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SCIENTIFIC RESULTS OF EXPLORATIONS BY THE U. S. FISH
COMMISSION STEAMER ALBATROSS.

VII.—PRELIMINARY REPORT ON THE COL-
LECTION OF MOLLUSCA AND BRACH-
IOPODA OBTAINED IN 1887-'88.

— BY

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plates V-XIV.

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novel craft was freighted with the larval shells of some form belonging to the *Volutidæ*, but in which the calcification appears to proceed equally and simultaneously from the peristome of the protoconch, so that the apex, while indicating that a protoconch had existed, did not present a raised point due to calcification along the columella of that protoconch, as in *Scaphella magellanica*. From careful comparisons, I find the only known species belonging to the region where this ovicapsule was obtained which is not excluded by the character of its nucleus from identification with the larvæ contained therein, is *S. brasiliana*, which has two plaits; and I have little doubt that to that species it should be referred. About twenty-five larval shells were contained in it, each showing two plaits.

This remarkable ovicapsule measures about 55^{mm} in horizontal diameter and 50^{mm} in vertical height. It was collected at U. S. Fish Commission Station 2766, in 10½ fathoms, sand, off the Rio de la Plata, in south latitude 36° 47' and west longitude 56° 23'. Its specific gravity is almost equal to that of the alcohol in which it is preserved, and consequently it is somewhat lighter than sea-water. Whatever may have been its original condition, the contained air bubble would have made it practically lighter than the water around it, though very slightly so.

According to H. & A. Adams, in the Genera of Recent Mollusca, Orbigny states that "the ovicapsule of *S. brasiliana* is 3 inches in length." As I am unable to refer to Orbigny's work and thus determine how certainly the ovicapsule he refers to was identified with its parent, the question remains doubtful how far it is to be depended upon. It would seem singular to call a circular hemispherical capsule, like that of *Scaphella*, "long," and that adjective would indicate some error of identification. However that may be, if the present ovicapsule, undoubtedly belonging to the *Volutidæ*, does not come from *S. brasiliana*, I am entirely at a loss to conjecture to what mollusk of this region it can be referred.

Genus **VOLUTILITHES** Swainson.

This genus is the Eocene parent of the recent genera of the *Volutidæ*. The *V. abyssicola* Adams & Reeve is not a typical species, but belongs to a small subsidiary group, having a dentate outer lip. The type of *Volutilithes* is the *Voluta spinosa* of Lamarek.

Volutilithes Philippiana sp. nov.

Plate IX, Fig. 4.

Shell (not fully adult) small, elongated, fusiform; color rather dark oliveaceous-ash color with a pale band in front of the suture; nucleus superficially eroded, small, apparently not mammillate or inflated when perfect; whorls six, when adult probably with one or two more, appressed at the suture, somewhat constricted in front of it; sculpture of rounded grooves, coarser on the constricted band in front of the suture,

finer and almost linear anteriorly on the last whorl, and slightly coarser again on the canal; the interspaces are flattened, narrow, but always wider than the grooves; there are also some fine, irregularly distributed spiral striæ; transverse sculpture of numerous little elevated, narrow, slightly flexuous waves, which on the penultimate whorl extend from the suture back to the constricted part, where they become obsolete; on the last whorl they are more irregular, fainter, and barely pass the periphery; in a perfectly adult shell they would probably be obsolete on the last whorl; these waves average somewhat less than two millimeters from crest to crest at their most prominent part a little behind the periphery on the earlier whorls; the lines of growth are fine, regular, distinct under a lens and minutely decussate the spirals; aperture narrow, pointed behind, rather wide in front, with no constriction for the canal; outer lip thin, slightly receding near the suture, not lirate within; inner lip slightly excavated, white, with a polished film of glaze over the part from which the limy layer has been absorbed; pillar thin, sharp, nearly straight; canal wide, not differentiated; there is a single prominent, fine, sharp plait just behind the edge of the pillar, and a little further back two smaller subequal plaits closer to each other than the anterior one of the pair is to the larger anterior plait; all are very oblique. Longitude of shell, 36.5; maximum latitude, 14.5; longitude of aperture, 19.5^{mm}.

HAB.—Station 2791, in south latitude 38° 08', and west longitude 75° 53', off the southwest coast of Chili, in 677 fathoms, mud; bottom temperature 37° 9 F.

This unique shell belongs to a group of which the other known representatives appear to be extinct. *V. D'Orbignyana*, *V. Domeykoana* and *V. gracilis* Philippi, *V. indurata* Conrad as well as *V. triplicata* Sowerby, all from the tertiary strata of Chili and the western coast of America, are members of it. The *Voluta gracilis* (Philippi, 1887; not of Lea, 1833, or Swainson, 1842) is perhaps its nearest relative, and probably in a large series would prove to be hardly specifically distinct. The name *gracilis* being several times preoccupied, I have therefore applied the name *Philippiana* to the present species, so that if future researches should indicate it to be identical with the tertiary fossil the name will extend to that also. It is intended as a slight compliment to Dr. Philippi, of Santiago, whose labors for nearly three quarters of a century have so much ameliorated malacology.

The west American tertiary group in question may turn out to be, as a whole, equivalent to but one species, in which case *V. triplicata* of Sowerby was first described. But until I have seen specimens of the various named forms, I would lay no stress on this observation suggested by the rather indifferent figures. The present species appears, more nearly than any other recent form, to represent the typical *Volutilithes*, while the *V. abyssicola* is shown by Mr. Watson, from the adult *Challenger* specimens, to be more nearly related to *Lioderma* Conrad.

V. Philippiana and its fossil precursors represent a step in the line of descent from the Cretaceous forms of *Volutidae* toward *Scaphella* and *Aurinia* as well as *Voluta* proper. *Scaphella* is probably descended from older representatives of the present group, while *Voluta* proper came through the line of forms like *Lyria*, so abundant in the Eocene. It is true that the present species is not spinose at the shoulder like the types of the genus, but even those are frequently smooth, and the Chilian and Oregonian fossils are frequently nodose and almost spiny at the shoulder.

The soft parts of this species were preserved. The exterior of the body is of a yellowish color and, as contracted in alcohol, rather rugose; the foot is moderately pointed behind, in front auriculated at the corners and double-edged; there is no operculum or rudiment of an opercular gland; the head is wide, with rather long, rounded, moderately stout tentacles with an expansion at the outer bases, but no eyes in the specimen before me. The siphon is long and has an appendix near its base on each side of the gutter; the gill and osphradium are as usual; the anus is simple, not free or prominent; near it are a purpuriferous and a large slime-gland, on the dome of the mantle; the verge is small, clavate, with a smaller conical tip, not flattened, about as long as one of the tentacles but thicker. It is situated immediately behind the right tentacle.

The characters of the group as far as can be judged from present data are as follows: Shell transversely ribbed and spirally striated; nucleus minute, not conspicuously differentiated from the immediately succeeding whorls; plaits few, moderate, oblique; animal devoid of an operculum and blind.

Scaphella proper has a membranous larval shell and a styliferous nucleus, and the surface of the adult is usually smooth; *Fulgoraria* has a similar or at least a swollen mammillary nucleus and spirally striated and ribbed whorls with strong plaits.

A careful study of the nuclei in well preserved recent and fossil *Volutidae* will do much toward elucidating the relations of its subordinate groups. In my report on the Floridian Pliocene, a beginning has been made in this direction. The present species came in very opportunely to assist in determining the characters of the soft parts. An empty ovicapsule dredged with it resembles those of *Scaphella magellanica*, but was only about 10^{mm} in diameter at the base.

Family MITRIDÆ.

Genus **MITRA** Lamarck.

Mitra Bairdii Dall.

Plate XI, Fig. 7.

Mitra (Turris?) Bairdii Dall, Bull. Mus. Comp. Zool., xviii, p. 161, June, 1889.

Shell waxen gray or greenish, elongated, acute, with ten or eleven flattened whorls; nucleus ? (wanting); sculpture consisting on the

PLATE IX.

- FIG. 1.* *Dentalium megathyris* Dall, 95.0; p. 293.
 2. Floating ovicapsule of *Scaphella* ? *brasiliensis* Sol.; 50 by 55^{mm}; p. 312.
 3. *Solariella infundibulum* Watson, ♂, enlarged diagram of the soft parts, with the shell removed; the operculum *in situ*; p. 349.
 4.* *Volutilithes Philippiana* Dall, 36.5; p. 313.
 5. *Scaphella magellanica* Sowerby, larval shell, from ovicapsule dredged at Station 2779, enlarged; 11.0; p. 311.
 6. *Scaphella magellanica* Sowerby, ovicapsule on valve of *Pecten*. The diameter of the base of the capsule is about 28.0; p. 311.
 7. *Halistylus columna* Dall (much enlarged), 5.8; p. 341.
 8.* *Cadulus albicomatus* Dall, 24.0; p. 295.

PLATE X.

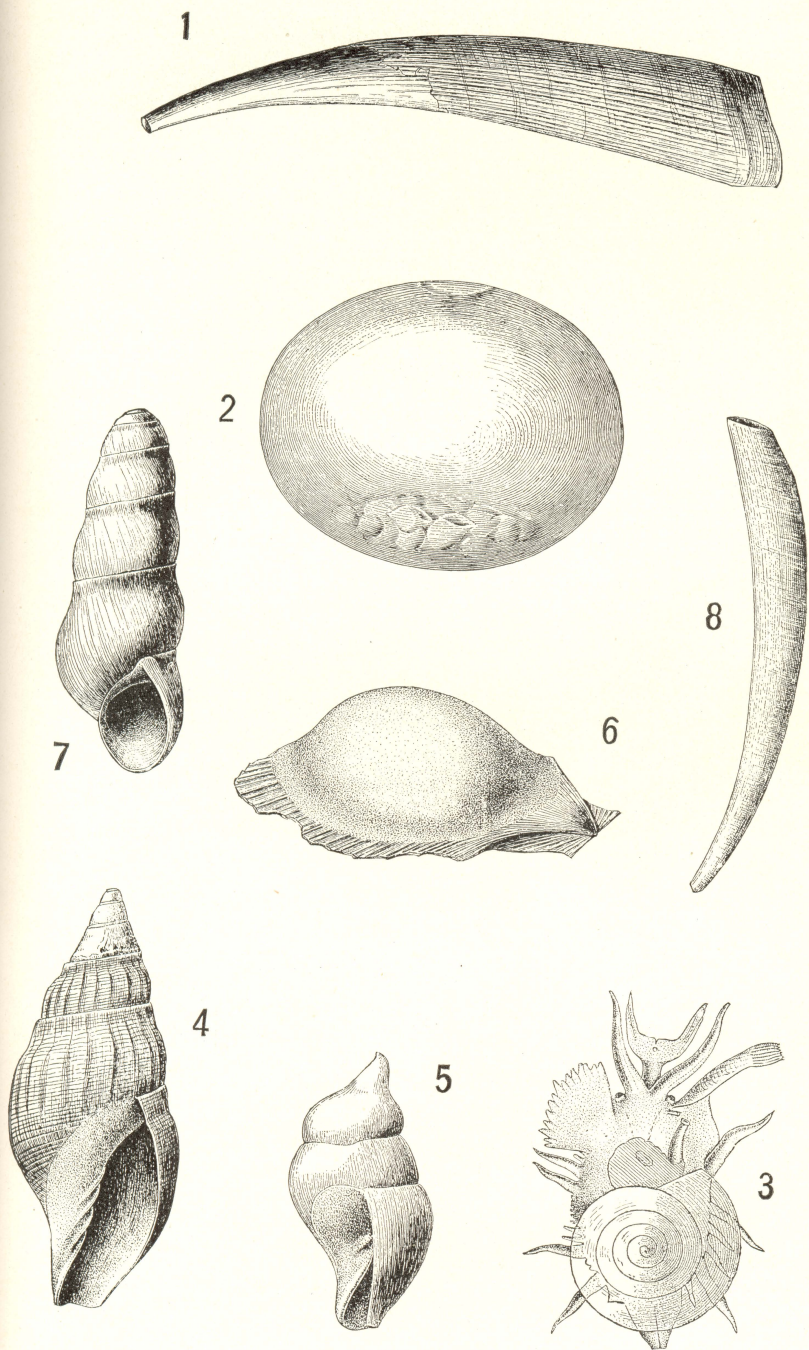
- FIG. 1. *Callocardia (Vesicomya) Smithii* Dall, interior of left valve, 28.0; p. 268.
 2. The same, hinge of right valve.
 3. The same, exterior of left valve.
 4.* *Lophocardium Annette* Dall, 29.0; p. 264.
 5.* *Callocardia guttata* A. Adams, 17 by 17.5; from a drawing by Mr. Edgar A. Smith of the unique type in the British Museum; p. 267.
 6. *Callocardia (Callogonia) Leeana* Dall, 20.0; p. 269.
 7. The same, hinge of right valve from below, old specimen, 35.0.
 8. The same, left valve.
 9. The hinge (Fig. 7), viewed from the left, right valve.
 10.* *Malletia goniura* Dall, 15.5; p. 251.
 11.* *Cymatoica occidentalis* Dall, 12.5; p. 272.
 12. *Cymatoica orientalis* Dall, 9.5; p. 273.

PLATE XI.

- FIG. 1. *Pteronotus phaneus* Dall, 17.0; p. 330.
 2. *Pecten (Pseudamusium) strigillatum* Dall, 9.0; p. 250.
 3. *Eupleura Stimpsoni* Dall, 12.0; p. 331.
 4. *Crassatella floridana* Dall, 50.0; p. 260.
 5. *Benthonella gaze* Dall, 8.0; p. 338.
 6. *Marginella cineracea* Dall, 14.0; p. 310.
 7. *Mitra Bairdii* Dall, 35.0; p. 315.
 8. *Scala babylonia* Dall, 30.0; p. 332.
 9. *Pecten effluens* Dall, 26.0; p. 249.
 10. *Peristichia toreta* Dall, 10.75; p. 334.
 11. *Cyclostrema cistrionium* Dall, alt. 1.6; p. 354.

PLATE XII.

- FIG. 1.* *Haliotis Pourtalesii* Dall, upper surface, a calcareous foraminifer adhering near the margin of the aperture; 23.0; p. 355.
 2. *Adeorbis sincera* Dall, 3.25; p. 338.
 3.* *Haliotis Pourtalesii* Dall, front view; 23.0; p. 355.
 4. *Calliostoma Coppingeri* Smith, 10.0; p. 344.
 5. *Calliostoma Riöensis* Dall, 15.0; p. 345.
 6.* *Solariella oxybasis* Dall, 13.5; p. 352. = *S. cidaris* *ads. young.*
 7.* *Actaeon perconicus* Dall, 5.0; p. 296.
 8. *Solariella actinophora* Dall, alt. 7.25; the aperture is somewhat broken on the base; p. 353.
 9.* *Nassa Townsendi* Dall, 10.0; p. 326.



GASTROPODS AND SCAPHOPODS.

(Explanation of plate on page 360.)