NEW OR LITTLE-KNOWN LOWER PALÆOZOIC GASTEROPODA IN THE COLLECTION OF THE AUSTRALIAN MUSEUM.

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(Plates xv., and xvi.)

THE following Lower Palæozoic fossils are either new to Australian Palæontology, or have been imperfectly described.

Genus Goniostropha, *Œhlert*, 1888.

(Bull. Soc. Ètudes Sci. Angers for 1887 (1888).)

GONIOSTROPHA PRITCHARDI, *sp. nov.*

Pl. xv., Figs. 1 – 4.

Sp. char.—Shell small, elongately spiral, of seven or eight slowly increasing angular whorls, each bearing two sharp median keels, enclosing between them a smooth, slightly concave band, and the remaining surface of each whorl occupied by a series of fine spiral lyræ that are sometimes finer above than below the band; sutures deep; mouth with the outer lip apparently rounded, and the inner lip reflected. Length (of largest specimen) one and a quarter inches.

Obs.—None of the mouths in the specimens before me are perfect, but the outer lip seems to have been rounded in outline, and the inner lip is certainly reflected. The whorls are only rendered angular by the projecting principal keels, enclosing between them the band, and they become less median in position as the apex is approached. This form belongs to a group of rather common *Murchisonia*-like shells for which Dr. Daniel Œhlert has proposed the name *Goniostropha*, distinguished by more or less angular whorls, the band occupying the angle or greatest periphery of each whorl, accompanied by supplementary finer revolving lyræ. In this respect it differs from an allied genus, *Hypergonia*, Donald.*

As this is an undescribed species from the Lilydale Limestone of Victoria, I have much pleasure in associating with it the name

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* Quart. Journ. Geol. Soc., 1889, xlv., p. 623.

of Mr. G. B. Pritchard, who has done much to advance our knowledge of Victorian Palæontology.

Loc. and Horizon.—Cave Hill Quarries, Lilydale, Upper Yarra District, Victoria. Lilydale Limestone, Upper Silurian ; presented by Messrs. J. Hinder and E. Smith.

Genus Gyrodoma, *gen. nov.**

GYRODOMA ETHERIDGEI, *Creswell, sp.*

Pl. xvi., Fig. 1.

Eunema etheridgei, Creswell, Proc. R. Soc. Vict., 1893, v. (n.s.), p. 42, t. 8, f. 2, (2 figs.).

Obs.—Mr. Creswell's figure represents an imperfect shell, and those now before me are also in the same condition, but sufficient characters are deducable to show that it is not referable to *Eunema*, which is an imperforate genus, with angular whorls. In *G. etheridgei*, on the other hand the whorls are boldly rounded, certainly seven in number and possibly more ; in Pl. xvi., Fig. 1 seven are visible, whilst Creswell assumed five to be the number. In the latter's left hand figure, as above quoted, there seems to me to be an umbilicus, although no mention is made of this in the description. In Pl. xvi., Fig. 1, a distinct and rather flat or depressed band is visible, bounded by two lyræ that are certainly more prominent than the remainder encircling the whorls. Mr. Creswell's figures both distinctly portray two bands side by side, but the example now figured has but one. If a double band does exist on some specimens, it indicates a departure towards the Cretaceous genus *Disopeta*, Gardner. The whorls decrease in size rapidly, the inner lip is almost straight, and with the anterior termination of the outer lip describes nearly a right angle.

The presence of the regular spiral lyræ distinguishes the proposed new genus from the allied *Goniostropha*, Œhlert, *Cœlocaulus*, Œhlert, *Hormotoma*, Salter, *Caliendrum*, Brown, *Cerithioides*, Haughton, *Stegocœlia*, Donald, *Hypergonia*, Donald, and *Glyphodeta*, Donald, aided in some instances by the rounded whorls of *Gyrodoma*, and the position of the band. The nonderolement of the whorls distinguishes the latter from *Loxoplocus*, Fischer, and the absence of all tuberculation from *Murchisonia*, the genus proper in its restricted sense. If an umbilicus exists it cannot be a *Pithodea*, De Kon. I therefore conclude it is a new section of *Murchisonia* and call it *Gyrodoma*.

Loc. and Horizon.—Cave Hill Quarries, Lilydale, Upper Yarra District, Victoria. Lilydale Limestone, Upper Silurian ; presented by Mr. J. Hinder.

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* *Gyro*, to turn round, and *domus*, a house.

Genus Mourlonia, *De Koninck*, 1883.

(Faune Calc. Carb. Belgique, 1880, pt. 4, p. 75.)

MOURLONIA DUNI, *sp. nov.*

Pl. xv., Fig. 5 ; Pl. xvi., Fig. 2.

Sp. char.—Shell conical, or somewhat trochiform, the sides of the cone fairly continuous; spire rather depressed, but acute at the apex ; whorls six, gently rounded ; base convex. Body whorl large, more than twice the height of the penultimate whorl, obtusely angular at the centre ; sutures faintly impressed ; band sutural on all but the body whorl, bounded above by a faint keel, on the body whorl occupying the obtuse median angle, the bounding keels very sharp and distinct, with a faintly impressed groove below the lower, and apparently without special sculpture ; sinus unknown ; umbilicus open, although not widely so ; mouth oval, with the inner lip reflected somewhat over the umbilicus, but without concealing it.

Obs.—The late Mr. Felix Ratte figured* three univalves from our Lower Palæozoic rocks without assigning specific names to them, nor even generic in the case of two. Whether or no the present shell be one of these I am in doubt, but in some points his fig. 6 is like it, and again in other respects widely divergent ; for instance in the figure quoted there is too great a convexity of the whorls, too elevated a spire, and too prominent a band. At the same time there is the possibility that the two may be identical, allowing for defective drawing.

Mourlonia duni is an exceedingly characteristic species of the Wellington Caves Limestone, and is at present unknown to me from any other horizon. It is named in honour of my former Assistant, Mr. W. S. Dun, to whom I am indebted for much cordial help.

Loc and Horizon—Wellington Caves, N. S. Wales. Siluro-Devonian.

Genus Helicotoma, *Salter*, 1859.

(Canadian Organic Remains, 1859, Dec. I., p. 10.)

HELICOTOMA JOHNSTONI, *sp. nov.*

Pl. xv., Figs. 6 – 8 ; Pl. xvi., Figs. 3 and 4.

Straparollus (Maclurea) tasmanicus, Johnston, Geol. Tas., 1888, t. 5, f. 7 (excl. f. 1 and 1*a*).

Sp. char.—Shell discoid, of about four whorls, each nearly twice the breadth of the preceding ; spire short, wholly depressed

* Proc. Linn. Soc. N. S. Wales, x., 1, 1885, t. 9. f. 6.

below the level of the body whorl, which is traversed on its outer angle by a keel, without nodes, crenulations or echinations, but variable in its degree of prominence and acuteness, on the inner side of the keel the surface of the whorl slopes rapidly away to the suture, with immediately above it a second feeble obtuse keel; on the under side the surface of the body whorl is either gently rounded or flattened, but the inner whorls rounded only ; umbilicus telescopic, but most of the whorls visible ; back in no way concave beneath the keel of the body whorl, but rounded and broadening towards the mouth, the surface loosing much of its convexity. Mouth generally rounded, but slightly insinuated at the keel, and more so along the sutural margin, the upper margin, in other words, retreating towards the shallow notch or insinuation referred to, and the lower edge advancing and insinuated. Sculpture of the upper surface consists of fine obliquely retreating lyrulæ on the inner half of each whorl, and similar advancing lyrulæ on the outer half, giving a faintly V-shaped figure, but on the wide back these lyrulæ become more directly transverse ; on the under surface the lyrulæ describe a sigmoidal curve, becoming much coarser and sub-laminar towards the mouth, the sharpest portion of the curve being immediately above the suture at the obtuse feeble keel.

Obs.—Under the name of *Straparollus tasmanicus*, I feel convinced Mr. R. M. Johnston has included two perfectly distinct shells. His figs. 1 and 1*a*. represent a *Raphistoma* that may be known as *Raphistoma tasmanicum*, Johnston, *sp.*, whilst fig. 7, the subject of the present remarks, appears to me to be a *Helicotoma*, and I therefore propose for it the name of *H. johnstoni*. The specimen now figured was received in a collection of fossils forwarded from the Tasmanian Museum. Pl. xv., Fig. 6, represents the upper side, corresponding to Johnston's fig. 7, whilst our Pl. xv., Fig. 7, is that of the under or umbilical side of the *same* specimen. I am puzzled how to distinguish this from another shell that Mr. Johnston has figured as *Lituites*, sp. indet.,* except that in the latter the transverse laminæ are too coarse for the lines occurring on the under surface of *Helicotoma johnstoni*.

In the faintly V-shaped outline of the sculpture on the upper side, the apex of the V is at the keel of the body whorl, producing a slight notch on the outer lip, after the manner of *Helicotoma*, without in anyway simulating a true sinus. This reflection of the sculpture lines and the presence of the notch distinguish this shell at once from *Polytropis*, De Koninck.

Loc. and Horizon.—Gordon River, West Tasmania. Gordon River Limestone, Lower Silurian.

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* Johnston—Geol. Tas., 1888, t. 5, f. 8 and 10.

Genus Trochonema, *Salter*, 1859.

(Canadian Organic Remains, 1859, Dec. 1, p. 24).

TROCHONEMA ETHERIDGEI, *Johnston*.

Pl. xvi., Figs. 5 and 6.

Trochonema etheridgei, Johnston, Geol. Tas., 1888, t. 5, f. 13 and 14.

Sp. char.—Shell turbinate, of five or six acutely keeled and angular whorls, the principal keel occupying the periphery of each whorl; on the anti-penultimate whorl there are three keels, the first small and thread-like bordering the upper suture, the surface thence to the second keel being tabulate or flat, from the latter to the principal keel slightly oblique and concave, and thence to the lower suture the surface is straight-walled; the penultimate whorl possesses four keels besides the peripheral, the three upper arranged as in the anti-penultimate, whilst between the third and fourth the surface is again straight-walled; the body whorl (somewhat hidden in matrix) probably possessed four also, the peripheral keel being strong and prominent. Sutures excavated. Mouth almost rhomboidal; outer lip strongly angled at the peripheral keel, rounded below; inner lip possibly straight. Umbilicus distinct. Sculpture consisting of oblique sub-imbricating growth lamellæ, faintly varicose along the peripheral keel, and becoming much stronger and rugose towards the mouth on the body whorl.

Obs.—This well marked shell was figured but not described by Mr. Johnston. In his plate explanation the author remarks that *T. etheridgei* is allied to *T. tricarinata*, Meek,* of the Corniferous Group of North America. *T. tricarinata*, Meek, should be known as *T. meekianum*, Miller.† The present shell is readily distinguished from *T. montgomerii*, mihi, by its much more turbinate form, and different arrangement of the spiral keels and sculpture.

Loc. and Horizon.—Gordon River, West Tasmania. Gordon River Limestone, Lower Silurian.

TROCHONEMA MONTGOMERII, *Eth., fil.*

Eunema montgomerii, Eth., fil., Ann. Rep. Secy. for Mines Tas. for 1895-6 (1896), p. xlvii., pl. f. 21 and 22.

Obs.—Since the publication of this species, further examples have been received from the Tasmanian Museum, one with an umbilicus exposed. This will necessitate its removal from *Eunema* to *Trochonema*. The following additional features may be noted:

* Ohio Geol. Report, Pal. I., 1873, p. 218, t. 19, f. 5 *a* and *b*.

† N. American Geol. and Pal., 1889, p. 428.

Each thread-like lyrula of the sculpture is separated from its neighbour by several times its own thickness. the obliquity of the lyrulæ on the upper part of each whorl being changed on the straight-walled portion to a perfectly vertical direction. The upper part of the inner lip, although not forming a callosity, is revolute, slightly projecting over the umbilicus. The aperture was long oval, angled on the outer lip by the principal keel of the body whorl.

Loc. and Horizon.—Gordon River, West Tasmania. Gordon River Limestone, Lower Silurian.

Trochonema? nodosa, *sp. nov.*

Pl. xv., Figs. 9, 10.

Worthenia, sp. nov., Ratte, Proc. Linn. Soc. N.S. Wales, x., 1885, pt. 1, p. 80, t. 9, f. 1 and 2.

Sp. char.—Shell turbinate, but not depressed; whorls more than four (four in part only preserved), the body whorl apparently not free, each whorl horizontal or nearly so on its upper portion around the suture, vertical or straight-walled in the lower; all, except the body whorl, bear two keels, the latter three, the uppermost keel in each case demarcating the two portions of the whorls, and carring a number of blunt nodes, or tubercles, which on the body whorl become of a variciform nature, and more pronounced with the growth of the whorl; the second keel is midway between that just mentioned and the suture, and with the third on the body whorl is nodose also. Mouth generally oval, vertically elongated; outer lip quadrangular; inner lip and minute sculpture not preserved; umbilicus deep and apparently open.

Obs.—Had not Mr. Ratte figured this shell, and referred it to *Worthenia* (with which it has no connection), without a specific name, I should not have noticed it in consequence of its poor state of preservation. I am even doubtful of its proper generic resting-place from the same cause, but *Trochonema*, so far as I can judge, seems to be the most appropriate genus. At the same time it departs from the majority of species referred to the latter by the nodose nature of the encircling keels. There is one species of this genus, however, similarly ornamented—*T. yandellana*, Hall & Whitfield,* from the North American Corniferous Limestone, but otherwise distinct from *T. ? nodosa*. It may even be related to our old friend *Buccinum breve*, Sby., of the British Devonian rocks, and which Whidborne has of late referred† to the recent genus *Liotia*, Gray, without, however, in my opinion, sufficient reason.

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* 24th Ann. Rep. N. York State Cab., 1872, p. 194; 27th *ibid.*, 1875, t. 13, f. 3; Nettelroth, Kentucky Fossil Shells, 1889, t. 20, f. 3.

† Mon. Dev. Fauna S. England, 1892, pt. 4, p. 271.

Loc. and Horizon.—Cave Flat, Murrumbidgee River, N. S. Wales. Cave Flat Limestone, Siluro-Devonian.

Genus Holopea, *Hall*, 1847.

(Pal. N. York, 1847, i., p. 169).

HOLOPEA WELLINGTONENSIS, *sp. nov.*

Pl. xv., Fig. 11; Pl. xvi., Fig. 7–9.

(*Unnamed shell*), Ratte, Proc. Linn. Soc. N.S. Wales, x., 1885, pt. 1, t. 9, f. 3–5.

Sp. char.—Shell ventricose, of six whorls rapidly decreasing in size above the last or body whorl; apex acute; whorls rounded, uniformly ventricose, or almost inflated, very much wider than high, slightly horizontally flattened around the suture; body whorl very much expanded in proportion to the others. Mouth round; outer lip sharp and fine; inner lip straight and slightly thickened. Umbilicus open and deep. Sculpture consisting of a large number of regular, fine, equidistant, sharp revolving threads crossed by others exceedingly fine and oblique, giving rise to a beautiful and minute cancellation; towards the outer lip are a few coarse sub-laminar ridges.

Obs.—This species was figured, although neither named nor described, by the late Mr. Ratte, but his figure shows a revoluted inner lip that is not present in any of our specimens.

A similar flattening of the whorls around the suture is seen in *Holopea obesa*, Winchell.*

H. wellingtonensis is not unlike some forms of *Callonema*, Hall, but possess spiral and growth threads, instead of the latter only, and also lacks the obtuse angularity on the anterior part of the body whorl that is almost always seen in species of Hall's genus. Both *Holopea* and *Callonema* are umbilicated.

Loc. and Horizon.—Wellington Caves, N.S. Wales. Siluro-Devonian.

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* Geol. Wisconsin, 1873–79, iv., 1882, p. 348, t. 27, f. 4.