

Supplementary material to:

# A SPIDER AND OTHER ARACHNIDS FROM THE DEVONIAN OF NEW YORK, AND A REINTERPRETATION OF DEVONIAN ARANEAE.

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ABSTRACT. The oldest known spider, from the Devonian (Givetian) of Gilboa, New York, is *Attercopus fimbriunguis* (Shear, Selden and Rolfe), parts of which were originally described as a trigonotarbid, possibly of the genus *Gelasinotarbus*. Previous reports of Devonian spider fossils, from the Lower Emsian of Alken-an-der-Mosel, Germany, and the Pragian of Rhynie, Scotland, are shown to be erroneous identifications. *Attercopus* is placed as sister-taxon to all living spiders, on the basis of characters of the spinneret and the arrangement of the patella–tibia joint of the walking legs. A cladogram of the relationships of all pulmonate arachnids is presented. A pulmonate arachnid from Gilboa, related to Araneae and Amblypygi, is described as *Ecchosis pulchribothrium* Selden and Shear, gen. et sp. nov., and additional arachnid material is described.



329.31+ mess  
 329.58+ crumpled  
 329.63+ Fig 155/6 ¶  
 329.69+ serrula poor  
 329.31a.M1+ ¶ •

2002.9.9A  
 2002.9.12+ chelicera

Patella

329.3+ poor ¶  
 329.25+ poor  
 329.39+ Fig 128 ¶ •  
 329.45+ ¶  
 329.56 poor  
 329.59+ (2) (+ Fe ¶ •)  
 329.69+ ¶ •  
 329.70+ Fig 129 ¶ •

329.31a.M1+ ¶ •  
 334.1a.4+ Ti/Mt/Ta •  
 334.1a.5 ¶  
 334.1b.12 ¶ •  
 334.1b.85+ ¶ poorPa  
 334.1b.86+ Fe/Pa/Ti mess

411.19.98+ small  
 411.19.99 interestingly  
 crumpled, worth •  
 411.19.248 nice end-  
 view ¶ •  
 411.20.25 ¶ •  
 2002.12.78 small

Tibia

329.1+ palpal ¶ •  
 329.3+ poor ¶  
 + nice end ¶ •  
 329.27 lge, poor  
 329.31a.M1+ ¶ • poor Ti  
 329.31a.M2+ mess • Fig 136  
 329.33+ crumpled  
 329.54 distal part only  
 329.69+ ¶ • in mess  
 329.PR.14 tiny, poor

334.1a.4+ ¶ • mess  
 334.1a.8 ¶ • good Ti  
 334.1b.32 prob Ti  
 distal missing  
 334.1b.33 crumpled  
 334.1b.86+ Fe/Pa/Ti mess

411.7.45 end ¶ •  
 411.19.98+ end Ti ¶ •  
 2002.9.18+ poor  
 2002.12.49 nice distal •  
 2002.12.69 distal end

Metatarsus

329.3+ ¶ • good  
 329.38 ¶ • good  
 329.53+ • crumpled  
 329.57+ ¶ Fig 131  
 329.58+ Fig 134+ Ta  
 329.70+ ¶ Figs 132, 133

334.1b.9 small, no di  
 411.7.65+ poor  
 411.9.29+ Ta mush  
 411.19.105+ Ta poor  
 411.19.117+ small  
 411.19.251 good ¶ •  
 411.20.4 poor  
 411.20.33+ scrappy

2002.9.7 [2] prox.  
 2002.9.20 [2] poor Mt  
 2002.12.101 Mt? 329.31a.M2+ Fig 136  
 good mush  
 2002.12.105 end  
 2002.12.117 tiny diMt

329.02.12M.6+ Ta ¶ •

334.1a.4+ • exc.

Tarsus

329.40 [lost]  
 329.53+ poor  
 329.58+ Fig 134  
 329.60 poor  
 329.63 Fig 135  
 329.64+ poor  
 329.69+ palpal ¶ •  
 329.02.12M.6+ ¶ • Ta org?  
 329.16.34 good •

334.1a.4+ ¶ • exc  
 334.1b.38 ¶ • Ta org?  
 329.31a.M2+ Fig 136 good mush

411.7.98 mess+ claw  
 411.9.29+ Ta mush  
 411.19.105+ Ta poor  
 411.19.117+ small  
 411.20.33+ scrappy

Unknown podomeres

329.12 scrap  
 329.21 scrap  
 329.26 scrap  
 329.28 scrap  
 329.55 scraps  
 329.59+ scrap  
 329.62 scraps

329.1b.35 scrap  
 329.1b.52 scrap  
 329.1b.55 scrap  
 334.1b.14 tiny scrap  
 334.1b.42 scrap

411.19.100 poor Fe, Ti?  
 411.19.101 poor Ti, Mt?  
 411.19.103 var. scraps  
 411.19.119 pod. end  
 411.19.123 Ta/Mt scrap  
 411.19.205 scrap

329.66+ scraps

2002.9.15 [2] scraps

2002.12.103+ scrap

2002.9.19 [2] scraps

2002.12.113 end pod.

2002.12.116 scrap

### Sternum

411.19.83+ ¶ cx too

### Spinneret

334.1b.34 ¶ •

### Others

329.10 scrap

411.19.104+ mush

2002.12.1 scrap

329.23 scrap

411.19.108 ?fimb

2002.12.48 scrap

329.37 2 lge folded scraps

411.19.114 do.

2002.12.55 hairy scrap

329.57+ mess

2002.9.10 [2] scraps

2002.12.95 mess

2002.9.11 [2] scrap

2002.12.103+ scrap

411.1.10 tiny scrap

2002.9.16 [2] odd scrap

2002.12.110 odd

411.11.7 odd piece

structure •

411.14.1 scraps

2002.12.112 scrap/mess

## *Ecchosis pulchribothrium*

The pores are quite obviously circular at high mag., and not the slit-organs of *A. fimbriunguis*. True slits and lyriforms also occur, and pore canals? at high mag.

329.4 large, pale piece, adjacent to compound eye

329.19 scrap

329.31 ¶ scrap with big striated **spine**

329.45 scraps

329.46 ¶ piece of **podomere** with big **holes**

329.47 ¶ lge scrap with lge **holes**

411.7.10 ¶ piece of **pod.** with spine sockets &c.

411.7.17 scrap

411.7.37 ¶ • **holotype Pa** with sculptured trich, and basal **Ti**

411.7.53 mess with **striated macroseta**

411.7.86 ¶ • **paratype** scrap, also figured sculptured **trich** on **Pa**.

411.7.87 scrap

329.16.1 scrap

329.16.4 ¶ beautiful **podomeres**, **tergite** pieces

329.16.32 ¶ [2 specs] huge **pod.** lge sockets, pores

411.12.1 scraps

334.1b.38 **tergite** with dendroids

334.1b.75 scrap

334.1b.82 lge scrap, sockets and mucrones

334.1b.84 lge scrap, no mucrones, striated macrosetae, pores

411.19.25 mucrones with setae, pores

411.19.29 typical sheet: mucrones, sockets, pores

411.19.32 large sockets, pores

411.19.33 rear of tergite? mucrones+ adjacent setae, pores

411.19.35 rear of tergite? mucrones+ adjacent setae, pores

411.1.33 ¶ • **paratype** huge **femur**

411.1.36 scrap with lge **slit**

411.19.43 pale scrap, pores

411.19.45 scrap, pores

411.19.51 **podomere** scrap with setae

411.19.77 typical patch of cuticle, pores &c.

411.19.87 ¶ pod. scrap, spine holes, macrosetae

411.19.91 ¶ pod. with big holes, but unrelated to others?

411.1.38 piece with nice **slits**

411.1.43 scraps

411.1.50 scruffy piece of lge **pod.**, also scraps

411.1.41 lge scrap with many lge slits

411.1.177 scrap with edge, pores?

411.1.180 • **tergite**, with slits, mucrones+ setae,+ **dendroids!**

411.19.96 ¶ • **paratype Pa**, sculptured trich, rows of slit sensilla

411.19.110 scrap of **pod?** macrosetae, huge socket

411.19.112 typical sheet: macrosetal+ normal sockets, pores

411.19.128 2 scraps of cuticle, sockets, pores &c.

411.19.137 ¶ • scrap with huge, **bifid spine**

411.19.147 2 poor scraps: 1 dark, 1 pale

411.19.150 scrap, no sockets

411.2.5 poor ?rear of car? on top of arthropleurid

411.7.5 ¶ **podomere** with lge holes

411.19.157 scrap  
 411.19.161 lge piece with edge, pores, no lge sockets  
 411.19.162 2 scraps: 1 dark, 1 pale  
 411.19.163 large scrap  
 411.19.164 scrap with mucro at edge of slide  
 411.19.166 scrap  
 411.19.170 poor scrap, big *bifidus* too - ditto 163, 171, 172, 173 &c.  
 411.19.182 lge patch, mucrones+ sockets, nice single slit  
 411.19.184 a) lge patch typ. cu; b) edge+ lyriform [**•** with *fimb.*]  
 411.19.185 "eyebrow" - nice slits  
 411.19.186 large pieces, pores, few socketed mucrones  
 411.19.187 more huge pieces, pores, few sockets  
 411.19.188 ¶ **•** huge **podomere**, [**•** with *fimb.*]: pores, setae, huge striated spine with bifid tip, lyriform organ (not transverse)

411.19.193 ¶ **another** of same (or base of above?)+ spines+ pores.  
 411.19.194 piece with mucrones+ setae &c., *fimb* chelicera  
 411.19.195 scrap with **lyriform**  
 411.19.198 scrap  
 411.19.201 3 scraps of cuticle  
 411.19.204 scrap of cuticle  
 411.19.206 huge piece of ?car, [**•** with *fimb.*]  
  
 411.20.1 piece with 2 groups of **slits**  
 411.20.2 scrap with many **slits**  
  
 2002.9.4 poor scrap  
 2002.9.7 pale scrap  
 2002.9.12 scrap?  
 2002.9.13 ¶ **•** **coxa** with nice costa coxalis  
 2002.9.16 (2 slides) tergite? crumpled

## Arachnida incertae sedis

Flagelliform appendages with slit sensilla.

411.19.184 •  
 411.19.188 •  
 411.19.206 •