

TRILOBITE-BASED AGE DETERMINATION OF THE RICHES ISLAND FORMATION (BAIE D'ESPOIR GROUP) IN THE ST. ALBAN'S MAP AREA (NTS 1M/13), CENTRAL NEWFOUNDLAND

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ABSTRACT

A deformed pygidium of the trilobite Annamitella sp. cf. A. perplexa (Bates, 1968) indicates a probable late Arenig age for the uppermost Riches Island Formation (Baie D'Espoir Group) exposed along Conne River. A previous age determination of late Arenig to early Caradoc was based on brachiopod genera.

INTRODUCTION

The Riches Island Formation (Baie D'Espoir Group) comprises semipelitic schist and phyllite, psammite, graphitic schist, siltstone and pelite, and acid and intermediate igneous rocks (Colman-Sadd, 1976). Neuman in Colman-Sadd (1976, page 6) reported the following taxa from a fossiliferous outcrop exposed on the northwest shoreline of Conne River, 1 km northeast of salt water (Figure 1):

Brachiopods: orthid cf. *Orthambonites*
orthid cf. *Productorthis*
syntrophid

Bryozoa with hemispherical and cylindrical zoaria
Pelmatozoan ossicles

Neuman in Colman-Sadd (1976, page 6) assigned the above fossils a late Arenig to early Caradoc age.

On July 15, 1992, the locality was revisited and J.S. Ash discovered a strongly deformed trilobite pygidium (Plates 1 to 3). This was subsequently recovered by W.D. Boyce and identified as *Annamitella* sp. cf. *A. perplexa* (Bates, 1968). Articulate brachiopods, bryozoa, crinoids and gastropods were also collected, but have yet to be identified.

SIGNIFICANCE OF TRILOBITE DISCOVERY

The genus *Annamitella* is widely distributed in the Dunnage Zone of central Newfoundland, and is generally indicative of a late Arenig to early Llanvirn age (Dean, 1973; Boyce et al., 1988). *Annamitella perplexa* (Bates, 1968) occurs in the Carmel Formation of Anglesey. Fortey and Owens (1990, page 608, Figure 1) indicate a late Arenig (early Fennian) age for the Carmel Formation. Therefore, *Annamitella* sp. cf. *A. perplexa* (Bates, 1968) suggests a probable late Arenig age for the uppermost Riches Island Formation.

SYSTEMATIC PALEONTOLOGY

Phylum ARTHROPODA Siebold and Stannius, 1845
Class TRILOBITA Walch, 1771
Order PTYCHOPARIIDA Swinnerton, 1915
Suborder PTYCHOPARIINA Richter, 1933
Superfamily LEIOSTEGIACEA Bradley, 1925
Family LEIOSTEGIIDAE Bradley, 1925

Genus *Annamitella* Mansuy, 1920

1954 *Bathyuriscops* Lisogor in Keller and Lisogor.
1958 *Proetiella* Harrington and Leanza.
1968 *Monella* Bates.

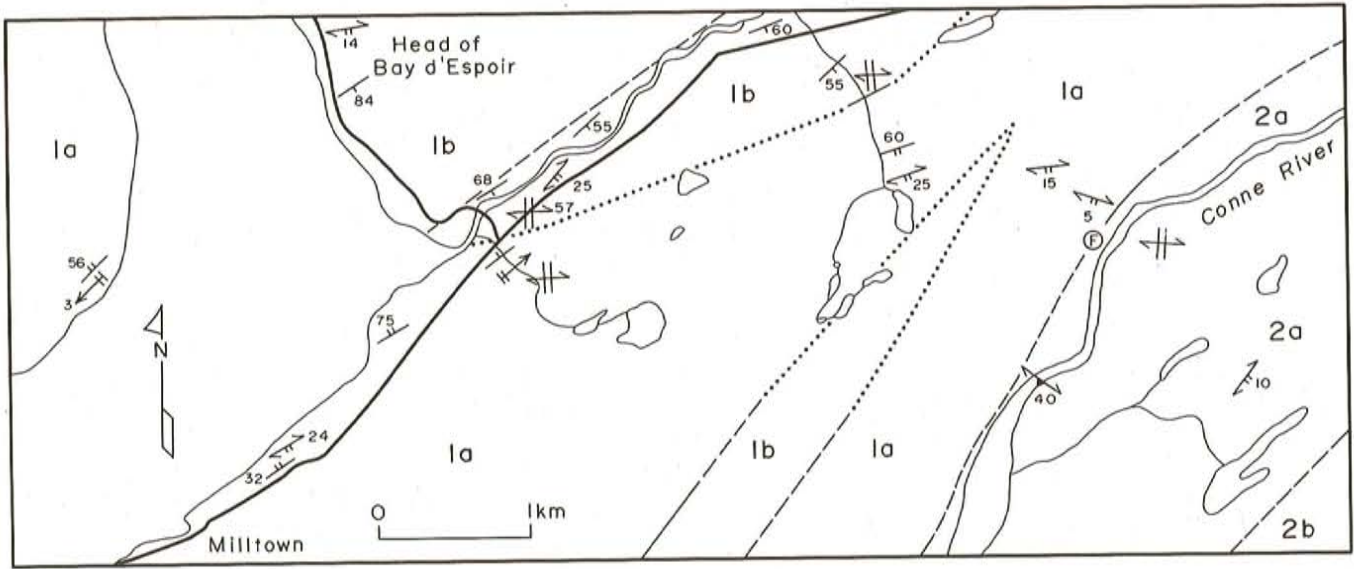
Type species. *Annamitella asiatica* Mansuy, 1920 (by monotypy).

Geological range. Arenig to Llandeilo.

Diagnosis. See Fortey (in Fortey and Shergold, 1984, page 323).

Assigned species. *Annamitella* includes the following species (Fortey and Shergold, 1984, pages 323-324; Beckly, 1989, page 8):

Annamitella asiatica Mansuy, 1920
Annamitella? borealis Whittington in Neuman, 1964
Annamitella brachyops Fortey in Fortey and Shergold, 1984
Annamitella guizhousensis Yin and Li, 1978
Annamitella? insulana Dean, 1973
Annamitella sinesulcata Beckly, 1989
Annamitella strigifrons Fortey in Fortey and Shergold, 1984
Bathyuriscops granulatus Weber, 1948
Bathyuriscops kantsingensis Chang and Fan, 1960
Dalmanitina tellecheai Rusconi, 1951
Monella perplexa Bates, 1968



LEGEND

EARLY OR MIDDLE ORDOVICIAN

BAIE D'ESPOIR GROUP

RICHES ISLAND FORMATION

2b Siltstone and pelite

2a Semipelitic schist and phyllite

ST. JOSEPH'S COVE FORMATION

1b Sandstone and conglomerate

1a Siltstone and pelite

SYMBOLS

Geological boundary (defined, approximate, assumed)..... / - - - - -

Fossil locality..... (F)

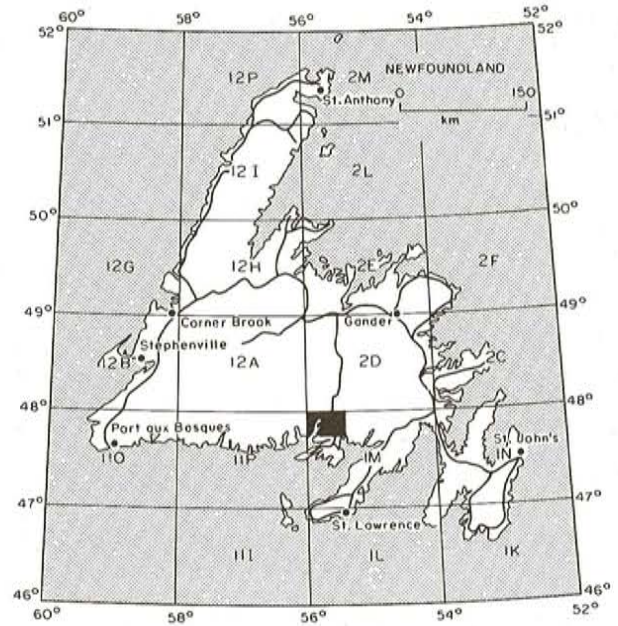


Figure 1. Location of study area and simplified geology map of the Conne River area (after Colman-Sadd, 1976).



Plate 1. *Imprint of deformed Annamitella pygidium in the Riches Island Formation, Conne River, x 2.36.*

Annamitella sp. cf. *A. perplexa* (Bates, 1968)
Plates 1 to 3

Occurrence. Uppermost part of the Riches Island Formation (Baie D'Espoir Group), Conne River valley, 1 km northeast of salt water.

Material. One (1) strongly deformed pygidium.

Remarks. The Conne River pygidium sample exhibits at least seven axial rings and five pleural ribs similar to that of *Annamitella insulana* Dean, 1973 (Figure 2) and *Annamitella perplexa* (Bates, 1968). However, the relatively wide and flat posterior border appears to be more like that of *Annamitella perplexa* (Bates, 1968) (see Bates, 1968; Plate 11, figures 16, 20). Therefore, definite species assignment must await the recovery of more material, especially cranidia and librigenae.

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Plate 2. *Modelling-clay replica of Annamitella pygidium, x 1.68.*

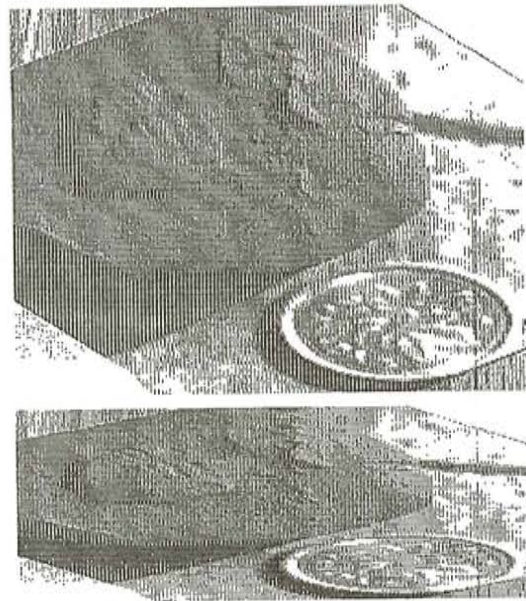
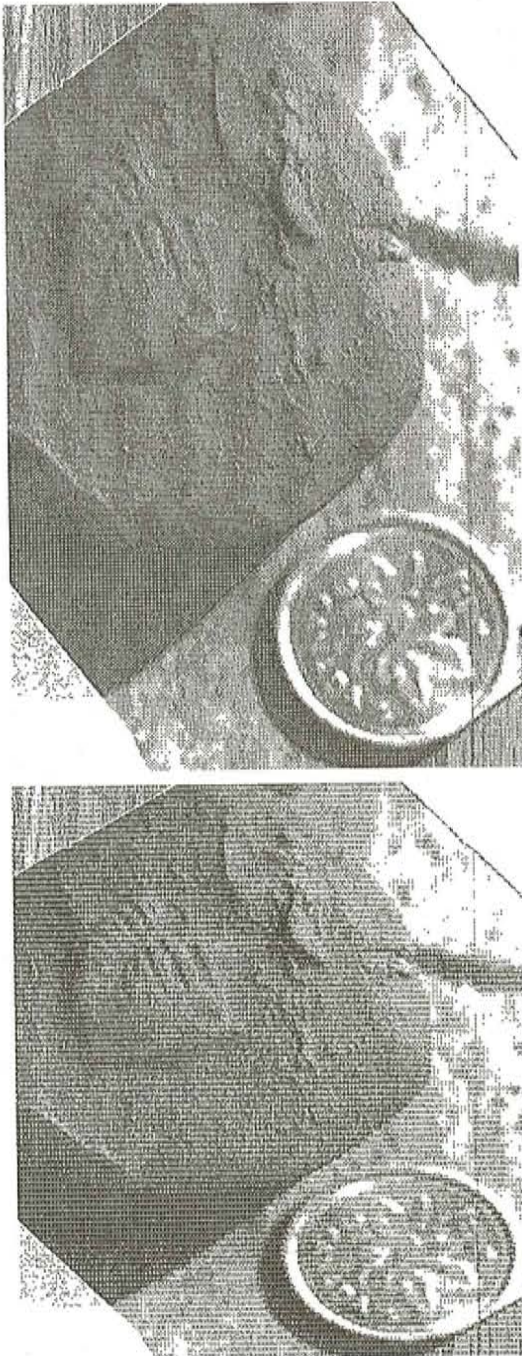


Plate 3. *Progressive compression of (scanned image of) pygidium (along assumed original direction of extension) in order to remove deformation. Scale is the same as that of Plate 2.*

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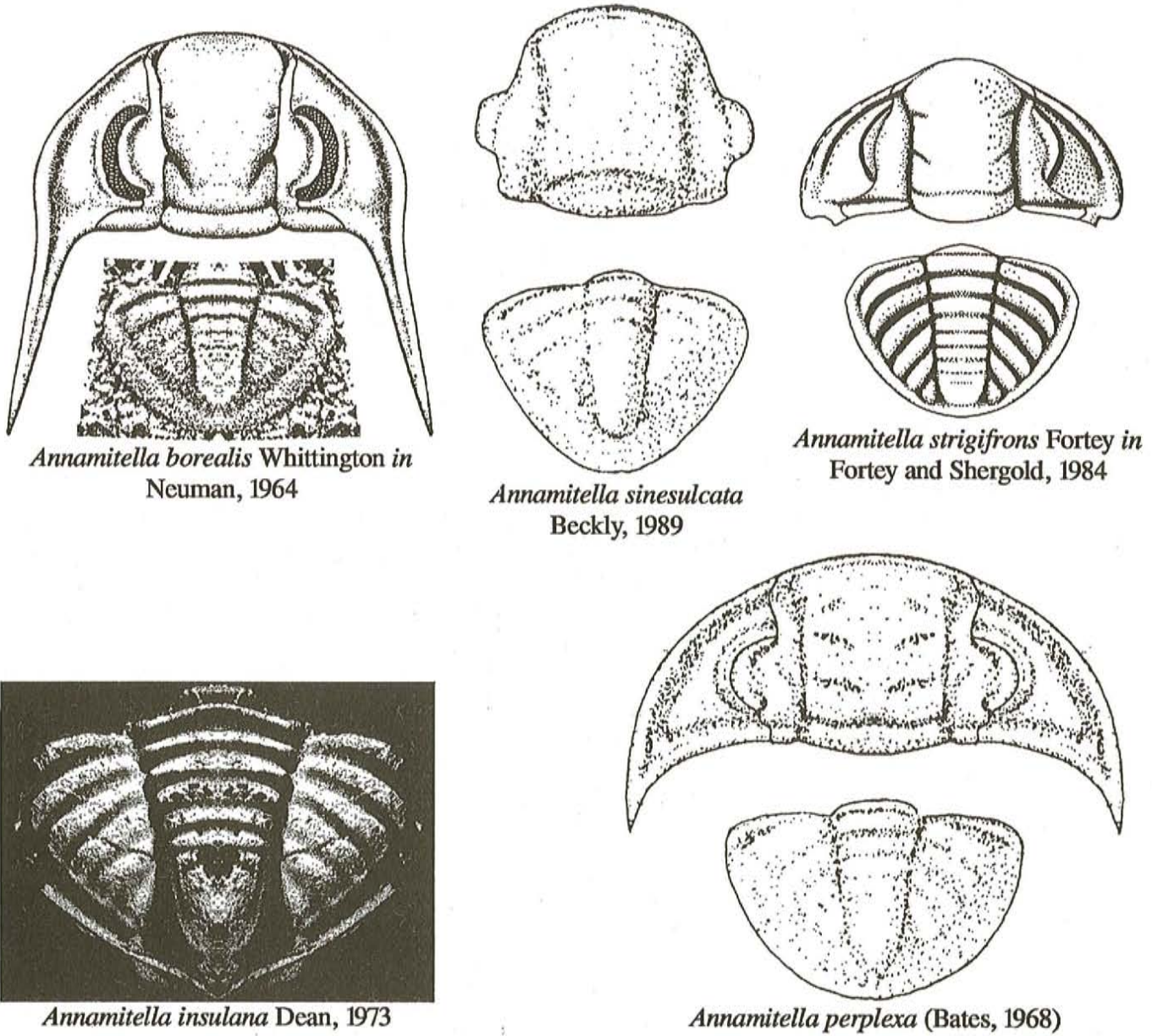


Figure 2. Computer-aided reconstructions of Arenig-Llanvirn species of *Annamitella*. Reconstruction of *Annamitella borealis* Whittington in Neuman, 1964 is based on Neuman (1964, Figure 4 and Plate 6, figure 13). Reconstructions of *Annamitella sinesulcata* Beckly, 1989 and *Annamitella strigifrons* Fortey in Fortey and Shergold, 1984 are from Beckly (1989, Figure 8b) and Fortey and Shergold (1984, Text-Figure 5), respectively. Reconstruction of internal mold of pygidium of *Annamitella insulana* Dean, 1973 is based on Dean (1973; Plate 6, figure 5). Reconstruction of *Annamitella perplexa* (Bates, 1968) is based on Beckly (1989, Figure 8a).

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