ADDITIONAL NEW MOLLUSKS FROM SANTA ELENA BAY, ECUADOR

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In the Proceedings of the United States National Museum [1] I had occasion to publish a short paper entitled "New mollusks from Santa Elena Bay, Ecuador." In this 12 new species of Pyramidellids and two of Melanellids collected by Dr. A. A. Olsson in Santa Elena Bay, Ecuador, were described. The finding of so many novelties in the little sending stimulated Doctor Olsson to further search and a second sending, a mere teaspoonful of shells collected on the coast southeast of Punta Santa Elena, Santa Elena Peninsula, Ecuador, yields the many new forms here described, as well as some of those contained in the last sending.

Even with the addition of these species, we venture to say that only a small fraction of the Pyramidellid and Melanellid fauna that the region affords are made known, for in the equivalent geographic faunal areas to the north these groups are wonderfully diversified, and the material now at hand promises that careful search will disclose a large number of additional forms. It is to be hoped too that some one farther south will do a little sifting in suitable places so that we may know something of the fauna of minute things which so far has failed the attention of naturalists.

The species described in the paper cited above are:

Pyramidella (*Longchaeus*) *elenensis*.
Turbonilla (*Chemnitzia*) *theone*.
Turbonilla (*Chemnitzia*) *cenoa*.
Turbonilla (*Turbonilla*) *axeli*.
Turbonilla (*Strioturbonilla*) *evagone*.
Turbonilla (*Strioturbonilla*) *nychia*.
Turbonilla (*Strioturbonilla*) *thyne*.
Turbonilla (*Pyrgiscus*) *melca*.
Turbonilla (*Pyrgiscus*) *evadna*.
Turbonilla (*Bartschella*) *semela*.
Odostomia (*Chrysallida*) *olssoni*.
Odostomia (*Chrysallida*) *melitta*.
Melanella (*Melanella*) *olssoni*.
Melanella (*Balcis*) *elenensis*.

The only other mollusks belonging to these two families that have been described from Santa Elena Bay were gathered by Hugh

[1] Vol. 66, art. 44, pp. 1–9, pls. 1–2, 1924.

Cuming and published in 1834 by Sowerby in the Proceedings of the Zoological Society of London (pp. 6–8.) They are:

Eulima splendidula, *E. imbricata*, *E. hastata*, *E. pusilla*.

These I referred to the following genera in my Monograph of West American Melanellid Mollusks, published in 1917 in volume 53 of the Proceedings of the United States National Museum:

Niso splendidula Sowerby (p. 348, pl. 48, fig. 5).
Niso imbricata Sowerby (p. 351, pl. 48, fig. 6).
Melanella (*Melanella*) *hastata* Sowerby (p. 317, pl. 38, figs. 4, 6).
Melanella (*Melanella*) *pusilla* Sowerby (p. 317, pl. 38, fig. 2).

PYRAMIDELLA (PHARCIDELLA) AVA, new species

Plate 3, fig. 6

Shell minute, stout, pupoid. Nuclear whorls decollated. Postnuclear whorls slightly rounded, smooth, marked by faint riblets, an occasional varicial streak, and a single deeply incised peripheral spiral groove which is crossed by slender axial threads. This groove falls considerably anterior to the summit of the succeeding turns, leaving a rather broad smooth band between this incised line and the suture. Base well rounded, marked by a continuation of the slender riblets and microscopic spiral striations. Aperture oval; outer lip reinforced within by seven spiral lamellae; columella very stout, short, provided with a strong oblique fold at its insertion, and two very slender much more oblique folds anterior to this.

The type (Cat. No. 363067, U.S.N.M.) has lost the nucleus and probably the first postnuclear whorl. The four and one-half remaining whorls measure, length, 4.1 mm.; diameter, 1.6 mm.

PYRAMIDELLA (TRIPTYCHUS) OLSSONI, new species

Plate 1, fig. 11

Shell moderately large; semitranslucent, bluish-white. Nuclear whorls decollated; postnuclear whorls moderately rounded, strongly tabulatedly shouldered at the summit, marked by three strong rounded spiral cords, of which the first, which is at the summit, is a little stronger than the other two; the third is about as far anterior to the suture as it is distant from the median. In addition to the spiral cords, the whorls are marked by axial ribs which are more strongly developed on the anterior half of the whorls than on the posterior. On the anterior half they cause their junction with the spiral cords to form decided tubercles which are best developed on the median cord; the third cord is not affected by the ribs as far as the formation of the tubercles is concerned, and appears almost smooth; the space between the median and the third cord, and the

space between the third and the base show the ribs as slender raised threads. Of these ribs, 20 occur upon the second and third of the remaining turns, 21 upon the fourth, 24 upon the fifth, 28 upon the sixth, and 34 upon the last turn. Periphery of the last whorl marked by a strong spiral cord a little stronger than the first supraperipheral cord. Base moderately rounded, marked by two strong spiral cords which divide the space between the peripheral cord and the tip of the columella into three equal spaces; these broad spaces between the spiral cords are crossed by slender, threadlike continuations of the axial ribs. Aperture rendered irregular by the strong spiral cords. Outer lip thin, showing the external sculpture within, provided with three slender spiral folds of which the first is between the median and the third, and the second between the third and peripheral cord on the spire, while the third is between the peripheral and first basal cord. Columella very stout, provided with three folds of which the first, which is a little anterior to the insertion of the columella, is very strong and continues over the base as the anterior basal fold, while the other two are slender and much more oblique and rather closely approximated, and almost extend to the anterior terminal point of the columella.

The unique type (Cat. No. 363066, U.S.N.M.) has seven whorls remaining, which measure, length, 5 mm.; diameter, 1.6 mm.

PYRAMIDELLA (SYRNOLA) COLLEA, new species

Plate 3, fig. 7

Shell small, very irregularly elongate-conic, bluish-white, semitranslucent. Early whorls decollated, the four remaining almost flattened, appressed at the summit, marked by incremental lines only. Suture scarcely impressed. The preceding whorl shines through the appressed summit, and the anterior termination of the preceding whorl forms a zone that gives to the shell a false suture effect. Periphery of the last whorl well rounded. Base short, well rounded, smooth. Aperture small, oval; posterior angle acute; the outer lip thickened at the posterior angle and also at the base and slightly so in the middle, forming therefore a rather conspicuous peristome reinforced within by three strong lamellar folds; inner lip stout, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

The type (Cat. No. 363095 U.S.N.M.) has lost the nucleus and early postnuclear whorls. The four and one-half remaining measure, length, 3.4 mm.; diameter, 1.2 mm. This species strongly suggests a *Melanella*, and would be classified as such were it not for the presence of the spiral lamellae within the outer lip. It will be interesting to see the nuclear turns of this species.

TURBONILLA (CHEMNITZIA) RIMACA, new species

Plate 1, fig. 7

Shell small, elongate-conic, semitranslucent, bluish-white. Nuclear whorls 1½, strongly rounded, smooth, forming a depressed helicoid spire, the axis of which is almost at right angles to that of the succeeding turns, in the first of which almost half of the nuclear spire is immersed. Postnuclear whorls moderately rounded, appressed at the summit, somewhat obscurely angulated at the termination of the anterior third between summit and suture, marked by low, rounded, distantly spaced, almost vertical axial ribs, of which 12 occur upon the first four turns, and 14 upon the rest. The spaces between the axial riblets are shallow, only moderately impressed, and almost three times as wide as the ribs. Suture well marked. Periphery of the last whorl strongly rounded. Base rather long, well rounded, marked only by incremental lines. Aperture oval, very elongated; outer lip thin, showing the external sculpture within, inner lip strongly twisted, bearing a heavy fold at its insertion.

The type (Cat. No. 363068, U.S.N.M.) has six postnuclear whorls and measures, length, 3.2 mm.; diameter, 0.8 mm.

TURBONILLA (STRIOTURBONILLA) HUA, new species

Plate 1, fig. 5

Shell very irregularly elongate-conic, bluish-white, semitranslucent. Nuclear whorls 2.3, strongly rounded, forming a decidedly elevated spire, the axis of which is at right angles to that of the succeeding turns, in the first of which the nuclear spire is about one-third immersed. Postnuclear whorls narrowly shouldered at the summit, moderately rounded, crossed by rather strong, obliquely, protractively slanting axial ribs which are a little more than one-half as wide as the spaces that separate them. Of these ribs, 16 occur upon the second, 18 upon the third, 20 upon the fourth and fifth, and 22 upon the rest of the whorls. The axial ribs terminate rather strongly at the summit, and there appears to be a slight constriction immediately below the summit, which gives to the angle at the summit a somewhat crenulated aspect. The intercostal spaces terminate abruptly at the periphery, and are crossed by numerous microscopic spiral striations. Suture rendered conspicuous by the shoulder at the summit. Periphery well rounded. Base short, well-rounded, marked by incremental lines only. Aperture subquadrate; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip almost vertical, slightly twisted, and provided with an oblique fold at its insertion.

The type (Cat. No. 363069, U.S.N.M.) is not quite adult. It has seven postnuclear whorls and measures, length, 3 mm.; diameter, 0.8 mm.

TURBONILLA (STRIOTURBONILLA) ATA, new species

Plate 1, fig. 8

Shell very irregularly elongate-conic, pale brown. Nuclear whorls 2.3, well rounded, forming a depressed helicoid spire whose axis is almost at right angles to that of the succeeding turns, in the first of which it is about one-fourth immersed. The left edge of the nuclear spire projects beyond the outline of the postnuclear spire. Early postnuclear whorls moderately rounded, the later ones almost flattened; the early whorls are somewhat worn in our specimen, and consequently no rib count can be made. The later turns are slightly shouldered at the summit and crossed by slender, almost straight protractively slanting axial ribs of which 20 occur upon the fourth, 22 upon the fifth, 20 upon the sixth to ninth, and 22 upon the last whorl. The spaces separating the axial ribs are about as wide as the ribs and are crossed by a deeply impressed line of pits which is situated about two-fifths of the space between the summit and the suture anterior to the summit. A second line of pits of about equal width, but a little more profoundly impressed, marks the anterior termination of the intercostal spaces. In addition to these two lines of pits, the rest of the intercostal spaces are marked by numerous very fine, closely spaced spiral striations. Suture well impressed. Periphery of the last whorl slightly angulated. Base short, marked by numerous slender closely spaced spiral threads. Aperture elongate-ovate; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip almost straight, provided with a moderately strong fold a little anterior to its insertion.

The type (Cat. No. 363070, U.S.N.M.) has 10½ whorls and measures, length, 6.3 mm.; diameter, 1.4 mm.

TURBONILLA (STRIOTURBONILLA) CACA, new species

Plate 1, fig. 9

Shell elongate-conic, turreted, bluish-white. Nuclear whorls 2½, well rounded, forming a decidedly elevated spire whose axis is at right angles to that of the succeeding turns, in the first of which the nuclear spire is about one-fourth immersed. Postnuclear whorls strongly tabulatedly shouldered at the summit, the rest only slightly rounded, marked by strong retractively slanting axial ribs, of which 18 occur upon the first, 20 upon the second to sixth, 22 upon the seventh, and 24 upon the last turn. The intercostal spaces are about as wide as the ribs, the impressed portion terminating abruptly at the

periphery; they are crossed by numerous very fine closely spaced spiral striations. Suture rendered rather conspicuous by the shouldered summit. Base rather short, well rounded, marked by incremental lines and closely spaced microscopic spiral striations. Aperture subquadrate; outer lip thin showing the external sculpture within; inner lip almost straight and almost vertical; parietal wall covered by a thin callus.

The type (Cat. No. 363071, U.S.N.M.) has 8.8 whorls and measures, length, 5.2 mm.; diameter, 1.3 mm.

TURBONILLA (STRIOTURBONILLA) CAPA, new species

Plate 1, figs. 1, 2

Shell elongate-conic, bluish-white. Nuclear whorls 2½, well rounded, forming a depressed helicoid spire, the axis of which is about one-third immersed in the first of the postnuclear turns. The left outline of the nuclear spire projects slightly beyond the outline of the postnuclear spire. Early postnuclear whorls well rounded, the later ones only slightly rounded, marked by rather strong slightly protractively slanting, quite regular axial ribs, of which 18 occur upon the first 4 whorls, 20 upon the fifth and sixth, 22 upon the seventh, 24 upon the eighth, 26 upon the ninth, and 28 upon the last turn. The intercostal spaces are about as wide as the axial ribs, terminating anteriorly in a deep pit. Another deep pit of less size is situated about two-fifths of the distance between the summit and the peripheral pit anterior to the summit. The space between the peripheral and median pit is crossed by 14 almost equal and almost equally spaced spiral striations, while the space between the summit and the median pit has 13 spiral striations. These are a little finer than those on the anterior portion. Suture well impressed, periphery well rounded. Base short, well rounded, marked by about 15 well impressed spiral striations which are a little more distantly spaced than those posterior to the periphery. Aperture subquadrate, the posterior angle obtuse; outer lip thin showing the external sculpture within; inner lip stout, reflected over and appressed to the base for its posterior third.

The description of the species has been based upon two specimens (Cat. No. 363072, U.S.N.M.). One having the nuclear spire and seven whorls measures; length, 3.3 mm.; greater diameter, 1 mm. The other has the last five whorls and measures, length, 4.6 mm.; greater diameter, 1.6 mm. Between the two there is an overlap of probably one whorl.

Cat. No. 363073, U.S.N.M., contains another specimen from the same locality.

TURBONILLA (PYRGISCUS) TIA, new species

Plate 3, fig. 10

Shell elongate-conic, pale straw-colored, with a broad light zone at the summit and immediately anterior to the periphery, the space between being a trifle darker, practically agreeing with the base in coloration. The type has lost the nucleus and the early postnuclear whorls. The first of the 7½ remaining turns has 20 slightly retractively curved rather distantly spaced axial ribs. There are also 20 on the second and third, 22 upon the fourth, 24 upon the fifth and sixth, and 36 upon the last. Upon this whorl they become rather irregular in development and much more closely spaced than on the earlier turns. On the early whorls the intercostal spaces, which are rather strongly impressed, are about twice as wide as the ribs, while on the last turn they are less than half the width of the ribs. The intercostal spaces are crossed by spiral lines of pits which are of rather irregular strength and spacing; the strongest pit is at the periphery. There are 20 of these incised lines between the summit and the periphery; they are a little closer crowded toward the summit than at the periphery. Suture moderately well impressed. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked by feeble continuations of the axial ribs and by 16 well-incised spiral lines. Aperture moderately large; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip slightly curved and strongly reflected and appressed to the base for about half of its length, and provided with an obsolete fold a little anterior to its insertion; parietal wall covered with a thin callus.

The type (Cat. No. 363074, U.S.N.M.) measures, length, 6.2 mm.; diameter, 1.8 mm.

Cat. No. 363075, U.S.N.M., contains another specimen.

TURBONILLA (PYRGISCUS) INTIA, new species

Plate 3, fig. 9

Shell elongate-conic, early whorls bluish-white, the later ones pale brownish-yellow, deepest on the base. The type consists of the last six whorls, the nucleus and the early whorls being lost. These whorls are almost appressed at the summit and rather high between the summit and the periphery. They are marked by low broad rounded retractively slanting axial ribs, of which 22 occur upon the first to third of the remaining turns, 24 upon the fourth, 26 upon the fifth and the last whorl. On the latter they become almost obsolete. The intercostal spaces are narrow, less than half the width of the axial ribs and but poorly impressed. They are crossed

by seven equal and equally spaced impressed spiral lines. Suture moderately constricted. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked by incremental lines and 10 incised spiral lines, of which the first 3 below the periphery are rather strongly impressed pits, while the rest are much weaker. The first two, that is, the fifth and sixth below the periphery, are closely approximated, while the next three are about twice as far apart as the other two just mentioned. The next pair inclose a space a little narrower than that posterior to it, while the space between the eighth and ninth is about as wide. Aperture small, oval; posterior angle acute; outer lip thin showing the external sculpture within; inner lip rather stout, somewhat twisted, reflected over and its posterior half appressed to the base, parietal wall covered by a rather thick callus.

The type (Cat. No. 363076, U.S.N.M.) measures, length, 6.8 mm.; diameter, 2 mm.

TURBONILLA (PYRGISCUS) COLLEA, new species

Plate 1, fig. 4

Shell of medium size, pale horn-colored, with the anterior half of the base pale brown. Nuclear whorls decollated. Postnuclear whorls appressed at the summit, flattened in the middle, and marked by strong, retractively slanting, somewhat curved axial ribs, of which 18 occur upon the first and second, 16 upon the third and fourth, 18 upon the fifth to seventh, and 24 upon the last turn. The spaces separating these ribs are at least twice as wide as the ribs on all but the last turn, where they become much narrower and about equal the ribs in width. Intercostal spaces are crossed by six strong, rather broad equally incised spiral lines, of which the first and second below the summit are much wider apart than the rest; the spaces between the second and third and third and fourth are about equal, while the spaces separating the fourth from the fifth and fifth from the sixth are about equal and about half as wide as the last two. Suture well impressed. Periphery of the last whorl well rounded. Base moderately long, strongly rounded, marked by the feeble continuations of the axial ribs and eight equal and equally spaced, rather broad spiral striations which are, however, less strong than those on the spire. Aperture small, oval; posterior angle acute; outer lip thin showing the external sculpture within; inner lip somewhat sinuous, provided with a strong oblique fold at its insertion and reflected and appressed to the base for about half of its length; parietal wall covered by a rather strong callus.

The type (Cat. No. 363077, U.S.N.M.) has lost the nucleus and probably the first postnuclear whorl. The eight and one-half remaining turns measure, length, 5.3 mm.; diameter, 1.4 mm.

Cat. No. 363078, U.S.N.M., is another specimen from the same locality.

TURBONILLA (PYRGISCUS) AYA, new species

Plate 1, fig. 10

Shell small, elongate-conic, pale yellow. Nuclear whorls 2½ forming a helicoid spire whose axis is not quite at right angles to that of the succeeding turns, in the first of which it is about one-fifth immersed. Postnuclear whorls slightly rounded, appressed at the summit, marked by moderately strong, rounded, slightly protractively slanting axial ribs, of which 22 occur upon the first and second, 20 upon the third, 18 upon the fourth and fifth, and 20 upon the last turn. The spaces separating these ribs are about as wide as the ribs and crossed by seven equal and almost equally spaced spiral cords. The spaces between the summit and the first, and the first and second, and the third and fourth are a litle wider than the rest, which are equal. Suture moderately well impressed. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked by seven equal and equally spaced incised spiral lines which are less than half the strength of those on the spire. There is a rather broad, smooth band between the first of these and the peripheral series of pits. Aperture small, oval; posterior angle acute; outer lip thin showing the external sculpture within; inner lip somewhat sinuous, reflected over and appressed to the base for almost half its length; parietal wall covered by a thin callus.

The type (Cat. No. 363079, U.S.N.M.) has lost the nucleus and probably the first postnuclear turn. The seven whorls remaining measure, length, 4 mm.; diameter, 1.1 mm. Cat. No. 363080, U.S.N.M. contains two specimens, one of which has served for a description of the nucleus.

TURBONILLA (PYRGISCUS) MARA, new species

Plate 1, figs. 3, 6

Shell small, elongate-conic. Nuclear whorls flesh-colored, the last three pale brown, the rest pale brown near the summit, flesh-colored on the rest of the spire, with the base pale brown. Nuclear whorls 2¾, well rounded, forming a depressed helicoid spire, the axis of which is at right angles to that of the succeeding turns, in the first of which it is about one-fifth immersed. First postnuclear whorls

strongly rounded with mere indications of axial ribs; the second one also strongly rounded with 14 low, rounded, distantly spaced axial ribs; the third and fourth turn are also well rounded and marked with the same number of ribs, while the remaining turns are almost flattened and each marked by 14 very strongly retractively slanting, curved axial ribs. Intercostal spaces broad but lightly impressed, marked by 21 incised spiral lines which become progressively a little wider spaced from the summit to the periphery. Suture well impressed. Periphery of the last whorl with a series of very strongly impressed spiral pits. Base well rounded, marked by numerous closely spaced spiral striations. Aperture rather large, oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip somewhat twisted, reflected over and appressed to the base for about half its length; parietal wall covered by a thick callus.

The type (Cat. No. 363081, U.S.N.M.) has seven postnuclear whorls and measures, length 3.3 mm.; diameter, 1 mm.

Cat. No. 363082, U.S.N.M. contains three additional specimens.

TURBONILLA (PYRGISCUS) RIMA, new species

Plate 2. fig. 7

Shell elongate-conic. Nucleus and early postnuclear whorls flesh-colored, the rest yellowish-horn colored. Nuclear whorls 2½, well rounded, forming a large helicoid apex, the axis of which is at right angles to that of the succeeding turns, in the first of which it is scarcely at all immersed; the tilted edge of the nucleus projects slightly beyond the outline of the postnuclear spire on both sides. Postnuclear whorls decidedly high between the summit and the periphery; the first one very high and well rounded, the second and third becoming progressively less rounded, while the rest are flattened. The first postnuclear turn is almost smooth, having scarcely any indication of axial ribs, these being reduced to a few obsolete retractively slanting lines. The second one has poorly developed ribs which are here, as well as on the other whorls to follow, decidedly retractively slanting. There are 26 of them on the second whorl, and from there on the ribs become strong and well rounded, and about as wide as the spaces that separate them. The third whorl has 20, the fourth 22, the fifth 26, and the last 28. The intercostal spaces are rather shallow and are crossed by six broad incised spiral lines which are of almost equal width and spacing. Suture rendered slightly sinuous by the ribs at the summit. Periphery of the last whorl well rounded. Base short, well rounded, marked by the feeble continuations of the axial ribs, which become evanescent before reach-

ing the middle of the base, and by six equal and equally spaced incised spiral lines. Aperture oval, posterior angle acute; outer lip thin showing the external sculpture within; inner lip slightly curved and reflected over and appressed to the base for about half of its length; parietal wall covered by a thin callus.

The type (Cat. No. 363083, U.S.N.M.) has six and one-half postnuclear whorls and measures, length 4 mm.; diameter, 1.1 mm.

TURBONILLA (MORMULA) INCA, new species

Plate 2, fig. 5

Shell elongate-conic, milk-white. Nuclear whorls decollated. Postnuclear whorls appressed at the summit, marked by low, rounded almost vertical axial ribs, of which 22 occur upon the first three of the remaining turns, 24 upon the fourth, 26 upon the fifth, while on the last turn the axial ribs become quite obsolete. Intercostal spaces about as wide as the ribs, marked by a rather conspicuous series of pits halfway between the summit and the suture, and another at the periphery, and numerous fine incised spiral lines between the summit and the median line of pits, and between the median and peripheral line. Suture rendered sinuous by the axial ribs. Periphery well rounded. Base moderately long, well rounded, marked by the continuations of the axial ribs which evanesce after passing the middle of the base, and a number of rather strong incised spiral lines. Aperture moderately large; posterior angle acute; outer lip reinforced within by five strong spiral lamellae; inner lip rather stout, reflected over and appressed to the base for two-thirds of its length, and provided with an oblique fold at its insertion; parietal wall covered by a rather thick callus.

The type (Cat. No. 363084, U.S.N.M.) has lost the nucleus and probably the first postnuclear whorl. The seven and a half whorls remaining measure, length, 4.7 mm.; diameter, 1.4 mm.

TURBONILLA (ASMUNDA) CHURIA, new species

Plate 3, fig. 5

Shell moderately large, elongate-turreted, white. The nucleus and probably the first postnuclear whorls decollated. Postnuclear whorls tabulated at the shoulder, almost flattened, marked by strong, distantly spaced very slightly protractively slanting axial ribs, of which 12 occur upon the first of the remaining turns, 14 upon the second, 16 upon the third to fifth, and 18 upon the last turn. The intercostal spaces are about twice as wide as the ribs, and well impressed. Periphery angulated. Base short, well rounded, marked by the continuation of the axial ribs and a median rather strong spiral cord. Aperture subquadrate; posterior angle obtuse; outer

lip thin, showing the external sculpture within; inner lip rather stout, provided with an oblique fold a little anterior to its insertion.

The type (Cat. No. 363085, U.S.N.M.) has lost the nucleus and probably a fraction of the first nuclear turn. The seven remaining whorls measure, length, 3.2 mm.; diameter, 1.1 mm.

ODOSTOMIA (CHRYSALLIDA) QUILLA, new species

Plate 2, fig. 2

Shell small, elongate-ovate, semitranslucent, bluish-white. Nuclear whorls decollated. Postnuclear whorls flattened, almost appressed at the summit, marked by strong retractively slanting axial ribs, of which 16 occur upon the first and 18 upon the remaining turns. Intercostal spaces a little wider than the ribs, crossed by four series of broad subequal spiral pits. The space between the summit and the first of these is about three times as wide as the spaces that separate the rest, which form rather slender spiral cords that scarcely render the junction with the ribs nodulose. The spaces inclosed between the spiral cords and axial ribs are quadrate pits, having their long axis parallel with the spiral sculpture. The periphery would be deeply channeled were it not for the axial ribs which connect across from the summit of the succeeding turns. Periphery well rounded. Base marked by five almost equal strong spiral cords which are separated by narrow channels. Aperture oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip very stout and reflected over and appressed to the base for its entire length and provided with a rather strong oblique fold at its insertion; parietal wall covered with a rather thick callus.

The type (Cat. No. 363086, U.S.N.M.) has almost six whorls and measures, length, 1.8 mm.; diameter, 0.7 mm. Cat. No. 363087, U.S.N.M., contains another specimen. This species is remarkable for its exceedingly strong axial ribs and its rather feeble spiral sculpture; also in having the whorls practically appressed at the summit.

ODOSTOMIA (CHRYSALLIDA) VIRA, new species

Plate 2, fig. 3

Shell small, very elongate-ovate, semitranslucent, milk-white. Nuclear whorls decollated. Postnuclear whorls slightly rounded, narrowly shouldered at the summit, rather high between summit and suture, marked by 18 strong almost vertical axial ribs. Intercostal spaces about one and one-half times as wide as the ribs, crossed by four slender spiral cords which are equal in strength and divide the spaces between them into broadly rectangular well-impressed pits that have their long axis parallel with the spiral sculpture. At the

summit of the turns there is a smooth area a little wider than the four spiral cords mentioned. The spiral cords, in joining the axial ribs, render these slightly tuberculated. Suture moderately impressed. Periphery well rounded. Base very long, moderately rounded, marked by the continuation of the axial ribs, which evanesce after passing the middle of the base, and five spiral cords which are of equal spacing but become somewhat enfeebled. On the posterior half of the base, where the axial ribs are present, the spiral and axial sculpture inclose rectangular pits not unlike those of the spire. Aperture very elongate-oval; outer lip thin, showing the external sculpture within; inner lip very stout, long, reflected over and appressed to the base for almost its entire length, provided with a very strong oblique fold a little anterior to its insertion; parietal wall covered by a moderately thick callus.

The type (Cat. No. 363088, U.S.N.M.) has lost the nucleus and probably the first one and one-half postnuclear turns. The four and one-half remaining turns measure, length, 2.7 mm.; diameter, 1 m. Cat. No. 363089, U.S.N.M., contains two additional specimens.

ODOSTOMIA (CHRYSALLIDA) ATA, new species

Plate 2, fig. 8

Shell moderately large, very elongate-ovate, bluish-white. Nuclear whorls decollated in the type. Postnuclear whorls slightly rounded and shouldered at the summit, marked by strong almost vertical axial ribs, of which 16 occur upon the first, 18 upon the second to fourth, and 16 upon the last turn. Intercostal spaces about one and one-half times as wide as the ribs, crossed by five spiral cords of which the first is really the thickened summit which occupies the space almost three times the width of the remaining four cords, which are equal. The first of the remaining cords is about one-third of the distance between the summit and the suture anterior to the summit. The space separating this cord from the one at the summit is a little wider than the rest which are also equal. The spaces inclosed between the cord at the summit and the first below it and the ribs are almost squarish pits, while the other spaces between the spiral cords and the axial ribs are rectangular pits having their long axis parallel with the spiral sculpture. The junction of the axial ribs and spiral cords form slender tubercles, those at the summit being low and rounded, while the other four are elongated with their long axis parallel with the spiral sculpture. The summits of the whorls are shouldered. Suture well impressed but not broadly channeled, marked by the fifth spiral cord. Base rather long, well rounded, marked by six rather strong well rounded spiral cords which are considerably wider than the spaces that separate them.

The first of these is crossed by the continuation of the axial ribs which cross the second interval but do not cross the second cord. The anterior basal spiral cord is therefore slightly nodulose. Aperture elongate-oval; posterior angle obtuse, somewhat effuse anteriorly; outer lip thin, showing the external sculpture within; inner lip sinuous, reflected over and appressed to the base for three-fourths of its length and provided with a rather conspicuous fold a little anterior to its insertion; parietal wall covered by a rather thick callus.

The type (Cat. No. 363090, U.S.N.M.) has lost the nucleus. It has five and one-half postnuclear whorls and measures, length, 1.7 mm.; diameter, 1.1 mm.

ODOSTOMIA (CHRYSALLIDA) COLLEA, new species

Plate 2, fig. 1

Shell elongate-conic, bluish-milk-white. Nuclear whorls decollated. Postnuclear whorls slightly rounded, appressed at the summit, which falls considerably below the peripheral cord and gives to the whorls a decidedly overhanging appearance. The postnuclear whorls are marked by rather strong axial ribs, of which the early ones are retractively curved and the later slightly protractive. Of these ribs, 18 occur upon the first to third and 20 upon the remaining whorls. The intercostal spaces about one and one-half times as wide as the ribs and rather well impressed and crossed by five spiral cords, of which the first is at the summit and is a little stronger than its neighbor anteriorly, which equals the supraperipheral cord in strength, the third and fourth being a little weaker and more closely approximated. The spaces between the cord at the summit and the first below it and between the fourth and fifth are equal and form a series of broadly rectangular pits, while the space between the second and third is a little narrower and that between the third and fourth is even less in width. The junction of the axial ribs and spiral cords form slender elongate tubercles whose long axis is parallel to the spiral sculpture. On almost all the whorls except the first, the first basal cord is apparent in the suture and on the last two whorls this forms a strong almost smooth band, while the axial ribs extend across the channel separating it from the first supraperipheral cord they do not tuberculate the basal cord. Suture moderately impressed, periphery well rounded. Base of the last whorl well rounded, marked by eight moderately strong spiral cords which become progressively weaker from the periphery anteriorly, and also progressively a little closer spaced, the spaces that separate the spiral cord being always a little wider than the cords. These spaces are crossed by threadlike continuations of the axial ribs. Aperture

broadly oval; posterior angle obtuse: outer lip thin showing the external sculpture within: inner lip reflected over and appressed to the base for about three-fourths of its length, leaving, however, a narrow unbilical chink, and provided with a very strong oblique fold at its insertion; parietal wall covered with a thick callus.

The type (Cat. No. 363091, U.S.N.M.) has six and one-half postnuclear whorls and measures, length, 3 mm.; diameter, 1 mm.

ODOSTOMIA (CHRYSALLIDA) PACHA, new species

Plate 2, fig. 6.

Shell small, semitranslucent, bluish-white. Nuclear whorls decollated. Postnuclear whorls slightly rounded, moderately shouldered at the summit and marked by very strong decidedly retractively slanting axial ribs, of which 14 occur upon the second and 16 upon the rest. Intercostal spaces about one and one-half times as wide as the ribs, well impressed, crossed by four rather strong, equal and equally spaced spiral cords, of which the first is at the summit. These cords pass strongly upon the sides of the ribs and render the summit tuberculated, the tubercles being almost rounded, while the spaces inclosed between the axial ribs and the spiral cords are oval pits having their long axis parallel with the spiral sculpture. Suture rendered channeled by the shouldered summit. In the third to last suture, the peripheral cord becomes apparent, and this increases in strength of exposure until on the last whorl it is fully exposed in the suture. The axial ribs extend strongly across the space separating this cord from the first of the spire which is about as wide as those on the spire, but the ribs do not render it tuberculated. Base short, well rounded, marked by four strong spiral cords not including the one at the periphery. These grow progressively weaker from the perpiheral cord to the one at the tip of the base, and also somewhat closer spaced. The broad channels separating the cords are crossed by numerous slender axial threads. Aperture (?); outer lip fractured; inner lip short, reflected over and appressed to the base and provided with a strong fold at its insertion.

The type (Cat. No. 363092, U.S.N.M.) has six and one-half whorls and measures, length, 2.7 mm.; diameter, 0.9 mm.

ODOSTOMIA (CHRYSALLIDA) CAPA, new species

Plate 2, fig. 4.

Shell very small, very elongate-ovate, milk-white. Nuclear whorls well rounded, smooth, deeply obliquely immersed in the first of the postnuclear whorls above which the tilted edge of the last volution only projects. First postnuclear whorl moderately rounded, the next

two are almost flattened, while the later turns are again slightly rounded, summit of the whorls very narrowly shouldered. The whorls are marked by moderately strong very regular protractively slanting axial ribs, of which 20 occur upon the second and 22 upon the remaining turns. The intercostal spaces are about one and one-half times as wide as the ribs and crossed by five equal and equally spaced spiral cords, of which the first is at the summit. The spaces inclosed between the ribs and spiral cords form almost squarish pits, while their junction form slender rounded tubercles. On the last two turns the peripheral smooth cord is apparent in the suture. The axial ribs extend across the space separating the peripheral cord from the first supraperipheral cord, but scarcely render it tuberculated. Base rather long, somewhat inflated, well rounded, marked by five low rounded spiral cords which are not quite as wide as the spaces that separate them. The first of these is the peripheral cord referred to. These cords grow progressively weaker from the peripheral cord anteriorly and the spaces separating them become a little narrower. Aperture oval; posterior angle acute; outer lip thin showing the external sculpture within; inner lip almost straight, reflected over and appressed to the base, but leaving a very narrow umbilical chink, and provided with a very strong oblique fold at its insertion; parietal wall covered with a thick callus.

The type (Cat. No. 363093, U.S.N.M.) has five postnuclear whorls and measures, length, 2.1 mm.; diameter, 0.8 mm.

ODOSTOMIA (PYRGULINA) MARA, new species

Plate 2, fig. 9

Shell small, very elongate-ovate, bluish-white. Nuclear whorls decollated. Postnuclear whorls slightly rounded, narrowly shouldered at the summit, and crossed by 14 distantly spaced lamellar axial ribs. The spaces separating the ribs are about five times as wide as the ribs and are crossed by five equal and almost equally spaced incised spiral lines. Suture rendered wavy by the strong axial ribs at the summit. Base short, strongly rounded, marked by five equally incised spiral lines which are almost as strong as those on the spire. The first of these is about one-third of the distance between the first supraperipheral line and the tip of the base anterior to the supraperipheral line, thus leaving a broad smooth zone on the posterior portion of the base. The rest of the lines are progressively a little closer spaced from the posterior anteriorly. Aperture small, oval; posterior angle obtuse; outer lip thin showing the external sculpture within; inner lip short, very heavily reflected over and appressed to the base for a little more than half its length, and provided with a rather strong oblique fold at its insertion; parietal wall

covered with a very thick callus which renders the peritreme complete.

The type (Cat. No. 363094, U.S.N.M.) has five and one-half postnuclear whorls and measures, length, 3 mm.; diameter, 1.2 mm.

MELANELLA (BALCIS) CAPA, new species

Plate 3, fig. 2

Shell small, slender, falciform, bluish-white, semitranslucent. Nuclear whorls decollated. Postnuclear whorls appressed at the summit, flattened, marked by incremental lines only; the portion at the summit appressed to the preceding turn, marked anteriorly by a conspicuous zone which gives to the whorls the effect of a double suture; in fact, this line is much more conspicuous than the actual suture which is scarcely apparent. Periphery of the last whorl well rounded. Base moderately long, strongly rounded on the left margin. Aperture moderately large, pear-shaped; posterior angle decidedly acute; outer lip slightly protracted in the middle into a clawlike element; inner lip somewhat curved, reflected over and appressed to the base for its entire length.

The type (Cat. No. 363097, U.S.N.M.) has eight whorls, having lost the nucleus and probably the first postnuclear whorls, and measures, length, 3.8 mm.; diameter, 1.4 mm.

MELANELLA (BALCIS) TIA, new species

Plate 3, fig. 1

Shell broadly conic, stout, thick, semitranslucent, bluish-white. Nuclear whorls decollated. Early postnuclear whorls slightly rounded, the rest flattened; the portion appressed to the preceding turn at the summit is limited by a conspicuous line which gives to the whorls a double sutured aspect. Suture well marked. Periphery of the last whorl short, inflated, and well rounded. Base short, well rounded. Aperture oval; posterior angle acute; outer lip thin; inner lip short, stout, reflected over and appressed to the base for two-thirds of its length; parietal wall covered by a moderately thick callus.

The type (Cat. No. 363096, U.S.N.M.) has seven and one-half whorls and measures, length, 3.9 mm.; diameter, 1.5 mm.

STROMBIFORMIS HUA, new species

Plate 3, fig. 3

Shell moderately large, acicular, slender, bluish-white, semitranslucent, showing the internal structure. Nuclear whorls decollated. Postnuclear whorls flattened, appressed at the summit, the appressed

portion passing over the preceding whorl as a slight glaze. The anterior limit of the appressed portion shows through the shell as a false suture which is far more conspicuous than the actual suture which is scarcely perceptible. Periphery well rounded. Base long, well rounded. Aperture very long, pear-shaped; posterior angle acute; outer lip protracted in the middle; inner lip long, slightly concave, reflected over and appressed to the base for its entire length; parietal wall covered with a thick callus that renders the peritreme complete.

The type (Cat. No. 363098, U.S.N.M.) has six and one-half whorls and measures, length, 4.2 mm.; diameter, 1.1 mm. Cat. No. 363099, U.S.N.M., contains an additional specimen.

STROMBIFORMIS INCA, new species

Plate 3, fig. 11

Shell acicular, large, thin, semitranslucent. Nuclear whorls decollated. Postnuclear whorls high between summit and suture, almost flattened, marked by incremental lines only excepting an occasional varix placed at irregular intervals. Summit of the whorls appressed and exceedingly attenuated so as to form an almost invisible suture. The posterior limit of the interior of the whorls shines through at the summit and gives an appearance of a suture which is far more conspicuous than the real suture. Periphery slightly rounded. Base rather long, moderately rounded. Aperture long, pear-shaped; outer lip thin (fractured); inner lip reflected and appressed to the base; parietal wall covered by a rather thick callus.

The type (Cat. No. 363100, U.S.N.M.) has lost the nucleus and probably the first one and one-half postnuclear whorls. The eight and one-half remaining measure, length, 8.1 mm.; diameter, 1.7 mm.

STROMBIFORMIS SALSA, new species

Plate 3, fig. 4

Shell of medium size, acicular. Nuclear whorls decollated. Early postnuclear whorls moderately rounded, the later ones flattened, thin, semitranslucent, flesh-colored, with two irregularly developed bands of brown, one of which marks the periphery; the other is a little nearer the peripheral zone than the summit. In addition to this there are irregularly distributed varicial streaks of brown which terminate abruptly at their left margin and fade into inconspicuousness to the right, the summit of the whorls appressed and so attenuated as to form a scarcely perceptible suture. The posterior limit of the interior of the whorls shines through the substance of the shell as a conspicuous line which appears as a false suture which is

far more marked than the real suture. Periphery well rounded. Base rather long, well rounded, the posterior half flesh-colored, the anterior half brown. Aperture pyriform; the posterior angle decidedly acute; outer lip slightly protracted in the middle; inner lip oblique, slightly curved, reflected over and appressed to the base; parietal wall covered with a thick callus which renders the peritreme complete; edge of the outer lip brown.

The type (Cat. No. 363101, U.S.N.M.) has nine and one-half whorls and measures, length, 6.5 mm.; diameter, 1.6 mm. Cat. No. 363102, U.S.N.M., contains another specimen.

STROMBIFORMIS PARIA, new species

Plate 3, fig. 8

Shell large, acicular, varying in color from bluish-white to brown. Nuclear whorls decollated. Early postnuclear whorls moderately rounded, the latter flattened. Summit of the whorls exceedingly attenuated and appressed. The posterior limit of the body cavity shines through the substance of the shell and appears as a false suture. The surface of the shell is marked by incremental lines and irregularly distributed varices. Periphery of the last whorl well rounded. Base rather long, attenuated, well rounded. Aperture pyriform; posterior angle acute; outer lip thin, slightly protracted in the middle; inner lip rather stout, reflected over and appressed to the base; parietal wall covered by a thick callus which renders the peritreme complete.

The type (Cat. No. 363103, U.S.N.M.) has seven and one-half whorls and measures, length, 10.3 mm.; diameter, 2.5 mm. Cat. No. 363104, U.S.N.M., contains eight additional specimens.

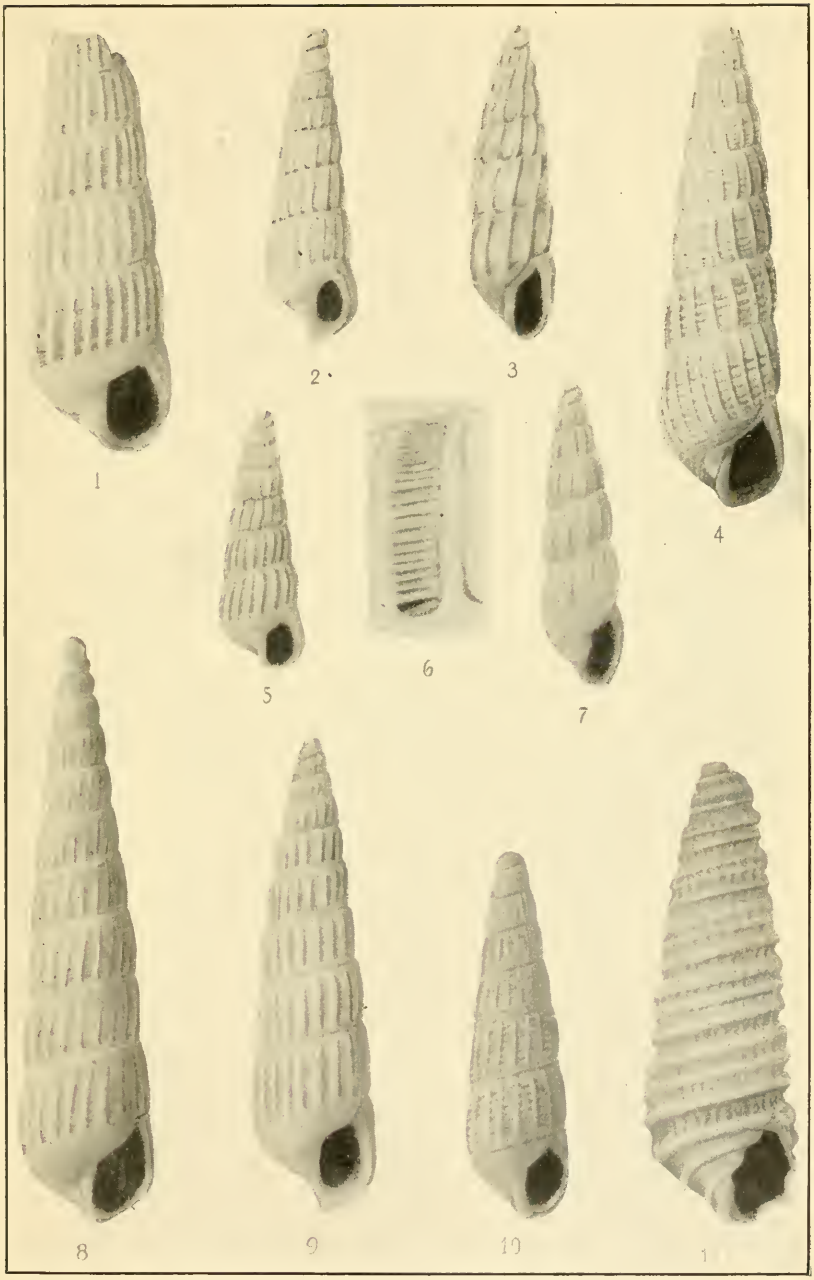
EXPLANATION OF PLATES

(All figures are those of the types)

PLATE 1

PLATE 2

PLATE 3



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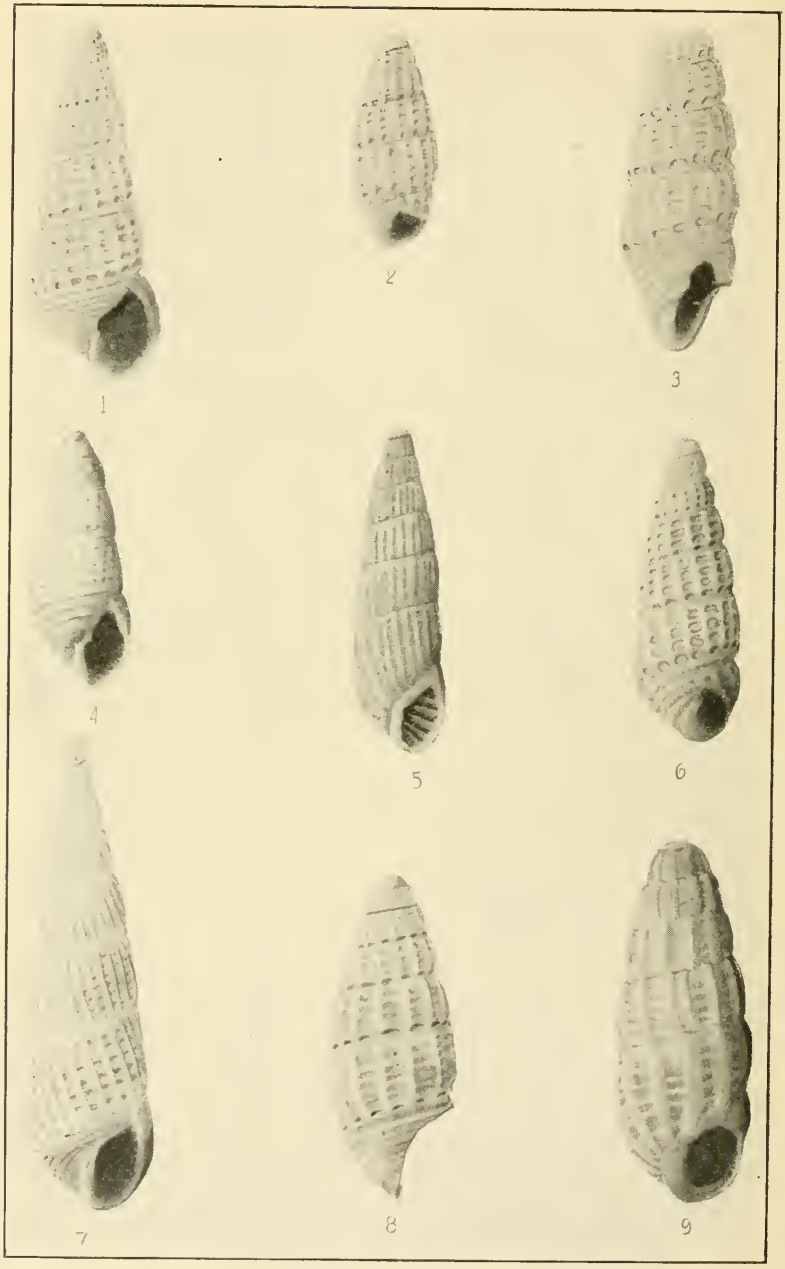
FOR EXPLANATION OF PLATE SEE PAGE 19



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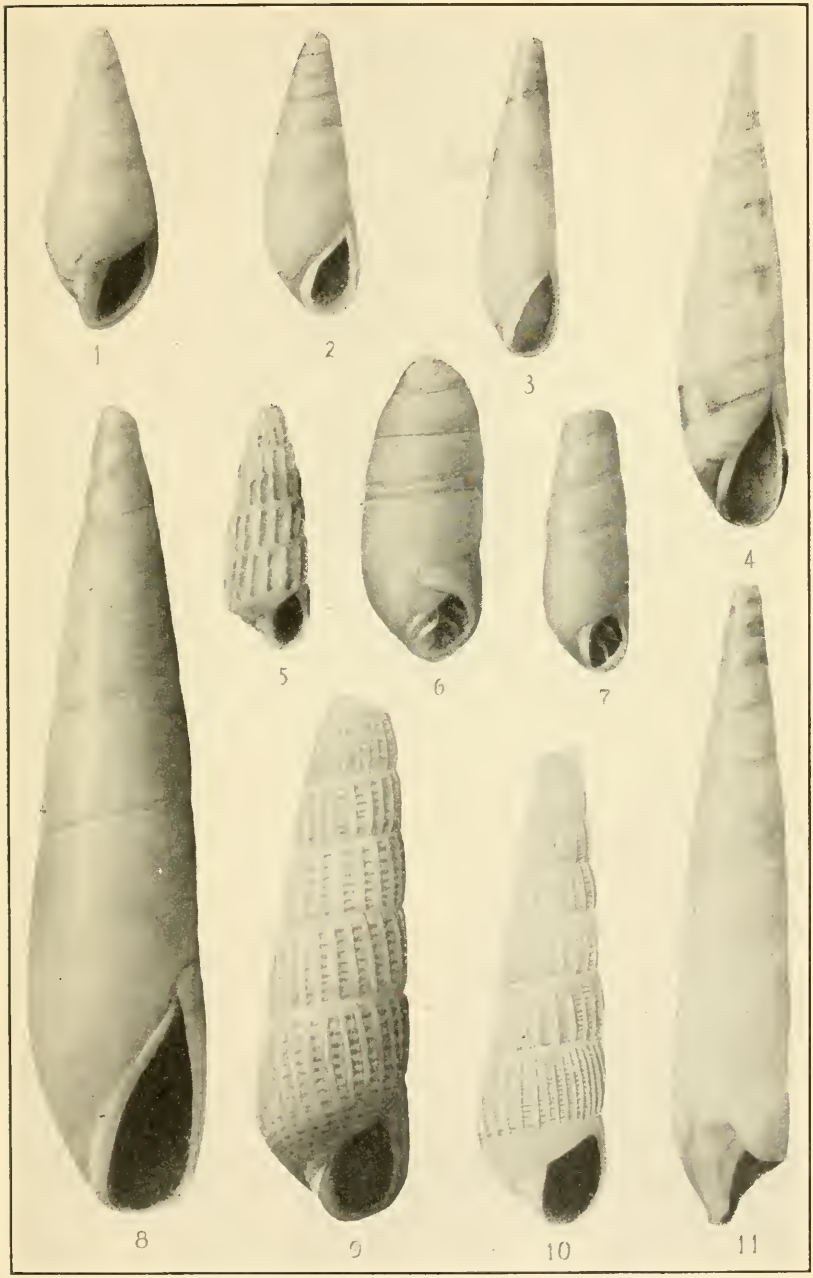

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