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ATLANTIC MOLLUSKS OF THE
FAMILY ACLIDIDAE

(WITH 6 PLATES)

BY
PAUL BARTSCH
U. S. National Museum



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BY PAUL BARTSCH

(WITH 6 PLATES)

The mollusks of this family are all small; some are very minute. They vary in shape from elongate-ovate to turreted. They are usually thin and translucent. The nuclear whorls are small and range from one to more than three; they may form a blunt or acute apex; they are smooth. The postnuclear whorls are rounded and separated by a well-impressed suture; they may be smooth, axially ribbed, or spirally lirate or reticulated, depending upon the particular genus in question. The periphery is usually well rounded; it may be weakly angulated. The base is usually well rounded, and may be umbilicated, rimate, with an umbilical chink, or not umbilicated. The aperture may be ovate or slightly rhomboid. The outer lip is thin and the inner usually concave. The operculum is thin, corneous, and paucispiral. The animal is said to have thin cylindrical tentacles which are approximated basally, bearing the eyes a little lateral, at their base. The mantle cavity is without a gill. A long retractile proboscis is present, also a pair of dentate jaws. The radula is broad and bears numerous very small, needlelike teeth. The sexes are said to be distinct.

The West Atlantic members of the family fall into a number of genera which the following key will help to differentiate.

KEY TO THE WEST ATLANTIC GENERA OF THE FAMILY ACLIDIDAE

Axial and spiral sculpture both present.

Whorls shouldered*Bermudaclis*

Whorls rounded*Graphis*

Axial and spiral sculpture not both present.

Axial ribs only present*Costaclis*

Axial ribs not present.

Spiral sculpture present.

Whorls shouldered*Schwengelia*

Whorls rounded*Aclis*

Spiral sculpture absent.

Shell elongate-pupoid*Henrya*

Shell not elongate-pupoid.....*Hemiaclis*

BERMUDACLIS, new genus

Shell minute, of pupoid outline, thin, subdiaphanous. The nucleus consists of a single well-rounded smooth turn. The postnuclear whorls are well rounded and separated by a well-constricted suture. A strong carina is present at the anterior termination of the posterior two-fifths, anterior to which spiral threads are present which are covered by strong incremental lines, producing a somewhat reticulated sculpture. Base short, moderately rounded, marked by incremental lines only, not umbilicated. Aperture subquadrate.

Type.—*Bermudaclis bermudensis* (Bartsch) (= *Aclis bermudensis* Bartsch).

The genus most nearly resembles *Graphis* Jeffreys. It differs from it in shape, carination, and sculpture. From *Aclis* proper it is easily distinguished by its nuclear characters, absence of umbilicus, and presence of a carina on the postnuclear turns.

KEY TO THE SPECIES OF BERMUDACLIS

Shell slender	<i>tampaensis</i>
Shell not slender	<i>bermudensis</i>

BERMUDACLIS TAMPAENSIS, new species

Plate I, figure 1

Shell minute, elongate-turreted, milk white. The nucleus consists of about 1 smooth turn which forms a blunt apex. The postnuclear whorls have a rounded shoulder which extends over the posterior fourth of the turns. Anterior to the shoulder they are strongly rounded and bear 2 broad, low, almost flattened spiral threads. The shoulder itself shows indication of 3 very feeble additional threads. The axial sculpture consists of weak, closely spaced threads which render the spiral threads very weakly granulose. Suture deeply impressed. Base rather short, well rounded, rimate, and marked by incremental lines. Aperture subrhomboidal; outer lip thin; inner lip a little heavier, concave, and reflected.

The type, U.S.N.M. No. 573633, was collected by Mrs. A. V. Underwood in drift in Tampa Bay at St. Petersburg, Fla. It has 7.5 whorls and measures: Length, 1.7 mm.; diameter, 0.5 mm.

Two topotypes are in Mrs. Underwood's collection.

U.S.N.M. No. 466295 contains 12 specimens collected by Dr. J. P. E. Morrison in drift on the edge of a mangrove swamp on Shell Key off St. Petersburg, Fla.

It differs from *B. bermudensis* in being more slender with both the axial and spiral sculpture more strongly developed.

BERMUDAELIS BERMUDENSIS (Dall and Bartsch)

Plate I, figure 2

1911. *Actis bermudensis* DALL and BARTSCH, Proc. U. S. Nat. Mus., vol. 40, pp. 278-279, pl. 35, fig. 5.

Shell minute, elongate-conic, white subdiaphanous. Nucleus composed of a single turn which is well rounded and smooth. Post-nuclear whorls strongly shouldered on the early turns, the shoulder forming a prominent carina at the anterior termination of the posterior two-fifths of the space between the sutures. The surface of the shell between the anterior suture and the shoulder is marked by 6 equal and equally-spaced very slender spiral threads, while the space between the shoulder and the summit is smooth. Beginning with the fifth whorl the shoulder becomes less apparent and finally loses its angulation altogether. The posterior two-fifths between the sutures, however, remains smooth, while the anterior three-fifths retains the 6 raised threads. Entire surface of the shell marked by exceedingly fine incremental lines. Sutures strongly constricted. Periphery of the last whorl feebly angulated. Base short, moderately rounded. Aperture subquadrate, somewhat effuse anteriorly; posterior angle obtuse; outer lip very thin, showing the external markings within; columella almost straight and slightly revolute.

The type has 7 postnuclear whorls and measures: Length, 2.1 mm.; diameter, 0.6 mm. It was collected in Bermuda and is in the Bermuda Museum. The minute sculpture was not indicated on the original figure.

U.S.N.M. No. 228692 contains 2 paratypes, one of which I have here figured.

This species differs from *Bermudaelis tampaensis* in being less slender, with both axial and spiral sculpture less strongly developed.

GRAPHIS Jeffreys

1867. *Graphis* JEFFREYS, Brit. Conch., vol. 4, p. 102.

Shell small, elongate-turreted, thin, semitranslucent. The nucleus consists of a little more than 1 turn which is large and strongly rounded and forms a blunt apex. The exposed portion of the post-nuclear whorls is high and strongly rounded, and marked by axial ribs and spiral threads; the latter are present on the entire surface

of the turns; they render the axial ribs slightly granulose at their junction. Suture strongly constricted. Periphery and base well rounded. The base is marked by the continuation of the axial ribs and spiral threads equaling those of the spire. Aperture ovate, outer and inner lip thin, the latter concave.

Type.—*Graphis unica* (Montagu) (= *Turbo unicus* Montagu). (See pl. 1, fig. 3.)

William Clark has given an interesting account¹ of the animal of the type species which I am quoting:

XII.—*On the Aclis unica*, *Auct.* By William Clark, Esq.

To the Editors of the Annals of Natural History.

Gentlemen,

Exmouth, 29th June 1854.

I propose, with your permission, to give an account of a very rare mollusk which I discovered this day, and which has hitherto evaded, in a living state, all our researches; I have sought it for thirty years, and may therefore sing "Io Paens" with the illustrious author of the "Amorum," as at last, as with him—

"Decidit in casses praeda petita meos."

Let this instance of unexpected success impress on us the value of the "nil desperandum." The discovery of this creature has long been a desideratum, as it will solve several malacological questions: it has from Montagu's time run the gauntlet of nearly all the genera, agreeably to the conchological surmises of naturalists, of whom scarcely two are in accord, and all in error: as my notes require me to place it in a position it has never yet occupied, and which I believe will prove to be its true malacological *status*. Our ignorance of every circumstance attendant on this almost microscopic being has invested it with a strange diversity of position and consequent structure, but the light of discovery that now dawns on us will dissipate, as it does in every case, misapprehensions, and tell us that the Fates have decreed, we all have been at fault about a very simple creature, which though not absolutely a typical *Rissoa*, is all but one, as the shell only wants the callus on the outer lip; but we have many admitted *Rissoae* without that appendage; indeed, if we were to look for *strict* typical specialties in either the hard or soft parts of any mollusk, every species must become a genus.

Rissoa unica, nobis.

Aclis unica, Brit. Moll. vol. iii. p. 222, pl. 90. f. 4, 5.

Chemnitzia unica, Alder et nobis.

Turritella unica, Fleming.

Turbo unicus, Mont. et auct.

Shell.—Of eight yellowish-white, rounded, finely reticulated volutions with oblique well-marked sutural lines. The apex is obtuse and not reflexed, as stated by me in another place: I was deceived by imperfect specimens, which led me into the error of supposing that it would prove a *Chemnitzia*.

¹ 1854, Ann. Mag. Nat. Hist., London, ser. 2, vol. 14, pp. 122-124.

This is one of the slenderest British shells, having only an axial admeasurement of $1/12$, and a diameter of $1/40$ unciae; the outer lip is thin, and the aperture is oblong-oval and almost entire.

Animal.—The general colour is hyaline-white, shot throughout all its organs with a mixture of very minute close-set points, short lines or blotches, of flaky and frosted snow colour. Mantle even with the shell, except that at the apertural upper angle it emits the filament I have so often mentioned as being present in all the *Rissoae*, and whose particular function is doubtful. The muzzle is slender and rather long, having the first half from the neck, on its upper part, clothed with a very close tunic or tight overlay; the disk is smooth, compressed, bevelled to a fine edge, and almost circular, with a median vertical fissure on the under surface, in which I have often seen the delicate white corneous plates, jaws, and lingual riband: but great powers and much time are required to seize a favourable opportunity of vision in so minute and restless a being. The tentacula are very like those of *Rissoa striata*, moderately long, flat, rounded or obtuse at the tips, quite smooth, even under high powers, divergent, with large black eyes, not on pedicles or prominences, but fixed on the centre of their bases with very little external inclination, and widely apart; there is no connecting tentacular veil, nor the least triangularity, foldings, or the presence of apical inflations, as in the *Chemnitziae*; on the march the eyes are usually carried within the margin of the shell. The foot is slender, greatly hollowed out in front and deeply labiated, with distinct, long, arcuated linear auricles which play on the march, or, as M. Lovèn would term it, "laete vibrantes," beneath which it is slightly constricted, and a little beyond the middle, posteally, is fixed on a simple lobe without lateral expansions or terminal cirrhal filament; the light yellow suboval operculum with distinct grossly spiral turns, exactly as in the paucispiral *Littorinidae*; below the operculum the foot is visibly contracted on each side, and terminates in a rounded rather broad point; no median line is apparent in any part of the sole.

This creature is not at all shy; it remained lively for thirty-six hours and gave every facility for good examination; it readily creeps up the deepest glasses, and however often brushed down, starts again with unabated vigour. The specimen described was detected in Littleham Cove, between Exmouth and Budleigh Salterton, in the littoral level, in a debris of minute decayed shells mixed with sand and mud that has an offensive odour, the mass being deposited on the margins of deep quiet pools affording nutriment to certain long narrow grassy sea-weeds. I have been thus particular to obviate difficulty to future naturalists, and I wish them success in obtaining a live specimen with less trouble than I have had.

The habitat of this species is, I believe, strictly littoral; its associates are the *Rissoa parva*, *R. striata*, *R. planorbis*, nobis (*Skenea planorbis*, auct.), as these are found in the same mass of spoil.

That this is a Littorinidian and almost a strict Rissoidean animal, allowing a trifling margin for specialty-variations, admits of no doubt. It has no malacological community with *Turritella*, *Aclis*, or *Chemnitzia*; but as the muzzle is carried in nearly a similar position as in the latter genus, the young malacologist must take care in so small an object not to be misled by this circumstance, or by the centrality of the eyes at the base of the tentacula: but the veteran observer with delicate and apt manipulation, patience, and good glasses, will easily detect the vertically cloven disk and corneous jaws, which, with

the rissoid simple tentacula, will demonstrate that this animal is merely an elongated *Rissoa*; and in our volume of malacological observations now in the press, we shall deposit it in the section of the elongated species of that genus.

I am, Gentlemen,
Your most obedient servant,
WILLIAM CLARK.

GRAPHIS UNDERWOODAE, new species

Plate 1, figure 4

Shell small, elongate-turreted, yellowish white. The nucleus consists of a little more than a single well-rounded smooth turn which forms a blunt apex. The postnuclear whorls are rather high between summit and suture and are strongly rounded. They are marked by strong, sinuous, almost vertical axial ribs which extend prominently from the summit to the suture. Of these ribs 30 are present on the last turn. These ribs are about as wide as the spaces that separate them. The spiral sculpture consists of 9 slender threads of about half the thickness of the axial ribs, which are rather uniform in size and fairly regular in spacing and confined to the anterior two-thirds of the turns. The combination of the axial and spiral sculpture produces a reticulated pattern. Suture very strongly constricted. Periphery well rounded. Base inflated, strongly rounded, not umbilicated, marked by the feeble continuation of the axial ribs and spiral cords weaker than those on the spire. Aperture oval; outer lip thin; the inner lip concave and slightly reflected.

The type, U.S.N.M. No. 573623, was collected in drift in Tampa Bay at St. Petersburg, Fla., by Mrs. A. V. Underwood. It has 10 whorls and measures: Length, 2.9 mm.; diameter, 0.8 mm.

U.S.N.M. No. 573624 contains 3 topotypes from the same source. Seven additional specimens are in Mrs. Underwood's collection.

U.S.N.M. No. 573635 contains 5 specimens from screenings of airport dredgings at Tampa Bay, Fla., by Mrs. Underwood. Sixteen additional specimens from the same station are in Mrs. Underwood's collection.

U.S.N.M. No. 466227 contains 8 specimens collected by Dr. J. P. E. Morrison in drift on the edge of the mangrove swamp on Shell Key off St. Petersburg, Fla.

The much stronger axial and spiral sculpture will readily distinguish this species from the European *Graphis unica* (Montagu).

COSTACLIS, new genus

This genus is created to include those members of the family that have axial ribs. The ribs may be very strong, or poorly developed, frequently confined to the early postnuclear whorls.

Type.—*Costaclis nucleata* (Dall) = *Aclis nuclcata* Dall.

KEY TO THE SPECIES OF COSTACLIS

Shell large, more than 9 mm. long.

Whorls strongly inflated.....*egregia*

Whorls not strongly inflated.....*nucleata*

Shell small, less than 6 mm. long.

Nuclear whorls bulbous.....*cubana*

Nuclear whorls not bulbous.....*rhyssa*

COSTACLIS EGREGIA (Dall)

Plate 1, figure 6

1889. *Aclis egregia* DALL, Bull. Mus. Comp. Zool., vol. 18, p. 325, pl. 18, fig. 12.

Shell large, broadly elongate-turreted, milk white. The nucleus consists of a little more than 3 small, well-rounded, smooth whorls. The postnuclear whorls are inflated, strongly rounded, and marked by broad, rounded axial ribs on the early turns, which are almost as wide as the spaces that separate them. On the last 4 turns these ribs become much weakened until on the last whorl they are merely indicated as protractively slanting threads. Suture strongly constricted. Periphery inflated, strongly rounded. Base moderately long, strongly rounded, moderately broadly umbilicated, marked by the continuation of the axial sculpture of the last turn. Aperture broadly oval; outer lip thin; inner lip almost straight, slightly reflected; parietal wall covered by a thin callus.

The type, U.S.N.M. No. 126791, was dredged by the *Blake* at station 228 off St. Vincent, West Indies, in 785 fms., on fine gray sand and ooze; bottom temperature, 39.5° F. The type has 11.8 whorls and measures: Length, 12.4 mm.; diameter, 5.3 mm.

A second specimen, U.S.N.M. No. 126799, was dredged by the *Blake* at station 163 off Guadeloupe, West Indies, in 769 fms., on fine sand; bottom temperature, 39.75° F.

This is the largest of the West Atlantic members of the family. The nearest approach in size to it is *Costaclis nucleata* Dall from which it is easily distinguished by its decidedly inflated whorls, weaker axial ribs, and smaller nuclear whorls.

COSTACLIS NUCLEATA (Dall)

Plate 2, figure 3

1889. *Aclis nucleata* DALL, Bull. Mus. Comp. Zool., vol. 18, p. 325, pl. 18, fig. 7.

Shell large for the genus, elongate-turreted, white. The nucleus consists of about 3 rather large, well-rounded, smooth whorls. The postnuclear whorls are moderately well rounded. On the early turns they slope more gently on the posterior three-quarters than on the anterior quarter between the summit and the suture, which gives them a somewhat constricted appearance anteriorly. The early post-nuclear whorls bear slightly protractively slanting, broad, low, rounded axial ribs which are about as wide as the spaces that separate them. The ribs beginning at the middle of the spire become gradually enfeebled and completely lost on the last whorl which is marked by lines of growth only. The periphery of the last whorl is inflated and strongly rounded. The base is rather short, well rounded, and moderately broadly openly umbilicated, marked by the continuations of the lines of growth. Aperture broadly oval; outer lip very thin; inner lip slender, slightly curved, and somewhat reflected; parietal wall glazed with a thin callus.

The type, U.S.N.M. No. 126830, was dredged by the *Blake* at station 230 off St. Vincent, West Indies, in 464 fms., on gray ooze; bottom temperature, 41.5° F. It has 11.5 whorls and measures: Length, 9.3 mm.; diameter, 3.4.

A second specimen, U.S.N.M. No. 97103, dredged by the *Albatross* at station 2750 off St. Bartholomew, West Indies, in 496 fms., on sand bottom, bottom temperature, 44.4° F., shows that the type was an immature individual. This shell has 16.1 whorls and measures: Length, 17.5 mm.; diameter, 5 mm.

This species approaches *C. egregia* (Dall) in size, differing from that in being more slender, with the postnuclear whorls not inflated; in having the axial ribs stronger, and the nuclear whorls longer.

COSTACLIS CUBANA (Bartsch)

Plate 1, figure 7

1911. *Aclis cubana* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, pp. 435-436, pl. 59, fig. 2. Not *Aclis cubana* (Bartsch) Dall, 1927, Proc. U. S. Nat. Mus., vol. 70, p. 71 = *Costaclis rhyssa* (Dall).

Shell small, slender, elongate-conic, milk white. Nuclear whorls 2, the first very much inflated, strongly rounded, and larger than the early postnuclear whorls. Postnuclear whorls well rounded, ap-

pressed at the summit, sculptured with somewhat irregular, feebly developed axial ribs, of which 18 occur upon the first and second, 20 upon the third and fourth, and 22 upon the penultimate turn. Sutures strongly constricted. Periphery of the last whorls marked by a very feeble, slender spiral cord. Base short, well rounded; marked by the feeble continuations of the axial ribs. Aperture very broadly ovate; posterior angle obtuse; outer lip very thin, showing the external sculpture within; columella very slender, decidedly curved and feebly revolute.

The type, U.S.N.M. No. 94290, was dredged by Dr. Rush at his station 34 in 780 fms., on coral mud off Cuba. It has 8 whorls and measures: Length, 4 mm.; diameter, 1.1 mm.

This species most nearly resembles the strongly costate individuals of *Costaclis rhyssa* Dall, from which its strongly bulbous nucleus will readily distinguish it. It is also stouter than that species.

COSTACLIS RHYSSA (Dall)

Plate 1, figure 5

1927. *Aclis rhyssa* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 71.

1927. *Aclis cubana* (Bartsch) DALL, Proc. U. S. Nat. Mus., vol. 70, p. 71. Not *Aclis cubana* Bartsch, 1911.

Shell small, elongate-turreted, thin, translucent, vitreous or white. The nuclear whorls pass so imperceptibly into the postnuclear whorls that it is impossible to definitely determine their number, which is probably a little more than 2. The nuclear whorls are smooth and well rounded; they do not form a bulbous apex. The postnuclear whorls are strongly rounded; their sculpture in different individuals varies from almost smooth to strongly axially costate. The ribs are almost vertical and about as wide as the spaces that separate them. Sixteen of these are present on the last whorl in the type where they evanesce at the periphery. Suture strongly constricted. Base rather short and well rounded, slightly rimate. Aperture broadly oval; outer lip thin; inner lip slender, concave and slightly reflected.

The type, U.S.N.M. No. 108389, was dredged by the *Albatross* at station 2415 in 440 fms., off Georgia on sand bottom; bottom temperature, 45.6° F. It has 10 whorls and measures: Length, 6 mm.; diameter, 1.3 mm.

U.S.N.M. No. 573625 contains several hundred topotypes from the same station.

U.S.N.M. No. 108045 contains a specimen dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on sand bottom; temperature, 46.8° F.

U.S.N.M. No. 108064 contains 20 specimens also from *Albatross* station 2668. These were confused with *Costaclis cubana* Bartsch by Dr. Dall.

The costate forms of this species resemble *Costaclis cubana* (Bartsch). This species does not have the bulbous nucleus; it is also a little more slender.

SCHWENGELIA, new genus

Small acclids with elongate-turreted shells, having a strong shoulder extending over the posterior portion of the whorls limited anteriorly by a spinal cord. The anterior portion of the whorls bears additional spiral threads. Base narrowly umbilicated. Outer lip flaringly expanded in the middle.

Type: *Schwengelia hendersoni* (Dall) = *Aclis hendersoni* Dall.

KEY TO THE SPECIES OF SCHWENGELIA

Spiral threads very strong.....*hendersoni*
Spiral threads not very strong.....*floridana*

SCHWENGELIA HENDERSONI (Dall)

Plate 2, figure 6

1927. *Aclis hendersoni* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 71.

1942. *Aclis hypergonia* SCHWENGEL and MCGINTY, Nautilus, vol. 56, p. 17, pl. 3, fig. 5.

Shell small, elongate-turreted, vitreous or milk white. The nucleus consists of about 1.5 strongly rounded, smooth whorls. The post-nuclear whorls have 4 strong sublamellar spiral cords of which the posterior marks the anterior termination of the shoulder, while the rest divide the space between this and the periphery into 4 equal spaces which are about three times as wide as the spiral cords. The spiral cords are most strongly developed on the early postnuclear whorls; at the middle of the spire they begin to weaken, and on the last whorl those anterior to the shoulder are much reduced. Suture strongly constricted. Periphery rendered slightly angulated by the fourth spiral cord. Base well rounded, marked by several faint spiral threads and incremental lines that cross the entire surface. Aperture large, subrhomboidal; outer lip somewhat angulated at the posterior spiral cord, effuse in the middle and slightly protracted at the junction of the inner and basal lip; the inner lip is thin and slightly reflected.

The type, U.S.N.M. No. 333465, was dredged by the *Albatross* at station 2665 off Fernandina, Fla., in 294 fms., on sand bottom;

bottom temperature, 46.3° F. It has about 9 whorls and measures: Length, 4.3 mm.; diameter, 1.3 mm.

U.S.N.M. No. 333466 contains a young specimen dredged by the *Albatross* at station 2415 off Georgia in 440 fms., on sand bottom; bottom temperature, 45.6° F.

The fact that Dall did not figure his species evidently caused Dr. Schwengel and McGinty to overlook the earlier description. Through the kindness of Dr. Schwengel I have been able to see one of her paratypes which was dredged off Lantana, Fla., in 92 fms. The type of *hypergonia*, 178704, is in the Academy of Natural Sciences of Philadelphia.

The strong spiral sculpture will readily distinguish this from *Schwengelia floridana* Bartsch.

SCHWENGELIA FLORIDANA (Bartsch)

Plate 2, figure 5

1911. *Aclis floridana* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, pp. 436-437, pl. 59, fig. 3.

Shell small, elongate-conic. Nuclear whorls 1.5, well rounded. Postnuclear whorls marked by a strong sloping shoulder which extends over the posterior fourth of the whorls between the sutures. This shoulder is limited anteriorly by a rather strong carina. The anterior three-fourths of the whorls between the sutures are well rounded, strongly constricted at the suture, and appear sculptured by several very feeble spiral lines. The axial sculpture consists of incremental lines and an occasional varicial streak. Sutures very strongly constricted. Periphery of the last whorl and the moderately long base well rounded, marked like the spire. Aperture with the posterior angle obtuse (outer lip fractured; anterior portion of the columella lost); parietal whorl covered with a moderately thick callus which joins the collumella with the posterior angle of the aperture.

The type, U.S.N.M. No. 82973a, was dredged by Dr. Rush in 150-200 fms., off Fowey Rocks, in Florida Straits. It has 8 whorls and measures: Length, 2.9 mm. (if the aperture were complete the shell would probably measure 3 mm.); diameter, 1 mm.

The almost obsolete spiral sculpture and much smaller size distinguish this from *S. hendersoni* (Dall).

ACLIS Loven

1846. *Aclis* LOVEN, Ofvers Vetens. Akad. Föhr, vol. 3, p. 148.

Small, elongate-turreted shells having a slender nucleus consisting of 2 or more smooth turns. The postnuclear whorls are well rounded,

separated by a well-impressed suture, and marked by a number of spiral cords chiefly on the anterior portion of the turns. (These may be present only on the early whorls.) Base strongly rounded and openly umbilicated. Aperture ovate; outer and inner lip thin.

Type—*Aclis supranitida* [Wood] = (*Alvania supranitida* Wood). (See pl. 2, fig. 1.)

ACLIS EOLIS, new species

Plate 2, figure 2

Shell small, elongate-turreted, semivitreous or white. Nuclear whorls 2, large, well rounded, smooth. The postnuclear whorls have a sloping shoulder that extends over almost the posterior half of the turns. The anterior half is well rounded and bears 3 equal and equally spaced spiral cords. The axial sculpture consists of faint lines of growth with an occasional elevated thread almost suggesting a varix. Periphery marked by a faint spiral thread much weaker than the 2 posterior to it. Base well rounded, smooth, narrowly umbilicated. Aperture broadly oval, somewhat effuse at the junction of the basal lip and columella; outer lip thin, slightly emarginated at the posterior slope and somewhat protracted anterior to this; inner lip thin, concave and slightly reflected.

The type, U.S.N.M. No. 573617, was dredged by the *Eolis* at station 100 in 1913, in 65 fms., off Sand Key, Fla. It has 9.6 whorls and measures: Length, 4 mm.; diameter, 1.4 mm.

Six additional lots are in the United States National Museum collection, all obtained in *Eolis* dredgings.

U.S.N.M. No. 414440, 2 topotypes; U.S.N.M. No. 573618, 2 specimens from station 163 (1915), 85 fms., off Sand Key, Fla. U.S.N.M. No. 417450, 1 specimen from station 301 (1915), 95 fms., off Sand Key; U.S.N.M. No. 417446, 1 specimen from station 315 off Key West, Fla., in 87 fms. (1916); U.S.N.M. No. 417447, 1 from station 326 in 75 fms., off Sand Key, Fla.; U.S.N.M. No. 417442, 7 specimens from station 338 in 85 fms., off Sand Key (1916). U.S.N.M. No. 450541 contains 2 specimens dredged by the *Eolis* at station 31 in 90 fms., off Key West, Fla. (1911).

This species differs from the European *Aclis supranitida* (Wood) in being much smaller, having fewer nuclear whorls and in having a much narrower umbilicus.

HENRYA, new genus

Shell minute, thin, of elongate-pupoid outline. The nucleus consists of a single large, well-rounded, smooth turn that forms a blunt

apex. The postnuclear whorls are inflated and strongly rounded, marked by strong incremental lines which are rather closely spaced and almost form hairlike elements. This is particularly true of the early turns. Suture strongly constricted. Periphery inflated, strongly rounded. Base well rounded with an umbilical chink. Aperture oblique, irregularly broadly oval; outer lip thin; inner lip slightly twisted and slightly revolute.

Type.—*Henrya henryi*, new species.

This genus differs from *Hemiaclis* in having an elongate-pupiform outline, a much more blunt apex than any member of that genus, in having more inflated postnuclear whorls, with stronger incremental sculpture and in having a more twisted columella. The genus at present is represented by three species: One from San Salvador, Bahama, one from Mexico, and one from Florida. It appears to frequent mangrove-covered regions, probably supersaline; that at least is the case in the San Salvador habitat.

The genus is named for my son Henry who helped gather the type species.

KEY TO THE SPECIES OF HENRYA

Diameter 2 or more mm.

Shell slender *henryi*

Shell stout *goldmani*

Diameter less than 1.5 mm. *morrisoni*

HENRYA HENRYI, new species

Plate 3, figure 2

Shell exceedingly small, elongate-pupoid in outline, milk white. The nucleus consists of about 1 strongly rounded large turn which forms a blunt apex. The postnuclear whorls are inflated, strongly rounded, and marked by incremental lines only. Suture profoundly impressed. Periphery of the last whorl inflated and strongly rounded. Base rather long, well rounded with a narrow umbilicus. Aperture oval, slightly effuse at the junction of the basal and inner lip; outer lip thin; inner lip also thin, slightly sinuous, and reflected.

The type, U.S.N.M. No. 573619, comes from the larger of the two lakes in the island of San Salvador, Bahama. It has 6.3 whorls and measures: Length, 2.1 mm.; diameter, 0.5 mm.

U.S.N.M. No. 360368 contains 7 topotypes from the same source.

U.S.N.M. No. 54709 contains 9 specimens collected by Dr. Brown in the lagoon in San Salvador, Bahamas.

The specimens were collected by myself and son Henry G. Bartsch,

whose name I am attaching to this species as a specific designation. I have called the larger of the two lakes in the island of San Salvador Lake Isabella and the smaller Lake Ferdinand. These lakes are connected by underground conduits with the sea and the evaporation is compensated at high tide by the welling up of water at some distance from shore inside of the lake. The water of the lake is supersaline.

This species in size most nearly resembles *H. goldmani*, but it is much more slender and has the whorls less rounded.

HENRYA GOLDMANI, new species

Plate 3, figure 3

Shell minute, pupoid, translucent, glassy. The nucleus consists of a single, strongly rounded, hyaline turn which forms a very blunt apex. The postnuclear whorls are very strongly rounded and marked by incremental lines which on the early turns form weak, hairlike, retractively slanting riblets. Suture very strongly constricted. Periphery of the last whorl strongly rounded. Base moderately long, strongly rounded, narrowly umbilicated, marked by incremental lines only. Aperture oval; outer lip thin; inner lip reflected over the base. Parietal wall covered by a thick callus.

The type, U.S.N.M. No. 467454, was collected by E. A. and L. G. Goldman in a saline lagoon near Progreso, Yucatan. It has 6 whorls and measures: Length, 2 mm.; diameter, 0.7 mm.

U.S.N.M. No. 573632 contains 3 topotypes from the same source.

This species in size most nearly resembles *H. henryi* from which its much stouter form and inflated and rounded whorls will readily distinguish it.

HENRYA MORRISONI, new species

Plate 3, figure 1

Shell very minute, pupoid, very slender, milk white. The nucleus consists of a single, strongly rounded, hyaline turn which forms a very blunt apex. The postnuclear whorls are rather high between summit and suture, strongly rounded, and marked by rather conspicuous, retractively slanting lines of growth. Suture strongly constricted. Aperture well rounded. Base rather long, well rounded, without an umbilical chink, and marked by incremental lines only. Aperture oval; outer lip thin; inner lip thin and reflected over the base.

The type, U.S.N.M. No. 573636, was collected by Dr. J. P. E. Morrison at his station 15 in drift at the edge of a mangrove swamp

on Shell Key off St. Petersburg, Fla. It has 5.4 whorls and measures: Length, 1.4 mm.; diameter, 0.35 mm.

U.S.N.M. No. 466297 contains 11 topotypes from the same source.

U.S.N.M. No. 466225 contains 1 specimen collected by Dr. Morrison at his station 14 on the upper line of drift along a mangrove swamp on Shell Key off St. Petersburg, Fla.

U.S.N.M. No. 573626 contains 15 specimens collected by Mrs. A. V. Underwood from siftings of dredgings at the airport in Tampa Bay, Fla. Forty-one additional specimens from the same source are in Mrs. Underwood's collection.

This species is easily distinguished from the other two by its much smaller size. I take pleasure in naming it for my associate, Dr. J. P. E. Morrison.

HEMIACLIS G. O. Sars

1878. *Hemiacлис* G. O. Sars, Moll. Reg. Arct. Norvegiae, p. 197.

1884. *Stilbe* JEFFREYS, Proc. Zool. Soc., p. 130.

This genus includes acлиds which have a polished shell marked only by faint incremental lines and occasionally with a hint of spiral striations. There is considerable variation in umbilical characteristics. Some species have an open umbilicus, others a mere rimation, and still others have not even an umbilical chink. The character of the aperture also presents a large range of variation in different species; some have an angulation at the junction of the basal and inner lip, while in others the edge of the peristome is concavely rounded here. *Hemiacлис* never has a columellar fold.

I have been unable to detect any characters that separate Jeffreys' genus *Stilbe* and *Hemiacлис*, even in a subgeneric sense.

The type of *Hemiacлис* is *H. ventrosa* (Jeffreys) Sars. I have figured the type of that species (pl. 3, fig. 5). The type of *Stilbe* Jeffreys is *S. acuta* Jeffreys.

KEY TO THE SPECIES OF HEMIACLIS ²

- Base umbilicated.
- Shell ovate.
- Length 2 mm.....*pyramida*
- Length 3.5 mm.....*conula*
- Shell not ovate.
- Shell elongate-ovate.
- Nuclear whorls slender, tapering.
- Base narrowly umbilicated.....*verrilli*
- Base openly umbilicated.....*lata*
- Nuclear whorls not slender and tapering.
- Nuclear whorls blunt.
- Length less than 3 mm.....*stilifer*
- Length more than 4 mm.....*pendata*
- Shell not elongate-ovate.
- Shell turreted.
- Shell more than 9 mm. long.
- Whorls strongly rounded.
- Umbilicus very narrow.....*marguerita*
- Umbilicus moderately broad.....*hyalina*
- Whorls only slightly rounded.....*benedicti*
- Shell less than 5 mm. long.
- Shell very slender.....*tenuis*
- Shell not very slender.
- Nuclear whorls exceedingly slender.
- Outer lip thickened.....*tanneri*
- Outer lip not thickened.....*fernandinae*
- Nuclear whorls not exceedingly slender.
- Base rather long.....*rushi*
- Base short.....*carolinensis*
- Base not umbilicated.
- Whorls strongly rounded.
- Length more than 7 mm.....*dalli*
- Length less than 4 mm.....*georgiana*
- Whorls only slightly rounded.....*limata*

HEMIACLIS PYRAMIDA (Dall)

Plate 3, figure 4

1927. *Aclis pyramida* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 70.

Shell minute, ovate, milk white. The nucleus consists of about 1 smooth turn which forms a blunt apex and which is scarcely differentiated from the postnuclear whorls. The postnuclear whorls are well rounded, smooth, and shining with scarcely a trace of incremental lines. Suture moderately constricted. Periphery and base inflated,

² *Aclis sarissa* Watson belongs to this genus. I have not seen specimens of it and therefore refrain from placing it in the key of this difficult genus.

the latter rather short, strongly rounded and moderately openly umbilicated, without sculpture. Aperture irregularly oval at the junction of the basal and inner lip; outer lip thin; inner lip also thin and reflected.

The unique type, U.S.N.M. No. 108223, was dredged by the *Albatross* at station 2415 in 440 fms., off Georgia, lat. $30^{\circ}44'$ N., long. $79^{\circ}26'$ W., on broken coral, coarse sand and broken shell bottom; bottom temperature, 45.6° F. It has 6 whorls and measures: Length, 2 mm.; diameter, 1.1 mm.

This can readily be differentiated from the other ovate *Hemiaclis* by its much smaller size.

HEMIACLIS CONULA (Dall)

Plate 3, figure 6

1927. *Aclis conula* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 70.

Shell small, ovate, milk white. The nucleus consists of a little more than a single well-rounded, smooth turn which is scarcely differentiated from the postnuclear whorls. The postnuclear whorls are slightly rounded, forming an almost straight lateral line. They are devoid of sculpture. Suture slightly constricted. Periphery inflated with a mere suggestion of an angulation. Base short, well rounded, narrowly openly umbilicated, without sculpture. Aperture ovate, somewhat effuse at the junction of the basal and inner lip; outer lip thin; inner lip concave and slightly reflected.

The unique type, U.S.N.M. No. 108022, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has about 8 whorls and measures: Length, 3.7 mm.; diameter, 1.1 mm.

This species can readily be distinguished from *H. pyramida* by its much smaller size.

HEMIACLIS VERRILLI (Bartsch)

Plate 4, figure 5

1911. *Aclis verrilli* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, pp. 437-438, pl. 59, fig. 6.

Shell acicular, yellowish white. Nuclear whorls 4, well rounded with strongly impressed sutures, smooth, forming a slender apex to the spire. Postnuclear whorls well rounded, appressed at the summit, sculptured by 6 feeble, poorly defined, somewhat irregular spiral threads and numerous incremental lines, the combination of the two

lending the surface of the spire a feebly malleated surface. In addition to the above sculpture the surface is marked with irregularly disposed varicial lines. Sutures strongly impressed. Periphery of the last whorl well rounded. Base moderately long, well rounded, narrowly umbilicated, marked by 7 feeble and irregularly placed spiral lines, its surface having the same aspect as that of the spire. Aperture rather large; somewhat effuse anteriorly, posterior angle somewhat obtuse; outer lip patulous, columella oblique, slightly curved and strongly revolute.

The type, U.S.N.M. No. 44811, has 11 whorls and measures: Length, 4.6 mm.; diameter, 1.7 mm. It was dredged by the U.S.S. *Fish Hawk* at station 894 in 365 fms., off Martha's Vineyard, Mass.; bottom temperature, 40° F.

U.S.N.M. No. 44808 contains 1 specimen dredged by the *Fish Hawk* at station 892 in 487 fms., off Martha's Vineyard.

U.S.N.M. No. 44809 contains 1 specimen dredged by the *Fish Hawk* at station 1093 in 349 fms., off Martha's Vineyard; bottom temperature, 40° F.

U.S.N.M. No. 78161 contains 2 specimens dredged by the *Fish Hawk* at station 2710 in 984 fms., southeast of Nantucket.

U.S.N.M. No. 151887 contains 1 specimen dredged by the *Albatross* at station 2547 in 390 fms., 40 miles south of Martha's Vineyard.

The present species has been listed from the West Atlantic under the name *Aclis walleri* Jeffreys, a European species. It is not at all closely related to this form; *walleri* is much smaller, much more narrowly elongate-conic and has a much wider umbilicus.

The type of *walleri* described by Jeffreys (British Conchology, vol. 4, pp. 105-106, and figured in vol. 5, pl. 72, fig. 4) is in the National Museum (U.S.N.M. No. 182214) and measures: Length, 3.3 mm.; diameter, 1.2 mm.

The species was named for Prof. A. E. Verrill.

This species most nearly resembles *H. lata*, from which it is readily distinguished by its less broadly elongate-ovate outline, less wide umbilicus and more rounded whorls.

HEMIACLIS LATA (Dall)

Plate 4, figure 4

1927. *Aclis lata* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 70.

Shell moderately large, elongate-ovate. The nucleus consists of about 2.5 very slender, smooth whorls which are scarcely differentiated from the succeeding turns. The postnuclear whorls are very

slightly rounded and devoid of sculpture. The suture is slightly constricted which gives the spire an almost straight-sided outline. Periphery inflated with the merest indication of an angulation. Base short, inflated, strongly rounded, openly umbilicated, smooth. Aperture broadly ovate; outer lip thin, slightly protracted in the middle; inner lip curved, not effuse at the junction with the basal lip.

The type, U.S.N.M. No. 126790, was dredged by the *Hassler* in 100 fms., off Barbados. It has 11.9 whorls and measures: Length, 5.5 mm.; diameter, 2.5 mm.

This species is readily distinguished from *H. verrilli* by its more broadly elongate-ovate outline, more open umbilicus, and less-rounded whorls.

HEMIACLIS STILIFER (Dall)

Plate 4, figure 2

1927. *Aclis stilifer* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 69.

Shell small, elongate-ovate, cream yellow. The nucleus consists of about 1 strongly rounded smooth turn which forms a blunt apex. The postnuclear whorls are slightly rounded, and without sculpture, polished and shining. Suture slightly impressed. Periphery inflated with a feeble indication of an angulation. Base short, well rounded, with a narrow umbilicus, smooth. Aperture oval; outer lip thin; inner lip also thin and slightly reflected.

The type, U.S.N.M. No. 108024, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 7 whorls and measures: Length, 2.5 mm.; diameter, 1.4 mm.

U.S.N.M. No. 573631 contains 7 topotypes from the same source.

U.S.N.M. No. 333452 contains 5 specimens from 2415 in 440 fms., off Georgia, lat. 30°44' N., long. 79°26' W., on broken coral, coarse sand, and broken shell bottom; bottom temperature, 45.6° F.

U.S.N.M. No. 105385 contains 5 specimens from the same station.

This species is most nearly related to *H. pendata* from which it is readily distinguished by all its measurements. It is also a little more broadly elongate-ovate than that species.

HEMIACLIS PENDATA (Dall)

Plate 4, figure 3

1927. *Aclis pendata* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 70.

Shell moderately large, elongate-ovate, cream yellow. The nucleus consists of about 1.5 well-rounded, smooth turns which form a com-

paratively blunt apex. The postnuclear whorls are moderately well rounded and marked by incremental lines only. Suture well impressed. Periphery of the last whorl inflated, well rounded. Base moderately long, well rounded, narrowly openly umbilicated and marked by incremental lines only. Aperture ovate, slightly effuse at the junction of the basal and inner lip; outer lip thin; inner lip also thin and slightly reflected.

The type, U.S.N.M. No. 108021, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 9 whorls and measures; Length, 5 mm.; diameter, 2 mm.

U.S.N.M. No. 108023 contains 8 topotypes from the same source.

U.S.N.M. No. 108384 contains 3 specimens dredged by the *Albatross* at station 2415 in 440 fms., off Georgia, lat. 30°44' N., long. 79°26' W., on broken coral, coarse sand, and broken shell bottom; bottom temperature, 45.6° F.

U.S.N.M. No. 108387 contains 23 specimens from the same station.

This species is most nearly related to *H. stilifer*, from which its larger size and a little more slender form and little wider umbilicus will readily distinguish it.

HEMIACLIS MARGUERITA, new species

Plate 5, figure 3

Shell rather large, elongate-turreted, milk white. The nucleus consists of about 2.5 well-rounded, smooth turns which form a blunt apex. The nuclear spire does not quite conform to the straight line of the postnuclear spire, but is a little thicker than that. Postnuclear whorls strongly rounded, marked by incremental lines only. Suture moderately constricted. Periphery well rounded. Base moderately long, well rounded, very narrowly umbilicated. Aperture oval; outer and inner lip thin, the latter slightly reflected.

The type, U.S.N.M. No. 108019, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 15.4 whorls and measures: Length, 9.5 mm.; diameter, 2 mm.

U.S.N.M. No. 108025 contains 30 topotypes from the same source.

U.S.N.M. No. 108042 contains 33 additional specimens from the same station.

U.S.N.M. No. 108288 contains 28 specimens from station 2415 in 440 fms., off Georgia, lat. 30°44' N., long. 79°26' W., on broken

coral, coarse sand, and broken shell bottom; bottom temperature, 45.6 F.

U.S.N.M. No. 108390 contains 162 specimens from the same station.

U.S.N.M. No. 329371 contains 4 specimens, also from the same station.

This species belongs to the group of *hyalina* and *benedicti*. From *hyalina* it can be distinguished by its narrower umbilicus, and from *benedicti* by having the whorls much more strongly rounded. Care must be taken not to confuse immature specimens of this species with other species that do not attain the large size of the present form. This species was erroneously named *Aclis dalli* Bartsch by Dall in his paper "Small Shells from the Dredgings off the Southeast Coast of the United States by the United States Fisheries Steamer 'Albatross' in 1885 and 1886."

I take pleasure in naming it for Mrs. Marguerite Poole who devoted many years to sorting the minute mollusks from the various dredging stations made by the *Eolis*, Mr. Henderson's private yacht.

HEMIACLIS HYALINA (Watson)

Plate 6, figure 5

1880. *Aclis hyalina* WATSON, Journ. Linn. Soc. London, vol. 15, pp. 246-247.

1885. *Aclis hyalina* WATSON, Rep. Voy. Challenger, Zool., vol. 15, pp. 502-503, pl. 34, fig. 2.

"*Shell*.—Broadly subulate, high, conical, umbilicate, ribless or *very* faintly ribbed on the earlier whorls, thin, glassy. *Sculpture*: Longitudinals—there are very many, close-set, faint, irregular angulations of the surface, which, besides, is covered with very fine hair-like striae; these under a lens look very sharp and regular, but under the microscope are seen to be rounded and irregular, made up of little inconstant curves, with changing swellings and depressions. Spirals—the surface is faintly malleated in a somewhat orderly fashion; but besides the larger system of malleations there is a second system a good deal smaller and more irregular, and the raised edges of these very slight depressions run in very numerous irregular and variable spiral lines, which are so slight as only to be visible in a changing light. On the base the longitudinal striae are rather stronger, and the spiral system feebler than on the spire. The edge of the base is rounded, but there is a change of direction at that part which produces a very slight angulation. The lip of the small umbilicus is thickened and angulated. *Colour* glossy on the surface; the shell is milkily transparent, glassy,

and thin. *Spire* conical, with a very slightly concave profile, long and fine. *Apex* small, rounded, but with a very slight contraction and prominence on one side, in consequence of the extreme tip being not entirely suppressed. *Whorls* 12, of gradual and regular increase, convex; the base is rounded, slightly tumid, and produced. *Suture* linear, regular, rather sharply though minutely impressed. *Mouth* small, oval. *Outer lip* leaves the body a little below the contraction of the base; from this point it advances forwards so as to form with the body a small but acute-angled sinus; it sweeps round, not patulous, with a very regular curve to the point of the pillar, which it joins at a bluntly-acute angle, and forms there a slight but not at all incised canal. *Pillar* is very slightly oblique and a little concave. *Inner lip* is entirely discontinuous across the body, and first appears in a minute thin abrupt edge, which surrounds the base of the pillar; its very thin, narrow, and slightly patulous face forms the entire pillar. *Umbilicus* lies behind the thin pillar-lip, and is a minute deep funnel-shaped pore, sharply defined by its angulated and thickened basal lip. H. 0.42 in. (10.5 mm.) B. 0.15 (3.8 mm.). Penultimate whorl, height 0.062. Mouth, height 0.094, breadth 0.064.

"Challenger Station 122. September 10, 1873. Lat. $9^{\circ}5'$ S., long. $34^{\circ}50'$ W. Off Pernambuco. 350 fathoms. Red mud."

This species appears most nearly related to *H. marguerita*, but its much broader umbilicus as well as other characteristics will differentiate it from that.

HEMIACLIS BENEDICTI, new species

Plate 5, figure 5

Shell large, elongate-turreted, cream yellow. The nucleus consists of probably 1 well-rounded turn which forms a blunt apex. The nuclear whorl merges imperceptibly into the postnuclear turns which are very slightly rounded and marked by incremental lines only. Suture very slightly impressed. Periphery of the last whorl rounded. Base short, well rounded, narrowly umbilicated. Aperture broadly ovate; outer lip thin; the inner lip moderately thick and reflected.

The type, U.S.N.M. No. 87356, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 12 whorls and measures: Length, 10.4 mm.; diameter, 3.3 mm.

U.S.N.M. No. 108061 contains 4 specimens from the same station.

U.S.N.M. No. 108386 contains 71 specimens dredged by the *Albatross* at station 2415 in 440 fms., off Georgia, lat. $30^{\circ}44'$ N., long.

79°26' W., on broken coral, coarse sand, and broken shell bottom; bottom temperature, 45.6° F.

This species belongs to the group of *marguerita* and *hyalina* from both of which its much less rounded whorls will readily distinguish it.

These specimens were identified by Dr. Dall in his paper, "Small Shells from the Dredgings off the Southeast Coast of the United States by the United States Fisheries Steamer 'Albatross' in 1885 and 1886," as *Aclis lata*.

HEMIACLIS TENUIS (Verrill)

Plate 4, figure 1

1882. *Aclis tenuis* VERRILL, Trans. Conn. Acad., vol. 5, p. 528, pl. 58, fig. 19.
Not *Aclis tenuis* (Verrill) Dall 1927, Proc. U. S. Nat. Mus., vol. 70, p. 71 = *Hemiaclis marguerita*.

Shell minute, elongate-conic, slender, milk white. The nucleus consists of about 1.5 smooth turns which form a moderately blunt apex. The outline of the nuclear turns coincides with the outline of the spire. The postnuclear whorls are well rounded, polished, without sculpture. Suture strongly constricted. Periphery with the merest indication of an angulation. Base short, well rounded, narrowly umbilicated. Aperture oval; outer lip thin; inner lip slightly reflected.

The type, U.S.N.M. No. 40821, was dredged by the United States Fish Commission's steamer *Fish Hawk* at station 873 in 100 fms., off Martha's Vineyard, in soft sticky mud; bottom temperature, 51° F. It has a little more than 8 whorls and measures: Length, 2.8 mm.; diameter, 1.1 mm.

U.S.N.M. No. 83739 contains 1 specimen dredged by the *Albatross* at station 2572, off southeast George's Bank in 1769 fms., on gray ooze bottom; bottom temperature, 37.3° F.

The very slender shape will readily distinguish this from the other northern species.

HEMIACLIS TANNERI, new species

Plate 5, figure 1

Shell minute, elongate-conic, milk white. The nucleus consists of about 1.5 well-rounded smooth turns which form a very slender apex, conforming in outline with the spire. The postnuclear whorls are very strongly rounded, smooth, polished, and devoid of sculpture. Suture only slightly impressed. Periphery well rounded. Base short, well rounded and narrowly openly umbilicated. Aperture broadly oval; outer lip effuse, thickened; inner lip strongly curved, also slightly thickened and slightly reflected.

U.S.N.M. No. 417444 was dredged by the *Albatross* at station 2234 in 810 fms., off Long Island, N. Y. It has 10 whorls and measures: Length, 3 mm.; diameter, 1 mm.

The exceedingly slender nuclear whorls relate this to *H. fernandinae*, which, however, is without a thickened lip.

HEMIACLIS FERNANDINAE (Dall)

Plate 5, figure 4

1927. *Aclis fernandinae* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 69.

Shell small, elongate-turreted, milk white. The nucleus consists of about 3 small, moderately rounded turns which form a slender apex. The postnuclear whorls are well rounded by incremental lines only. Suture well constricted. Periphery of the last whorl inflated and rounded. Base moderately long, well rounded, narrowly umbilicated and marked only by incremental lines. Aperture rather large, slightly effuse at the outer lip which is thin at the edge; inner lip thin, concave and slightly reflected. The aperture is slightly effuse at the junction of the outer and basal lip.

The type, U.S.N.M. No. 108047, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 11 whorls and measures: Length, 4.1 mm.; diameter, 1.1 mm.

U.S.N.M. No. 573620 contains 5 topotypes from the same source.

This species is most nearly related to *H. tanneri* from which it differs by the absence of the thickening of the lip.

HEMIACLIS RUSHI (Bartsch)

Plate 5, figure 2

1911. *Aclis rushi* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, p. 436, pl. 59, fig. 3.

Shell small, elongate-conic, white. Nuclear whorls 2, well rounded, smooth. Postnuclear whorls inflated, appressed at the summit, sculptured with fine incremental lines and an occasional impressed varicial streak. In addition to this there appear 5 very fine subobsolete-raised spiral threads between the sutures which lend the surface a very weakly malleated appearance. Sutures very constricted. Periphery of the last whorl well rounded. Base moderately long, narrowly umbilicated, well rounded, marked like the spire. Aperture large, decidedly effuse anteriorly, with a patulous expansion covering the posterior half of the outer lip; posterior angle obtuse; outer lip thin, the portion immediately anterior to the patulous part

forming a claw; columella very long, oblique, and very strongly reflected.

Two specimens of this species were dredged by Dr. Rush in 150-200 fms., off Fowey Rocks, Florida Straits. The type, U.S.N.M. No. 82973, has 8 whorls and measures: Length, 2.7 mm.; diameter, 1.2 mm.

U.S.N.M. No. 573630 contains the topotype from the same source.

Named for Dr. W. H. Rush.

This species differs from *H. carolinensis* in having the base of the last whorl much longer.

HEMIACLIS CAROLINENSIS (Bartsch)

Plate 6, figure 4

1911. *Aclis carolinensis* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, p. 438, pl. 59, fig. 7.

Shell acicular. Nuclear whorls 2, well rounded, smooth. Early postnuclear whorls gently rounded on the posterior two-thirds between the sutures and abruptly on the anterior one-third. The later whorls are more evenly rounded; sculptured with numerous fine incremental lines and by feeble, somewhat irregular, raised, slender spiral threads. The combination of the incremental lines and the spiral threads lends the surface of the whorls a somewhat malleated appearance. In addition to the above sculpture varicial lines appear at irregular intervals. Sutures strongly impressed. Periphery of the last whorl obliquely angled. Base moderately long, strongly but narrowly umbilicated, well rounded, sculptured like the spire with spiral striation, incremental lines and about 6 obsolete raised spiral threads. Aperture large, decidedly effuse anteriorly, the basal portion patulous; posterior angle obtuse; outer lip thin; columella strongly curved, expanded and revolute.

The type, U.S.N.M. No. 83743, was dredged by the *Albatross* at station 2595 in 63 fms., sandy bottom; bottom temperature, 75° F., 22 miles east-southeast of Hatteras, N. C. It has 10 whorls and measures: Length, 4.7 mm.; diameter, 1.3 mm.

This species differs from *H. rushi* in having the base much shorter.

HEMIACLIS DALLI (Bartsch)

Plate 6, figure 2

1911. *Aclis dalli* BARTSCH, Proc. U. S. Nat. Mus., vol. 40, p. 435, pl. 59, fig. 1.
 Not *Aclis dalli* (Bartsch) Dall 1927, Proc. U. S. Nat. Mus., vol. 70, pp. 68-69 = *Hemiaclis marguerita*, new species.

Shell slender, very elongate-conic, milk white, vitreous. Nuclear whorls not differentiated from the rest. Early postnuclear whorls well rounded; the later half strongly inflated; all strongly appressed at the summit, the appressed portion appearing as a slightly differentiated color band at the summit of the whorls. The entire surface of the shell is sculptured only by the exceedingly fine incremental lines. Sutures very strongly constricted. Periphery of the last whorl and the moderately long base well rounded, smooth. Aperture large, somewhat effuse anteriorly; posterior angle obtuse; outer lip thin and semitransparent; columella moderately long, curved and reflected.

The type, U.S.N.M. No. 94288, was dredged by Doctor Rush at his station 34 in 780 fms., on coral mud bottom off Cuba. It has 17 whorls and measures: Length, 7.8 mm.; diameter, 1.7 mm.

Named for Dr. W. H. Dall.

HEMIACLIS GEORGIANA (Dall)

Plate 6, figure 3

1927. *Aclis georgiana* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 68.

Shell small, elongate-turreted, milk white. The nucleus consists of about 1 large well-rounded turn which forms a blunt apex. The postnuclear whorls are strongly rounded, shining, and without sculpture. Suture well constricted. Periphery inflated, strongly rounded. Base long, strongly rounded, *not* umbilicated, without sculpture. Aperture oval; outer lip protracted in the middle; inner lip reflected and appressed to the attenuated base.

The type, U.S.N.M. No. 108020, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 6.5 whorls and measures: Length, 3 mm.; diameter, 1 mm.

U.S.N.M. No. 573621 contains 15 topotypes from the same source.

U.S.N.M. No. 108054 contains 16 additional topotypes from the same source.

U.S.N.M. No. 333451, still another specimen from the same station.

U.S.N.M. No. 108046 contains 1 specimen from the same station.

U.S.N.M. No. 108391 contains 3 specimens dredged by the *Albatross* at station 2415 in 440 fms., off Georgia, lat. $30^{\circ}44'$ N., long. $79^{\circ}29'$ W., on broken coral, coarse sand, and broken shell bottom; bottom temperature, 45.6° F.

The much smaller size will readily differentiate this species from *H. dalli*.

HEMIACLIS LIMATA (Dall)

Plate 6, figure 1

1927. *Aclis limata* DALL, Proc. U. S. Nat. Mus., vol. 70, p. 69.

Shell small, elongate-conic, milk white. The nucleus consists of a little more than a single turn which forms a blunt apex and which is scarcely differentiated from the succeeding whorls. The postnuclear whorls are almost flattened, without sculpture. Suture slightly contracted. Periphery of the last whorl somewhat inflated and obscurely slightly angulated. Base short, inflated, well rounded, *not* umbilicated. Aperture ovate; outer lip slightly protracted in the middle, thin; inner lip concave and reflected. Parietal wall covered by a moderately thick callus.

The type, U.S.N.M. No. 108044, was dredged by the *Albatross* at station 2668 in 294 fms., off Fernandina, Fla., on gray sand and broken coral bottom; bottom temperature, 46.3° F. It has 8 whorls and measures: Length, 4 mm.; diameter, 0.8 mm.

U.S.N.M. No. 573622 contains 1 topotype from the same source.

The almost flat whorls will readily distinguish this species from the other nonumbilicated *Hemiaclis*.

HEMIACLIS SARISSA (Watson)

Plate 6, figure 6

1880. *Aclis sarissa* WATSON, Linn. Soc. London, vol. 15, pp. 247-248.

1885. *Aclis sarissa* WATSON, Rep. Voy. *Challenger*, Zool., vol. 15, pp. 503-504, pl. 34, fig. 3.

"*Shell*.—Subulate, conical, smooth, white, glossy, with rounded whorls and a somewhat impressed suture. *Sculpture*: Longitudinals—there are a few minute and faint lines of growth. Spirals—there are a few irregular and very slight transverse angulations, which are connected with a very subdued and almost invisible malleated surface, which may be seen in a changing light. *Colour* white, probably transparent in fresh specimens; the surface, which is glassy, is very smooth. *Spire* conical, but not quite regularly so, being slightly con-

vex in the middle and very faintly concave above and below. *Apex*, for the genus and relatively to size, blunt, almost slightly tumid, round, but on one side the extreme tip has the faintest conceivable prominence. *Whorls* 9, of the regular increase, though the last is a little disproportionally large, well rounded; the last, which is slightly tumid, has a very faint trace of angulation below the suture and at the edge of the base, which is flatly rounded and projecting, with a slightly thickened and angulated carination round the umbilicus. *Suture* linear, impressed, and very slightly oblique. *Mouth* oval, bluntly angulated above, effuse on the base and slightly so on the outer lip. *Outer lip* is slightly pinched in at its union with the body; from this point it runs out to the right with a free curve, but, speedily turning to the left, its course is straight, and here it is prominent, and it becomes increasingly patulous as it curves quickly round to join the pillar. *Pillar* is not at all oblique, but is slightly concave. *Inner lip* crosses the body on a thin but sharply-edged pad; it is thin, sharp, and scarcely patulous on the front of the pillar. *Umbilicus*: there is a small funnel-shaped trough between the pillar-lip and the angulated edge of the base, but this contracts immediately to a mere chink. Height, 0.153 in. (3.83 mm.); breadth 0.053 (1.33 mm.).

"Challenger Station 122. September 10 1873. Lat. $9^{\circ}5'$ S., long. $34^{\circ}50'$ W. Off Pernambuco. 350 fathoms. Red mud.

"This species is like *Aclis walleri*, Jeffr., but certainly distinct; the shell is broader, the whorls, which are fewer (9 instead of 11), are rounder, being less flattened, constricted above and less bulgy below, the spire, which is less regularly conical, is not so attenuated, the apex is not nearly so fine and the surface of the shell is smoother, the longitudinals being less visible, while the malleated structure, which also exists in *Aclis walleri*, is here even less visible."

I have not seen specimens of this species and have quoted Watson's description and copied his figure.

EXPLANATION OF PLATES

PLATE I

Figure 6 enlarged 10×; the rest 25×

- FIG. 1. *Bermudaclis tampaensis*.
 2. *Bermudaclis bermudensis*.
 3. *Graphis unica*.
 4. *Graphis underwoodae*.
 5. *Costaclis rhyssa*.
 6. *Costaclis egregia*.
 7. *Costaclis cubana*.

PLATE 2

Figure 3 enlarged 10×; the rest 25×

- FIG. 1. *Aclis supranitida*.
2. *Aclis colis*.
3. *Costaclis nucleata*.
4. *Schwengelia hendersoni*.
5. *Schwengelia floridana*.
6. *Schwengelia hypogona* = *hendersoni*.

PLATE 3

All figures enlarged 25×

- FIG. 1. *Henrya morrisoni*.
2. *Henrya henryi*.
3. *Henrya goldmani*.
4. *Hemiaclis pyramida*.
5. *Hemiaclis ventrosa*.
6. *Hemiaclis conula*.

PLATE 4

All figures enlarged 25×

- FIG. 1. *Hemiaclis tenuis*.
2. *Hemiaclis stilifer*.
3. *Hemiaclis pendata*.
4. *Hemiaclis lata*.
5. *Hemiaclis verrilli*.

PLATE 5

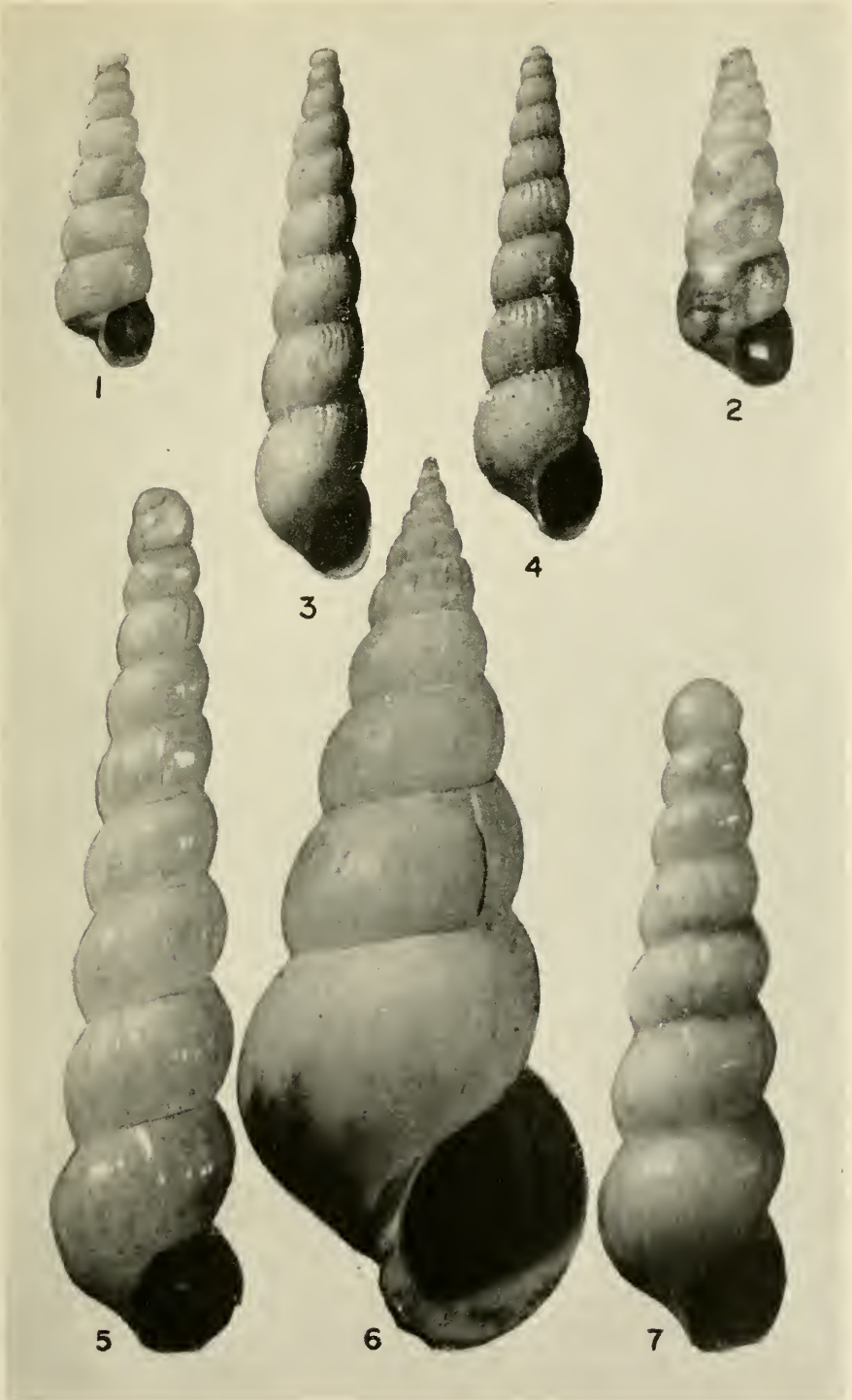
Figures 3 and 5 enlarged 10×; the rest 25×

- FIG. 1. *Hemiaclis tanneri*.
2. *Hemiaclis rushi*.
3. *Hemiaclis marguerita*.
4. *Hemiaclis fernandinac*.
5. *Hemiaclis benedicti*.

PLATE 6

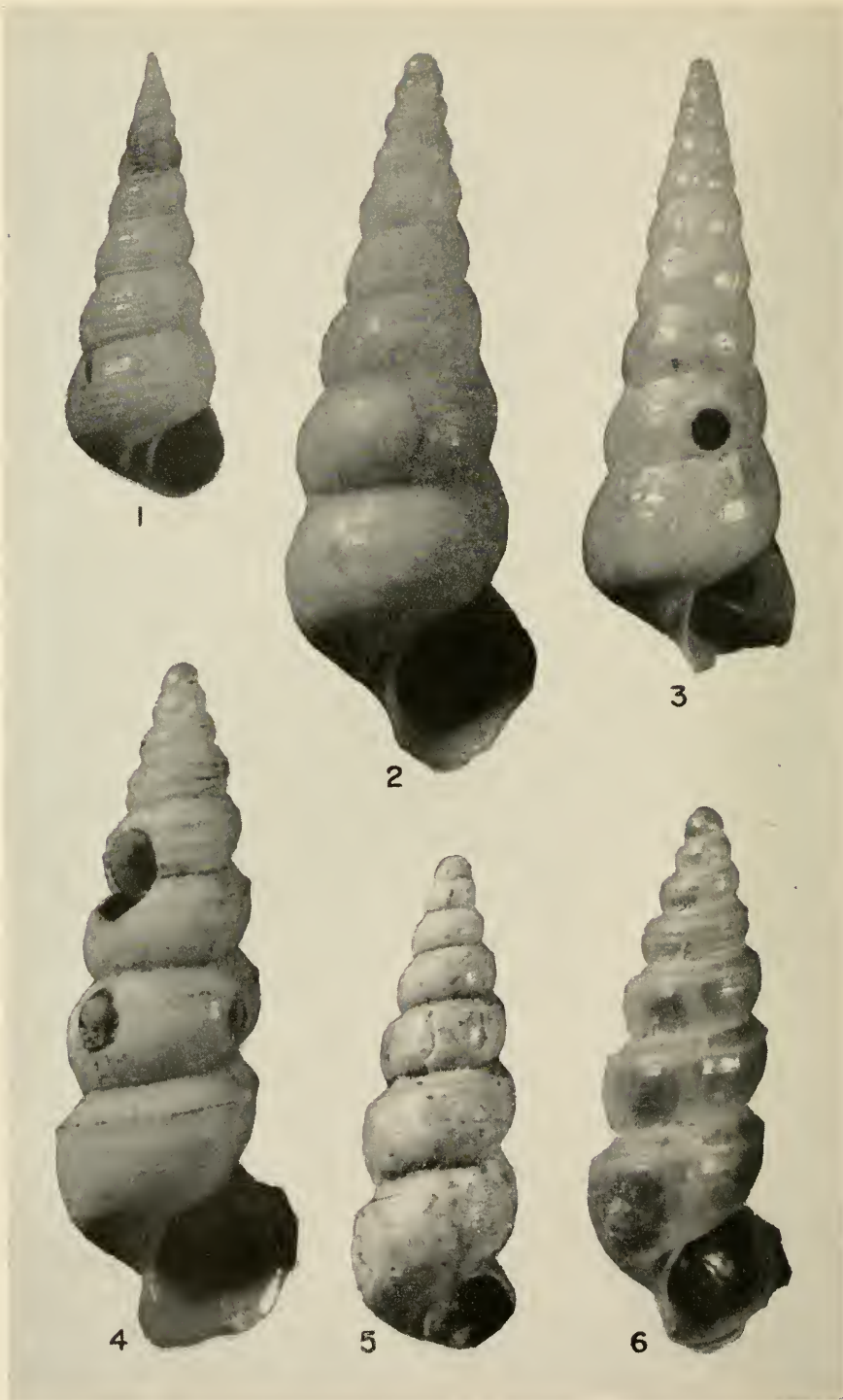
Figures 2 and 5 enlarged 10×; the rest 25×

- FIG. 1. *Hemiaclis limata*.
2. *Hemiaclis dalli*.
3. *Hemiaclis georgiana*.
4. *Hemiaclis carolinensis*.
5. *Hemiaclis hyalina*.
6. *Hemiaclis sarissa*.

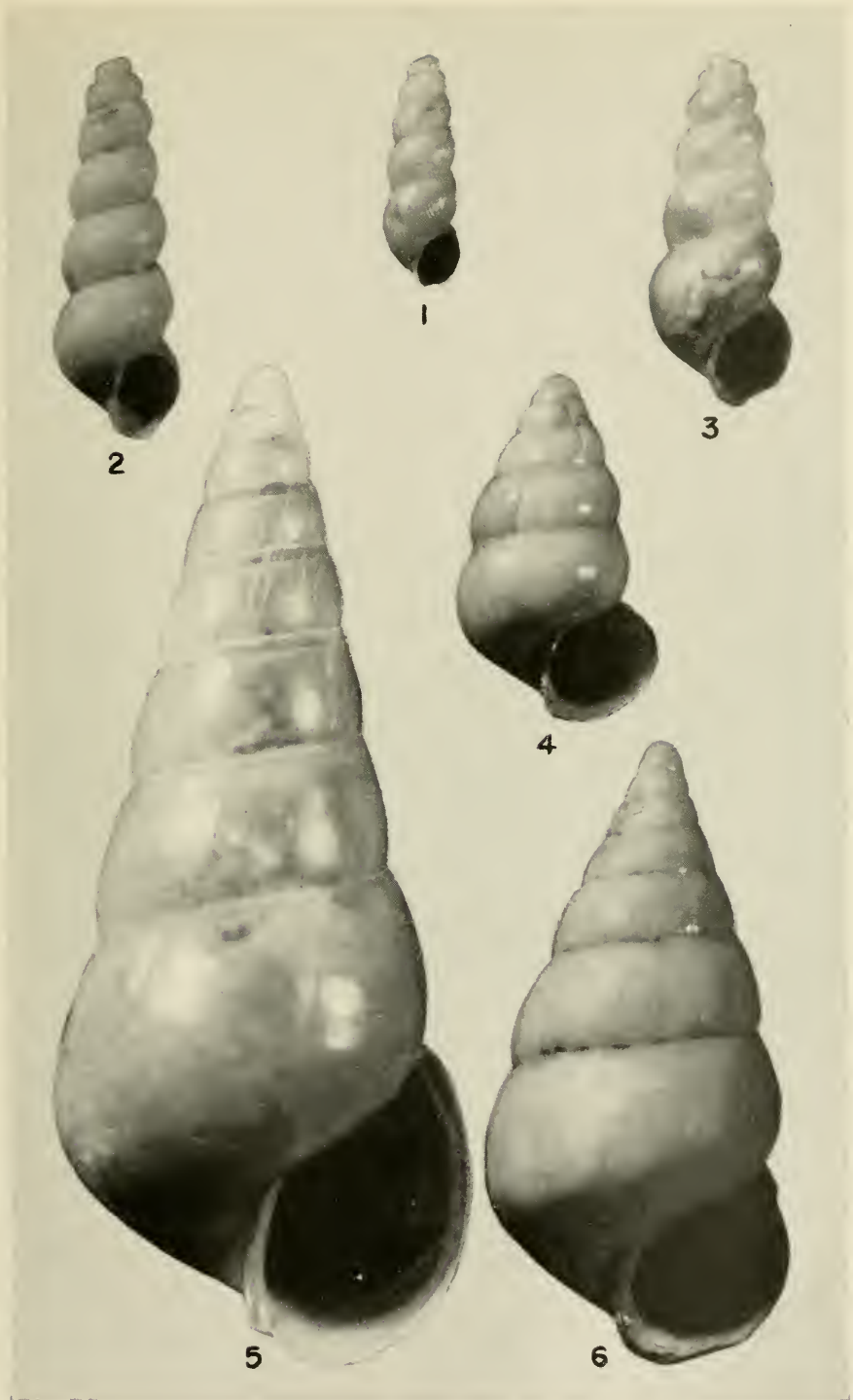


WEST ATLANTIC MOLLUSKS OF THE FAMILY ACLIDIDAE

(For explanation, see p. 28.)



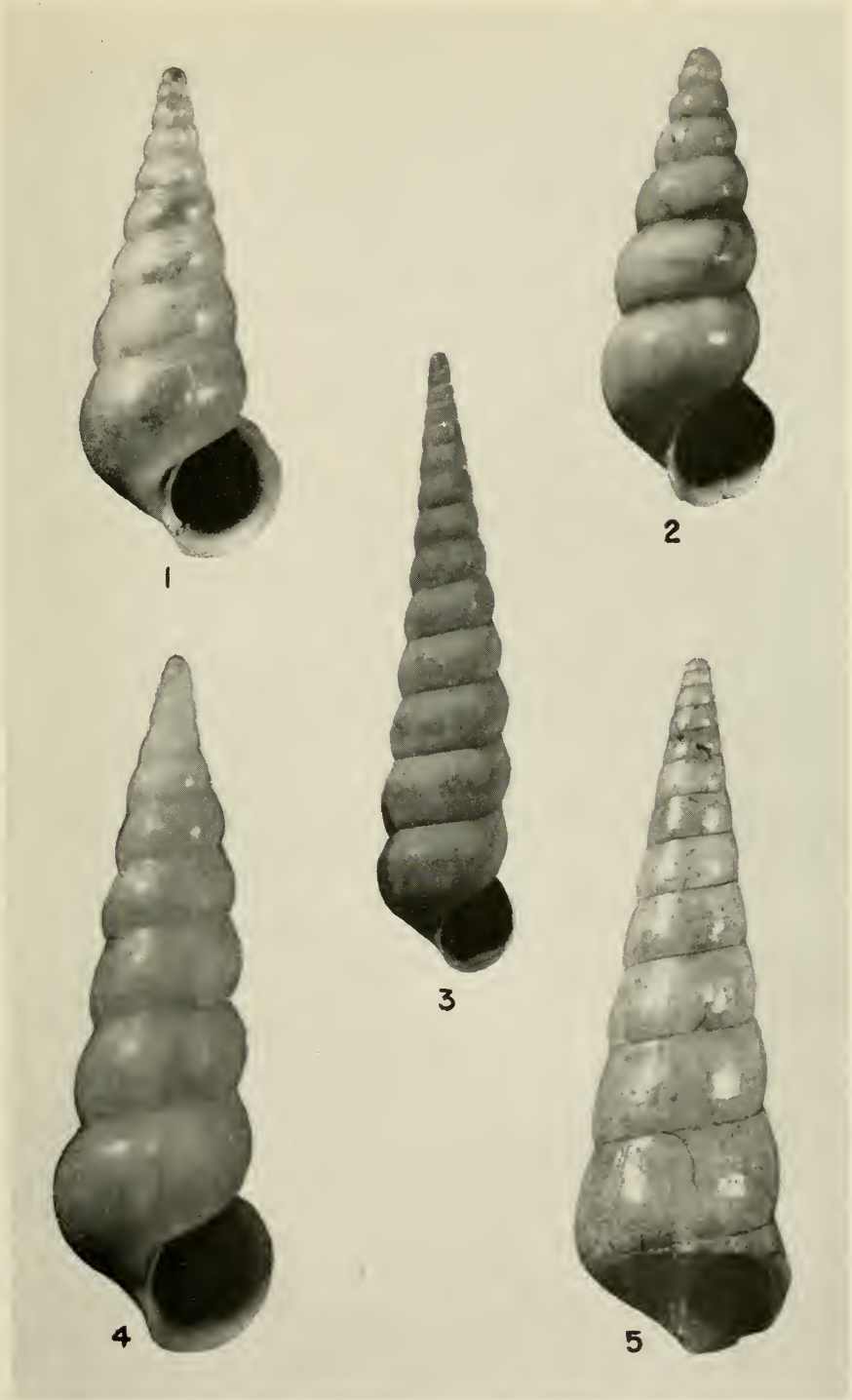
WEST ATLANTIC MOLLUSKS OF THE FAMILY ACLIDIDAE
(For explanation, see p. 29.)



WEST ATLANTIC MOLLUSKS OF THE FAMILY ACLIDIDAE
(For explanation, see p. 29.)

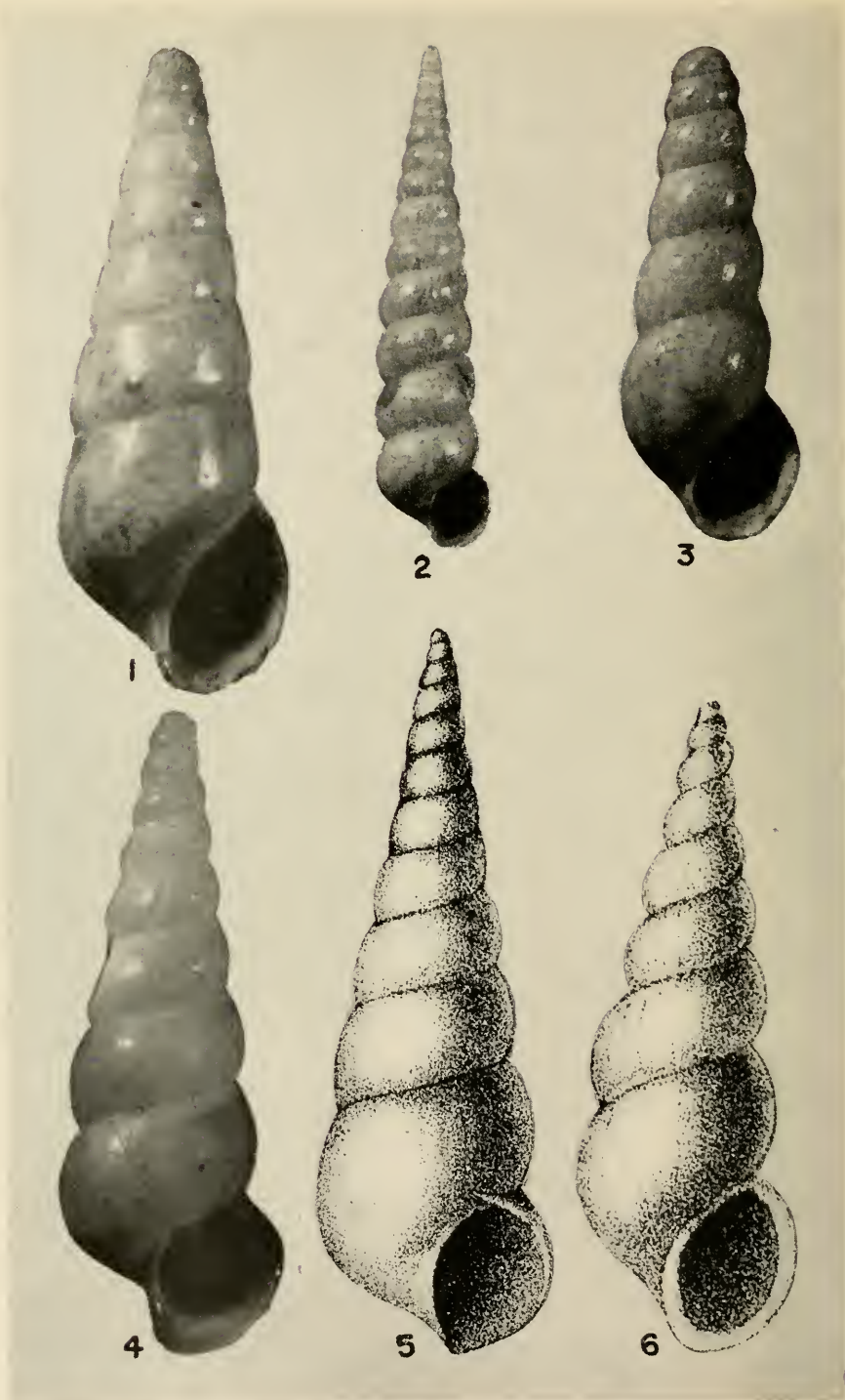


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(For explanation, see p. 29.)



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