

ART XIV.—*On some Trilobites and Brachiopods from the Mount Isa District, N.W. Queensland.*

By FREDK. CHAPMAN, A.L.S., F.G.S.

(Commonwealth Palaeontologist, National Museum, Melbourne.)

(With Plates XXI., XXII.)

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The following are descriptions of a small but very interesting series of Cambrian Trilobites and Brachiopods, collected by Messrs. Campbell Miles and E. C. Saint-Smith, from the head of the Templeton River, twelve miles west of Mount Isa, and from Thornton River, NW. Queensland. These fossils were submitted to me for examination through the courtesy of Mr. B. Dunstan, F.G.S., Government Geologist of Queensland. Included in these descriptions is a specimen, viz., *Marjumi* *conspicabilis*, submitted later by Mr. Campbell Miles, and now incorporated in the Queensland Collection.

The specimens were received with other fossils (Ordovician), on 14/4/25, and a preliminary report was furnished, 7/5/26, which, however, was not published. Since writing this report I have been able to devote more time to the study of these fossils, and in some cases the former tentative determinations have been somewhat modified. Their generic affinities are such as to confirm the horizon in which they are found, as being of Middle to Upper Cambrian age. The genera and species herein described are as follows:—

BRACHIOPODA:—

- Lingulella marcia* Walcott, var. *templetonensis*, nov.
- Acrothele bulboides*, sp. nov.

TRILOBITA:—

- Agnostus chinensis* Dames.
- Bathyriscus saint-smithii*, sp. nov.
- Bathyriscus nitidus*, sp. nov.
- Bathyriscus olenelloides*, sp. nov.
- Marjumi milesi*, sp. nov.
- Marjumi conspicabilis*, sp. nov.
- Marjumi elegans*, sp. nov.
- Dikelocephalus dunstani*, sp. nov.
- Milesia templetonensis*, gen. et sp. nov.

Phylum MOLLUSCOIDEA.

Class BRACHIOPODA.

Order ATREMATA.

Family OBOLIDAE.

Genus *Lingulella* Salter.

LINGULELLA MARCIA Walcott, var. TEMPLETONENSIS, nov.

(Plate XXI., Figs. 1, 2.)

Lingulella marcia Walcott, 1911, pp. 74-75, pl. xiv., figs. 3, 3a. Id., 1913, p. 69, pl. ii., figs. 6, 6a.

Observations.—This new varietal form is distinguished by its large size, compared with the type species. There are two examples in the present series. One is an internal cast of a pedicle or ventral valve, showing umbonal and lateral scars. The characteristic divergent striae of this specific form are even impressed on this cast, as was also shown in the internal shell surface figured by Walcott (*loc. cit.*) from a Chinese example. The outline of this Queensland specimen represents the internal surface of a shell of the narrower variety of *Lingulella marcia*. This agrees with the figure 6d of Walcott's series from the Middle Cambrian of China. The internal striae and pedicle channel are very distinctly seen, and the shell is of porcellaneous whiteness on a yellow matrix.

Dimensions.—Length, 14.5 mm.; width, 11.5 mm.

The length of the typically broad form of *Lingulella marcia* from the Cambrian of China, figured by Walcott on his pl. ii., fig. 6e, is 3 mm. On account of the large dimensions of our specimens we are justified in regarding the Queensland form to be at least varietal to the Chinese species, and have therefore named it as a local variety.

Occurrence.—Twelve miles west of Mt. Isa, head of Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith, July, 1924.

Order NEOTREMATA.

Family ACROTHELIDAE.

Genus *Acrothele* Linnarsson.

ACROTHELE BULBOIDES, sp. nov.

(Plate XXI., Figs. 3-5.)

Description.—Shell slightly wider than long, rounded to almost subquadrate. Ventral valve with a fairly long hinge-line; anterior border rounded and meeting the hinge-line at a decidedly sharp angle. Posterior sloping away to the anterior border. The tumid area occupied by a deep subquadrate fossette indicating the pedicle opening, whilst towards the hinge-line there is the usual

V-shaped depression common to the genus. The shell-structure is corneous and glossy and generally white, whilst the surface is concentrically marked with very fine growth lines. Dorsal valve slightly convex to flat, broadly rounded, with fine concentrically marked surface, the striae on which are seen to slightly undulate or even anastomose.

Dimensions.—Length of holotype (ventral valve), 3.5 mm.; width, 4 mm.; height, circ. 1 mm. Length of paratype (dorsal valve), 5 mm.; width, 5.5 mm.

Observations.—From the relative tumidity of the ventral valve it might appear that the relationship of the above species was with *Acrotreta* rather than *Acrothele*. The broadly expanding anterior area, however, shows it to belong to the type of *Acrothele* represented by Walcott's *A. matthewi*, var. *eryx*, from the Middle Cambrian of China (Walcott, 1913, p. 73, pl. iii., figs. 6, 6a-h). *Acrothele bulboides* differs in the greater tumidity of the pedicle area and in the practical absence of radial surface striae. From *Micromitra* the above form is distinct in the position of the pedicle opening, although at first sight the shells appear to belong to that genus, as indicated on the Field List supplied with this collection.

Occurrence.—Twelve miles west of Mount Isa, head of Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith, July, 1924.

Phylum ARTHROPODA.

Class TRILOBITA.

Order HYPOPARIA.

Family AGNOSTIDAE.

Genus *Agnostus* Brongniart.

AGNOSTUS CHINENSIS Dames.

(Plate XXI., Fig. 6.; Pl. XXII., Fig. 20.)

Agnostus chinensis Dames, 1883, p. 27, pl. ii., figs. 18, 19. Walcott, 1913, p. 99, pl. vii., figs. 4-6, 6a.

Observations.—Three pygidia occur on two of the chips under field No. 26 of the present collection. They agree specifically in having a semi-circular border with a sub-acuminate axial lobe; there is also a sub-central tubercle adjacent to a transverse and slightly curved ridge. On each side of the margin of the pygidial border, towards the posterior third, there is an obscure and blunt spine.

A species of the genus *Agnostus*, viz., *A. elkedraensis* Eth. fil., has already been recorded from the same area, by Dr. Whitehouse in his "Note on a Collection of Cambrian Trilobites from the South Templeton River, Queensland" (Whitehouse, 1927). *A. elkedraensis*, according to Etheridge jun., who described it from the Barkley Tableland, has no lateral pygidial spines, but differs

from the present species in having a transversely divided pygidial lobe with a tubercle on the anterior portion, whilst the lateral spines are more posteriorly situated. Etheridge's comparison of *A. elkedraensis* with *A. acadicus* of Hartt, shows it to be distinct from the Thornton River form here referred to *A. chinensis*.

Dimensions.—Plesiotype, length of pygidium, 2.75 mm.; greatest width, 2.5 mm.

Occurrence.—Found in whitish porcellanised rock with iron-stains, Thornton River, NW. Queensland; collected by Mr. Campbell Miles.

Order OPISTHOPARIA.

Family BATHYURIDAE.

Genus *Bathyuriscus* Meek.

BATHYURISCUS SAINT-SMITHII, sp. nov.

Description.—(Based on type, collected by Mr. D. Smith.) Form of carapace roundly ovate. Head broadly rounded, with solid and lengthened genal spines extending to the line of the third thoracic ring. Glabella prominent, well-rounded in front, straight at sides. Fixed cheeks and palpebral lobes semicircular and strongly curved. Frontal limb finely lineate, increasing in strength towards the genal angles. Transverse furrows of the glabella well-marked. Neck-ring distinct, apparently without spine.

Thoracic segments twelve, narrow, with sillon. The segments of the lobe broad and well defined, with indications of a short basal spine. At junction with the axial furrows the surface of the pleura rise to tubercles which may have supported the short spines. Extremities of pleura terminate in short backwardly curved spines. Pygidium comparatively small, semicircular, consisting of four segments, with a terminal ovate axial lobe.

Dimensions.—Length of carapace, 48 mm. Width of cephalon measured at the genal angles, 35 mm. Length of cephalon, 17 mm. Length of thorax, 23 mm. Length of pygidium, 8 mm. Greatest width of axial lobe, 9.25 mm.

Observations.—The nearest related species to the above is perhaps *Bathyuriscus anax* Walcott, which occurs in the Middle Cambrian of Salt Lake Country, Utah. Although agreeing in general form and character, the present species differs from *B. anax* in having twelve instead of eight thoracic segments, and in having longer genal spines. The carapaces are often so abundant that one lies upon the other and they appear to have drifted into a closely packed pool. The rock in which they are found varies from a whitish tuff-like and silicified sediment to a similar hard rock much stained with iron, varying from yellowish to perhaps brown.

Occurrence.—This handsome species is by far the commonest trilobite in the Mount Isa Cambrian series. Twelve miles west of Mount Isa, at the head of the Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith. Also the holotype by D. Smith, per E. H. Muir (presented to the Commonwealth Collection). Named in honour of Mr. E. C. Saint-Smith.

BATHYURISCUS NITIDUS, sp. nov.

(Plate XXI., Fig. 9.)

Description.—Carapace elongate-ovate. Cephalon rounded, paraboloid, with slender, dependent genal spines. Glabella rather narrow, long, and with four well-marked transverse furrows. Frontal limb sulcate within the margin, becoming finely grooved towards the genal spines. The fixed cheeks and the palpebral lobes wide and expanded, margined by a lunate crest. Neck-ring well developed. Thoracic segments probably eight, very narrow, the pleura terminating in sharp spines. The axial lobe is about half the width of the thoracic lobe. Pygidium unknown.

Dimensions.—Length of cephalon, 6 mm. Width at genal angles, 11 mm. Width of thorax, circ. 9.5 mm.

Observations.—This neat little species appears to find some relationship with *Bathyriscus rotundatus* (Rom.), which is found in the middle and base of the Upper Cambrian in the Mount Stephen district, British Columbia (see Walcott, 1916, p. 346, pl. xlvii., fig. 2, 2a,b). Thus the present form has similarly sharp genal spines and thoracic margins, whilst the shape of the glabella is also identical. On the other hand our species has more widely expanded fixed cheeks.

Occurrence.—A single specimen found 12 miles west of Mount Isa, at the head of the Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith.

BATHYURISCUS OLENELLOIDES, sp. nov.

(Plate XXI., Fig. 10.)

Description.—Form of carapace elongate-ovate. Cephalon broadly semicircular. Glabella roundly expanded in front, concave laterally; border of fixed cheeks strongly convex, with the palpebral lobes small and lunate. Genal spines long and divergent. Thorax of 10 segments, narrow, with sharply terminated pleura. Pygidium obscurely preserved and apparently small, rounded at extremity.

Dimensions.—Height of cephalon, 9 mm. Approximate width at genal angle, 20 mm. Length of thorax, 14 mm. Height of pygidium, circ. 3.5 mm.

Observations.—This is a much larger form than *B. nitidus*, which occurs on the same slab, and further differs from it in its

broader carapace and strongly divergent genal spines. This latter character suggested the trivial name *olenelloides*. This type of cephalon is also seen in *Bathyriscus primus* (Walcott, 1916, p. 352, pl. xlv., fig. 6d), from the Lower Cambrian, Alberta, Canada, which otherwise differs in having a shorter carapace with fewer thoracic segments.

Occurrence.—A single individual on a slab of white porcelainous shale with *B. nitidus*, sp. nov., 12 miles west of Mount Isa, at the head of the Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith.

Family OLENIDAE.

Genus **Marjumia** Walcott.

MARJUMIA MILESI, sp. nov.

(Plate XXI., Fig. 11.)

Description.—Cephalon (glabella and fixed cheeks only). Glabella elongate-ovate, broad anteriorly, and at the base with moderately well-marked transverse furrows. Border of fixed cheeks subcircular with a small palpebral lobe at the posterior lateral angle. Pygidium transversely ovate, the lateral margin curving outwardly and downwards, forming conspicuous falcate or sickle-shaped spines. Posterior lateral margins continued to basal extremity, entire but for a small blunt posterior spine on each side of the flattened concave border of the pygidial extremity. The pygidium has four segments. Pygidial axis moderately convex, flattened towards the posterior excepting at the extreme end, which is swollen. The flattened pygidial border below the extremity of the pygidial axis has the surface finely and concentrically furrowed as in both *Bathyriscus* and *Dikelocephalus*.

Dimensions.—Height of cephalon (paratype), 13 mm. Glabella at widest part, 6.5 mm. Pygidium (holotype), length, 12.75 mm. Greatest width above principal spines, 27 mm. Length of pygidial axis, 8.5 mm. Width of axis at junction of thorax, 8.5 mm. Width of posterior extremity, 5 mm. Width of pygidial border at posterior extremity, 4.25 mm.

Observations.—Several of the species of the genus *Marjumia* which Dr. Walcott has described from the Middle Cambrian of Millard County, Utah (Walcott, 1916, p. 402, pl. lxx., fig. 3b), have points of agreement with the above species, but differ in some essentials. Thus the pygidia figured by that author as *Marjumia callas* have the lateral spines falcate, but the pygidial extremity is rounded and not obtusely concave. Another species, which was not determined by Walcott, but placed under *Bathyriscus* and compared with *Marjumia callas* (Walcott, 1916, p. 348, pl. lxx., fig. 5), and in the text with *Bathyriscus adaeus*, is even closer in pygidial characters.

Occurrence.—12 miles west of Mount Isa, at the head of the Templeton River; collected by Messrs. Campbell Miles and E. C. Saint-Smith.

MARJUMIA CONSPICABILIS, sp. nov.

(Plate XXII., Fig. 13.)

Description.—Holotype, consisting of large part of thorax and pygidium, shows the carapace to be of large size, and of a long-ovate form. The thorax has the lateral margins broadly rounded, and the 14 segments of the genus are represented. The longitudinal axis is wide, and tapers only slightly towards the pygidium. It is on this depressed area that the ends of the pleura separate into salient backwardly directed spines. The last of the series belongs to the anterior segments of the pygidium, where it represents the falcate spine typical of the genus *Marjuma*. The thoracic segments are fairly narrow, and the pleura are each marked by a conspicuous diagonal sillon. The pygidial border in the specimen is not sufficiently well preserved to indicate the number of spines it carries, but there is an indication of at least one pair of spines below the anterior, falcate ones. The pygidial margin is finely, concentrically striate, as in *M. milesi*.

Dimensions.—Length of thorax, circ. 34 mm. Greatest width of carapace, 47 mm. Length of pygidium, circ. 11 mm. Greatest width, 26 mm.

Observations.—Apparently the only species comparable with *Marjuma conspicabilis* is *M. typa* Walcott. The carapace of the Shepherd Creek species, however, is more broadly ovate, and the marginal depression of the pleura and pygidium is more pronounced. The longitudinal axis in *M. typa* is much narrower, and the axial furrows are nearly straight. The spinose ends of the pleura in *M. typa* are sharper and more salient than in *M. conspicabilis*, where they curve rather suddenly towards the posterior. The axis of the pygidium in *M. typa* is proportionately longer than in *M. conspicabilis* and its marginal border has apparently a large number of spines.

Occurrence.—Shepherd Creek, near Miles Creek, north branch of the Templeton River, NW. Queensland; presented to the Geological Survey of Queensland by Mr. Campbell Miles.

MARJUMIA ELEGANS, sp. nov.

(Plate XXII., Figs. 14-16.)

Description.—Carapace rather small, broadly ovate anteriorly, tapering posteriorly; cephalon broadly semi-circular, with a pyriform and anteriorly expanded glabella. Outer limb grooved internally, and finely longitudinally, sulcate towards the genal angles. Genal spines moderately long, dependent. Thorax consisting of 14 segments. Pleura comparatively narrow, grooved diagon-

ally, spinose at the curved extremities. Pygidium comparatively small, consisting of four segments, and bearing four pairs of lateral, somewhat hook-shaped spines. Axial furrows somewhat deeply impressed and straight.

Dimensions.—Length of carapace, 27 mm.; width of cephalon, 21 mm. Greatest width of thorax, 18 mm. Length of pygidium, 6 mm.

Observations.—This species is perhaps the commonest of the genus here described, and the holotype has been selected from a complete carapace (No. 13A, Queensland Collection). The diagnostic characters have been based on additional specimens, among which are some well preserved cephalae and pygidia. In the pygidial characters the species also resembles *M. typa* Walcott, already referred to, but the carapace, as a whole, is a rather different form.

Occurrence.—12 miles west of Mount Isa, at the head of the Templeton River. Also occurring in a collection from Mr. Campbell Miles, from Shepherd Creek, near Miles Creek, north branch of Templeton River.

Family DIKELOCEPHALIDAE.

Genus *Dikelocephalus* Owen.

DIKELOCEPHALUS DUNSTANI, sp. nov.

(Plate XXII., Figs. 17, 18.)

Description.—Based on remains of cephalon and pygidium. Cephalon, large, broad, the cranidium showing an expanded glabella, extending to the frontal margin. On either side, the frontal limb gradually expands towards the genal angle. The glabella with four transverse furrows. Palpebral lobes of the fixed cheeks wide and strongly curved. Pygidium broad, almost flabellate, with a short pygidial axis, almost triangular in outline, with four segments. Marginal border of the pygidium broad in outline and conspicuously incised with fine linear grooves. At the lateral posterior angles there are two large falcate spines which more closely approximate to one another than in *D. minnesotensis*. On the posterior segment of the pygidial axis is an indication of an incipient spine, sometimes also seen in the genus *Saukia*.

Dimensions.—Height of cranidium, 24 mm.; width of cranidium, including palpebral lobes, 30 mm. Length of pygidium, measured from the tips of the spines, 22 mm. Width of pygidium, circ. 44 mm. Average width of marginal flange, 8 mm.

Observations.—This species resembles *D. minnesotensis* Owen, in general characters. The glabella, however, is more globosely expanded in the present species, whilst the pygidial spines are situated near the axis. This species is named in honour of the

Government Geologist of Queensland, Mr. B. Dunstan, F.G.S., through whose courtesy I received the fossils for reporting upon.

Occurrence.—Thornton River, NW. Queensland; collected by Mr. Campbell Miles.

Genus *Milesia*, gen. nov.

(For generic characters, see Observations *infra*.)

MILESIA TEMPLETONENSIS, sp. nov.

(Plate XXII., Fig. 19.)

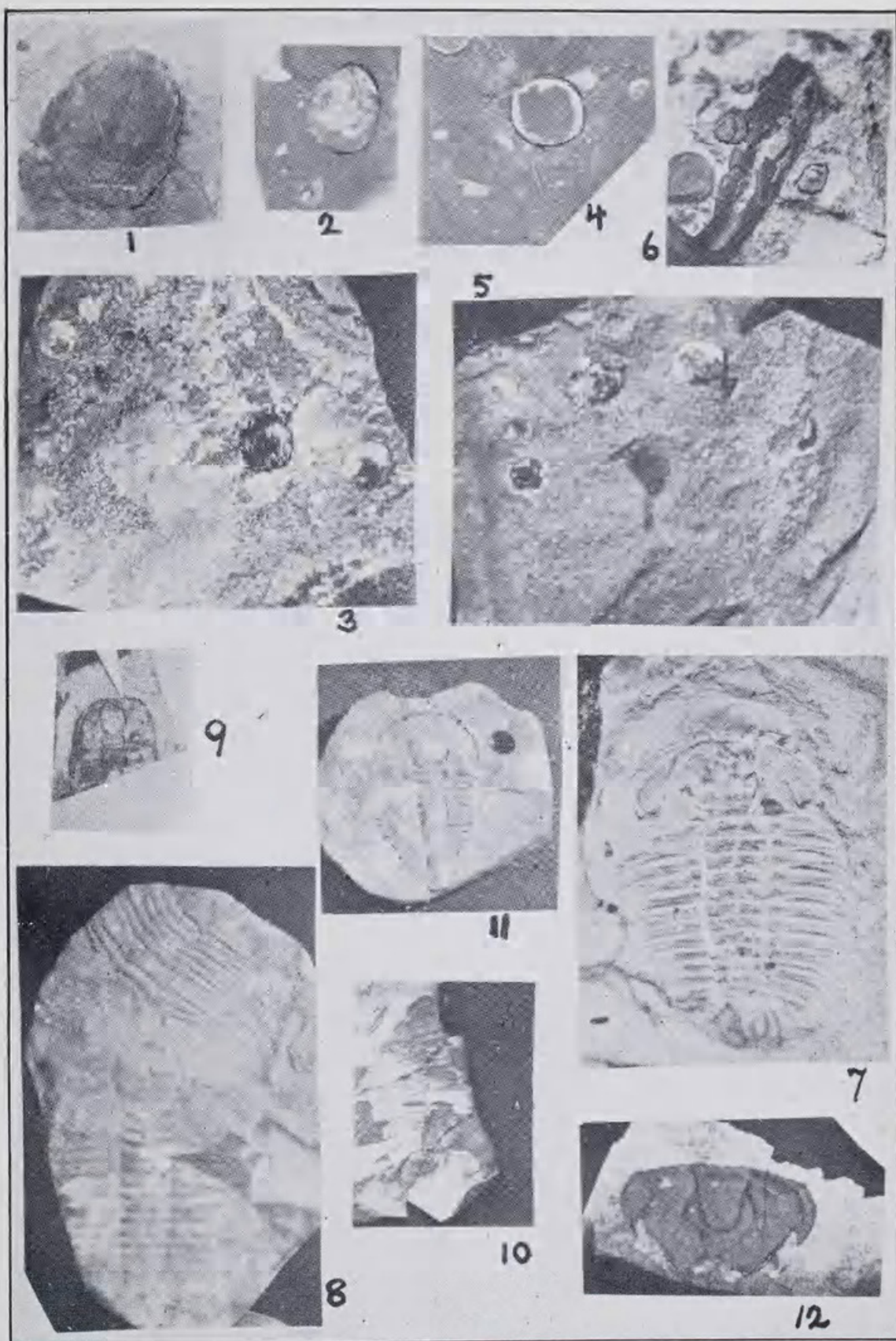
Description.—Holotype, of a nearly complete specimen. General form elongate ovate. Cephalon transversely ovate, showing cranium with large palpebral lobe. The frontal limb is wanting, but the free cheeks are well represented in outline by a sunken impression of a broad head-shield with short and stoutly falcate genal spines. The axial lobe with indication of the two basal transverse furrows, the posterior furrow strong, extending across the glabella. Thorax with 12 well-marked segments. Axial lobe moderately convex. Pleural lobes flattened, each segment having a distinct transverse furrow to the spinous margin. Pygidium semicircular, well rounded basally, with a deep, depressed flange radially furrowed and transversely wrinkled, and with traces of the strong pygidial spine near thoracic suture. Axial lobe of pygidium tapering distally to a point and pinched or rigid at apex. Lateral lobes of pygidium flattened, numbering about five.

Dimensions. — Approximate height of cephalic shield, 20 mm.; width of cephalic shield, including free cheeks, 42 mm. Height of thoracic series, 34 mm. Greatest width of thorax, 40 mm. Height of pygidium, circ. 18 mm. Greatest width of axial lobe, 13 mm.

Observations.—This handsome form shows some relationship to *Dikelocephalus*, but it is better to refer it to a new genus. This is named in honour of one of the discoverers of this interesting collection, Mr. Campbell Miles.

The furrowed glabella and the large number of thoracic segments—12—separate *Milesia* from *Bathyriscus*, which it otherwise resembles. The expanded base of the pygidium also agrees with *Dikelocephalus*. In *Marjumi* the glabella is narrower and not so conspicuously furrowed, though the number of thoracic segments agrees in that particular. The genal spines are not so slender and prolonged as in *Dikelocephalus*, but more nearly resemble those of *Bathyriscus*.

Occurrence.—Preserved in sub-cherty shale of a whitish tint, iron-stained on joints and showing as a brown chert on a fractured surface. 12 miles west of Mount Isa, at the head of Templeton River, NW. Queensland (Queensland Geol. Survey Coll.).



F.C. photo.

Cambrian Fossils. Mt. Isa, Queensland.



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