

- Haas, W., 1968: Trilobiten aus dem Silur und Devon von Bithynien (NW-Türkei). -*Palaeontogr.*, A, **130**, (1—6).
- Kobayashi, T., 1957: Notes on two Devonian trilobites from the Kitakami mountains in Japan. -*Jour. Fac. Sci. Univ. Tokyo, Sec. 2*, **11**, (1).
- and Hamada T., 1971: Silurian trilobites from the Langkawi Island, North-west Malaysia, with notes on the Dalmanitidae and Raphiophoridae. -*Geol. Pal. SE Asia*, **9**.
- and ———, 1974: Silurian Trilobites of Japan in comparison with Asian, Pacific and other faunas. -*Palaeont. Soc. Japan Spec. Pap.*, (18).
- Lane, P. D., 1972: New trilobites from the Silurian of North-east Greenland, with a note on trilobite faunas in pure limestones. -*Palaeont.*, **15**, (2).
- Lütke, F., 1965: Zur Kenntniss herzynischer Trilobiten aus dem Unter- und Mitteldevon des Harzes. -*Palaeontogr.*, A **124**.
- Moore, R. C. (Editor), 1959: Treatise on Invertebrate Palaeontology, pt. O., Arthropoda I. -*Geol. Soc. America & Univ. Kansas Press*.
- Pribyl, A. & Vaněk, J., 1971: Studie über die Familie Scutelluidae Richter und Richter (Trilobita) und ihrer phylogenetische Entwicklung. -*Acta Univ. Carolinae, Geol.*, **4**.
- Sinclair, G. W., 1949: The Ordovician trilobite *Eobronteus*. -*J. Paleont.*, **23**, (1).
- , 1949: Footnotes to *Eobronteus*. -*Ibid.*, **23**, (5).
- Snajdr, M., (1957) 1960: A study of the family Scutelluidae (Trilobitae). -*Rozprawy Ustr. ust. geol.*, **26**.
- , 1972: *Radioscutellum* nov. gen. from the Lower Palaeozoic of Bohemia (Trilobita). -*Vestník Ustr. ust. geol.*, **47**, (5).
- Tschernysheva, N. E. et al., 1960: Trilobita in "Osnovy Palaeontologii". (In Russian)

TWO NEW THYSANOPELTIDAE TRILOBITE GENERA FROM LOWER SILURIAN OF WESTERN HUNAN

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Summary

Two new genera, *Ciliscutellum* and *Sangzhi-scutellum*, were collected from the Lower Silurian of western Hunan by Y. R. Liu and the writer respectively. *Ciliscutellum* was found in association with *Glyptograptus* sp., *Monograptus* sp. and ophiuroids from a horizon consisting of dark grey fine sandstone and yellowish green shale, beneath which *Pristiograptus*, *Monograptus*, *Rastrites* and *Climacograptus* have been found, while *Sangzhi-scutellum* was based on *Meianillaenus flabelliforme* Liu, 1982.

Description of new genera and species

Family Thysanopeltidae Hawle et Corda, 1847

***Ciliscutellum* gen. nov.**

Diagnosis: Dorsal shield elliptical in outline. Cephalon semicircular excluding the genal spines, moderately convex. Cranidium subquadrate in

outline. Glabella contracted in the middle of the posterior portion, strongly expanded forwards, rounded at anterolateral corners and reaching the anterior margin of cranidium, broadly rounded in front, with 3 pairs of lateral glabellar impressions. Occipital ring almost uniform in width (sag. and exsag.), trapezoidal in shape. Occipital furrow shallow and broad. Dorsal furrows narrow and distinct, preglabellar furrow very shallow, with a pair of alae-like scars on the inner side close to the dorsal furrows opposite the contracted posterior portion of glabella. Palpebral lobes medium-sized, placed behind the mid-length of cranidium. Eye ridges distinct, oblique. Fixed cheeks narrow (tr.) in front, widening backwards from the palpebral lobes. In the preocular area a pair of shallow furrows running obliquely backwards and outwards from both sides opposite the broadest portion of glabella parallel to the anterior margin of cranidium. Posterolateral limbs

small and narrower (tr.). Anterior section of the facial sutures long, diverging from the anterior end of the palpebral lobe, then turning inwards to cut the anterior border at a rounded angle; posterior section very short, running obliquely outwards and backwards. Free cheek subtriangular; lateral border broad, extending directly backwards and slightly outwards into a long and thin genal spine. Thorax composed of 10 segments. Pygidium slightly convex, semicircular in outline. Axis subtriangular in outline, gently convex, with 4 rings each ornamented by paired tubercles and a terminal piece. Pleural lobe divided by shallow pleural furrows into 6 pairs of pleural ribs and a median rib. On the posterior portion of the median rib occurring a narrow longitudinal ridge. Border flat and smooth. Surface of dorsal shield ornamented with fine lines.

Type species: *Ciliscutellum ciliensis* sp. nov.

Discussion: The new genus differs from *Eobronteus* Reed, 1928, in the longer glabella almost reaching the anterior margin of the cranidium, the narrower (tr.) posterolateral limbs, the long and narrow genal spines and the presence of a longitudinal ridge behind the pygidial axis. It differs from *Lamproscutellum*, Yin 1980, which is distinguished by the well defined three pairs of glabellar furrows, the presence of a pair of small tubercles on both sides of occipital furrow, the semi-elliptical instead of elongate pygidium, the conical axis with distinct axial rings, the 7 pairs of pleural ribs with a bifurcated median rib, and the absence of a pygidial border. *Ciliscutellum* also differs from *Protobronteus* Snajdr, 1960, which bears a longer glabella reaching to the anterior margin of the cranidium a shorter palpebral lobe and a pygidial axis with no prominent axial rings.

Occurrence: Lower Silurian of Hunan.

***Ciliscutellum ciliensis* gen. et sp. nov.**

(Pl. I, figs. 1—9; Pl. II, figs. 1—7)

Description: Exoskeleton oval in outline. Cephalon semicircular, moderately convex. Cranidium subquadrate in outline. Glabella mushroom-

shaped, bluntly rounded in front, contracted behind its mid-length, and expanded forward, almost reaching the anterior margin of cranidium, with a longitudinal ridge and 3 pairs of lateral glabellar impressions. Occipital ring very wide (tr.), nearly uniform in width (sag. and exsag.), trapezoidal in shape. Occipital furrow straight, shallow and broad. Dorsal furrows of considerable depth, broad; preglabellar furrow very shallow. A pair of tubercles situated on both sides of the contracted portion of dorsal furrows. Palpebral lobes moderate in size, placed slightly behind the mid-length of cranidium, about one-third as long as cranidium. Palpebral furrows shallow; eye ridges distinct, stretching obliquely forwards and inwards from the palpebral lobes to the dorsal furrows opposite the anterior pair of glabellar furrows. Fixed cheeks slightly convex, nearly as wide as the glabella between the palpebral lobes, gradually narrowing anteriorly. Preocular area subrectangular, with a pair of shallow furrows running from the broadest portion of glabella and parallel to the anterior margin. Postero-lateral limb subtriangular in outline, small; posterior border furrows obsolete. Anterior section of the facial sutures diverging forwards, forming an angle of about 20° with the axial line, then turning abruptly inwards to but the anterior margin at a rounded angle; posterior section very short, extending from the posterior end of the palpebral lobe outwards and backwards. Free cheeks subtriangular in shape, moderately convex; eyes medium-sized, crescentic, convex; lateral borders broad and flat, extending directly backwards and slightly outwards into long and thin genal spines.

Thorax composed of 10 segments. Axis moderately convex, slightly narrower than the pleural lobe, gradually narrowing backwards; articulating half-ring narrow (sag.) and broad (tr.). Pleural lobe flat; pleural furrows absent, while pleural spine blunt.

Pygidium large, longer than the cephalon, slightly convex, semicircular in outline, with a width to length ratio of about 1.5:1. Axis short, subtriangular in outline moderately convex, indistinctly separated by shallow transverse furrows

into 4 rings, each with a pair of small, low tubercles. Pleural lobes with 6 paired ribs, and a post-axial rib. A longitudinal ridge present behind the middle of the post-axial rib. Border flat and smooth.

Surface of dorsal shield ornamented with fine lines.

Occurrence: Upper part of Lungmachi Formation, Lower Silurian; Yichongqiao, Cili District, NW Hunan.

Sangzhiscutellum gen. nov.

Diagnosis: Cranidium flabelliform in outline. Glabella broad, contracted in the middle and posterior portion, strongly expanded forwards, with a longitudinal medium ridge and two pairs of lateral glabellar muscle impressions. Occipital furrow broad and shallow, arched backwards on both sides to form a broad W-shaped wavy line. Occipital ring broad in the middle, provided with a small mesial tubercle. Palpebral lobe of moderate size, located at a position in the postero-lateral part of the cephalon; eye ridge absent. Fixed cheek slightly more than one-half as wide as the glabella between the palpebral lobes. Preocular limb narrow and long (exsag.), rectangular in shape. A pair of smaller circular elevations located on both sides of the contracted portion of dorsal furrows. Anterior border slightly convex; anterior margin rounded. Posterolateral limb very narrow (tr.). Anterior sections of the facial sutures long, strongly diverging forwards to cut the anterior border at small rounded angles.

Pygidium semielliptical in outline. Axis short (sag.), subconical, weakly trilobed, with two axial ring furrows in anterior portion. Six pairs of pleural ribs and a broader middle rib separated by broad rib furrows not reaching to the margin.

Surface of anterior portion of cranidium and pygidium ornamented with fine lines.

Type species: *Meitanillaenus flabelliforme* Liu, 1982.

Discussion: The type species of the new genus is readily distinguished from *Meitanillaenus*

Chang, 1974, by the possession of occipital furrow and occipital tubercle, a trilobed pygidial axis, and by the presence of 6 pairs of moderately long pleural furrows. In characters of both the cranidium and pygidium, the new genus is quite different from the members of the family Illaenidae but identical with the family Thysanopeltidae.

The new genus differs from *Planiscutellum* R. & E. Richter, 1956, in the presence of two pairs of glabellar muscle impressions, the narrower (sag.) anterior border, the narrower (tr.) fixed cheek, the longer palpebral lobe and in the pygidium which has 6 pairs of pleural furrows. In pygidium, the new genus is similar to *Eobronieus* Reed, 1928, but in the former, the pygidium is semielliptical in shape and the pygidial axis is trilobed. The genus differs from *Leioscutellum* Wu, 1977, which has a narrower glabella, a broader (tr.) occipital ring and an elongate semielliptical pygidium with 8 pairs of pleural furrows.

Occurrence: Lower Silurian of Hunan.

Sangzhiscutellum flabelliforme (Liu), 1982

(Pl. II, figs. 8, 9)

1982 *Meitanillaenus flabelliforme* Liu; Palaeont. Atlas of Hunan, p. 335, pl. 230, figs. 5—6.

Description: Cranidium flabelliform in outline. Glabella broad, contracted in the middle and posterior portion, strongly expanded anteriorly, with a longitudinal carinated ridge and two pairs of lateral glabellar muscle impressions. Dorsal furrows broad and shallow, gradually shallowing forwards. Occipital furrow broad and shallow, with middle arched forwards, laterally trending backwards to form a broad W-shaped curve. Occipital ring broader in the middle, with a small mesial tubercle. Palpebral lobe of moderate size, located at the posterior portion of the cephalon. Eye ridges absent. Fixed cheek slightly more than one-half as broad as the narrowest portion of glabella. Preocular limb narrow and long (exsag.), rectangular in shape. A pair of small circular rings about 1 mm in diameter located on both sides of the strongly contracted part of dorsal

furrows. Anterior border slightly convex, uniform in width; anterior margin rounded. Posterolateral limb narrow (tr.) and short. Anterior sections of the facial sutures long, strongly diverging forwards from the anterior end of the palpebral lobe to form an angle of about 30° with the axial line.

Pygidium short, semi-elliptical in outline, with a width to length (sag.) ratio of about 1.4:1. Axis short (sag.), bluntly conical, about $1/4$ as wide as the pygidium; anterior portion with two

ring furrows, while middle and posterior portion divided into three lobes by a pair of shallow longitudinal furrows. Pleural lobe divided into 6 pairs of ribs and a slightly broader middle rib. Posterior portion of the middle rib with a longitudinal ridge.

Surface of anterior portion of cranidium and pygidium ornamented with fine lines.

Occurrence: Lower Silurian; Luerkou, Sangzhi District, W. Hunan.

图 版 说 明

本文所研究的标本除 *Sangzhiscutellum* gen. nov. (图版 II, 图 8, 9) 外, 均保存在南京大学地质系古生物地史学实验室。

图 版 I

1—9. *Ciliscutellum ciliensis* gen. et sp. nov.

1—3, 背部, 均 $\times 2.4$, 登记号: T149, T150, T151 (Holotype)。

4. 头盖及四个胸节, $\times 1.5$, 登记号: T152,

5. 头部及部分胸节, $\times 1.1$, 登记号: T153,

6. 为图 5 标本的尾部, $\times 1.1$, 登记号: T154,

7—9, 背部, $\times 2.3$, $\times 2.5$, $\times 1.8$, 登记号: T155, T156, T157。湖南慈利县宜冲桥乡邓家台村, 下志留统龙马溪群上部。

1—3, 背部, $\times 1.5$, $\times 1.1$, $\times 2.3$, 登记号: T158, T159, T160。

4. 头盖及部分胸部, $\times 2.6$, 登记号: T161, 湖南慈利县宜冲桥乡邓家台村, 下志留统龙马溪群上部。

5, 6 背部, $\times 1.6$, $\times 1.8$, 登记号: T162, T163。湖南慈利县宜冲桥乡邓家台村, 下志留统龙马溪群上部。

7. 活动颊, $\times 2.5$, 登记号: T164。湖南慈利县宜冲桥乡何家湾村, 下志留统龙马溪群上部。

8, 9. *Sangzhiscutellum flabelliforme* (Liu)

8. 头盖 (Holotype), $\times 4$, 登记号: HT8180。

9. 尾部, $\times 4$, 登记号: HT8181。湖南桑植县鹿耳口, 下志留统。

图 版 II

1—7. *Ciliscutellum ciliensis* gen. et sp. nov.



