum of Natural History, N. Y., Vol. xi, May, 1876.]
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DEVONIAN TRILOBITES AND MOLLUSKS
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RICHARD RATHBUN.

We have given in this paper descriptions of the trilobites and of all the species of mollusks, not including the brachiopods, collected by the parties of the Morgan Expeditions, in 1870 and '71, from the Devonian rocks of the plain around the little village of Ererê. In the Bulletin of the Buffalo Society of Natural Science, for January, 1874, Vol. I, No. 4, Prof. Hartt has described at length the geography and geology of the Ererê-Monte-Alegre district, in which occur the fossiliferous Devonian beds forming the plain of Ererê. These beds consist of thin horizontal layers of white and reddish sandstones, interstratified more or less with shales. Both the sandstones and the shales contain at a few points an abundance of fossils, closely related to, and in some cases identical with, forms characteristic of the middle Devonian rocks of North America. The brachiopods, the most abundant fossils in the Ererê Devonian, were described by Mr. Rathbun in the work above cited, in a paper immediately following that of Prof. Hartt. There then remained for description, the mollusks, including six forms of gasteropods and eight of lamellibranchs, with a single form of Tentaculites, two forms of trilobites of the genera Dalmania and Homalonotus, both probably new, and a number of obscure forms, many of which are entirely unrecognizable.

The mollusks and trilobites in the Devonian at Ererê are confined entirely to the sandstone, no traces of either having
been found in the shale, in which the only recognizable forms are the very abundant Discina and two species of Lingula, already described.

By reference to the paper on the Brachiopoda of Ereré, mentioned above, it will be seen that many of the forms there described are identical with species of the Devonian age, more especially the Hamilton group, of New York state, and that most of the remaining forms have closely related ones in these same deposits of North America. The close relation in horizon of the middle Devonian of New York and the formations of the plain of Ereré was thus demonstrated. The study of the mollusks has greatly strengthened the proof of this relationship, for several of the forms of mollusks from Ereré have proved identical with forms recently described from the Hamilton group of New York by Prof. Hall, and possibly others, now apparently distinct, may also turn out identical with more extended collections. All the genera represented, with a single exception, are common to the Devonian elsewhere. We are under very many obligations to Prof. James Hall of Albany, N. Y., for identifying for us many of the following genera, some of which have been recently proposed by him. He also made a comparison of the species with the New York forms contained in his collection, and it was with his aid that we were enabled to unite the three forms, as hereinafter indicated. To Mr. R. P. Whitfield, of Albany, we are also much indebted for assistance in our work.

TRILOBITES.

Genus DALMANIA, Emmrich.

Dalmania Paiutus, sp. nov.

Animal of medium size, sometimes quite large; test very tumid, and with the different lobes and segments sharply defined.

Buckler crescent-shaped; greatest breadth about one and one-fourth the greatest length, and nearly twice the length of the glabella; in front sub-acuminate or bluntly sub-angular; the margins on either side diverg-
Morgan Expeditions.

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...
gynal fold strongly convex and of moderate width. Eyes large and very prominent, situated exactly opposite outer extremities of anterior and median lobes. In none of the specimens in the collection are they sufficiently well preserved to allow of detailed description.

A Hypostome, probably of this species, is sub-triangular in form and strongly convex. The front margin is strongly arched and slightly sub-angular. On each side it is produced in a short acuminate spine, extending directly outward. The sides are nearly straight and incline slightly toward one another in going backward. The body of the hypostome is very convex and abruptly separated from a flattened margin. The outline of the convex portion forms a very regular curve as follows: beginning at the anterior lateral angles it runs obliquely backward and inward, the flattened margin widening gradually; posteriorly with a regular arch it extends apparently nearly to the margin. The whole hypostome is strongly arched, transversely and vertically. The abrupt margin of central portion increases in height going backward. This specimen measures 7 mm in length and about 10 mm in greatest width. A fragment of a larger specimen of hypostome, having a length of 21 mm, was also obtained from the same bed as the above, and, although differing from it somewhat in appearance, may belong to an older specimen of the same species.

Pygidium triangular, with curved sides, and very convex. Axis narrow, prominent, regularly rounded from side to side, and extending about 3/4 length of shield; width in front apparently equal to 1/3 width of shield. It decreases slightly in width and gradually in height posteriorly, where it ends abruptly, the extremity being rounded and convex; width in front about one and one-half times the width behind. In one large specimen the axis shows 14 rings, the anterior of which, in the internal mould, are prominent, rounded, and separated by furrows of rather greater width; but they become very small and indistinct posteriorly, the last three or four being crowded together. In none of the specimens collected is the articular ring preserved, but several of these show 11 to 13 rings. Lateral lobes convex, but generally of much less elevation than the axis; margin slightly flattened. Furrows deep and extending to the margin in all but the last four or five rings. The segments are rounded near the axis, but are flattened and much broader toward the margin. The anterior one is nearly at right angles with the axis, but they become more strongly inclined posteriorly. On the first segments the sutures are faint and on the posterior ones not observable. The margin is dentate, the terminations of each segment being apparently blunt and obliquely rounded or angular. Posterior part of pygidium, behind axis, highly inclined, rounded and smooth; posterior margin concave, arched and slightly turned up along the edge. A specimen of medium size measures in length, about 15 mm, in width, 14 mm. A very large specimen has a length of 32 mm.

A few detached segments, that may belong to the thorax, were found, but they are unsatisfactory for determination.
The first distinguishing feature of this species lies in the great prominence of the test, none of the forms, with which we have compared it, approaching it at all in convexity. This difference of character is supplemented by many others. From Dalmania Boothii, of the Hamilton group of New York, the only abundant form known in beds corresponding most nearly in age to the Ereré Devonian, it differs, among other features, in the greater proportionate length of the middle of the head, in the more gradual backward narrowing of the glabella, and in the greater length of the frontal lobe, which is generally more angular in front in the latter form.

This beautiful species occurs somewhat abundantly in the Devonian sandstone at Ereré, associated with Spirifera Pedroana, etc. The specific name is given in allusion to a mythical personage, after whom the Serra do Paitana in the vicinity received its name.

**Genus HOMALONOTUS, Kuenig.**

**Homalonotus Oiara, sp. nov.**

There was obtained from the Devonian sandstone at Ereré, a single fragment of the head of a large trilobite, which belongs to this genus. It is very distinct from any other form yet known, but too imperfect to admit of proper description. It differs from Homalonotus Dekayi, Van., apparently, in the fact that the margins of the glabella are more concave than in the latter form, and the eyes are placed farther forward. We have ventured to rank it as a new species, naming it after the Tupi water maiden. Associated with the last species above described, Dalmania Paitana.

**GASTEROPODA.**

**Genus Pleurotomaria, Defrance.**

**Pleurotomaria Rochana, sp. nov.**

Shell quite small; outline, as seen in front and hind view, a rhomboid, of which two opposing sides are about twice the length of the other two
Holopea Furmaniana, sp. nov.

Shell rather above the medium size, obliquely sub-conical in front view, with the length and breadth nearly equal. Volutions about three or four in number, very prominent and well rounded. They increase quite rapidly in size from the very small apex, the last one being ventricose and sometimes slightly flattened on the top near the suture, which is rather deep and acute-angular. Aperture slightly oblique, oval in outline and a little reflected on the lower side. Surface, as determined by external moulds, smooth. One specimen of average size measures: length and breadth each, about 17 mm; but many specimens are larger than this.

All the specimens of this form, so far obtained, are in the condition of moulds of the interior and exterior. In the internal mould there is a small umbilicus, probably due entirely to the removal of the columnella. This form is easily recognized by its regular and well rounded volutions and low spire, the volutions commencing of very small size and increasing rapidly and regularly to the aperture. So far as we are aware the genus Holopea has not been recognized from the Devonian before; but the smooth exterior of this form...
pressed-conical; aperture, antrorse, with the aperture, antrorse. Volutations about three to four, pervolutions about three. Surface of shell, though not very smooth, is slightly more convex from the apex to the periphery, and are separated by flexures. The dim of shell is preserved. This is the same shell as that measured by Mr. 

The specimens obtained, as well as the condition. Associated fossils are Agassizii, etc., from the Lower Carlova, Pará, Brazil. 

The specimen found by the commandant of the second expedition to Brazil in 1870 was assigned to the genus Jurupensem. 

Press-conical in front view, with about four volutions about three or four pervolutions, each volutions increased quite rapidly in size, and smaller, becoming more convex and somewhat smaller. The side surface is a little more convex and the more convex side is towards the aperture, enlarging rapidly to the same size. The aperture is oval in outline, with the sinistro-dextral diameter a little less than the dorso-ventral. The margin is apparently smooth, but is defective in the specimen. Exterior surface of shell not preserved. Surface of internal mould of body volutions not very irregular, and a few deep, rounded flexures. To these flexures a few, irregular, longitudinal undulations near the aperture appear to correspond. There is a slanting prominence, probably the impression of the base of a spine, just on the left of the dorsal line, midway between the aperture and the beginning of the outer volutions. Dimensions: greatest length from anterior margin of aperture, 19 mm; dorso-ventral diameter of aperture, 13.5 mm; sinistro-dextral diameter of same, 12 mm. 

Only one specimen of Platyoceras, the one described above, was obtained from Ereré. It agrees with P. symmetricum of Hall, Hamilton group, N. Y., in being symmetrical and having the same number and character of volutions; but it is much smaller than any specimen of P. symmetricum from the Hamilton group which we have seen, and more per-
fect specimens, preserving the shell, may show it to be distinct from that species.

From the Devonian sandstone of Ereré, Prov. of Pará, Brazil; associated with Spirifera Pedroana, etc.

Genus BELLEROPHON, Montfort.

**Bellerophon Morganianus**, sp. nov.

Shell of small to medium size, subglobose, with the umbilical openings small but rather deep. Body whorl generally somewhat broadly flattened along the back, sometimes moderately rounded and curving abruptly to the umbilicus. It increases rapidly in size toward the aperture, where it expands quite abruptly, making the aperture large and apparently transversely sub-elliptical in outline. Surface covered with minute, rounded, transverse, parallel, raised lines, which first curve slightly forward from an indistinct, median dorsal band, and then extend nearly directly to the edge of the umbilical openings. Of a nearly perfect specimen of medium size, the greatest length from the outer edge of the aperture is about 17 mm; sinistro-dextral diameter of aperture of same specimen, about 19 mm.

This Brazilian species of **Bellerophon** appears to be closely related to *B. leda* of Hall, Hamilton group, New York, and is of about the same size as that species. The body whorl of *B. Morganianus* is, however, generally larger where it commences than is the case in *B. leda*, and the revolving raised lines are entirely wanting in the former species.

Obtained in great abundance from the Devonian sandstone of Ereré, Prov. of Pará, Brazil; associated with Spirifera Pedroana, etc.

Dedicated respectfully to Mr. Edwin B. Morgan, of Aurora, N. Y.

**Bellerophon Coutinhoanus**, sp. nov.

Shell rather small, subglobose, trilobed. The outer whorl increases rapidly toward the aperture, and is divided into three longitudinal lobes, of which the middle or dorsal lobe is about two-thirds the width of the whorl itself, and is prominent, sharply defined at its margins and very regularly rounded. The lateral lobes curve regularly and quite abruptly from the dorsal lobe to the umbilical openings. Size of the most perfect specimen, which is not, however, the largest one obtained: greatest length from near the outer edge of the aperture, about 15 mm; width of the outer whorl near the aperture, nearly 15 mm.
Although a number of specimens of this species of Bellero-
phon were obtained from Ereré, the aperture is not preserved in
any of them, and the umbilical openings, if such existed,
are covered up by the rock in every case. The specimens
are all of internal moulds and the surface markings are not
retained. B. Coutinhoanus is very closely allied to B.
trilobatus of Sow., Devonian of Europe, more especially to
the variety tumidus, from which; however, it differs in hav-
ing the dorsal lobe broader, less prominent, and more
flattened along the top, with its margins more distinctly defined.
From the Devonian sandstone of Ereré, Prov. of Pará,
Brazil; associated with Nuculites Nyssa, etc.
Respectfully dedicated to Dr. Silva de Coutinho, Rio de
Janeiro, Brazil.

Bellerophon Gilletianus, sp. nov.
Shell very small, laterally compressed, somewhat lenticular in form and
sub-circular in outline; umbilical openings of medium size, deep. The
outer voluton commences very small, somewhat compressed and more or
less angular on the median dorsal line, and increases rapidly in prominence
but quite gradually in width, becoming more and more strongly angular
toward the aperture, where it is but slightly expanded. The summit of
the mesial prominence is often well rounded, but sometimes acute, while
on each side is generally a very shallow accompanying groove, growing
more pronounced toward the aperture, and which gives to the shell near
the mouth a somewhat trilobed appearance.
The surface of the shell is marked by numerous, very fine, rounded,
thread-like, concentric raised lines, which arch very strongly backward
from the umbilicol to the median dorsal line, where the corresponding
eones on each side unite in a curve. Of the largest specimen obtained,
the greatest diameter, which is from the outer margin of the aperture to
the opposite side of the shell, is about 10 mm.; width of the body voluton
near the aperture, about 5 mm. Most of the specimens, however, are
much smaller than this.

B. rotiformis of De Kon., Europe, resembles the species
just described in size and general appearance, but it is more
lenticular in shape and the whorls increase more rapidly in
size. The umbilical openings are also smaller and the slope
toward them is much less abrupt.
Morgan Expeditions.

Moderately abundant in the Devonian sandstone of Ererê, Prov. of Pará, Brazil; associated with Nuculites Nyssa, Spirifer Pedroana, etc.

Named after M. Léon Gillet, Prof. Hartt's able and obliging agent at Pará.

LAMELLIBRANCHIATA.

Genus NUCULITES, Conrad.

Nuculites Nyssa.

Nuculites Nyssa, Hall. Lamell. Shells of the U. Held., Ham. and Chem. Groups, etc., 1890. (Preparatory for the Paleontology of N. Y.)

Description of Ererê specimens—Shell of medium size, longitudinally sub-ovate or sub-triangular in outline, and of moderate convexity. Anterior margin well rounded and narrower than the posterior. The dorsal margin, curving slightly, extends obliquely backwards from the beak to the posterior extremity of the shell, a short distance above the termination of the median antero-posterior diameter. The ventral margin is moderately rounded and, together with the anterior and posterior margins, forms an elliptical curve. Beaks about one-fifth the length from the anterior extremity, with the apices acute and strongly incurved to the hinge line. Valves most convex at a point just above and anterior to the middle. The surface arches rapidly and more or less regularly from the ventral margin to the beak, but is generally a little more strongly curved in the umboval region, and is broadly flattened, rounding suddenly to the dorsal margin. The slope toward the posterior margin is convex and more abrupt than toward the ventral margin; toward the anterior margin it is still more abrupt, becoming gradually concave near the beaks. The septum, curving very slightly, and with its concave side forward, extends down nearly two-thirds the shell height, cutting the antero-posterior diameter at about one-fourth its length from the front. Surface smooth or marked with a few indistinct lines of growth. Length, 24 mm; height, 17 mm; depth of single valve, 5 mm. Specimens of larger size are numerous.

This species of Nuculites, which is the most common lamellibranch at Ererê, proves to be identical with \textit{N. Nyssa} of Hall, found in the Hamilton group, New York.

We are indebted to Prof. Hall for the identification of the forms from the two places.
Abundant in the Devonian sandstone of Eréré, Prov. of Pará, Brazil, with Spirifera Pedroana, Streptorhynchus Agassizii, etc.

_Nuculites Eerensis_, sp. nov.

Shell small, elongate, nearly twice as long as high, sub-elliptical in outline, the margin forming quite a regular elliptical curve, broken by the slight upward extension of the beaks. Dorsal margin oblique and nearly straight. Beaks situated about one-third the length from the anterior margin, small, only slightly incurved, and apparently not reaching to the hinge line. The convexity of the valves is moderate, being greatest just below the umbonal region. The septum extends downwards for about three-fifths the height of the valves, and intersects the antero-posterior diameter at a little less than one-third its length from the front. Length, 13 mm; height, 5 mm; depth of single valve, nearly 3 mm.

This species of _Nuculites_ is readily distinguished from the last one above described, _N. Nysa_ of Hall, by its elongate form and nearly elliptical outline, and by the absence of any flattening along the middle. Only two specimens have yet been obtained. These are both internal moulds of the left valve, and the surface markings are not preserved upon them.

Found, with _Spirifera Pedroana_, etc., in the Devonian sandstone of Eréré, Prov. of Pará, Brazil.

_Genus GRAMMYSIA_, De Verneuil.

_Grammysia (Pholadella?) paralela._


Shell small, elongate, about two-thirds as high as long, with the greatest height at the beaks. Valves moderately convex, the surface arching strongly from the beaks to the ventral margin, but being rather more abruptly curved in the upper portion. The beaks are situated at about one-fourth one-fifth the length of the shell from the anterior extremity, and project but little above the hinge margin; they are small, rather strongly arcuate and turned somewhat abruptly forward, with the apices acute and contiguous. Dorsal margin straight and extending directly backward. The anterior margin extends obliquely forward in its upper half, forming at the beaks an angle of about 135° with the dorsal margin, and is slightly
concave; it rounds somewhat abruptly to the ventral margin below, which is moderately curved anteriorly, but becomes nearly straight and subparallel with the dorsal margin along the middle of the shell. Posteriorly the ventral margin appears to round up more or less strongly toward the dorsal margin, but in none of the specimens obtained, is the posterior extremity of the shell perfectly preserved. From a line, extending obliquely across the valves, from just behind the beaks to the lower posterior extremity of the shell, and forming an angle of about 30° with the dorsal margin, the surface curves moderately and quite regularly to the anterior margin, and is traversed by about 10 or 12 low, wide, rounded, concentric undulations, which decrease in size from the ventral margin toward the beaks, where they are quite small. The lower ones round up quite abruptly in front, but are more gently curved along the middle. Posterior to the oblique line, above mentioned, the surface descends abruptly, and with a concave slope, to the hinge line and the posterior extremity, and is smooth in the moulds. Length, about 16 mm; height, 10.5 mm; depth of each valve, 5 mm.

Prof. Hall has identified this Brazilian form with his Grammysia parallelata of the Hamilton group, New York, loc. cit.; but he expresses a doubt as to whether the species is a true Grammysia, or belongs to his new genus Pholadella, published in 1869.

Only a few specimens of this pretty form were obtained from the Devonian sandstone of Ererê, Prov. of Pará, Brazil, associated with Spirifera Pedroana, etc.

Genus EDMONDIA, De Koninck.

Edmondia Pondiana, sp. nov.

Shell below the medium size, elongate, nearly two-thirds as high as long, sub-elliptical in outline and moderately ventricose, with the greatest convexity in the lower posterior part of the umbonal region. Anterior end much narrower than the posterior, well rounded and prominent, the margin uniting by a moderate curve with the ventral margin, which, along the middle one-half of the shell, is quite straight and nearly parallel with the dorsal margin; posterior end strongly rounded, and apparently slightly truncate in its lower portion; dorsal margin straight and about one-half the length of the shell. Beaks situated at a little less than one-third the length from the front, broad, very prominent, and strongly incurred toward the hinge margin and the front, nearly or quite contiguous, and projecting a moderate distance above the hinge. The umbonal region is obliquely flattened, the flattened surface inclining anteriorly. This flattening, which commences on the beak, appears to
extend downward, and somewhat obliquely backward, across the valve; but it becomes less and less perceptible toward the ventral margin, toward which the slope, for nearly the whole height of the valve, near the middle, is only slightly curved; toward the front, the slope is much stronger and it becomes concave in front of, and beneath, the beaks. Commencing at the anterior margin, the surface rises at a moderately strong angle for one-fifth the shell length, more or less, when the angle of ascent becoming gradually less, it continues to rise with very little curvature toward an oblique line, extending across the valve from the posterior side of the beak to the lower posterior extremity of the shell. Along this line the valve rounds over toward the dorsal and posterior margins, quite gradually in the lower part, but more and more abruptly near the beak, the curve, from the point of greatest convexity of the valve toward the posterior end of the hinge margin, being abrupt and slightly sigmoidal. Exterior surface unknown. Length, 22 mm.; height, 14 mm.; convexity of single valve, 4 mm.

This species is founded on a single specimen, a very perfect internal mould of the left valve; but one or two much smaller specimens, probably referable to the same species, were also obtained from Ereré. From the Devonian sandstone of Ereré, Prov. of Pará, Brazil; associated with Spirifera Pedroana, etc.

(Named after my friends, Mr. Fred. Pond, American Consul at Pará, and his brother, Mr. Thos. Pond, to whom I am indebted for a thousand favors. C. F. H.)

Edmondia Sylvana, sp. nov.

Shell small; length a little more than one and one-half times the height; outline apparently sub-elliptical. Valves moderately and nearly symmetrical, most prominent in the umbonal region. Beaks small, sub-central and obtuse in the beaks, incurving very little and hardly projecting above the plane of the hinge, between which and the apices of the beak is quite a space. The dorsal margin is regularly curved, and rounds down on each side of the beak to the anterior and posterior margins, of which the former seems to be the narrower, and is more regularly rounded than the latter; ventral margin nearly straight along the middle. The surface of the valves arches very strongly and quite regularly from the beaks to the ventral margin, while the curvature along the antero-posterior diameter is moderate and nearly regular. Length, 17 mm.; height, 10 mm.; convexity of single valve, 4 mm.
Although only a single specimen of this species, which has been referred with some doubt to Edmondia, has been obtained, and that is not a very perfect one, it has been possible from it to make out the principal characters of the species quite accurately. It is readily distinguished from all the other species of lamellibranches yet found at Ereé, by the nearly symmetrical valves and sub-central beaks.

From the Devonian sandstone, Ereé, Prov. of Pará, Brazil, with Spirifer Pedroana, etc.

[Named in honor of my friend, Senhor José Gualdimo da Silva, of Pará, to whom I am under many obligations. C. F. H.]

Genus MODIOMORPHA, Hall.

Modiomorpha Pimentana, sp. nov.

Shell of moderate size, elongate, sub-quadrilateral in outline. From the beaks, which are placed at less than one-fourth the length from the front, the height increases very gradually to the posterior end of the hinge margin, which last equals about three-fifths the length of the shell and is straight; height of shell at beak about five-sixths that at end of hinge margin. Anterior margin straight and oblique for about one-half its length, forming at the beak an angle of about 135° with the dorsal margin. It rounds abruptly to the ventral margin, which, in its posterior three-fourths, is nearly straight. The posterior margin is slightly convex, and extends obliquely backward from the dorsal margin, with which it forms an angle equal to about that at the beaks, and curves abruptly to the ventral margin. Beaks very small, obtuse and no. produced above the hinge line. The valves are quite convex, the surface rising rapidly from the ventral and anterior margins on the one side, and from the dorsal and posterior margins on the other, toward a line running obliquely across the valves from the beaks to the lower posterior extremity. Along this line the valves are sometimes angular, at others they are regularly and strongly rounded; generally, however, they are angular near the beaks and become gradually rounded and flattened posteriorly. Above, the surface slopes to the dorsal margin very abruptly and is concave just behind the beaks, but the slope becomes more and more gradual toward the posterior extremity, and, from very slightly concave at first, it changes to very slightly convex posteriorly. The lower and anterior portion of the valves is sometimes broadly flattened. Surface marked with numerous concentric lines of growth. Length, 5 cm; height, 15 cm; depth of single valve, 5 cm. These dimensions are of the largest specimen found; most of the specimens are much smaller.
This form of *Modiomorpha*, which is quite abundant at Ererê, although very constant in its outline, varies considerably in its surface characters, as described above. The specimens obtained are all moulds of the interior and exterior. Associated with *Nuculites Nysa*, *Spirifera Pedrona*, etc., in the Devonian sandstone of Ererê, Prov. of Pará, Brazil.

Named in honor of Senhor Pimenta Bueno of Para, to whom the expeditions are under obligations.

**Genus PALEANEILO, Hall.**

**Paleaneilo sulcata**, sp. nov.

Shell of moderate size, elongate, slightly gibbous, and apparently sub-elliptical in outline, with the height less than two-thirds the length. Dorsal margin inclining slightly downward in extending backward from the beaks. The anterior margin appears to be slightly concave, for about one-third its length from the beaks, and forms an angle of nearly 120° with the dorsal margin; in its lower two-thirds it is well and regularly rounded. Ventral margin nearly straight and suddenly indented toward the posterior extremity of the shell, which is imperfect in all the specimens of this species yet obtained. Beaks situated at a distance from the front, equal to a little less than half the height of the shell, quite prominent and incurred to the hinge line. The valves are most convex just above and anterior to the middle, with the surface arching quite strongly and regularly, the curvature, however, increasing somewhat in strength, from the ventral margin to the beaks. A rather deep and well marked sinus commences in each valve on the posterior side of the beak, where it is very small, and extends obliquely across the valve to the ventral margin, near the posterior extremity of the shell, increasing gradually in size at the same time, the margin being deeply indented by it. The anterior edge of the sinuses is quite abrupt and forms a slight fold on the surface of the valve; it makes an angle of about 30° with the dorsal margin of the shell; the posterior edge rounds over gradually. From the anterior margin of the valve the surface rounds up gradually for a short distance, and then extends with very little curvature to the sinuses.

Surface of mould smooth. Length, about 17 mm; height, 11.5 mm; depth of each valve, 3.5 mm.

This species of lamellibranch has the external characters of the genus *Paleaneilo*, but the specimens representing it are not in a condition to show the character of the hinge,
which is crenuline in that genus. Only a few specimens
have been obtained.

From the Devonian sandstone of Ereré, Prov. of Fará,
Brazil; associated with Streptorhynchus Agassizii, etc.

Palaeaneilo? simplex, sp. nov.

Shell of medium size, elongate, quite regularly sub-elliptical in outline
and of moderate convexity; height about two-thirds the length. Anterior
margin not quite as high as the posterior; both anterior and posterior
margins slightly rounded, and passing gradually into the ventral margin, which is regularly and moderately rounded. The
dorsal margin is nearly straight and extends directly backwards from the
beak; its length is less than one-half that of the shell. Beaks situated
at about one-third the length of the shell from the anterior end, quite
small, rather strongly incurved to the plane of the hinge, and slightly
elevated above the hinge margin, with the apices acute. The point of
greatest convexity of the valves is just above the middle. The curvature
of the surface from the ventral margin to the beaks is moderate and
nearly regular, growing gradually stronger, however, toward the beaks.
The curvature along the antero-posterior diameter is quite moderate and
regular, the slopes toward the anterior and posterior margins from the
middle being sub-equal. Toward the dorsal margin the slope is moderate
posteriorly, but grows gradually stronger as the beaks are approached,
just behind which it is very abrupt. Immediately in front of the beaks
the surface is slightly concave. Surface markings unknown; the surface
of the internal moulds is quite smooth. Length, 16 mm; height, 12 mm;
depth of single valve, 3 mm.

The above description of this form was made from a
single, very perfect specimen, an internal mould of the
left valve, in which, however, the characters of the hinge
are not preserved. The generic relations of the species
are thus rendered doubtful; but it agrees externally with
Prof. Hall's genus Palaeaneilo in which we place it pro-
sionally. Besides the single specimen just mentioned,
there are four or five other specimens of lamellibranchs
from Ereré, which apparently belong to this same species.
In them the beak is sometimes more acute, and the curva-
ture of the surface varies slightly. In all the other char-
acters they agree quite perfectly. This form of Palaeaneilo
Morgan Expeditions.

is readily distinguished from P. sulcata, by the regular curvature of the surface from the anterior to the posterior end, and by the absence of a sinus.

From the Devonian sandstone of Eres, Prov. of Para, Brazil; associated with Spirifera Pedroana, etc.

**Genus TENTACULITES, Schlotheim.**

**Tentaculites Eldredgianus, sp. nov.**

Shell small, rather long, straight, circular in cross-section, at least 1 mm in diameter at the larger end, and tapering very gradually to an acute point. Length of the most perfect specimen, a fragment, about 16 mm. Annulations narrow, quite prominent, and angular or slightly rounded on the summit; the interspaces are generally about twice as wide as the annulations, though they vary somewhat in width, and are flattened or a little rounded in the bottom; they are ornamented by fine annular raised lines, of which there are about four or five in each interspace, near the larger end of the specimen. The annulations decrease in size, but become more numerous toward the apex. There are about 5 to 7 in the space of 3 mm near the large end.

The specimens of this species, so far obtained, are from the sandstone, in which they exist as moulds of the exterior surface, generally filled up with clay or sandy material. The moulds usually preserve the impression of the annulations very sharply; the annular raised lines, however, are seldom preserved. The casts formed by the filling up of the moulds are never exact copies, but in them the annulations are almost always low and wide. The full length is not preserved in any of the specimens obtained, but it was probably not much greater than 16 mm. Although the distance between the annulations varies, the variation is never very great, and in generally regular through the same specimen, the interspaces becoming gradually narrower toward the apex.

From the sandstone of the Devonian age, Eres, Prov. of Para, Brazil; associated with Spirifera Pedroana, etc.
Dedicated to Mr. Rolfe Eldredge, one of Prof. Hartt's companions at Ereré, on his expedition of 1870.

Among the more obscure remains obtained from the Devonian sandstone beds at Ereré, and which it is impossible from their imperfect condition to properly identify, are fragments of crinoidal columns, the valves of a form which appears to be related to Bayrichia, M'Coy, fragments of wood, etc. They are all, however, in such a poor state of preservation, that it would be unwise to attempt anything beyond a mere notice of their appearance. The crinoidal remains occur as impressions of the detached disks of the columns, which are small and thin, and it is seldom that more than two or three of the disks are found together. The central canal is generally replaced by sandy material, but none of the surface markings are retained. Diameter of disks, about 2.5 to 3 mm; thickness of each, about 0.5 mm. The test of Bayrichia (?) is small, sub-ovate in outline, with a slight depression near one end. The surface, though imperfect in all the specimens obtained, seems to have been granulose. Diameter of a medium specimen, 2 mm. The remains that have been referred to with doubt as plants have no definite or describable shapes and are probably fucoidal. Many of the other fragments obtained will undoubtedly be explained with the aid of new collections from the same locality.

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of Prof. Hartt's first paper in 1870.

Some of the remains from the Delaware, which it is impossible to identify, are fragments of a form which I have named Dysocton, fragments of which a poor state of preservation do not permit anything more than a description. The crinoidal remains of the attached disks of the crinoidacean are seldom that more or less fused together. The crinoids are sandy material, but not broken. Diameter of the crinoid, about 0.5 mm. The remains are in outline, with a polished surface, though imperfectly, and it is very probable that the remains have been granulated. Diameter of the crinoid, about 0.5 mm. The remains of the crinoid are undoubtedly from the same place as plants have no doubt been found there. Remains from the same place.