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Final Report on the Blake mollusca.

REPORTS ON THE RESULTS OF DREDGING, UNDER THE SUPER-
VISION OF ALEXANDER AGASSIZ, IN THE GULF OF MEXICO
(1877-78) AND IN THE CARIBBEAN SEA (1879-80), BY THE U. S.
COAST SURVEY STEAMER "BLAKE," LIEUT.-COMMANDER C. D.
SIGSBEE, U. S. N., AND COMMANDER J. R. BARTLETT, U. S. N.,
COMMANDING.

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Superintendents of the U. S. Coast and Geodetic Survey.]

XXIX.—REPORT ON THE MOLLUSCA. /

By W. H. DALL.

PART I.—BRACHIOPODA & PELECYPODA.

PART II.—GASTROPODA AND SCAPHOPODA. — P. 319

Pt. I.

WITH NINE PLATES

Pt. II

WITH THIRTY-ONE PLATES.

Division of Mollusks
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Reports on the Results of Dredging, under the Supervision of ALEXANDER AGASSIZ, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U. S. Coast Survey Steamer "Blake," LIEUT.-COMMANDER C. D. SIGSBEE, U. S. N., and COMMANDER J. R. BARTLETT, U. S. N., Commanding.

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XXIX.

Report on the Mollusca, by W. H. DALL. — Part II. Gastropoda and Scaphopoda.

THE reader of this Report, for various details as to its origin, progress, and results, is referred to the introductory remarks prefixed to Part I. (Bull. Mus. Comp. Zool., Vol. XII, No. 6, pp. 171-186.) His attention is especially called to the remarks upon nomenclature (p. 175), and the acknowledgments for indebtedness to other scientific men and their publications.

In the present portion of the Report, the material offered by the Blake Collection has been materially supplemented by the southern dredgings of the U. S. Fish Commission Steamer "Albatross," and other material collected in the region and now in the National Museum. It was the original intention of the writer to make this Report a summary to date of deep-sea research and faunal exploration of the geographical province extending from Brazil to Cape Hatteras. But the material has been collected so rapidly, and the study of it leads to such unexpected conclusions, in many cases, that it has been impracticable to do this for all the families. A general bathymetrical review may be attempted later; the present paper contains data for any one ambitious to make the attempt at once, but the writer prefers to defer it until the results of the later dredgings of the Fish Commission and of the French expeditions are at hand, to be combined into a paper which shall represent the latest information on the subject.

However, in the following Report will be found in several instances a complete though brief review of all the species of a group known to

resembles that of *A. Gouldiana*. There is no jaw, nor any radula, so this feature may be taken as diagnostic of *Aurinia*. There are two little cartilaginous pads near the tip of the proboscis. There is no opercular pad or operculum, nor was there any visible color gland.

On the whole, the general characters of the soft parts agree well with *A. Gouldiana*, though differing in some minor details.

Aurinia robusta n. s.

Plate XXXV. Fig. 2.

Shell large, stout, with a chalky external layer under a thin pale yellow epidermis, and an internal porcellaneous white layer; a strongly curved and recurved canal; four columella plaits, nearly obsolete in the adult; the surface finely spirally striated; earlier whorls with the suture appressed and numerous (on the fourth whorl about 25) small short transverse riblets mounted on the periphery; outer lip sharp; throat pure white; pillar lip merely glazed, exterior spotted with squarish brown spots with less regularity of size and position and more distant than in *S. junonia*; whorls six beside the nucleus, fully rounded, somewhat irregularly coiled. Lon. of shell, 119.0; of last whorl, 100.0; of aperture, 88.0 mm. Max. diameter of shell, 52.0 mm.

Nucleus small, of one and a half concave whorls, with the acute initial point central, rising above the margin of the concave, which is formed by the sharp posterior edge of the first post-embryonic whorl; this whorl is sculptured with very low flat striated transverse riblets with narrower channelled interspaces, extending clear across the whorl and both crossed by about eight distinct spiral threads between the two sutures; after the first turn the transverse bands become narrower, the interspaces about equal to them, and the spiral threads wider and flattened so that a fine and exceedingly elegant trellising is the result. The second whorl begins to be spotted with squarish brown spots with fainter edges, of which seven series appear at the end of the second turn; interior yellowish white with four sharp plaits on the pillar, very oblique, and growing stronger backward; epidermis smooth, thin, not polished; suture very closely appressed. Lon. of this young shell, with nucleus and two whorls, 12.0; of second whorl, 11.0; max. diam., 5.0 mm.

Habitat. Station 55, off Havana, in lat. $22^{\circ} 9' .5$ and lon. $82^{\circ} 21' .5$, in 242 fms.; Station 50, lat. $26^{\circ} 31'$ and lon. $85^{\circ} 53'$, in 119 fms; U. S. Fish Commission Station 2397, in the Gulf of Mexico, lat. $28^{\circ} 42'$, lon. $86^{\circ} 36'$, in 280 fms., gray mud, bottom temperature $46^{\circ} .1$ F.

This fine and remarkable species is peculiarly distinguished by its chalky outer layer, under a pale epidermis, which becomes eroded, like that of a fresh-water shell. The form of the nucleus, if the hypothesis of a membranous embryonic first shell be admitted, would be due to a calcification which did not extend to the dome of the membrane, while the acute initial point of the calcified part may be supposed to occupy the vicinity of the pillar in the soft

shell. The posterior margin of the first post-embryonic whorl might easily be rounded off by erosion, when the solid nucleus within after a little wear would put on quite a different appearance. The pattern of coloration, resembling *S. junonia* and *S. dubia*, also resembles that of young *Conus floridanus*, *Conus Mazei* Deshayes, and other not related archibenthal species. The pillar is more flexuous than in either of the other species. The riblet sculpture resembles not only that of *S. dubia* and *S. Gouldiana* in a general way, but also that of the fossil *S. mutabilis*, perhaps the precursor of all the Gulf species. The Blake dredged only fragments of this shell, the Fish Commission a single adult.

Aurinia Gouldiana n. s.

Plate XXIX. Fig. 3.

Voluta Gouldiana Dall, Conch. Exchange, II. p. 10, July, 1887.

Shell rather small, solid, slender, white, brownish plum-color, or spirally banded with whitish and claret-color, rarely square-spotted in spiral series; whorls moderately full, five and a half beside the nucleus; sculpture of fine close distinct spiral threads covering the whole surface except the anterior part of the last whorl, where they gradually give way to much stronger and more distant threads, which in some specimens wind into the aperture, as if simulating small plaits; the nucleus is nearly flat, whitish, consisting of one whorl rising a little above the posterior edge of the first post-embryonic whorl, and having a central projecting initial point, but less prominent than in *V. robusta*. The suture is appressed and in the early whorls a little margined; the first whorl is only strongly spirally striated and convexly rounded; the succeeding whorls have the periphery rippled by a succession of (on the third whorl 22) small waves, with their anterior slope steeper than the other, and which, in some specimens, extend to the last third of the last whorl before becoming obsolete, though ceasing sooner in others; these waves are generally confined to the periphery and vary in strength and number in different specimens, one specimen having only eighteen on the third whorl; the color varies from yellowish white to a ruddy brown with a suggestion of purple in it, which is usually stronger at the suture along the pillar and outer lip, and especially toward the end of the canal. The fresh specimens nearly all show a tendency to spiral banding; one beautiful but half-grown specimen has six narrow pale bands, the second from the suture being on the periphery, with the much wider interspaces of a brownish claret color; this fades slightly, but the white ones do not seem faded. The outer lip is sharp with a dark margin, the throat whitish, the pillar callus yellowish white; there are, in the very young, four plaits, of which the first and third, counting backward, are fainter than the other two; in adult shells rarely are more than two visible and those are quite faint; there is only a light glaze on the body whorl; in the adults the nucleus and first whorl are generally so worn as to resemble one of the common round

PLATE XXXV.

- Fig. 1. *Mitromorpha biplicata* Dall ; 7.0. Page 165.
 " 2. *Aurinia robusta* Dall ; 119.0. Page 153.
 " 3. *Columbella (Astyris) profundus* Dall ; 8.0. Page 192.
 " 4. *Cancelaria (Trigonostoma) Agassizi* Dall ; 13.5. Page 130.
 " 5. *Fusus eucosmius* Dall ; 85.0. Page 167.
 " 6. *Benthobia Tryoni* Dall ; 13.0. Page 132.
 " 7. *Fusus halistreptus* Dall ; 80.0. Page 168.
 " 8. *Marginella cassis* Dall ; 15.0. Page 137.
 " 9. *Columbella (Astyris) diaphana* Verrill ; 9.0. Page 191.
 " 10. *Conomitra Blakeana* var. *laevior* Dall ; 9.75. Page 164.
 " 11. *Liomesus ? Stimpsoni* Dall ; 32.5. Page 176.
 " 12. *Eudolium Verrillii* Dall ; 32.0. Page 233.
 " 12 a. *Sipho (Ptychosalpinx ?) globulus* Dall ; 31.0. Page 175.

