NEW MOLLUSKS FROM SANTA ELENA BAY, ECUADOR.

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Dr. R. A. Olsson has recently submitted to the United States National Museum a small lot of Pyramidellidae and Melanellidae collected by him in Santa Elena Bay, Ecuador. This is the first material that we have had from this locality. In fact, very little has been collected excepting the gathering made during the forties of the last century at this place by Hugh Cuming, which did not stress the minute species.

A very careful comparison of these specimens with the magnificent Panama series in the United States National Museum reveals the fact that every species represented in this gathering proves to be undescribed. This should certainly stimulate future efforts in this region, as well as in the territory to the south of it, from which very little minute material has come to hand.

All the species described in this paper are based upon Doctor Olsson's collecting at Santa Elena Bay. The specimens have been donated to the United States National Museum.

PYRAMIDELLA (LONGCHAEUS) ELENENSIS, new species.

Plate 1, fig. 5.

Shell elongate-conic, pinkish white, with a lighter median zone on each whorl. Nuclear whorls decollated. Postnuclear whorls flattened, narrowly tabulatedly shouldered at the summit, which is also minutely crenulated. Periphery of the whorls marked by a slender incised groove, crossed by numerous minute riblets and bounded posteriorly by a rather strong keel. The summit of the succeeding whorls falls below the groove and causes the suture to appear deeply channeled and finely denticulated. Base short, well rounded, smooth. Aperture fractured in both of our specimens; outer lip provided with four conspicuous spinal laminæ within, of which two are posterior and two anterior to the peripheral sulcus. Columella short, very stout, provided with a very broad lamellar fold about one-third of the distance from its insertion to the tip anterior to the insertion,

and two additional folds which are much weaker, the anterior one being the weaker.

The type, Cat. No. 359747, U.S.N.M., has lost the nuclear whorl and probably the first two and a half postnuclear turns. The 7.5 remaining measure: Length, 6.4 mm.; diameter, 2.5 mm. Cat. No. 359748, U.S.N.M., contains another specimen from the same locality.

This species suggests in size *Pyramidella* (*Pharidella*) *panamensis* Dall and Bartsch, but it is distinguished from this at once by its much broader whorls and less deep sutural channels, and absence of the axial riblets.

TURBONILLA (CHEMNITZIA) THEONE, new species.

Plate 1, fig. 6.

Shell short, stout, elongate-conic. Nuclear whorls decollated. Postnuclear whorls slightly rounded, narrowly slopingly shouldered at the summit, marked by broad, strongly protractively curved axial ribs, of which 16 occur upon the second, 18 upon the third, 20 upon the fourth, 22 upon the fifth, 24 upon the sixth, 26 upon the seventh and the last whorl. These ribs render the summit of the whorls feebly crenulated. The intercoastal spaces are a little less wide than the ribs, and only feebly impressed, terminating at the periphery. Base rather long, strongly rounded. Aperture oval; posterior angle obtuse; outer lip fractured; inner lip reflected and appressed to the base for two-thirds of its length, provided with a feeble oblique fold a little anterior to its insertion; parietal wall covered by a thin callus.

The type, Cat. No. 359756, U.S.N.M., has lost the nucleus. The 7.5 whorls remaining measure: Length, 4.9 mm. diameter, 1.7 mm. Cat. No. 359757, U.S.N.M., contains another specimen from the type locality.

This species differs from all the other members of the West coast by its almost elongate oval outline and stout shape.

TURBONILLA (CHEMNITZIA OENOA, new species.

Plate 1, fig. 3.

Shell small, subdiaphanous, yellowish white, with a bluish band at the summit of the whorls where this is appressed to the preceding turn. This band gives the shell the appearance of being ornamented by a string of beads at this place. Nuclear whorls decollated. Postnuclear whorls slightly rounded, rather strongly obliquely tabulatedly shouldered at the summit, crossed by slightly protractive ribs, which render the summit crenulated, and which are about as wide as the spaces that separate them. Of these ribs, 16 occur upon the first and second, 18 upon the third, 20 upon the fourth, 22 upon

the fifth and sixth, 24 upon the seventh, and 28 upon the last turn. Intercostal spaces moderately, deeply impressed, terminating at the periphery, which is well rounded. Base moderately long, well rounded, marked by lines of growth only. Aperture oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip slightly sinuous, reflected over and appressed to the base, for almost its entire length, provided with a feeble, oblique fold at its insertion.

The type, Cat. No. 359753, U.S.N.M., has 8.5 whorls and measures: Length, 4.2 mm.; diameter, 1.3 mm. Cat. No. 359754, U.S.N.M., contains two additional specimens from the same locality.

The present species is nearest related to *Turbonilla* (*Chemnitzia*) *kelseyi* Dall and Bartsch, but differs from it by its much more elegant features, strongly tabulated shoulder, with the crenulations at the termination of the ribs at the summit forming a more conspicuous beaded pattern.

TURBONILLA (TURBONILLA) AXELI, new species.

Plate 1, fig. 1.

Shell small, elongate-conic, bluish white. Nuclear whorls two and a half, smooth, forming a decidedly elevated spire which has its axis at right angles to that of the succeeding whorls, in the first of which the nuclear spire is about one-fourth immersed. Postnuclear whorls rather high between summit and suture, with a broad, sloping, tabulated shoulder. The whorls are crossed by strong axial ribs which extend strongly from the summit to the periphery and feebly over the base, forming slender cusps at the shoulder near the summit. Of these ribs, 16 occur upon the first and second, 18 upon the third and fourth, 10 upon the fifth, 22 upon the sixth, and 24 upon the last turn. These ribs are about half as wide as the spaces that separate them. The latter are decidedly excavated between the shoulder and the suture, the termination of the excavation forming almost a keel at the periphery of the last whorl. Suture somewhat constricted. Base short, well rounded. Aperture oval; posterior angle obtuse; outer lip thin at the edge, showing the external sculpture within; inner lip curved, slightly reflected and appressed to the base for its anterior three-fifths.

The type, Cat. No. 359749, U.S.N.M., has 8 postnuclear whorls, having lost the nucleus, and measures: Length, 3.9 mm.; diameter, 1.2 mm. The nuclear whorls were described from a young specimen. Cat. No. 359750, U.S.N.M., contains another specimen from the type locality.

This species differs from *Turbonilla* (*Turbonilla*) *centrota* Dall and Bartsch in being stouter and having the tabulated shoulder at the summit much more sloping.

TURBONILLA (STRIOTURBONILLA) EVAGONE, new species.

Plate 1, fig. 4.

Shell elongate-conic, bluish white. Nuclear whorls decollated. Postnuclear whorls flattened on the sides, almost excurved at the summit, which is narrowly tabulatedly shouldered, crossed by numerous axial ribs, which have a decidedly protractive slant, and which feebly crenulate the summit. Of these ribs, 18 occur upon the first and second, 20 upon the third to fifth, 22 upon the sixth and seventh, 26 upon the eighth, 28 upon the ninth, and 30 upon the last turn. These ribs are about as wide as the spaces that separate them. The latter are deeply impressed and terminate a little anterior to the periphery, leaving a narrow, smooth band at the suture. Periphery of the last whorl well rounded. Base moderately long, well rounded, smooth, excepting lines of growth. The entire surface of the spire and base is marked by microscopic spiral striations. Aperture oval; posterior angle acute; outer lip moderately thick, showing the external sculpture within; inner lip somewhat sinuous, reflected and appressed for its posterior third to its preceding turn, and provided with an oblique obsolete fold a little anterior to the insertion of the columella; parietal wall covered by a thin callus.

The type, Cat. No. 359751, U.S.N.M., has 10.6 postnuclear whorls and measures. length, 6.2 mm.; diameter, 1.7 mm. Cat. No. 359752, U.S.N.M., contains 7 additional specimens from the type locality.

This is nearest related to *Turbonilla* (*Strioturbonilla*) *panamensis* C. B. Adams, but differs from it by its larger size, more robust form and more numerous ribs.

TURBONILLA (STRIOTURBONILLA) NYCHIA, new species.

Plate 2, fig. 6.

Shell broadly elongate-conic, bluish white. Nuclear whorls two and a third, forming a depressed helicoid spire, the axis of which is at right angles to the nuclear turns, in the first of which the nuclear spire is about one-third immersed. Early postnuclear whorls strongly rounded, the later ones less so, appressed at the summit, crossed by curved, protractively slanting axial ribs, of which 20 occur upon the first and second and 22 upon the remaining turns. These ribs become somewhat enfeebled toward the summit, which they render slightly sinuous. Intercostal spaces a little wider than the ribs, crossed by 23 incised spiral lines, of which the 11 occurring on the posterior two-fifths are a little finer and closer spaced than the rest, the twelfth being a little stronger. The 10 succeeding are again subequal, while the twenty-third forms a deep peripheral pit. The latter is separated from the rest by a little wider space. The space

separating the twenty-second from the twenty-third is much wider than the rest and appears like a smooth girdle. Periphery of the last whorl well rounded. Base short, well rounded, marked by twenty-five fine, incised spiral lines, those on the columella separating cords a little stronger than the rest.

The type, Cat. No. 359758, U.S.N.M., has 8.5 postnuclear whorls and measures; length, 4.5 mm.; diameter, 1.3 mm.

TURBONILLA (STRIOTURBONILLA) THYNE, new species.

Plate 1, fig. 2.

Shell very regularly conic, subdiaphanous, bluish white. Nuclear whorls two and a half, forming a moderately 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 slightly rounded, narrowly shouldered at the summit, marked by strong, retractively slanting, slightly curved axial ribs, of which 14 occur upon the first and second, 16 upon the third to sixth, and 18 upon the last turn. These ribs extend prominently from the summit, which they render slightly wavy, to the periphery. Intercostal spaces a little wider than the ribs, strongly impressed, terminating at the periphery. Suture moderately constricted. Periphery of the last whorl well rounded. Base short, well rounded, smooth. Aperture subquadrate; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip almost vertical, slightly flexuous, reflected over the posterior half to the base, provided with an obsolete fold a little anterior to its insertion.

The type, Cat. No. 359759, U.S.N.M., has almost 8 whorls and measures: length, 3.4 mm.; diameter, 1.1 mm.

The extremely regular conic outline and large ribs will distinguish this from any of the other species.

TURBONILLA (PYRGISCUS) MELEA, new species.

Plate 2, fig. 8.

Shell very slender, elongate-conic, yellowish white, with a little deeper yellow band about one-fourth of the distance between the summit and the suture anterior to the summit. Nuclear whorls and early postnuclear whorls decollated. Postnuclear whorls very high between summit and suture, appressed at the summit, marked by broad, low, rounded, almost vertical axial ribs, of which 20 occur upon the first and second of the remaining turns, 21 upon the third and fourth, and 28 upon the last whorl. Intercostal spaces about half as wide as the ribs, marked by 18 slender spiral threads which leave the spaces between them as deeply impressed oblong pits.

Suture slightly constricted. Periphery of the last whorl well rounded. Base short, well rounded, marked on the anterior two-thirds by 6 subequally spaced incised spiral lines, of which the posterior four are a little stronger than the rest. Aperture oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip flexuous, reflected over and appressed to the base for three-fourths of its length, and provided with a rather strong fold a little anterior to its insertion; parietal wall covered by a thin callus.

The type, Cat. No. 359760, U.S.N.M., has 5.8 whorls remaining, which measure: Length 4.1 mm., diameter 1 mm.

TURBONILLA (PYRGISCUS) EVADNA, new species.

Plate 2, fig. 7.

Shell elongate-conic, bluish white, semidiaphanous. Nuclear whorls decollated. Postnuclear whorls high between summit and suture, appressed at the summit, crossed by low, rounded, almost vertical axial ribs, of which 18 occur upon the first and second of the remaining turns, 20 upon the third, 22 upon the fourth, 24 upon the fifth, 26 upon the sixth, and 27 upon the last whorl. These ribs become enfeebled toward the summit, which they render slightly sinuous. Intercostal spaces a little wider than the ribs, crossed by 11 incised spiral lines, which are of somewhat irregular strength and spacing, the peripheral and the one posterior to the periphery being much wider than the rest. Suture moderately constricted. Periphery of the last whorl well rounded. Base short, strongly rounded, marked by 8 rather strongly incised spiral lines, between which finer striations occur. Aperture oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip sinuous, reflected over and appressed to the base for the posterior two-thirds of its length, provided with a strong obtuse oblique fold a little anterior to its insertion; parietal wall covered by a thick callus.

The type, Cat. No. 359761, U.S.N.M., has 8.5 whorls remaining and measures: Length 5.4 mm., diameter 1.3 mm.

TURBONILLA (BARTSCHELLA) SEMELA, new species.

Plate 2, fig. 1.

Shell elongate-conic, bluish-white, semitranslucent. Nuclear whorls, at least two, forming a depressed helicoid spire, which is obliquely half immersed in the first of the succeeding turns. Postnuclear whorls strongly rounded, appressed at the summit, marked by very slightly protractive slender axial ribs, of which 22 occur upon the first, 24 upon the second and third, and 26 upon the remain-

ing turns. The intercostal spaces are a little wider than the ribs. In addition to the axial sculpture, the whorls are marked by 5 spiral cords of which the first is at the summit, and is a little broader than the rest. These spiral cords are equally spaced. The intersections between them and the axial ribs form low, rounded nodules, while the spaces enclosed between them form slightly elongated pits, the long axis of which coincides with the spiral sculpture. Suture moderately constricted. Periphery of the last whorl marked by a spiral cord similar to those on the spire. Base short, well rounded, marked by 5 spiral cords between the peripheral cord and the insertion of the columella, which grow consecutively smaller from the posterior anteriorly, the columella being marked by 3 slender spiral threads. Aperture broadly oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip almost straight, reflected over and appressed to the base for almost its entire length, provided with a moderately strong fold a little anterior to its insertion.

The type, Cat. No. 359762, U.S.N.M., has 6.5 postnuclear whorls and measures: length, 3.5 mm.; diameter, 1.2 mm.

The present species is nearest related to *Turbonilla* (*Bartschella*) *andrewsi* Dall and Bartsch from Panama, from which it differs by its white color, much larger size and more elegant sculpture

ODOSTOMIA (CHRYSALLIDA) OLSSONI, new species.

Plate 2, fig. 3.

Shell elongate-ovate, bluish white. Nuclear whorls decollated in part, the remaining portion deeply immersed in the first of the succeeding turns. Postnuclear whorls strongly, tabulatedly shouldered at the summit, marked by very strong, slightly protractively slanting, almost vertical axial ribs, of which 18 occur upon the first, 20 upon the second, and 18 upon the remaining turns. Intercostal spaces about one and a half times as wide as the ribs. The spiral sculpture consists of 4 spiral cords which are not as strong as the axial ribs, the first of which is at the summit. These cords divide the space between the summit and the periphery into three equal spiral zones of pits. In the later whorls the summit of the turn drops below the periphery and leaves the peripheral cord in the suture. This is as strong as the spiral cords on the spire. Suture strongly channeled. Base rather long, marked by 5 strong spiral cords, the spaces between which are crossed by numerous fine axial threads. Aperture oval; posterior angle obtuse; outer lip fractured; inner lip stout, reflected over and appressed to the base, and provided with a very strong oblique fold a little anterior to its insertion.

The type, Cat. No. 359763, U. S. N. M., has 6⅓ postnuclear whorls and measures: Length, 3.1 mm.; diameter, 1.2 mm.

The present species is related to *Odostomia* (*Chrysallida*) *excelsa* Dall and Bartsch from Panama, but differs from it in having 5 instead of 8 much stronger spiral cords on the base.

ODOSTOMIA (CHRYSALLIDA) MELITTA, new species.

Plate 2, fig. 2.

Shell elongate-conic, bluish white, semitranslucent. Nuclear whorls decollated. Postnuclear whorls narrowly, tabulatedly shouldered at the summit, flattened in the middle, marked by very strong, slightly protractively slanting axial ribs, of which 16 occur upon the first of the remaining turns, 18 upon the second, third, and fourth, and 20 upon the last. These ribs are almost as wide as the spaces that separate them. The spiral sculpture consists of 4 strong spiral cords which do not quite equal the ribs in strength. The first of these is at the summit, while the other three divide the spaces between the summit and the suture into three equal areas. The junction of the axial ribs and spiral cords forms low rounded tubercles, while the spaces between them enclose rounded pits. Beginning with the antipenultimate turn, the peripheral cord shows at the suture, and on the last turn it is completely free therein. This cord is a little less strong than those on the spire. Base rather long, marked by 7 strong spiral cords, those near the columella being a little less developed than the rest. The latter equal the peripheral cord in strength. The spaces between the cords equal the cords and are crossed by fine axial riblets. Aperture oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip very stout, reflected over and appressed to the base, and provided with a very strong, almost lamellar oblique fold a little anterior to its insertion; parietal wall covered by a thick callus.

The type, Cat. No. 359764, United States National Museum, has 6 whorls remaining and measures: Length, 4.2 mm.; diameter, 1.4 mm.

This also belongs to the group of *Odostomia* (*Chrysallida*) *excelsa* Dall and Bartsch, but differs from it by its elongate-conic form (*excelsa* is elongate-ovate) and by its much larger size.

MELANELLA (MELANELLA) OLSSONI, new species.

Plate 2, fig. 4.

Shell regularly elongate-conic, bluish white, semitranslucent. Nuclear whorls decollated. Postnuclear whorls almost flattened, giving to the spire an almost straight outline, appressed at the summit. The basal portion of the preceding whorl shines through the substance of the succeeding turn at its summit, and gives this the appearance of having a double suture. Periphery strongly rounded.

Base rather long, well rounded. The entire surface of the shell is smooth, with a silky luster. Aperture oval. Posterior angle acute; outer lip slightly contracted near the summit, rather protracted in the middle, but scarcely produced into a clawlike element, thin; inner lip stout, reflected over and appressed to the base; parietal wall covered by a moderately thick callus.

The type, Cat. No. 359765, U.S.N.M., has 8.5 whorls and measures: length, 4.5 mm.; diameter, 1.4 mm.

MELANELLA (BALCIS) ELENENSIS, new species.

Plate 2, fig. 5.

Shell elongate-conic, slightly falciform, bluish white. Nuclear whorls decollated. Postnuclear whorls appressed at the summit, very slightly rounded, forming an almost straight-sided spire. Suture but slightly constricted. Periphery of the last whorl well rounded. Base produced, well rounded. Entire surface smooth with a silky luster. Aperture suboval; posterior angle acute; outer lip thin, slightly contracted immediately below the posterior angle, but scarcely produced into a claw-like element anterior to this; inner lip stout, very oblique, reflected over and appressed to the base; parietal wall covered by a thin callus.

The type, Cat. No. 359766, U.S.N.M., has 8.5 whorls and measures: length, 4.5 mm.; diameter, 1.2 mm. Cat. No. 359767, U.S.N.M., contains a young specimen of 5.8 whorls from the same locality.

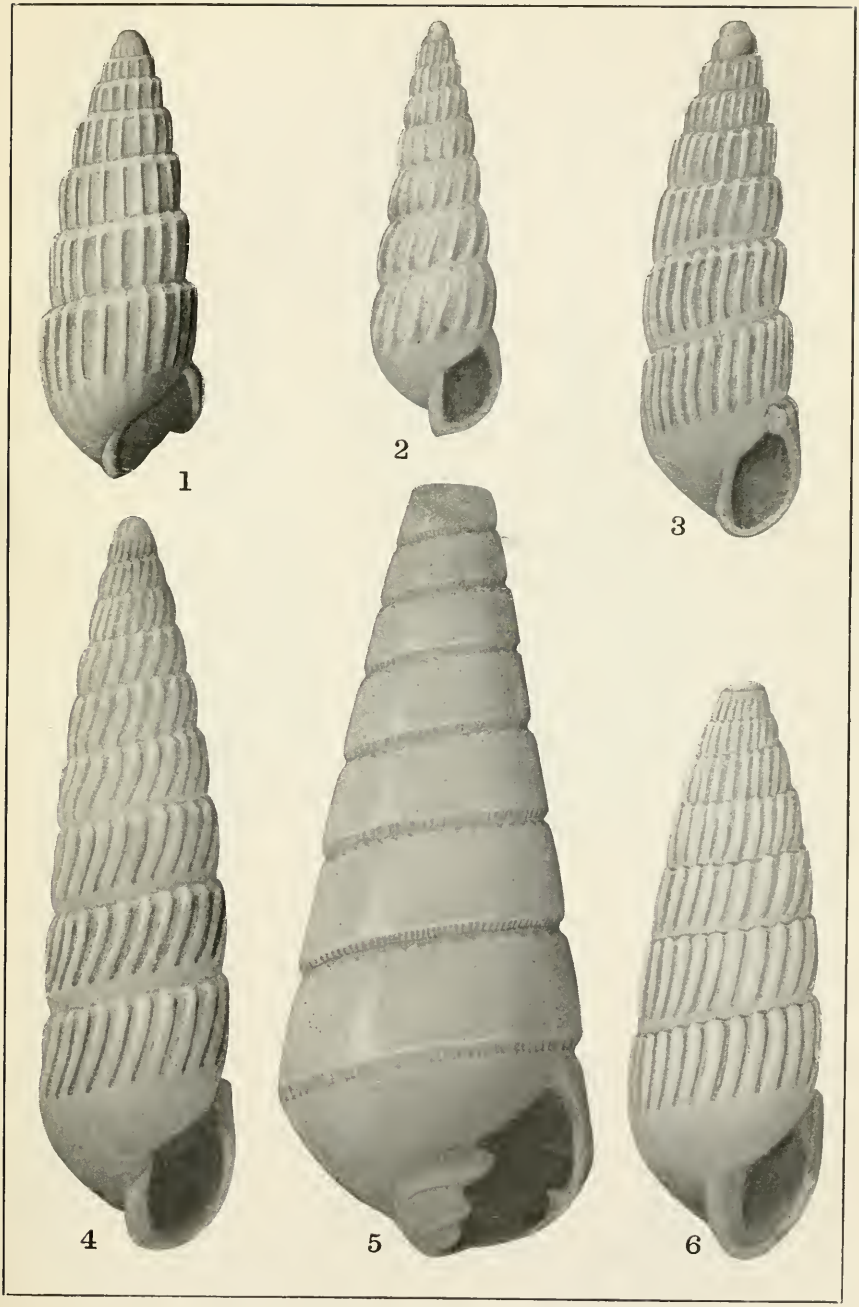
EXPLANATION OF PLATES.

Plate 1.

FIG. 1. *Turbonilla* (*Turbonilla*) *axeli*.
2. *Turbonilla* (*Strioturbonilla*) *thyme*. Spiral sculpture too fine to be shown in figure.
3. *Turbonilla* (*Chemnitzia*) *oenoa*.
4. *Turbonilla* (*Strioturbonilla*) *evagone*. Spiral sculpture too fine to be shown in figure.
5. *Pyramidella* (*Longchaeus*) *elenensis*.
6. *Turbonilla* (*Chemnitzia*) *theone*.

Plate 2.

FIG. 1. *Turbonilla* (*Bartschella*) *semele*.
2. *Odostomia* (*Chrysallida*) *melitta*.
3. *Odostomia* (*Chrysallida*) *olssoni*.
4. *Melanella* (*Melanella*) *olssoni*.
5. *Melanella* (*Balcis*) *elenensis*.
6. *Turbonilla* (*Strioturbonilla*) *nychia*.
7. *Turbonilla* (*Pyrgiscus*) *evadne*.
8. *Turbonilla* (*Pyrgiscus*) *melea*.



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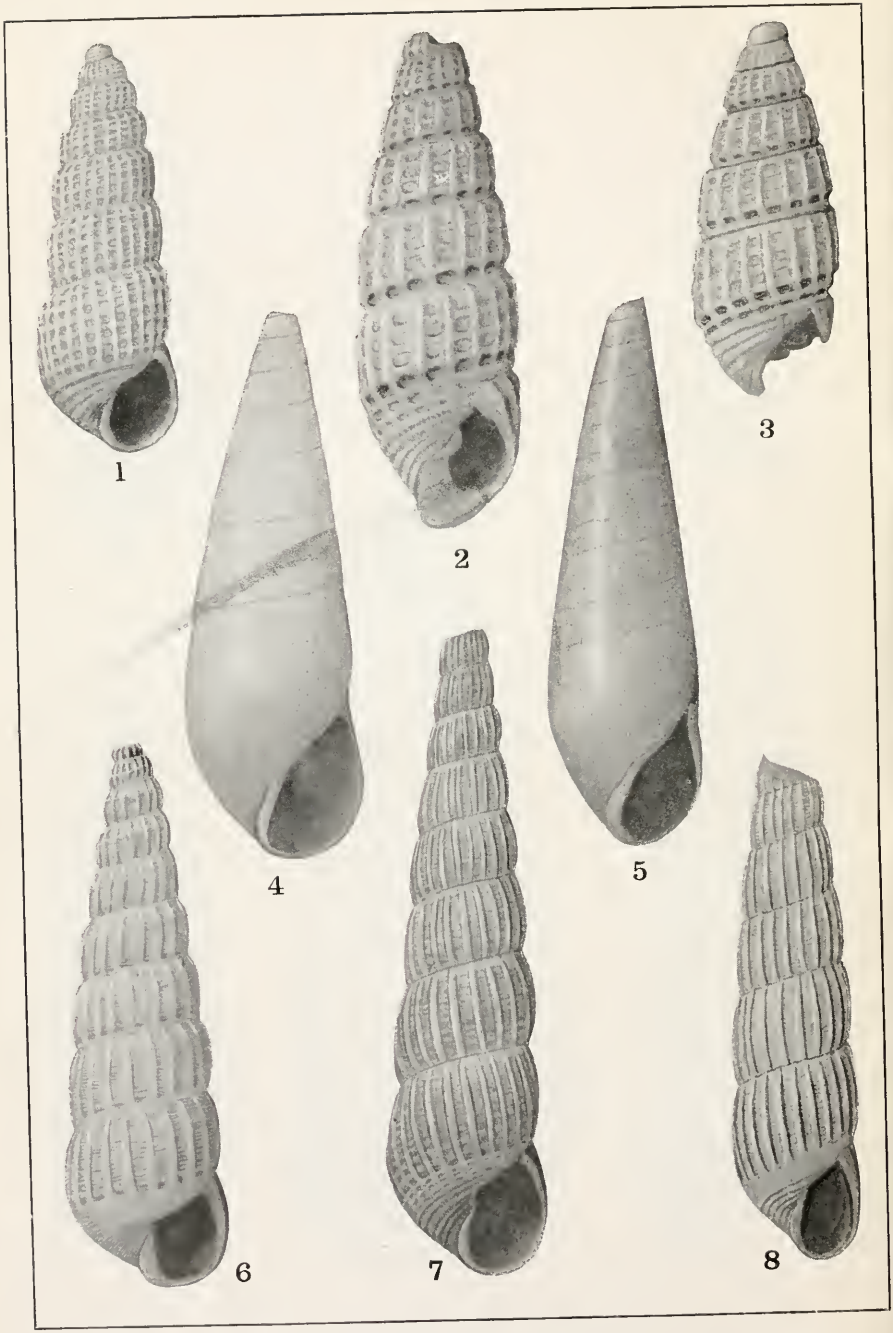

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