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MISSISSIPPIAN TRILOBITES FROM NORTHWESTERN GEORGIA

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ABSTRACT—Abundant trilobite specimens were obtained from an outcrop of the Lavender Shale Member of the Fort Payne Chert (Mississippian) near Ringgold, Catoosa County, northwest Georgia. The forms represent one new species of *Australosutura* Amos, Campbell, & Goldring, *A. georgiana*, and at least two species of *Proetus* Steininger. The specimens were found in silty claystone and silty clay shale.

INTRODUCTION

DURING a field trip to northwestern Georgia with a group of geology students in February 1965, abundant trilobite remains were discovered in an outcrop of gray, fossiliferous silty claystone and silty clay shale that Butts (1948) included in the Lavender Shale Member of the Fort Payne Chert. The locality is a small roadcut at the east foot of White Oak Mountain, 1.2 miles east of Ringgold, Catoosa County, Georgia, and 0.55 mile north of the intersection of the Cherokee Valley Road with U. S. Highway 41 (Text-fig. 1). Interstate Highway 75, which passes along the north tip of Taylor Ridge, is not shown in Text-figure 1. Most of the trilobites belong to a new species of *Australosutura* Amos, Campbell, & Goldring, and the remainder belong to at least two species of *Proetus* Steininger.

The Fort Payne Chert was named by Smith (1890) for outcrops at Fort Payne, DeKalb County, Alabama. In his definition, Smith included those rocks between the unrestricted Bangor Limestone (Meramecian-Chesterian) and the Chattanooga Shale. Butts (1910, 1926) restricted the Fort Payne to pre-Warsaw (=pre-Meramecian) post-Chattanooga strata, and he (Butts, 1926) restricted the Bangor Limestone to beds above the Hartselle Sandstone (Chesterian) and below the Pennington Shale (Chesterian). These procedures have since been generally adopted (Wilmarth, 1938; Weller, and others, 1948; Butts, 1948). Allen & Lester (1954, p. 1, 81) expressed some doubt regarding the stratigraphic relationships between the Fort Payne and the Floyd Shale. In northwest Georgia, the Chattanooga is commonly overlain by about 50 feet of shale and limestone that Butts (1948) called the Lavender Shale and included as a member of the Fort Payne. Hurst (1953) indicated that the thicknesses of the Lavender Shale and the Fort Payne Chert might bear a reciprocal relationship. Butts (1948) correlated the entire Fort Payne, including the Lavender Shale Member, with the Burlington and Keokuk Limestones (Osagean) of the Mississippi Valley.

Repository.—Illustrated type specimens of *Australosutura georgiana* bear catalog numbers of the Museum of Comparative Zoology (MCZ), Harvard University and the specimens are housed in that museum. All other figured specimens and the additional studied specimens are in the paleontological collections of the Department of Geology, University of Georgia (UG).

SYSTEMATIC PALEONTOLOGY

Family BRACHYMETOPIDAE Prantl & Přibyl, 1950, emend. Whittington, 1960

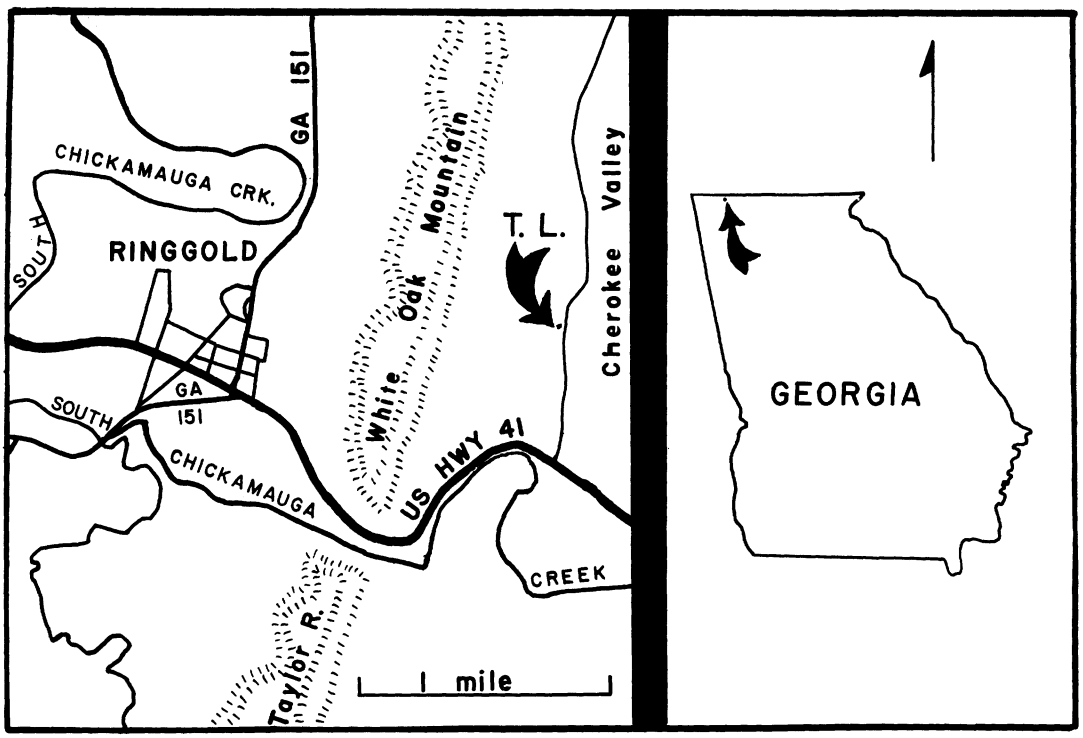
Genus AUSTRALOSUTURA Amos, Campbell, & Goldring, 1960

Type species: *Cordania gardneri* Mitchell

AUSTRALOSUTURA GEORGIANA Rich, n. sp.
Pl. 175, figs. 1–9

Description.—Cephalon semicircular having short and relatively blunt genal spines that are concave on sides away from lateral margin. Glabella convex, tapering forward, widest across occipital ring and preoccipital glabellar lobes. Well-defined axial furrows deepest beside occipital ring and gradually shallowing forward to preglabellar furrow. Occipital furrow moderately deep and posterior border furrow distinct. Midpoint of eye lobe nearly opposite lateral glabellar furrow 1p. Lateral furrow 2p faint or absent. Inner part of genal region and broad preglabellar field convex becoming broadly concave distally and terminating in relatively sharp upturned edge. Tubercles scattered on surface of glabella, on convex portion of genal region, and on preglabellar field. Doublure of librigena displaying terrace lines which are truncated at inner margin, suggesting a suture. In addition, the doublure narrows rapidly forward indicating the presence of a large rostral plate that broadens reciprocally.

Pygidium semielliptical in outline and having small marginal spines along the lateral border. Axial region divided into 12 rings with one or two possible additional faint rings on tip. Five tubercles on axial ring arranged in rows along axis, the median ones being the largest. Pleural lobe convex, outer part descending moderately steeply to nearly flat but slightly concave border area. Pleural region consisting of eight or nine ribs which extend only to inner part of border.



TEXT-FIG. 1—Map showing trilobite locality (T.L.) in northwest Georgia. Arrow on Georgia outline map on right indicates region of the locality map.

Pleural furrows plainly visible only on five anterior ribs. Two to four tubercles on each pleural rib.

Discussion.—Classification of the family Brachymetopidae has been a topic for much discussion during the past 15 years. Hupé (1953), Schmidt (1959), and Whittington (1960) proposed somewhat different classifications. Whittington (1960) described the genus *Cordania* Clarke in great detail and proposed the new genus *Mystrocephala* for forms that were previously included in *Cordania* having, among other cephalic characters, broad concave (sag.) preglabellar fields with upturned narrow cephalic borders. Whittington also noted that the pygidium of *Mystrocephala* differs from *Cordania* in that the anterior pleural bands on the first six or seven pleurae of the former genus do not extend to the margin. Amos, Campbell, & Goldring (1960), who also recognized that *Cordania* included forms that were not congeneric, proposed the name *Australosutura* for material from Carboniferous rocks of Australia that Mitchell (1922, 1924) called *Cordania gardneri*. They also reported *Australosutura gardneri* from Carboniferous rocks of Argentina. Later, Campbell & Engel (1963) indicated that the Argentine forms should be considered a separate species. In addition to great differences in pygidial characters, *Australosutura* differs from *Cordania* in having a longer glabella and shorter preglabellar field. The cephalic border of *Australosutura*, however, is similar to *Cordania* in that it is convex, although the border of the latter genus is somewhat broader.

The pygidium of *Australosutura georgiana* is very similar to *A. gardneri* (Mitchell) in that tubercles are along the margin and in that the pleurae do not cross the border. The rapidly narrowing doublure of the librigena and the probable existence of a large rostral plate serve to place the new species in the genus *Australosutura*. However, the cranidium of *A. georgiana* differs from *A. gardneri*, the type species of the genus, in that the border is much thinner and less convex, the glabella appears less inflated, and the preglabellar field is broader. These latter cephalic features are more characteristic of *Mystrocephala* Whittington. *Australosutura georgiana* is similar to *Australosutura* sp. that Campbell & Engel (1963) reported from Tournaisian rocks of New South Wales, Australia. The border in the Australian specimens was not clearly observed, but Campbell & Engel presumed it to be narrowly rolled.

With the exception of *Australosutura gardneri*

(Mitchell) from Carboniferous rocks of Australia and Argentina and *Australosutura* sp. reported by Campbell & Engel (1963) from Tournaisian strata of Australia, the only other representative of the genus is a form similar to *A. gardneri* from the Mississippian of Oklahoma (Ormiston, 1966). The Georgia occurrence thus represents the first recognition of the genus in the Appalachians.

Types.—Holotype, MCZ 8489; paratypes, MCZ 8490/1 to 8490/8.

Family PROETIDAE Salter, 1864
Genus PROETUS Steininger, 1831
PROETUS SP. A
Pl. 175, figs. 15,17

Description.—Cephalic border moderately thick and convex (sag.). Glabella convex, tapering forward, and having broadly rounded frontal lobe. Glabellar profile low. Preglabellar field absent, frontal lobe forming proximal side of well-developed border furrow. Lateral glabellar furrows extending to axial furrow.

Pygidium semielliptical in outline. Axis moderately arched, tapering backward, not extending to border. Lateral slopes of pleurae gentle. One specimen, not illustrated, has eight axial rings and at least six pleural ribs which become progressively more indistinct posteriorly.

Remarks.—One thin zone within the roadcut yielded two partial cranidia, one thoracic fragment, and several poorly preserved pygidia whose close association indicates that they belong to a single species. They are referred to an unidentified species of *Proetus*.

PROETUS SP. B
Pl. 175, figs. 10–12,14,16,18

Description.—Several relatively large coarse-featured forms that probably belong to a single species were found in different parts of the trilobite locality.

Cephalon semicircular and having thick cephalic border. Preglabellar field absent, glabella touching anterior border. Glabella inflated, convex, tapering forward, widest across preoccipital glabellar lobes. Lateral glabellar furrows 1p, 2p, and 3p distinct and separated. Occipital furrow and ring well defined.

Pygidium having eight to nine axial rings and six pleural ribs. Axis broad, tapering backward, not extending to posterior border.

Remarks.—In his investigation of the family Proetidae, Hessler (1963, 1965) summarized the historical background and the problems relating to studies of Lower Mississippian trilobites. He indicated that *Proetus* Steininger is represented in Lower Mississippian rocks of North America by his newly erected subgenus *Pudoproetus*. The specimens described here apparently belong to this subgenus.

PROETUS(?) sp.
Pl. 175, fig. 13

Remarks.—One partial cranidium was found that probably belongs to the genus *Proetus*. It is illustrated for sake of completeness.

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EXPLANATION OF PLATE 175

FIGS. *1–9*—*Australosutura georgiana* Rich, n. sp. *1*, Cephalon, dorsal view; MCZ 8489, ×4. *2,6*, Fragmental cephalons, dorsal views; MCZ 8490/1, 8490/2, respectively, ×3.4. *3*, Incomplete cranidium, dorsal view; MCZ 8490/3, ×3.5. *4,7,8,9*, Pygidia, dorsal views; MCZ 8490/4, 8490/5, 8490/6, 8490/7, respectively, ×3.4. *5*, Right free cheek having dorsal surface partially excavated to expose external mold of doublure, dorsal view; MCZ 8490/8, ×6. Figure 1 is of holotype; figures 2–9, inclusive, are of paratypes.

10,11,12,14,16,18—*Proetus* sp. B. *10*, Incomplete cephalon, dorsal view; UG-I-1, ×2.3. *11,12,16*, Pygidia, dorsal views; UG-I-2, UG-I-3, UG-I-5, respectively, ×2.3. *14*, Incomplete cephalon, left anterior view; UG-I-4, ×2.3. *18*, Cranidium, dorsal view; UG-I-6, ×2.7.

15,17—*Proetus* sp. A. *15*, Pygidium, dorsal view; UG-I-7, ×2.3. *17*, Partial cranidium, dorsal view; UG-I-8, ×2.3.

13—*Proetus* (?) sp. Incomplete cranidium, dorsal view; UG-I-9, ×3.