

Argyrotheca (Brachiopoda) from the Pliocene Bowden Shell Bed, parish of St. Thomas, Jamaica

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A single ventral valve of *Argyrotheca* is the only record to date of the phylum Brachiopoda within the highly diverse and abundant shelly fauna of the Bowden Shell Bed (Bowden Formation, Pliocene) of southeast Jamaica. The valve is compared with *A. inconstans*, occurring in Pliocene rocks of Cuba.

KEY WORDS: Brachiopoda, Bowden Shell Bed, Pliocene, Jamaica.

Introduction

The Bowden Shell Bed is the most fossiliferous unit within the Cainozoic rocks of the Antillean region (Donovan, 1998a). The bed crops out in eastern Jamaica as part of the Bowden Formation, a complex unit some 150 m thick, deposited in deep-water by gravity-sediment flows. The sediments together with the abundant and diverse entrained fauna probably originated on a narrow, unstable shelf (Pickerill *et al.*, 1998). The shell bed was discovered by Lucas Barrett in 1859, and has formed the focus of intermittent research for nearly 150 years (Donovan, 1998b). The most complete and comprehensive study of the bed, its origin and diverse biotas has recently been published (Donovan [ed.], 1998a).

The rich fauna is dominated by benthic molluscs, first described in detail by Woodring (1925, 1928). A diverse associated fauna includes benthic and planktonic forams, scleractinian corals, bryozoans, crustaceans, echinoderms and fish otoliths; an associated ichnofauna is dominated by various taxa of borings.

Despite the intensity of research on this unit, brachiopods surprisingly have not been featured in any published studies. The single ventral valve of *Argyrotheca*, recently recovered from residues, is minute and coarsely ribbed and is probably a juvenile specimen. It is here tentatively assigned to *A. inconstans* Cooper, 1979, first described from Pliocene rocks of Cuba. The brachiopod *Argyrotheca*

is a small but significant addition to the extensive faunal list from the Bowden Shell Bed and supplements the expanding faunal list of fossil brachiopods from Jamaica (Harper, 1993).

Systematic palaeontology

Superfamily Terebratulioidea Gray, 1840

Family Megathyrididae Dall, 1870

Genus *Argyrotheca* Dall, 1900

Type species — *Terebratulina cuneata* Risso, 1826 (Recent, Mediterranean), by original designation.

Argyrotheca cf. *inconstans* Cooper, 1979

Figure 1

compare:

v*1979 *Argyrotheca inconstans* Cooper, p. 21, pl. 6, figs 1-15.

Material — A single, juvenile ventral valve (UF 77323), deposited in the Invertebrate Paleontology Division of the Florida Museum of Natural History, University of Florida (UF), Gainesville, Florida (USA).

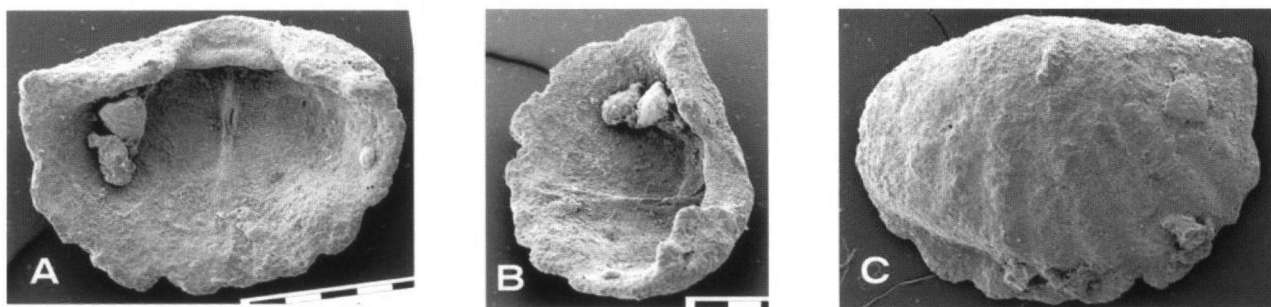


Figure 1. *Argyrotheca* cf. *inconstans* Cooper, 1979. A, B and C - normal and inclined internal views of ventral valve and external view of the same shell (UF 77323), respectively; x 25 (SEM photomicrographs).

Description — Minute, ventral valve of transversely quadrate outline, length about 80% of width. Maximum width at hinge line with slightly acute cardinal angles. Anterior commissure rectimarginate, modified slightly by ribbing. Ornament of rounded costae and incipient costellae, the former arising near umbo and numbering about eight; the ribs are generally broad in contrast to the narrower interspaces. A single costella is developed from one of the central costae. Concentric growth lines are present but indistinct and discontinuous.

Interior with a well-developed apical plate with anterior rim; supported by thin, relatively long median septum rising to a crest at mid-valve length near where it terminates.

Remarks — Cooper (1979, p. 21) considered *A. inconstans* to be rather unique. His new species from the Pliocene of Matanzas Province (Cuba) was characterised by its small size and variable development of distinctive costae. These features also typify the juvenile Bowden specimen. Moreover, both forms are also characterised by the development of a few median costellae (see e.g., Cooper, 1979, pl. 6, fig. 6), arising close to the umbones. The Bowden specimen is thus tentatively included in Cooper's species pending the acquisition of more material from Jamaica.

Discussion

Over fifty-five brachiopod taxa are now known from Upper Cretaceous-Pleistocene horizons in the Caribbean region. Nevertheless, the Pliocene has relatively few taxa compared with the diverse faunas of the Miocene rocks of the region (Harper, 2002). Within the Caribbean basin, the Pliocene, and to a lesser extent the Pleistocene, are depauperate intervals prior to the appearance of a range of local Lazarus taxa, recovering in the Recent fauna of the Caribbean Sea (Cooper, 1977). The new occurrence in the Bowden Shell Bed adds little to this problem; possible refugia within the Caribbean region remain unknown.

Species of *Argyrotheca* occur at a range of documented and predicted depths in Recent (Asgaard & Stenftoft, 1984)

and Pleistocene faunas (Harper *et al.*, 1995; Harper & Donovan, 2002) and usually appear in more cryptic habitats attached to small areas of substrate (Donovan & Harper, 1998; Harper *et al.*, 1995). The occurrence nonetheless contrast with brachiopod data from the Miocene shell beds in the Caribbean region. Brachiopods are not uncommon in Trechmann's shell bed and associated shelly horizons on the Lesser Antillean island of Carriacou. Here, however, the dominant brachiopods are large, smooth terebratulids, including *Tichosina* together with less common *Terebratulina* (Donovan & Harper, 2001).

The Bowden *Argyrotheca* probably represents part of a stray spat fall that survived entrainment and transport within the Bowden gravity flow.

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