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OLIGOCENE FOSSILS FROM THE NEIGHBORHOOD OF CARTAGENA, COLOMBIA,  
WITH NOTES ON SOME HAITIAN SPECIES.

BY HENRY A. PILSBY AND AMOS P. BROWN.

The material described below was collected by Mr. Lloyd B. Smith in 1914, in the course of professional work in the vicinity of Cartagena, chiefly near the so-called "mud volcanoes" and at Cenizas. Most or all of them seem to be from Upper Oligocene beds, about equivalent in age to the Gatun in the Canal Zone.

A few fossils collected by Mr. Smith in the following year in Haiti are also described. Their chief interest is in adding to the evidence of extensive Oligocene beds south of the main range of the island. The species made known up to this time are not sufficient to fix the position of these beds in the Oligocene series.<sup>1</sup>

When not otherwise specified, the species mentioned are from near Cartagena.

*Conus proteus* Hwass.

A specimen showing fewer color-spots than the recent *C. proteus*.

*Conus molis* B. and P.

*Conus imitator* B. and P.

*Conus æmulator* B. and P.

*Conus gaza* P. and J.

These four species were described from the Gatun bed.

*Turris cartagenensis* n. sp. Pl. 5, fig. 1.

A species grouping with *T. beudanti* (Sowerby) of Santo Domingo, from which it differs by the greater number and smaller size of longitudinal folds—ten on the last whorl. Form, sculpture and structure of the anal fasciole are as in the Santo Domingan species. Length of the broken shell figured, 36.5 mm.

*Drillia gatunensis* Toul.

*Cancellaria dariena* Toul.

*Mitra longa* Gabb.

*Marginella mediocris* n. sp. Pl. 5, fig. 2.

A species related to *M. latissima* Dall, but differs from the narrowest specimens of that by its much narrower contour. The outline

<sup>1</sup> See also a brief paper by one of us in PROC. ACAD. NAT. SCI. PHILA., 1910, p. 487.

## NEW MOLLUSCA OF THE SANTO DOMINGAN OLIGOCENE.

BY H. A. PILSBRY AND C. W. JOHNSON.

The authors have had a revision of the fossils of Santo Domingo and Haiti, chiefly contained in the William M. Gabb collection, in preparation for some years. The work is now completed; but as some months must elapse before the illustrations can be published, advance descriptions are here given of most of the new forms.

The age of the Santo Domingan beds covered by the collections of Heneken and Gabb has been the subject of some uncertainty; but it appears that the lower bed or beds, containing *Orthaulax*, are nearly or quite equivalent to the *Orthaulax pugnax* zone of the Oligocene of Tampa Bay, while the upper beds, furnishing most of the fossils, are uppermost Oligocene, synchronous with the upper beds (Gatun formation) of the Canal Zone. We have found no evidence of Pliocene or other beds between the Upper Oligocene and the Pleistocene.

Illustrations of the species here described will appear in the complete report, now awaiting publication.

## ACTEONIDÆ.

*Acteon subornatilis* n. sp.

*Acteon tornatilis* Linn., Gabb, Trans. Amer. Philos. Soc., XV, p. 245.

Shell similar to *A. tornatilis* of Europe in size and form, but as coarsely sculptured over the whole body-whorl as that species is on the base. There are about 35 subequal spiral grooves on the last whorl, cut into square or oblong pits by narrow vertical lamellæ, the grooves separated by flat-topped ridges which are wider than the intervals except on the base, where they become narrow, no longer flat-topped, and about equal in width to the intervening grooves. Length 17, diam. 8.4, length of aperture 12 mm.

This form was referred to *A. tornatilis* by Gabb, but it differs in having the sculpture coarser and equally developed over the whole body-whorl, not finer and fainter in the middle as in the well-known European species.

Type No. 3183.

*Acteocina subbullata* n. sp.

This species is almost identical with *A. bullata* (Kilner) in form

The type and two other specimens are No. 2958, A. N. S. P. The type is somewhat smaller than the others, both of which have been bored by predaceous snails.

*Clathurella amioa* n. sp.

Resembles *C. gracilis*. It is less slender and the whorls are shorter and revolve less obliquely. It has the same number of axial ribs and spiral threads, but, as they are relatively larger, they are much more crowded than in *C. gracilis*. The fine spiral lines between the prominent raised threads are very minute. The lip varix is noticeably larger, and the mouth is wider; the callous nodule on the body next to the sinus is much larger than in *C. gracilis*.

Length 16.3, diam. 5.25 mm.; aperture 7.5 mm.

It is allied to *C. vendryesiana* Dall,<sup>1</sup> but the prominent axial ribs over the whole shell differentiate it.

Type is No. 2913, A. N. S. P.

*Scobinella tristis* n. sp.

The shell is fusiform with turrated spire. The whorls are strongly angular at the shoulder, rather deeply concave between the shoulder and a strong, beaded ridge below the suture. There are four spiral cords in the concavity. At and below the shoulder there are about 24, deeply beaded spiral cords, the beads arranged in protractive curves. On the penult whorl there are four spirals below the shoulder, which has a bifid spiral. The aperture is very narrow. The outer lip of the type has been broken during the life of the animal, and is thicker than normal, lirate within. The long, straight columella bears two strong, mitriform plaits, and there is the faint trace of a third one.

Length 45.8, diam. 13, length of aperture 26 mm.; 6 + whorls remain, the upper ones being lost.

Type No. 2927, A. N. S. P.

This is a shorter, less graceful shell than *S. magnifica*, with the whorls more strongly shouldered, more concave above the shoulder, and with a stronger presutural cord. *Scobinella morierei* (Cossm.) has a shorter anterior canal. *S. calata* Conrad is smaller and less fusiform.

*Conus furvoides brachys* n. subsp.

The shell is shorter than *furvoides*. The last 4 whorls are concave and weakly striate spirally. It stands close to *C. concavilectum* B. & P., of Gatun, but that species has more copious and granulous

<sup>1</sup> *Proc. U. S. Nat. Mus.*, XIX, 1896, p. 306, Pl. 27, fig. 1.

spiral striae in the lower half, and the spiral striation of the spire is distinct.

Length 33.5, diam. 17.3 mm. (type).

“ 38, “ 20.5 “

*Conus xenicus* n. sp.

The shell is broad above, the diameter about two-thirds of the length; spire low, its outline strongly concave, rising to an acute apex; periphery carinate, the slopes below it nearly straight. The early whorls have a smooth keel, projecting above the suture, but the last five are flat, with very weak traces of spiral striae, and separated by a plain, narrowly impressed suture. The last whorl has coarse, well separated spiral cords on the anterior end, but under suitably oblique light very faint spirals may be seen throughout. The faint growth-striae retract rather strongly near the shoulder. The aperture is very narrow.

Length 29, diam. 19 mm. (type).

“ 27, “ 17 “

Besides the type, No. 2575, A. N. S. P., there are three other specimens in the lot. It was labeled "*Conus* sp. ?, monstrosity" by Gabb, but none of the specimens shows any trace of injury, and we have every reason to believe that they are entirely normal.

*Conus perlepidus* n. sp.

*Conus planiliratus* Sby., Gabb. Trans. Amer. Philos. Soc., XV, 1873, p. 230.  
Not of Sowerby.

The shell is rather slender, with somewhat concavely conic spire of about 12 whorls, which are flat, marked with raised, arcuate striae, and have an angle projecting very little above the suture. Last whorl is rather actually angular, the sides nearly straight below the angle, with sculpture of about 22 spiral furrows half as wide as the flat intervals; the furrows being cancellated by raised axial threads. The posterior sinus of the aperture is deep. Aperture of about equal width throughout.

Length 41, diam. 18, length of aperture 38 mm.

Gabb referred the specimens of this species to *C. planiliratus*, but Sowerby's phrase "*Testa turbinata, crassa*" could hardly have been applied to such "a long, narrow species" as this. Gabb refers, also, to Guppy's figure in Quarterly Journal of the Geological Society, XXII, Pl. 16, fig. 7, which agrees well with Sowerby's brief diagnosis of *C. planiliratus*, but not with the present species.

The type and five other specimens are No. 2569, A. N. S. P. In

small specimens, 22 mm. long, the spiral grooves are equal in width to the flat intervals.

***Conus trisculptus* n. sp.**

The shell is biconic, the spire composed of slightly concave whorls, with a low carina projecting above the suture. On the last  $2\frac{1}{2}$  whorls this carina bears low nodes (about 20 on the last whorl), but on the earlier whorls the keel is smooth. The upper slope of each whorl has prominent, arcuate radial striæ but no spirals. Below the shoulder the surface is slightly convex, contracted a little above the base. The lower half has about 13 spiral grooves, widely separated except close to the base; and except on the anterior fourth there are spiral series of small pustules which are slightly lengthened in the axial direction, and are arranged in vertical rows, but somewhat irregular in places.

Length 34.5, diam. 16.5 mm.; length of aperture 27 mm.

Costa Rica, Pliocene. W. M. Gabb. Type No. 2567, A. N. S. P.

This cone was with the lot of *C. consobrinus ultimus*, from which it is at once separable by the smooth keel of the upper whorls.

***Conus consobrinus ultimus* n. subsp.**

*Conus consobrinus* Sby., Gabb, Journ. A. N. S. Phila. 2 Ser., VIII, p. 359.

Shell more squarely shouldered than *C. consobrinus*, and with tubercles extending upon the angle of the last whorl.

Length 52, diam. 24.3 mm.

Costa Rica, Pliocene. Collected by W. M. Gabb. Type and five other specimens are No. 3322, A. N. S. P.

***Conus longitudinalis* n. sp.**

The shell is about twice as long as wide, with nearly straightly conic, elevated spire of about 10 whorls. These are flat, with an angle projecting above the suture and on the last whorl. There are slightly arcuate, protractive striæ above. The last whorl, below the shoulder is coarsely corrugated vertically, the wrinkles somewhat irregular. The anterior third has narrow spiral grooves, the upper three widely spaced, the rest in pairs, and all crossed by axial threads.

Length 35, diam. 17.5 mm.

This species is remarkable for its coarsely wrinkled surface. It is known by one specimen with the outer lip extensively broken, and the spire and part of the last whorl of another.

Type No. 2574, A. N. S. P.

**Conus simplicissimus** n. sp.

*Conus berghausii* Mich., Gabb, Trans. Amer. Philos. Soc., XV, 1872, p. 232.  
Not of Michelotti.

The shell is thick, stout, the diameter more than half the length, smooth except for delicate growth-lines. Spire conic with concave outlines, the whorls nearly flat, the upper ones angular above the suture. Shoulder rounded, the lateral slope below it somewhat convex, showing very faint traces of five spiral series of rather large reddish spots. Above the shoulder there are some oblique reddish flames. No spirals near the base or elsewhere. Aperture is somewhat widened in the lower third.

Length 68, diam. 42 mm.

" 63, " 33.5 " ; whorls 11 (type).

" 41, " 25.5 " .

A cone of very simple form, differing from others of somewhat similar contour by the absence of spiral sculpture. *C. recognitus* is much more contracted anteriorly, and has weak spiral striæ.

The smallest specimen of the three is that which Gabb referred to *C. berghausii* Mich., an Italian Tertiary species. Dr. Dall has included *C. berghausii* Gabb in the synonymy of *C. proteus*, but it differs from that by the swollen shape, and is certainly distinct.

Type No. 2549.

**Conus porcellus** n. sp.

*Conus cedo-nulli* Brug., Gabb, Trans. Amer. Philos. Soc., XV, 1872, p. 232.

The shell is broad, the diameter about two-thirds of the length. The spire is low-conic with slightly concave outlines, composed of about 10 whorls, the later two or three concave above, earlier ones flat, a few showing a slightly projecting angle above the suture; lightly sculptured with arcuate growth-lines. The shoulder of the last whorl is well rounded; lateral slope convex in the upper part, then straight. A siphonal fasciole is defined by an oblique, spiral ridge, below which there are four spiral cords. Above the ridge there are about 10 narrow, widely spaced spiral cords, each bordered above by a slight gutter which is striated vertically. The upper third of the last whorl is nearly smooth, but under a lens it shows faint, widely spaced spirals, either slightly raised or indicated by gray lines.

Length 29.3, diam. 19 mm.; length of aperture 25 mm. (type).

" 38, " 24 " (largest specimen).

Type No. 2546.

A series of several hundred specimens is in the collection, the type

being contained in No. 2556, A. N. S. P. We are utterly at a loss to account for Gabb's reference of the shell to *C. cedo-nulli*, which is entirely different.

The sculpture is rather variable, as usual in *Conus* some individuals showing raised spirals nearly up to the shoulder, while in other the upper half may be smooth.

*Conus pernodosus* n. sp.

The shell is rather slender, the diameter not quite half the length; spire produced, slightly concave in the upper part, of about 9 whorls, which are slightly concave and spirally striated above, with a projecting periphery which is set with somewhat pointed tubercles on the last  $3\frac{1}{2}$  whorls. On the angle of the last whorl there are 11 tubercles. Below the angle the outline is very slightly convex. Surface closely sculptured with flat-topped spiral cords about twice as wide as the intervals (37 below the angle of last whorl); intervals are sharply sculptured with axial threads.

Length 23.3 (imperfect at base); diam. 12.3 mm.

With the type, No. 2552, A. N. S. P., there are two young shells about 15 mm. long, which show tubercles on the last whorl only. The upper whorls, in this species, have a smooth, projecting periphery.

*Conus gabbi* n. sp.

The shell is rather slender, stoutly fusiform, with a concavely conic spire of about 11 whorls; all post-embryonic whorls have a tubercular keel projecting above the suture. Upper surface of each whorl is slightly concave, with about 5 unequal spiral threads crossed by prominent, arched, unequal striæ. Below the shoulder of the last whorl the slope is at first convex, becoming slightly concave in the lower part. It is sculptured with about 37 smooth, rounded spiral ribs narrower than their intervals, which are elegantly cancellated by close raised axial threads. The aperture is rather narrow throughout.

Length 43, diam. 17.5 mm.; length of aperture 35 mm.

The number and spacing of the spiral ribs is somewhat variable. In one specimen 35 mm. long there are only 24 spiral ribs. *Conus tortuosostriatus* Toula (1911), from the Panama Canal, resembles this species somewhat, but it has fewer and flattened spirals, and there are some fine spiral threads in the furrows. It seems also to be more contracted in the lower part.

The type and four other specimens are No. 2553, A. N. S. P.



**Conus larvatus** n. sp.

The shell is extremely slender, the length about  $3\frac{1}{2}$  times the diameter, fusiform. Spire produced, composed of flat whorls, the beaded periphery projecting above the suture; apical whorls lost. The last whorl is angular, the angle set with 25 bead-like tubercles, which are a little lengthened in the spiral direction; elsewhere, above and below the angle, it has close, even fine spiral cords with very sharp axial striation in the intervals. Upward, towards the shoulder, the striae slowly retract. The aperture is extremely narrow. The inner lip is excavated in its lower fourth.

Length (truncated) 33, diam. 9.5 mm.;  $5\frac{1}{2}$  whorls remaining.

Type No. 2550, A. N. S. P.

This species, *C. gabbi* and *C. pernodosus*, were lumped by Gabb under *C. orbigny* Audouin, a recent species inhabiting the Eastern Seas. *C. gracilissimus* Guppy, from the Oligocene of Jamaica, is closely allied, but it is a distinct species, with wide, flat, revolving costae.

*C. larvatus* is narrower than *C. tortuosostriatus* Toulou, and differs conspicuously in contour. Toulou's species has more resemblance to *C. gracilissimus* Guppy.

**Cancellaria gabbiana** n. sp.

The shell is short, turbinated solid, of about 7 whorls. The bulbous embryonic shell consists of  $1\frac{3}{4}$  convex, smooth whorls. Following whorls have slightly retractive axial ribs much narrower than their intervals, about 18 on the last whorl. At intervals of about a half whorl there are rather broad varices. There are 18 spiral cords hardly half as wide as their intervals and passing over ribs and varices. Siphonal fasciole is prominent, surrounding a small umbilicus. The aperture is large, oval; outer lip is somewhat effuse at the outer-basal part, but not retracted; sculptured within with 14 sharp lirae. Columellar plaits are not very strong, the upper one thin, middle one somewhat blunt. A broadly spreading but thin parietal callous coats the face in front of the aperture.

Length 24.5, diam. 19.4 mm.; length of aperture 17 mm.

The type and another specimen were among unassorted material. No. 3288, A. N. S. P.

**Cancellaria (Trigonostoma) insularis** n. sp.

*Cancellaria brevis* Sby., Gabb, Tr. Am. Philos. Soc., XV, 1873, p. 236. Not of Sowerby.

? *Cancellaria (Trigonostoma) aff. C. bullata* Sow., Toulou. Jahrb. k.k. Geol. Reichsanstalt, LXI, p. 504, Pl. 30, fig. 10.

The shell is short and broad, openly umbilicate, solid. There are