



FIGURE 14—*Holmiella millerensis* n. sp. Montenegro Member, Miller Mountain, holotype, UCLA 38541, locality 23993, entire specimen, photograph courtesy of C. A. Nelson,  $\times 0.5$ . **LACMIP 26933**

corners. No intergenal spine or node observed. Genal spine spectacular, originating with a broad base on anterior margin of cephalon just abaxial of outside axial furrow. Midpoint of genal spine base aligns with anterior portion of LA being advanced seven-eighths of cephalic length. Initially, spine subtends  $120^\circ$  angle with posteriorly directed axis. Spine rapidly curves posteriorly, anterior margin of spine slightly ahead of anterior margin of cephalon. Spine curves backward to parallel posterior taper of thoracic pleural spines, total length at least one-fifth greater than combined length (sag.) of cephalon, thorax, and pygidium. Adjacent to posterior portion of cephalon, spine is triangular in cross section with a broad base, dorsal surfaces sculpted with fine, nodular ribs directed outward and forward on both lateral surfaces; posterior portion of spine cylindrical.

Glabella slightly expanding forward, LA one-tenth wider (tr.) than L0. LA impinges upon anterior border, preglabellar field absent. LA just over two-fifths length (sag.) of glabella, defined laterally by deep axial furrows and posteriorly by a broad, shallow, backward-directed S3 that crosses glabellar axis but does not reach axial furrow. L3 equal in width (tr.) to L2. Axial furrow shallow and indistinct at L1 which is wider (tr.) than L2 or L0. S1 and S2 do not reach the glabellar midline. L0 defined by S0 furrow, shallow at the glabellar axis and deepening to pits at lateral margin. Lateral lobes on L0 defined by shallow furrows. Posterior margin of L0 even, without any indication of occipital node or spine. Ocular lobes narrow, one-sixth glabellar width (tr.), angled outward from LA then backward-directed, situated close to glabella, anterior portion aligned with posterolateral margin of

LA, separated from LA by deep axial furrow, posterior tips align with the middle of L1. Width (tr.) between distal margins of ocular lobes seven-eighths length of glabella. Interocular area flat with longitudinal interocular swelling separating ocular tip from axial furrow. Dorsal character of extraocular area and lateral border not available. Lateral margin displays wide doublure, one-twelfth width of cephalon, with sculpture of longitudinal ridges. Posterior border low and rounded. Anterior border (sag.) is three-eighths width (tr.) of lateral border as suggested by doublure. Extraocular area may be flat or broadly elevated, width (tr.) about 2.5 times width of interocular area. Hypostome unknown.

Thorax of 17 segments, tapering gently and uniformly. At T4, thoracic axis three-tenths of thoracic width (tr.), each inner portion of pleurae about one-fourth thoracic width and each pleural spine over one-tenth thoracic width. Axial rings of T1 through T5 have discernable lateral lobes marked by shallow furrows with prominent anterolateral furrows; T3 through T17 have medial nodes, or possibly spines, at back of ring. Axial furrows of thorax distinct. Inner portion of pleurae marked by strong anterior and posterior bands separated by flat, triangular pleural furrow which is wide at the axis and narrows to a point at lateral margin. Pleural furrow of anterior segments more than half sagittal width of segments; posteriorly, pleural furrow narrows (exsag.) while anterior and posterior bands maintain width through length of thorax. T3 not enlarged. Pleural spines on anterior thoracic segments are thornlike and divergent (laterally directed); posterior pleural spines are sentate and slightly pendent.

Pygidium large for a holmiid, length (sag.) is about one-tenth total exoskeletal length, ovoid in shape, width (tr.) slightly over twice pygidial length. Axis narrow, width (tr.) at anterior is one-quarter of pygidial width, with two? axial rings, a terminal piece, and low postaxial medial ridge. Ring furrows poorly defined on this specimen. Axial furrow shallow but anterolateral corners of second ring and terminal piece marked by circular pits. Terminal piece wide and triangular with strongly elevated and rounded posterior, and a pair of shallow, laterally directed pits. Three pleural ribs slightly curved, outward-directed at about  $40^\circ$  from sagittal axis, then angled gently posteriorly, pleural furrows deep, continuous to margin. Border wide, over one-fifth pygidial length, gently convex, and marked by subtle ridge that may be doublure. Posterior margin gently curved, cusped behind the axis and marked by three pairs of blunt spines as extensions of pleural ribs. Exoskeletal sculpture cannot be observed.

*Etymology.*—For the source of the type specimen at Miller Mountain.

*Type.*—Holotype complete internal mold, UCLA 38541, UCLA Loc. 26993, only specimen known. **LACMIP LOC. 26933**

*Occurrence.*—Upper part of the Montenegro Member, Miller Mountain, Esmeralda Co., Nevada (details of this locality in *Discussion*).

*Discussion.*—This species is based on a single specimen which is complete but poorly preserved due to compaction, metamorphism, tectonic distortion, and weathering. It is an internal mold, thus the description does not accurately treat the external features, particularly the glabellar furrows. The thoracic axis of the specimen is depressed below the level of the pleural regions of the thorax, probably due to compaction. The pygidium is the most weathered portion of the specimen, so the pygidial features are suspect.

The 15.8 cm long trilobite specimen occurs on a 9–10 cm thick block of very dusky red purple, laminated, granoblastic argillite. It was found in the early 1970s by R. P. Bowen, an exploration engineer for a mining company. He submitted the specimen to C. A. Nelson for study. Bowen reported that the specimen was found, presumably as float, at coordinates 396,180 m east by 4,208,600 m north in the NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , NW $\frac{1}{4}$  sec. 22, T.2N.,

R.34E. on the U.S. Geological Survey topographic map, Miller Mountain Quadrangle, 7.5' series. During this study, over two days were spent searching the vicinity, finding only one barely recognizable nevadiid cephalon. The lithology, argillite, and the exfoliated weathering pattern certainly agree with the rocks at the site, so there is virtually no question in my mind that this specimen came from the reported location. Measurements suggest that the specimen came from somewhere in the interval 100–160 m below the top of the Montenegro Member of the Campito Formation.

The large size, cephalic length of 54 mm, raises concerns that ontogenetic changes in the late holaspid stage may be incorporated in the description. To address this, a latex cast of a large specimen of *Holmiella preancora* from the Sekwi Formation, Mackenzie Mountains, Canada, provided by T. P. Fletcher, with cephalic length of 42.4 mm, was compared with illustrations of paratype cephalons ranging from 5.0 to 18.4 mm in cephalic length. The most notable difference is lateral expansion near the posterolateral corners of the cephalon resulting in a somewhat wider extraocular area (at least in the posterior part) and a slight change in cephalic shape from subpentagonal to subtrapezoidal on the larger specimen. The base of the genal spine is slightly more forward and the initial angle of the genal spine from the sagittal axis is slightly larger. Since no smaller material of *Holmiella millerensis* is available, these observations suggest some differences to be expected on smaller cephalons of this species.

This species differs from *Holmiella preancora* and *H. falcata* in the dramatically advanced genal spine and significantly wider extraocular area; the genal spine is somewhat more advanced than in *Holmiella falx* n. sp. The ocular lobes are much closer to the glabella, the width between the distal margins of the ocular lobes is 12% less than the length of the glabella plus L0, while this width is about 25% greater on *H. preancora* and *H. falcata* and 13% greater on *H. falx*. The pygidium of *H. millerensis* is wider, but the axis is only about one-fourth the transverse pygidial width compared to an axis one-third and one-half the width on *H. preancora* and *H. falcata*.

The pleural spines of this species, particularly in the posterior part of the thorax, are sentate and resemble those of *Kjerulfia* and *Grandinasus* n. gen.

A single 5 cm spine possibly attributable to this species, USNM 521004, was found about 35 m below the top of the Montenegro Member at MS 316 in the Montezuma Range. The spine is triangular in cross section and the ventral surface has a sculpture of fine transverse ridges.

HOLMIID? genus and species undetermined  
Figure 13.8

*Description.*—Fragmentary cephalon preserving glabella and parts of ocular lobes. Glabella straight-sided, slightly expanding forward. LA one-fifth length of glabella. S0, S1, and S2 distinct at axial furrow, absent across glabella axis, S0 shorter than S1. S3 shallow, arched forward. L0 expanded posteriorly to broad spine with diameter one-third width (tr.) L0. Ocular lobes one-fifth width (tr.) L0, separated from LA by deep axial furrow. Cephalic width between distal margins of ocular lobes one-sixth greater than glabellar length. Interocular area inclined slightly upward to ocular lobe. Small fragments of exoskeleton on specimen show no granules or surface sculpture.

*Occurrence and material examined.*—Single partial cephalon, cephalic length estimated as 13 mm, about 30 m above the base of the middle member of the Poleta Formation, northern Montezuma Range (section IS 224).

*Discussion.*—This specimen is too incomplete to allow even generic assignment. It is included, however, because it is the

youngest holmiid in the Montezuman rocks of Nevada. The massive occipital spine of this form differentiates it from *Holmiella*. This feature does occur on *Holmia?* sp. (Fritz, 1973) which has deeper glabellar furrows, a more pointed LA, and the ocular lobes meet the LA with a small connecting ridge and weak preocular furrow.

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## APPENDIX

## Localities Cited

All localities in Esmeralda County, Nevada. Numbers preceded by "ICS" are localities recorded at the Institute for Cambrian Studies, Boulder, Colorado. Four-digit numbers are JSH localities.

*Alcatraz Island*.—Locality 1223, 37°44.03'N, 117°37.01'W on the northwestern part of the Alcatraz Island 7.5-minute quadrangle map (U.S. Geological Survey, 1987), near top of Montenegro Member.

*East of Mount Jackson*.—Locality 1721, stream bank at 37°28.86'N, 117°19.71'W, Mount Jackson 7.5-minute quadrangle map (U.S. Geological Survey, 1968), shale in the lower member, Poleta Formation.

*Fish Lake Valley*.—Section FLVS, 0 point at 37°51.79'N, 117°52.24'W in the northwestern part of Rhyolite Ridge 7.5-minute quadrangle map (U.S. Geological Survey, 1987), measured east-southeasterly; section FLVS-N, 0 point at 37°52.17'N, 117°52.01'W on the same map, measured southeasterly. These sections measured by W. H. Fritz with JSH assisting.

*Gold Point*.—Locality ICS 1053, 37°22.56'N, 117°16.62'W on the Mount Jackson 7.5-minute quadrangle map (U.S. Geological Survey, 1968), top of lower member, Poleta Formation, collected by A. R. Palmer; section GP-N, 0 point at 37°21.96'N, 117°17.17.33'W on the Gold Point 7.5-minute quadrangle map (U.S. Geological Survey, 1968) measured southeasterly; locality 1473, 37°21.87'N, 117°17.33'W on the Gold Point quadrangle map, from lower 10 m of Poleta Formation.

*Mineral Ridge*.—Localities 1574 and 1672, 37°48.40'N and 117°44.81'W, Silver Peak 7.5-minute quadrangle map (U.S. Geological Survey, 1987), shale unit of lower member, Poleta Formation, probably the same locality as 1v (Walcott, 1910).

*Montezuma Range*.—All pertinent sections and localities shown on Figure 3.

*Slate Ridge*.—Section SR, 0 point at 37°20.11'N, 117°15.56'W, Gold Point 7.5-minute quadrangle map (U.S. Geological Survey, 1968) measured easterly; section SRN, 0 point at 37°20.11'N, 117°15.57'W, same map; locality 1489 at 37°20.27, 117°15.36'W, same map; section GCM, 0 point at 37°21.29'N, 117°14.19'W, Scotty's Junction SW 7.5-minute quadrangle map (U.S. Geological Survey, 1968), measured southeasterly.

*Stewart's Mill*.—Section RR, 0 point in a bulldozer trench at southwest corner NW¼, SE¼, section 8, T6S., R41E, Lida 7.5-minute quadrangle map (U.S. Geological Survey, 1968) measured north-northwesterly; locality ICS 1045, center westside line of NW¼, SW¼, section 8, near top of Montenegro Member, collected by A. R. Palmer.



**Subject:** Re: trilobite and reprint  
**From:** STEWHOLL@aol.com  
**Date:** Thu, 30 Mar 2006 23:08:55 EST  
**To:** hfilkorn@nhm.org

Dear Harry Filkorn:

I borrowed the holotype specimen of *Holmiella millerensis* from Clem Nelson with three other specimens. These were all returned to Clem personally on October 3, 2001, in Bishop. We had a delightful dinner with Clem at the Whisky River Restaurant and returned the specimens at that time.

I will get a reprint of my article in the mail in the next day or so.

Sincerely,

Stew

In a message dated 3/29/2006 12:36:54 P.M. Mountain Standard Time, hfilkorn@nhm.org writes:

Dear J. Stewart Hollingsworth,

I am attempting to locate one of the trilobite specimens that was figured in your article in the March issue of the *Journal of Paleontology*: the holotype of *Holmiella millerensis* Hollingsworth, 2006 (fig. 14 on p. 329). Did you return the specimen to the White Mountain Research Station in Bishop, California? If so, when was it sent back? About 20 years ago, the UCLA fossil collection was incorporated into the holdings of the Natural History Museum of Los Angeles County, Department of Invertebrate Paleontology (LACMIP), so the trilobite specimen should be placed in the type collection at the LACMIP.

I would greatly appreciate your help in tracking down this specimen.

Also, if you get reprints of your article, please send one to us for the type specimen file at the LACMIP.

Thank you.

Best regards,

Harry Filkorn, Collections Manager  
Department of Invertebrate Paleontology  
Natural History Museum of Los Angeles County  
900 Exposition Blvd.  
Los Angeles, CA 90007  
ph. (213) 744-3485  
fax (213) 746-7646  
[hfilkorn@nhm.org](mailto:hfilkorn@nhm.org)

J. Stewart Hollingsworth  
Institute for Cambrian Studies  
729 25 Road  
Grand Junction, CO 81505  
(970) 241-6484  
[stewhall@aol.com](mailto:stewhall@aol.com)