AN EARLY DEVONIAN GASTROPOD FAUNULE FROM THE MT ETNA BEDS CENTRAL QUEENSLAND

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Gastropods from the uppermost Mt Etna Limestone, central Queensland are represented by eleven taxa including the new taxon *Beuchelia sandsi* sp. nov. Most are imperfectly preserved and hence unidentifiable beyond genus, but do provide notable occurrence data of biostratigraphic importance. Lochkovian-Pragian-gastropod data remains poor for eastern Gondwanaland, but Old World realm affinities are apparent in this faunule. ❐ *Gastropods, Devonian, Pragian, Queensland.*

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Earliest Devonian (Lochkovian-Pragian) gastropods from Australia are poorly known with the exception of a Lochkovian faunule from the Windellama Limestone of NSW (Mawson, Smith & Talent, 2002); partial descriptions of an extensive (Lochkovian-Pragian) fauna from the Garra Limestone (Farrell, 1992) and the late Pragian Lilydale Limestone fauna (Tassell, 1976, 1980). This small faunule recovered from the uppermost Mt Etna Limestone, north of Rockhampton, Queensland represents a small but noteworthy insight into the gastropods of this age from east Gondwanaland.

Mt Etna Limestone has been variously referred to as Mt Etna Beds, Mount Holly Beds or Mt Alma Formation and represent an allocthonous block within the eastern Yarrol terrane. The limestone units contain an extensive coralline fauna, and less common brachiopods have been recovered near the top of the limestone sequence. In addition rare specimens of gastropod were recovered as part of this silicified fauna (QML 1353). Conodonts from the lowermost limestone indicate a Pragian (*sulcatus* CZ) age (Mawson & Talent, pers. comm.) but there is poor age control on the top of the sequence. On the eastern margins of Mt Etna, conformably on the carbonate succession, occurs a clastic unit containing abundant, if poorly preserved gastropods, bivalves and rarer nautiloids. This unit is exposed at Bench 10 within the Mt Etna Limestone mine designated QML1295.

Affinities of this fauna are difficult to gauge given the imperfect preservation. Emsian faunas from New South Wales contain *Coelocylcus*, ?*Coelozone*, *Oehlertia* and members of Gosseletininae (Tassell, 1982). *Ruedemannia (Batteniella)*, *Tremanotus*, from the Lochkovian to Pragian of New South Wales and Victoria (Tassell, 1976; Mawson, Talent & Smith, 2002). Such taxa are typical of old world realm faunas (Cook, 2000) but absence of data from China and other Asian Gondwanaland elements makes precise correlation impossible.

SYSTEMATIC PALAEONTOLOGY

Order AMPHIPGASTROPODA Simroth, 1906

Family BELLEROPHONTIDAE M'Coy, 1851

Subfamily BUCANIINAE Ulrich and Scofield, 1897

Tribe BUCANIIDES Ulrich and Scofield, 1897

Coelocyclus Perner, 1903

TYPE SPECIES. *Bellerophon* (*Coelocyclus*) *rarissimus* by original designation from the Devonian of Bohemia.

Coelocylcus sp.
(Fig. 1A–D)

MATERIAL. QMF37346–37350 from QML1295.

DESCRIPTION. Shell involute, small to medium, maximum width 13.5mm, maximum diameter 17.0mm, slowly expanding; widely doubly phaneromphalous with deep umbilicus, Whorl profile almost quadrate with sharp margin between umbilical zone and peripheral midwhorl; slit narrow and only slightly raised; growth lines

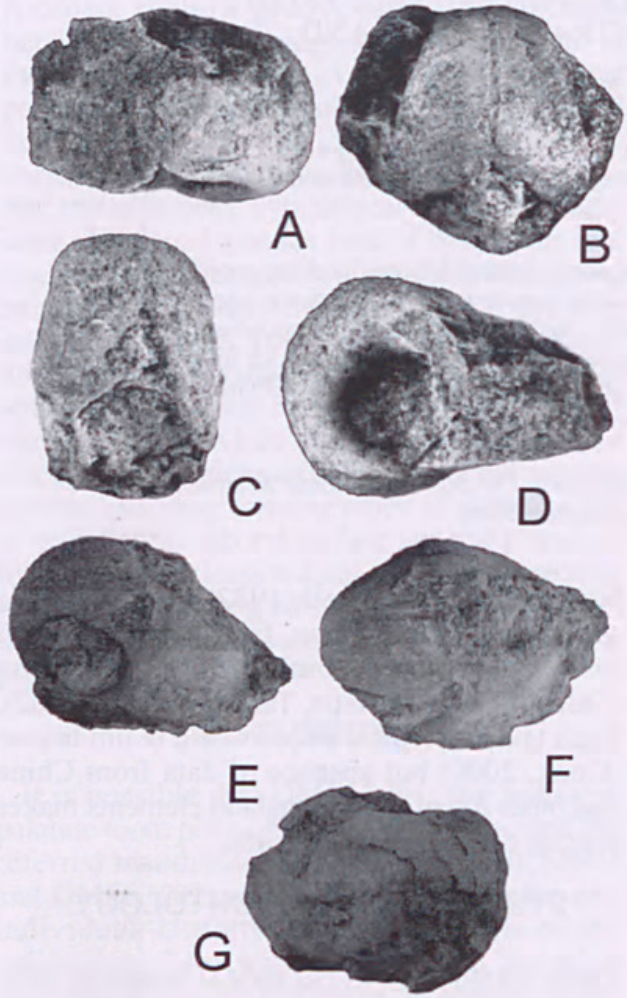

FIG. 1. A–D, *Coelocyclus* sp.; A, B. QMF37346 × 2.3; C, D, QMF37347 × 2.3; E–G, ?*Tremanotus* sp. QMF37342 × 0.6.

very fine and numerous deflected backwards evenly from the margin towards the slit.

REMARKS. The quadrate whorl profile and narrow slit undoubtedly allies the two specimens to *Coelocyclus* Perner. *Coelocyclus hadroni* Tassell, 1982 from the Emsian '*Receptaculites*' Limestone of New South Wales possesses coarser ornament.

The specimens lack the apertural flaring and reticulate ornament of *Bucania* Hall.

Tribe SALPINGOSTOMATIDES Koken, 1925

Tremanotus Koken, 1896

TYPE SPECIES. *Cyrtolites lamillifer* Lindstrom 1884 from the Silurian of Gotland by subsequent designation.

?**Tremanotus** sp.

(Fig. 1E–H)

MATERIAL. QMF 37342, QMF37343 from QML 1295.

DESCRIPTION. Shell large involute, doubly phaneromphalous but poorly preserved specimens; up to 34mm wide, 44mm diameter rapidly expanding and flared at apeture. Margin with trace of line of probable tremata.

REMARKS. Probable tremata suggest placement within the penecontemporaneous *Tremanotus*, well known from the Pragian Lilydale Limestone of Victoria (Tassell, 1976). Etheridge (1888) illustrated a specimen supposedly from the Early Triassic of the Sydney Basin, however the specimen is clearly *Tremanotus*, probably sourced from the Lilydale Limestone. We have been unable to locate the specimen within the Australian Museum collection, and any formal reference to it has been thankfully ignored in the last 117 years.

Order ARCHAEOGASTROPODA Thiele, 1925
MORPHOGROUP 'TROCHOMORPHA'
Family SINUOPEIDAE Wenz, 1938
Subfamily TURBONELLININAE Knight, 1956

Leptozone Perner

TYPE SPECIES. *Pleurotomaria (Leptozone) esthetica* Perner by monotypy from the Lower Devonian Koneprusy Limestone, Prague Basin.

Leptozone sp.

(Fig. 2A–M)

MATERIAL. QMF37887–QMF37896, QMF42094 from QML1295.

DESCRIPTION. Shell medium sized, turbiniform, phaneromphalus up to 14.1mm wide and 14.5mm high with spiral angle of approximately 60°; suture weakly impressed more so on later whorls, located at mid whorl periphery; upper whorl gently rounded meeting suture at about 10° base rounded. Ornament consists of very fine, numerous spiral threads and very fine growth lines. Growth lines slightly prosocline on upper whorl face; deflected at mid whorl forming a shallow sinus.

REMARKS. The shell shape, narrow midwhorl sinus and the fine spiral ornament places the material comfortably within *Leptozone*.

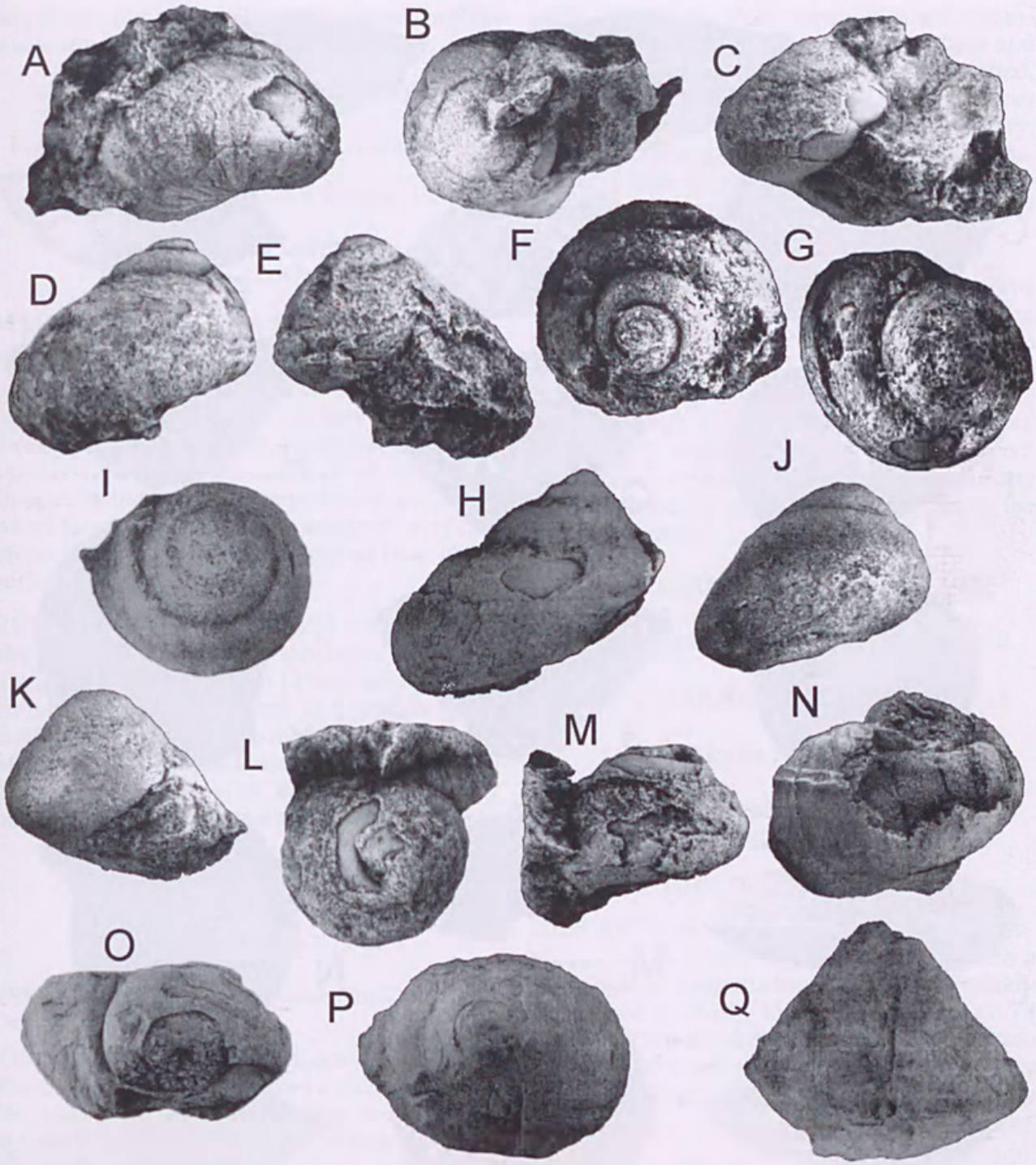

FIG. 2. A–M, *Leptozone* sp. A–C, QMF37895, × 2.5; D–F, QMF37896 ×3.2; G, H, QMF 37887, × 2; I–K, QMF37888 × 2.5; L,M, QMF42094 × 3.5; N,O. *Ceolozone* sp. QMF33805 × 1; P, Q, ?*Oehlertia* sp. QMF33804 × 1.

Family SINUOPEIDAE Wenz, 1938
Subfamily SINUOPEINAE Wenz, 1938

Indet. Sinuopeinae

MATERIAL. QMF48203 from QML1353.

DESCRIPTION. Shell small, low turbiniform, phaneromphalous, 6.2mm wide, 4.5mm high, spire angle approximately 130°; suture impressed; whorls embrace at periphery just below mid whorl; whorl profile rounded; ornament of coarse comarginal rugae which become slightly foliate at the mid whorl; rugae deflected to wide, shallow sinus just below mid whorl.

REMARKS. The shell form and wide sinus indicate clear sinuopeid affinities. Sinus position indicates placement within Sinuopeinae, although no known

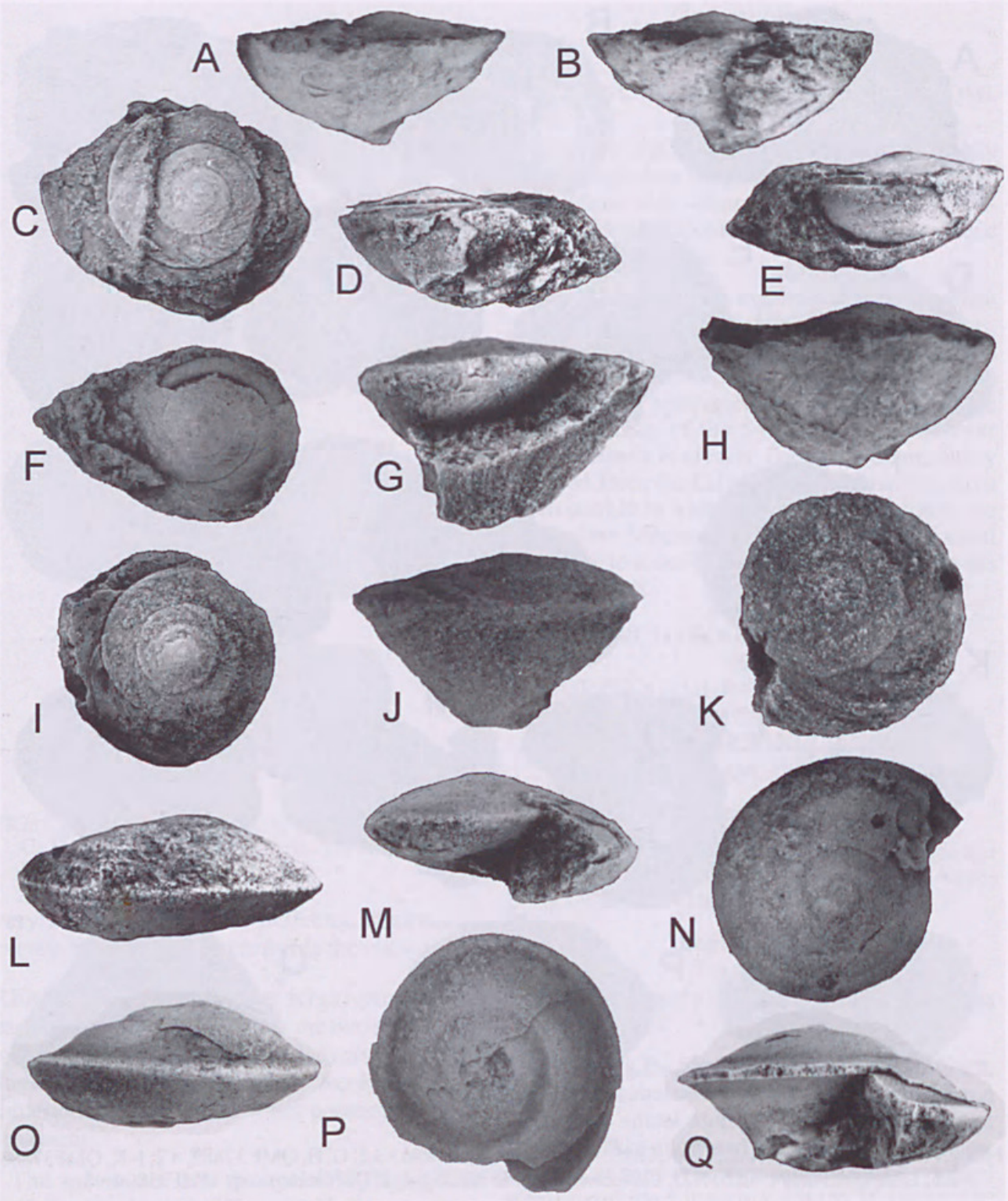

FIG. 3. A–K, *Beuchelia sandsi* sp. nov.; A–C, Holotype QMF37331 × 1.7 side, apertural and apical views; D–F, Paratype QMF37334 × 1.6, apertural side and apical views. G–I, Paratype QMF37333 × 1.4, oblique apertural, side and apical views; J, K, Paratype QMF37332, × 3.5, side and apical views; L–Q Liospirinae indet.; L–N, QMF 33716, × 1.6, side apertural and apical views; O–Q, QMF33717 × 2, side apical and apertural views.

taxa display such foliate ornament. Additional material would elucidate this unusual taxon.

MORPHOGROUP 'SELENIMORPHA'

Family RAPHISTOMATIDAE Koken, 1896

Subfamily LIOSPIRINAE Knight, 1956

Liospirinae indet.
(Fig. 3L–Q)

MATERIAL. QMF33716–8 from QML 1295.

DESCRIPTION. Shell small, narrowly phaneromphalus, lenticular, up to 18mm wide 8mm high with a spiral angle of approximately 140°. Suture weakly impressed to flush, located at peripheral selenizone on angulated midwhorl. Periphery sharper in smaller specimens. Upper and lower whorl faces equally rounded; ornament very fine prosocline growth lines on upper surface, lower surface ornament unknown.

REMARKS. Narrow umbilicus and lenticular shell shape place the specimen close to *Anygomphalus*, but the Mt Etna material lacks a circumumbilical cord. Lack of a gradate upper profile precludes assignment to *Arizonella* Stoyanow, and the material cannot be *Liospira* due to the presence of the umbilicus. Poor preservation prevents generic assignment.

Subfamily RAPHISTOMATINAE
Koken, 1896

Buechelia Schlüter, 1894

TYPE SPECIES. *Beuchelia goldfussi* from the Middle Devonian of Germany.

REMARKS. Heidelberger & Koch (2005) erected *Buechelia nodifera* from the Givetian 'Massenkalk', which is similar to *Buechelia nodosa* Blodgett, 1992 from the Eifelian of Alaska. We are unconvinced that they represent separate taxa.

Buechelia sandsi sp. nov.
(Fig. 3A–K)

DIAGNOSIS. *Buechelia* with very low spired to flat upper surface, lacking nodes at periphery.

ETYMOLOGY. For Noel Sands, for his contribution to the understanding of Mt Etna.

MATERIAL. Holotype, QMF37331. Paratypes QMF37332–40 all from QML1295.

DESCRIPTION. Shell medium sized, anomphalous, inverted conical with narrow base and nearly flat upper surface which is weakly arched, up to 22mm wide, and 14mm high. Sutures barely adpressed to flush, located at periphery. Periphery a sharp angulation bearing selenizone. Upper whorl face with numerous fine cords which are strongly prosocline; Lower whorl face steep forming cone, without ornament.

REMARKS. Clear absence of lower face ornament, flattened upper surface and the inverted wide conical shape place the material within the genus. It differs from the type species *B. goldfussi* Schlüter from the Givetian of Germany by having a lower profile on the upper surface. *B. nodosa* Blodgett (=*B. nodifera* Heidelberger & Koch) from the Eifelian of Alaska and Givetian of Germany possess peripheral nodes which are absent in the Mt Etna material.

Family EOTOMARIIDAE Wenz, 1938

Subfamily EOTOMARIINAE Wenz, 1938

Tribe PTYCHOMPHALIDES Wenz, 1938

Oehlertia Perner, 1907

?**Oehlertia** sp.
(Fig. 2P, Q)

MATERIAL. QMF33804 from QML1295.

DESCRIPTION. Shell conical, trochiform, anomphalus, up to 22mm high, 16mm wide with a spre angle of approximately 45°; suture weakly impressed to flush, located at lower part of periphery which bears a slit bordered by two low cords. Growth lines fine numerous, slightly prosocline from suture to periphery. Base gently rounded.

REMARKS. Poor detail of growth lines and the slit prevents accurate assessment, but the shell shape and wide peripheral selenizone suggest *Oehlertia* Perner 1907.

Family LOPHOSPIRIDAE Wenz, 1938

Indet. Lophospiridae aff. **Lophospira** sp.
(Fig. 4A–I)

MATERIAL. QMF33377, QMF33376, QMF33374, QMF33807, QMF33808, QMF33809, QMF33897, QMF33887 from QML1295.

DESCRIPTION. Shell high-turbiniform, anomphalus somewhat gradate, up to 27mm high, 19mm wide with a spiral angle of; whorl profile angular with upper whorl face consiting of prominent subsutural ramp flattening to a strong peripheral carina. Lower whorl face rounded with prominent cord below periphery. Suture impressed; whorls embrace below periphery at prominent cord; growth lines fine and numerous; sinus on carina. Aperture rounded but elongate with lower part of lip slightly tapered.

REMARKS. The material falls within a poorly understood complex of genera within the selenimorphs of Lophospiridae, which trace out a complex Ordovician-Carboniferous history through *Lophospira*, *Ruedemannia*, *Worthenia* and their constituent subgenera. Frýda & Manda (1997) confirmed the validity of *Ruedemannia (Hanusispira)* Horný and erected *Ruedemannia (Batteniella),* as taxa within this complex, but both subgenera have additional spiral ornament in comparison to the Mt Etna material. *Lophospira* Whitfield (Ordovician to Silurian) compares well with the Mt Etna material. Strong homeomorphy with *Lophospira*, a reduction in upper whorl face cords and disappearance of lower whorl face cords, not forming nodes (as in *Worthenia*), is a simple and highly likely variation within the group. It is possible that instead of secondary homeomorphy, the taxon represents a holdover of *Lophospira* itself.

Subfamily RUEDEMANNIINAE Knight, 1956

Rüedemannia Foerste, 1914

Ruedemannia (Battenella)
Frýda and Manda, 1997

?**Ruedemmannia (Batteniella)** sp.

MATERIAL. QMF48205 from QML1353.

DESCRIPTION. Shell small, high turbiniform, up to 3.5mm high, 2.6mm wide; spire angle approximately 40°; suture impressed, whorls meet just below mid whorl; upper whorl face meets suture at approximately 20° from horizontal; midwhorl flattened with suggestion of selenizone. Weak traces of prominent spiral cords are only preserved ornament on these poorly preserved specimens.

REMARKS. The shell form and remnants of spiral cords suggest placement in *Ruedemannia (Batteniella)* but this is not certain given the poor preservation. The subgenus has been recorded in New South Wales (Mawson, Smith & Talent, 2002).

Family GOSSELETININAE Wenz, 1938

Subfamily COELOZONINAE Knight, 1956

Coelozone Perner, 1907

Coelozone sp.
(Fig. 2 N–O)

MATERIAL. QMF33805 from QML1295

DESCRIPTION. Shell turbiniform, 32mm wide, approximately 32mm high, apex missing; spire angle approximately 40°; suture impressed; whorls meet at upper margin of selenizone slightly above midwhorl. Shell thick Whorl profile strongly rounded; base rounded, anomphalous. Selenizone slightly above periphery just above midwhorl, wide and convex within two strong bordering spiral cords. Growth lines fine, numerous prosocline on upper whorl face, slightly prosocline below, deflected deeply into selenizone. Apex and protoconch unknown.

REMARKS. Width and location of the selenizone, the shell shape and places the specimen within the *Coelozone* Perner 1907. The specimen is slightly higher-spried than the type species P*leurotomaria (Coelozone) verna*, but cannot be specifically assigned.

Order STYLOGASTROPODA
Frýda and Bandel, 1997

Family LOXONEMATIDAE Koken, 1889

Katoptychia Perner, 1907

TYPE SPECIES. *Katoptychia alba* Perner 1907, from the Lower Devonian of the Prague basin, by subsequent designation.

?**Katoptychia** sp.
(Fig. 4 J-M)

MATERIAL. QMF37344, QMF37345 from QML1295.

DESCRIPTION. Shell, medium sized, high spired approximately 18mm high, 5mm wide with spire angle of approximately 15°. Suture nearly flush, whorls embrace at periphery which is low on the flattened whorl face. Base anomphalous. Ornament lacking.

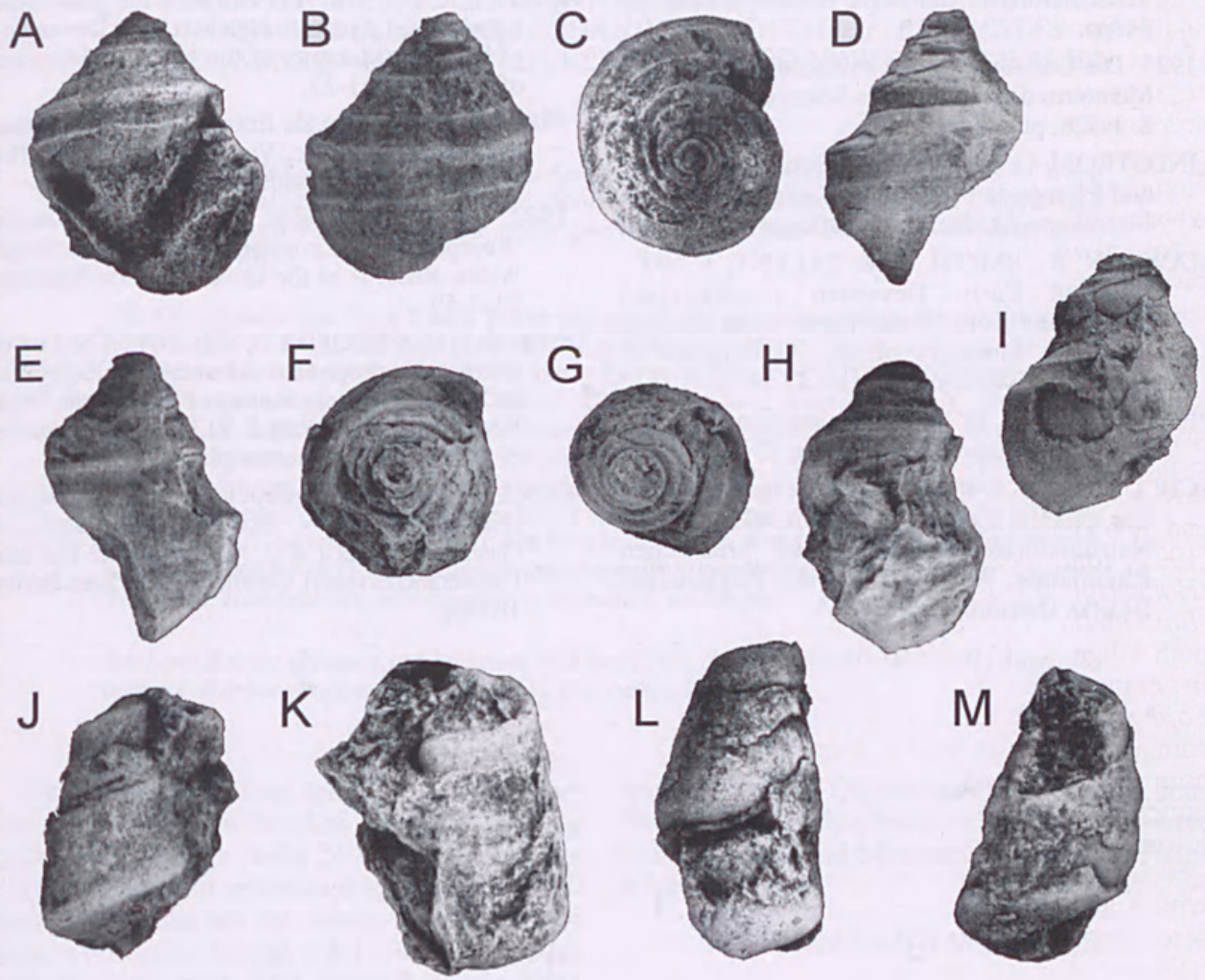

FIG. 4. A–I, Indet. Lophospiridae aff. *Lophospira* sp. A–C, QMF33373 × 1.6. D–F, QMF33803 × 1.3. G–I, QMF33375 × 1. J–M, *?Katoptychia* sp. J, K, QMF37344 × 2. QMF37345 × 2.

REMARKS. The characteristic whorl profile suggests the genus but lack of ornament prevents accurate assignment.

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