

SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 91, NUMBER 10

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## Johnson Fund

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JOHNSON-SMITHSONIAN DEEP-SEA EXPEDITION  
TO THE PUERTO RICAN DEEP

# NEW BRACHIOPODS

(WITH TWO PLATES)

BY

G. ARTHUR COOPER

Assistant Curator, Division of Stratigraphic Paleontology,  
U.S. National Museum



(PUBLICATION 3241)

CITY OF WASHINGTON  
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### NEW BRACHIOPODS

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(WITH TWO PLATES)

One of the most profitable realms for the collection of brachiopods living in the waters of the Atlantic Ocean is the region about the West Indies. From this region 16 species of brachiopods, representing 10 genera, are known. Of this number the Johnson-Smithsonian Deep-Sea Expedition collected six species, representing six genera, some of them the rarest and most interesting brachiopods of the region. The following species have been identified: *Dallina floridana* (Pourtales), *Thecidellina barretti* (Davidson), *Platidia "seminula,"* *Gryphus bartlettii* (Dall), *Argyrotheca barrettiana* (Davidson) and *Terebratulina* species. Two additional species have proved to be new and are here named in honor of the distinguished leaders of the expedition.

#### GRYPHUS BARTSCHI, n. sp.

Plate I, figs. 1-8

*Gryphus cubensis* Dall (in part), Proc. U.S. Nat. Mus., vol. 57, p. 315, 1920; U.S.N.M. nos. 193567, 226290, 64250, 211014, 64264 (part), 274140 (part).  
*Gryphus bartlettii* Dall (in part), idem, p. 314, 1920; U.S.N.M. no. 64258.

Shell moderately large for the genus, longitudinally oval in outline. Hinge narrow. Lateral profile unequally biconvex, the ventral valve having the greater depth. Lateral commissure nearly straight; anterior commissure rectimarginate or faintly uniplicate. Beak slightly incurved, foramen mesothyrid to permesothyrid, labiate. Surface marked by fine concentric lines of growth and faint, distant, elevated radial lines.

Ventral valve rather strongly convex, most convex a little posterior to the middle of the shell; anterior portion flattened; anterior margin gently rounded or subtruncate.

Dorsal valve evenly convex, slightly flattened at the front. Sides gently rounded, narrowed at the posterior to form an obtuse beak which curves under the ventral beak.

Ventral interior: Pedicle collar short; length of muscle field equal to about one third the length of the valve. Pallial sinuses narrowly divergent.

Dorsal interior: Loop narrow, equal in length to about one fourth the length of the valve. Crural processes short, transverse ribbon wide, rather sharply folded medianly.

*Discussion.*—The shell nearest to *Gryphus bartschi* externally is *Liothyrella uva* (Broderip). This species has the lenticular profile of the new species herein described and possesses also the fine radial lines in addition to concentric lines of growth. However, the loop of *L. uva* is sufficiently different from that of *Gryphus* to have warranted the erection of the different generic name.

*Gryphus bartschi* has been misidentified as *G. cubensis* (Pourtales), to which it has only a superficial resemblance. The latter is a larger shell with a very different growth habit. (See pl. 1, fig. 9.) In profile *G. cubensis* has a sinuous lateral profile with the greatest curvature at the middle of the valve. The sides of the ventral valve are conspicuously flexed dorsally. Viewed from the dorsal valve (see pl. 1, fig. 9), it is triangular in outline, being widest near the front. The anterior commissure is rectimarginate. The triangular outline is also seen in the young of the species.

In the same general geographic realm as *G. cubensis* and *G. bartschi* is another species, *G. bartlettii*. This is a large species readily distinguished by the strong fold on the dorsal valve. In shape, color, and ornamentation this species differs notably from the one described here as new.

*Type locality.*—Station 102, at 90 to 500 fathoms, latitude  $18^{\circ}50'30''$  N., longitude  $64^{\circ}43'$  W.—latitude  $18^{\circ}51'$  N., longitude  $64^{\circ}33'$  W. Occurs in association with *Gryphus bartlettii*.

*Holotype.*—U.S.N.M. no. 431002.

#### ARGYROTHECA JOHNSONI, n. sp.

Plate 1, fig. 10; plate 2, figs. 1-12

Shell larger than usual in the genus, semicircular to subelliptical in outline. Hinge straight, cardinal extremities acutely angular to mucronate in the young, but nearly a right angle in adults and old individuals. Lateral profile plano-convex. Anterior commissure broadly sulcate. Ventral interarea strongly inclined ventrally (pro-

cline), forming an angle of about  $90^\circ$  with the lateral commissure. Shell costate; costae broad and rounded with narrower interspaces. The ribs are salmon-colored, and the interspaces are yellow.

Ventral valve subpyramidal, gently convex in lateral profile. Fold low, defined by two central costae which are a little broader and more elevated than their fellows. In the sulcus between these two costae a rib is intercalated near the front of the valve. This rib appears  $2\frac{1}{2}$  to 3 millimeters from the beak when it is present. Lateral slopes flat or gently convex.

Dorsal valve flat or gently convex in lateral profile, but broadly sulcate in anterior profile. Median sulcus shallow, usually occupied by a low, indistinct secondary rib near the front of the valve. Region on each side of the sulcus gently convex, but just anterior to the cardinal extremities a prominent depression sets them off from the body of the shell.

Ventral interior: Teeth wide, pedicle collar high and narrow, supported by the median septum which extends nearly to the middle of the valve. The median septum is high, thin, and broadly triangular in profile, the apex of the triangle being located about one fourth the length of the valve from the beak.

Dorsal interior: The median septum extends nearly to the front margin of the valve and is triangular in profile. Front margin of septum sigmoidal in profile. Apex of septum located at about the middle of the valve. Loop broad, attached to the floor of the valve near the middle. The soft parts of the shell present no new features. The digestive gland is pale yellow in color. The gonads are crescentic in outline and pale yellow in color.

*Type locality*.—Station 52 at 14 to 22 fathoms, latitude  $19^\circ 10' 25''$  N., longitude  $69^\circ 20' 55''$  W.—latitude  $19^\circ 10' 05''$  N., longitude  $69^\circ 21' 25''$  W., attached to worm tubes in association with *Thecidellina barretti* (Davidson). The above description is based on 6 dried specimens and 26 alcoholic specimens, U.S.N.M. no. 431003, a-f.

*Holotype*.—U.S.N.M. no. 431003.

*Discussion*.—There are five known species of *Argyrotheca* living in the Atlantic around the West Indies. Three of these species are very small animals and are readily distinguished from *A. johnsoni*. The other two are rather large for the genus, but this is the only feature in which they resemble *A. johnsoni*. *Argyrotheca barrettiana* (Davidson) differs from *A. johnsoni* in color and ribbing pattern. This species is conspicuously marked by scarlet bands in the spaces between the ribs, but the ribs themselves are pale yellow.



Furthermore, the ribs are sharper and narrower than those of *A. johnsoni*. The feature of an intercalated rib between the two median costae marking the fold is shared by both species, but in addition to the median intercalated rib, there are extra costae inserted between the primary costae along the front margin of *A. barrettiana*.

Internally there are differences between *A. barrettiana* and *A. johnsoni* in the loop and apical region of the ventral valve. The loop of *A. johnsoni* meets the floor of the valve farther forward than in *A. barrettiana*. In the ventral valve of the latter the pedicle collar is less elevated and less strongly developed than in *A. johnsoni*.

There are equally as strong color and ribbing differences between *A. johnsoni* and *A. lutea* Dall as there are between the new species and *A. barrettiana*. The common color of *A. lutea* is a pale yellow, which is in contrast to the salmon color of *A. johnsoni*. The ribbing pattern of *A. lutea* is characterized by a rather prominent median sinus on both valves and frequent intercalation of ribs. There are also differences internally between the two species. The septum of *A. lutea* is serrate along its front margin, but that of *A. johnsoni* forms a somewhat sigmoidal curve in profile.

## EXPLANATION OF PLATES

### PLATE 1

All views are of the holotype, U.S.N.M. no. 431002.

FIGS. 1-8. *Gryphus bartschi* Cooper, n. sp. Fig. 1, posterior view showing labiate foramen,  $\times 2$ . Fig. 2, lateral view,  $\times 2$ . Fig. 3, anterior view, commissure rectimarginate,  $\times 2$ . Fig. 4, ventral view,  $\times 2$ . Fig. 5, dorsal view,  $\times 2$ . Fig. 6, dorsal view, natural size. Fig. 7, posterior view of ventral valve showing symphytium and foramen,  $\times 4$ . Fig. 8, dorsal interior showing narrow loop with plicated transverse ribbon.

FIG. 9. *Gryphus cubensis* (Pourtales). Dorsal view of a characteristic specimen introduced for comparison with *G. bartschi*,  $\times 2$ . Note the marked triangular outline of *G. cubensis* as compared with the oval outline of *G. bartschi*. U.S.N.M. no. 334762.

FIG. 10. *Argyrotheca johnsoni* Cooper, n. sp. Anterior view of a young specimen attached to a fragment of bryozoan colony. Note the broadly sulcate anterior commissure, median intercalated rib, and great width of the shell,  $\times 4$ . Paratype, U.S.N.M. no. 431003f.

### PLATE 2

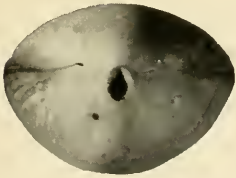
*Argyrotheca johnsoni* Cooper, n. sp.

FIGS. 1, 2. Ventral and dorsal views respectively of the holotype, natural size. U.S.N.M. no. 431003.



- FIGS. 3, 5. Ventral and dorsal views respectively of a young individual showing mucronate cardinal extremities and intercalated median rib,  $\times 4$ . Paratype, U.S.N.M. no. 431003a.
- FIG. 4. Ventral view of a somewhat larger individual than the preceding (431003a). The cardinal extremities are much less angular and the proportion of width to length has decreased,  $\times 4$ . Paratype, U.S.N.M. no. 431003b.
- FIGS. 6, 7. Young specimen in which median intercalated rib has not yet developed,  $\times 4$ . Paratype, U.S.N.M. no. 431003c.
- FIG. 8. Dorsal interior showing the lophophore,  $\times 4$ . Paratype, U.S.N.M. no. 431003d.
- FIGS. 9, 10. Dorsal and ventral views respectively of the holotype,  $\times 4$ . The ventral valve shows the median intercalated rib, but this is not represented on the dorsal valve. Note broad rounded costae.
- FIG. 11. Ventral interior showing pedicle collar and strong median septum,  $\times 6$ . Paratype, U.S.N.M. no. 431003e.
- FIG. 12. Dorsal interior showing loop and its union with the floor of the valve,  $\times 6$ . Paratype, U.S.N.M. no. 431003e.

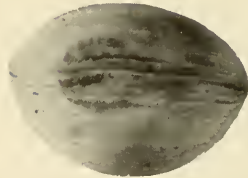




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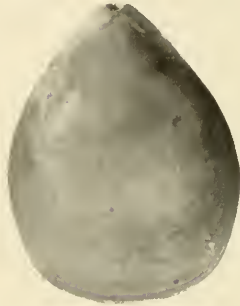
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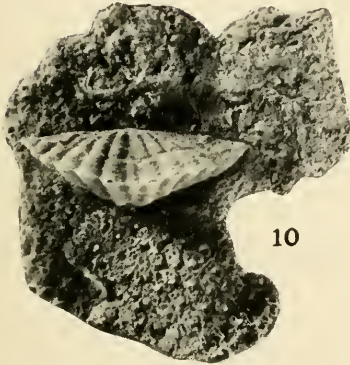
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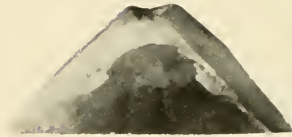
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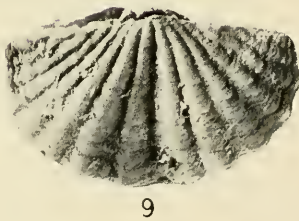


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NEW BRACHIOPODS  
(For explanation, see page 4.)



**NEW BRACHIOFODS**  
(For explanation, see pages 4, 5.)