

THE UROCOPTID MOLLUSKS FROM THE MAINLAND OF
AMERICA IN THE COLLECTION OF THE UNITED STATES
NATIONAL MUSEUM.

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The United States National Museum has from time to time received additions to its collections of this group, some of which have been reported upon by Dr. R. E. C. Stearns,^a Dr. William H. Dall,^b and Dr. H. A. Pilsbry.^c

By far the greater part of the material added in recent years was collected by Messrs. E. W. Nelson and E. A. Goldman in their explorations of Mexico, under the auspices of the Biological Survey of the United States Department of Agriculture. Dr. J. N. Rose and Mr. J. H. Painter, of the U. S. National Museum, and Dr. Edward Palmer have also made some interesting discoveries of mollusks in their botanical excursions in the same country. The very latest donations have come from Dr. H. Pittier, from Guatemala, and Prof. A. L. Herrera, from Mexico.

The two new forms from the United States were collected by Drs. T. W. Stanton and T. Wayland Vaughan, of the United States Geological Survey, and Dr. Edward Palmer.

This report would be incomplete without mentioning my indebtedness to Dr. William H. Dall, Curator of the Division of Mollusks, for many kind suggestions, and to Dr. H. A. Pilsbry for critically comparing several forms with specimens in the Philadelphia Academy of Natural Sciences.

EUCALODIUM DECOLLATUM Nyst.

There are two specimens of this species in the collection, Cat. No. 186131, U.S.N.M., collected by E. W. Nelson and E. A. Goldman, at Teapa, Tabasco, Mexico.

^aProc. U. S. Nat. Mus., XIII, 1890, pp. 208-211; XIV, 1891, p. 100.

^bNautilus, IX, 1895, No. 5; Proc. U. S. Nat. Mus., XVIII, 1895, pp. 3-5; XIX, 1896, pp. 344-357; Smith Misc. Coll. (Quart. Issue), XLVIII, 1905, pp. 187-190.

^cManual of Conchology, XV, 1903; XVI, 1904.

EUCALODIUM DECOLLATUM GUATEMALENSIS, new subspecies.

Plate III, fig. 9.

Eucalodium decollatum FISCHER AND CROSSE (in part), Miss. Scient. Mexique, p. 363, pl. XIV, figs. 3 and 3a; not *Eucalodium decollatum* Nyst.

Shell subcylindric, truncated, strong, of light reddish chocolate color. Plug convex and granulose. Whorls ten and one-fourth, moderately rounded, increasing gently in size, marked by many poorly defined, irregular, wavy, thread-like riblets, which are best developed on the posterior whorls. Sutures well marked. Periphery of the last whorl angulated. Base short, of lighter color than the spire, well rounded, showing a strongly impressed umbilical chink, but no perforation. Aperture oblique, suboval; peristome continuous, free, decidedly expanded, and somewhat reflected, white; columella somewhat curved, obsoletely truncated below. Aperture smoky white within. Internal pillar with a strong, smooth, spiral fold.

The type, Cat. No. 162307, U.S.N.M., was collected in Guatemala by Godman and measures: Length, 60.9 mm.; diameter of penultimate whorl, 17.5 mm.; greatest diameter of aperture, from the posterior angle to the angle at junction of outer lip and columella, 15 mm.

This subspecies appears to agree well with the form cited by Fischer and Crosse as *E. decollatum* Nyst. The true *E. decollatum* Nyst is a much larger form. *E. decollatum guatemalensis* has the color of the form known as *ghiesbreghtii* Pfeiffer. In the structure of the internal axis it agrees with *E. decollatum*. In *guatemalensis*, however, the lamella is a little less strongly developed.

EUCALODIUM MEXICANUM MAJOR Fischer and Crosse.

There is one specimen, Cat. No. 162500, U.S.N.M., in the collection from Guatemala, donated by Dr. H. von Ihering. This has 10 whorls remaining, which measure: Length, 65 mm.; diameter of penultimate whorl, 16.8 mm.

EUCALODIUM (OLIGOSTYLUS) BLANDIANUM Fischer and Crosse.

There are five specimens of this form in the collection. Two, Cat. No. 25029, U.S.N.M., labeled, Mexico. Two, Cat. No. 23787, U.S.N.M., Eastern Mexico with a ? and one, Cat. No. 10526, U.S.N.M., Orizaba, Mexico. The last was collected by G. Strebel, in 1866.

EUCALODIUM (OLIGOSTYLUS) BLANDIANUM MINOR Fischer and Crosse.

There are three specimens of this subspecies in the collection, Cat. Nos. 185932 and 185933, U.S.N.M., all from Aculzintgo, Vera Cruz, Mexico, presented by Prof. A. L. Herrera. One of these is a young

individual. The two adults have $8\frac{1}{2}$ and 9 whorls remaining, and measure: Length, 72.3 mm. and 67.8 mm.; diameter of penultimate whorls, 18.4 mm. and 17.3 mm., respectively.

EUCALODIUM (OLIGOSTYLUS) WALPOLEANUM Fischer and Crosse.

There are three lots of this species in the collection, Cat. No. 32078, two specimens collected by F. Sarg, with the locality label Guatemala. Two, Cat. No. 162308, U.S.N.M., from Coban, Guatemala, collected by Godman, and one, Cat. No. 117157, U.S.N.M., collected at the last locality by C. M. Wheatley. The last two have a decidedly stronger spiral sculpture and are also of lighter color than the preceding three specimens. There are two oval white eggs with Cat. No. 32078, U.S.N.M., which have the entire surface uniformly granulose and measure: Length, 5.8 mm.; diameter, 3.5 mm. The five shells measure:

Measurements of Eucalodium (Oligostylus) walpoleanum.

Cat. No.	Number of remaining whorls.	Length.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>
32078	9 $\frac{1}{2}$	76.3	19.3
32078	9 $\frac{1}{2}$	64	17
162308	9 $\frac{1}{2}$	71.7	18
162308	10	76.6	17
117157	11 $\frac{1}{2}$	76.4	18.2

EUCALODIUM (OLIGOSTYLUS) HIPPOCASTANEUM Dall.

The type and two specimens, Cat. No. 186137, U.S.N.M., collected by E. W. Nelson, at San Sebastian, Jalisco, Mexico. The type has $6\frac{1}{2}$ whorls and measures: Length, 19 mm.; diameter of penultimate whorl, 9.7 mm. The other two have 8 and $7\frac{1}{4}$ whorls, respectively, and measure: Length, 31.1 mm., and 29.1 mm.; diameter of penultimate whorl, 10 mm. and 9.4 mm.

EUCALODIUM (OLIGOSTYLUS) DENSECOSTATUM Strebel.

Two specimens, Cat. No. 73877, U.S.N.M., collected by the Geographic Commission at Mizantla, Mexico. These specimens have 9 and 8 whorls, respectively, and measure: Length, 38.3 mm. and 35.8 mm.; the diameter of penultimate whorls in both cases is 10.4 mm.

EUCALODIUM (OLIGOSTYLUS) SPECIOSUM BOUCARDI Pfeiffer.

There are two specimens of this form in the collection, Cat. No. 25033, U.S.N.M., labeled Mexico. The largest has $9\frac{1}{4}$, the other $8\frac{3}{4}$ whorls. They measure: Length, 52.9 mm., and 48.7 mm.; their penultimate whorls have a diameter of 8.1 mm., and 7.3 mm., respectively.

EUCALODIUM (OLIGOSTYLUS) SPECIOSUM STREBELI von Martens.

There is one specimen in the collection of this form, Cat. No. 10828, U.S.N.M., which has 9 whorls and measures: Length, 44.6 mm.; diameter of antipenultimate whorl, 11 mm. The locality given is Veracruz?, Mexico.

EUCALODIUM (OLIGOSTYLUS) CEREUUM Strebel.

The collection contains one specimen of this species, Cat. No. 25033a, U.S.N.M., labeled Mexico. It has 9 whorls remaining which measure: Length, 37.3 mm.; diameter of antipenultimate whorl, 10.3 mm. The fine spiral striations between the sinuous, oblique, closely placed thread-like riblets are well marked.

ANISOSPIRA DALLI von Martens.

There are twelve adult shells and three apices of this species in the collection, all but one collected by E. W. Nelson at the type locality, Huilotepec, Oaxaca, Mexico. One specimen donated by Bland, Cat. No. 58055a, U.S.N.M., is said to have come from near Mazatlan. The ten perfect specimens from the type locality measure:

Measurements of Anisospira dalli.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter, fourth to last whorl.	Diameter of first whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
107366 ^a	8.2	29.3	9.1	10.3	5.8
107366.....	9	32.6	9	10.5	7
107366.....	8.5	31.3	10.6	1	6
107366.....	8	29.2	10.2	1.2	6.5
107366.....	8.2	29.6	10	10.8	6
107366.....	7.5	29.3	9.7	10.8	6.9
107366.....	7.2	28	10	10.8	6.6
107366.....	7	26	10.5	10.6	6.6
107366.....	7.2	27.2	10.2	11.3	7.7
107366.....	8.2	29.7	9.5	9.9	6
Average .	7.9	29.22	9.88	10.72	6.31

^a Type.

Two of the decollated apices measure:

Apex measurements of Anisospira dalli.

Number of whorls.	Third whorl from apex.	Fifth whorl from apex.	Tenth whorl from apex.	fourteenth whorl from apex.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
15.....	3.15	3	4.5	5.5
11.....	3.2	3	5.1	.....

ANISOSPIRA STREBELI Pfeffer.

There are three specimens of this species in the collection, Cat. No. 162306, U.S.N.M., collected by Godman at Cerro de Plumes, Oaxaca, Mexico.

Measurements of Anisospira strebeli.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of fourth to last whorl.	Diameter of first whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
7.9	42.7	13	13.4	7
7.9	38.3	13.1	13.7	6.7
7.9	38.8	12.1	13.3	7

DISSOTROPIS, new subgenus.

Exterior of decollated spire agreeing with *Anisospira*. Columella provided with a strong spiral lamella which is situated a little above the floor and a weaker twist or low fold posterior to this. Lamella in the antepenultimate whorl cut by a series of regularly spaced, oblique, forward-slanting slits.

Type.—*Anisospira (Dissotropis) stearnsi*, new species.

ANISOSPIRA (DISSOTROPIS) STEARNSI, new species.

Plate III, fig. 1.

Shell subcylindric, milk white. Plug convex, covered on its inner half by rather large granules, outer half evenly, very finely granulose. Exposed columella at the decollated end slightly sigmoid. Whorls moderately convex, angular at the periphery which slightly overhangs the summit of the succeeding whorls, marked by many very regular and regularly spaced obliquely, slanting riblets which are about as wide as the interspaces. There are about 120 riblets on the third to last whorl. Periphery of the last whorl angular, the angle becoming less marked behind the outer lip. Base imperforate, very short, and moderately rounded at the junction of the columellar margin with the preceding whorl, becoming gradually longer and more inflated from there on to the peristome, marked by the continuation of the riblets, which are somewhat flexed and thickened at the periphery and become attenuated and very much crowded toward the umbilicus. Aperture subcircular, bordered by a cord-like, white peristome, which has the appearance on the inside as if it had been melted and flowed over the adjoining wall; columellar folds visible in the aperture, but very weakly developed at this point. In the interior the columella is slender, and provided with a weak, median flexure, which extends throughout the shell, and a strong, spiral lamella. The latter extends through the last five whorls only and is largest in the penultimate whorl, tapering

abruptly anteriorly and more gradually posteriorly. The insertion of this lamella is near the floor of the whorl; from that point it curves upward and outward, then again downward at the free edge. The latter in the penultimate whorl is at about one-third of the distance between the floor and the roof above the floor, and extends about one-third the way across from the columella to the wall. In the penultimate whorl the lamella is thickened at regular intervals on its upper surface, lending to this a somewhat beaded effect. These thickenings are not very prominent but rather low and broad. In the antipenultimate whorl the lamella is cut by a series of regularly spaced, obliquely forward curved slits, which extend about one-third of the way from the periphery of the lamella toward its insertion. The type, Cat. No. 186164, U.S.N.M., was obtained by Dr. R. E. C. Stearns from Bland

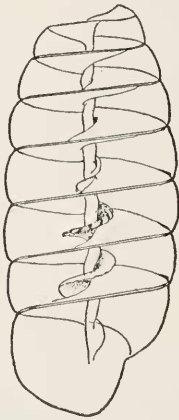


FIG. 1.—INTERIOR VIEW OF
ANISOSPIRA STEARNSI.

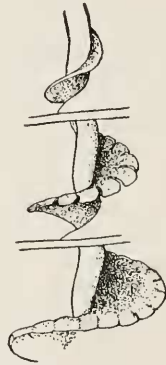


FIG. 2.—DETAIL OF PILLAR OF
ANISOSPIRA STEARNSI.

and is said to come from near Mazatlan. It has 7 whorls and measures: Length, 30 mm.; diameter of penultimate whorl, 11.6 mm.; diameter of fourth to last whorl, 12.5 mm.; diameter of first whorl, 7 mm.

ANISOSPIRA (DISSOTROPIS) BLANDI, new species.

Plate III, fig. 3.

Shell subcylindric from the last to the seventh to last whorl, the next two evenly and suddenly contracted, the first is less sloping, and lends the spire a capped appearance. Decollated apex very minutely punctured. Plug evenly, finely granulose. Whorls moderately rounded, marked by numerous, equally developed and evenly spaced, low rounded, obliquely backward curved thread-like riblets, of which about 120 occur upon the fourth to last whorl. The spaces between these riblets are a little less than twice as wide as the riblets. Sutures well impressed. Periphery of the last whorl angular. Base somewhat

pinched immediately anterior to the periphery, which renders this area slightly concave; the rest of the base well rounded and marked by the riblets, which are rendered somewhat sinuous in passing over the periphery and the depressed area. Aperture not entirely completed in our specimen, showing the almost obsolete fold. Internal pillar thin in the last whorl, gradually increasing in diameter to 2.3 mm. in the third to last volution, diminishing from there to the decollated apex. The pillar has a spiral twist running throughout the spire a little posterior to the middle, and a spiral lamella, which is inserted on the columella, a little above the floor. This fold is almost obsolete in the last whorl, growing gradually stronger posteriorly. It attains its maximum development in the antepenultimate volution, where it extends almost one-third of the way across the inside of the whorl; from this point it gradually diminishes in size and disappears altogether in the sixth to last volution. In the third and fourth to last volution the lamella is incised at regular intervals by slits, which extend about one-sixth of the way from the edge to the insertion of the columella. The type and only specimen, Cat. No. 58055, U.S.N.M., was obtained from Mr. Bland by Dr. Stearns, and is said to come from near Mazatlan. It has 9.1

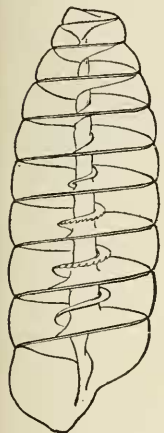


FIG. 3.—INTERIOR VIEW OF ANISOSPIRA BLANDI.



FIG. 4.—DETAIL OF PILLAR OF ANISOSPIRA BLANDI.

whorls which measure: Length, 33.7 mm.; diameter of penultimate whorl, 11.5 mm.; diameter of fifth to last whorl, 12 mm.; diameter of first whorl, 6.1 mm.

The present species is a somewhat puzzling form; the puncture at the decollated apex and inflated pillar would place it in *Cœlocentrum*, but the peculiar sculpture of the lamella allies it closely to *Anisospira* (*Dissotropis*) *stearnsi*.

CŒLOCENTRUM NELSONI Dall.

There are two lots of this species in the collection, the type, Cat. No. 107368, U.S.N.M., and four other specimens, Cat. No. 185902, U.S.N.M., collected by E. W. Nelson and E. A. Goldman, respectively, at Tuxtla Gutierrez, Chiapas, Mexico.

The specimens measure:

Measurements of Calocentrum nelsoni.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of fourth to last whorl.	Diameter of first whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
107368 <i>a</i> ...	9.1	52.1	17.4	17.3	9.1
185902.....	9.9	55	17.6	18.2	9.3
185902.....	8.3	49.5	16.8	17.3	10
185902.....	8	45	16.4	16.5	10.5
185902.....	<i>b</i> 4	30.4	16.2	16.5	

a Type.

b The last four.

CÆLOCENTRUM PFEFFERI Dall.

There are four specimens and two fragments of this species in the collection, Cat. No. 107367, U.S.N.M., all from Ocozocuantla, Chiapas, Mexico.

Measurements of Calocentrum pfefferi.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of fourth to last whorl.	Diameter of first whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
<i>a</i> 8.5	43.1	15.8	15.7	8.1
8.1	44.5	15.7	15.2	8.5
8.5	42.7	15.5	15	8.3
7.8	38.7	15.4	13.7	7.7

a Type.

CÆLOCENTRUM PITTIERI, new species.

Plate III, fig. 7.

Shell elongate conic, turrated, with truncated summit, light brown on the spire, and whitish on the base. The shell attains its greatest diameter in the fourth to last whorl, from which it tapers gradually to the ninth to last; the four whorls preceding this are of almost the same caliber. Plug evenly and minutely granulose. Puncture round, small. Whorls moderately rounded, marked by many quite regular, very narrow and acute, obliquely backward slanting riblets, which are less than half as wide as the spaces between them. These riblets are best developed on the posterior half of the spire; on the anterior half they are less regular, less acute, and much more distantly spaced. On the fifth to last whorl I counted 8 riblets to a space of 2 mm., while on the penultimate whorl only half that number were present. The spaces between the riblets and the sides of the riblets display a fine crinkling, which almost amounts to closely spaced spiral markings. Sutures well marked. Periphery of the last whorl marked by a small thread-like angulation; the space immediately anterior to

this is somewhat sunk, lending it the appearance of a broad, shallow groove. The remainder of the base is well rounded and marked by the continuation of the riblets which pass undiminished over the periphery and the groove to the umbilical region, where they become decidedly crowded. Last whorl free for about $1\frac{1}{2}$ mm. Aperture suboval, somewhat angulated at the posterior lateral margin and at the junction of the columellar edge and the lip, showing the edge of the obsoletely truncated pillar within. Peristome yellowish white, somewhat thickened, decidedly expanded but not reflected. Internal pillar, 2.5 mm. in diameter in its widest part, provided with a thickened twist in each whorl about one-fourth the height of the whorl above its base. In addition to this the pillar is marked, posterior to the twist, by irregularly developed, low, rounded, smooth, cord-like, oblique folds or threads; in most instances these are not continuous, but are interrupted, forming a series of low, oval, or elongated protuberances. The space anterior to the twist is smooth. There are two specimens of this species in the collection of the U. S. National Museum Cat. No. 185492, collected by Dr. H. Pittier in the Cave of Sakalkunte, near Senahu, Alta Vera Paz, Guatemala at an altitude of 1,800 meters.

Measurements of Celocentrum pittieri.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of fourth to last whorl.	Diameter of apex.
a 12.7	mm. 60.7	mm. 14.8	mm. 14.9	mm. 7.1
12.7	64.2	16.2	16.8	7

a Type.

Aperture of type from angle to angle, 13 mm., the line at right angles to the center of the above measurement, 10.1 mm.

These two specimens are in a semifossil state, and partly incrustated with lime deposits. The left border of the figure is slightly obscured by the deposit in our illustration. The shell superficially has the general aspect of *Celocentrum turris* Pfeiffer, but differs markedly from this by its much smaller internal pillar and the sculpture thereof.

CÆLOCENTRUM PITTIERI GUATEMALENSIS, new subspecies.

Plate IV, fig. 11.

There is one specimen in the collection, Cat. No. 187469, U.S.N.M., collected by Dr. H. Pittier at Secanquim, Alta Vera Paz, Guatemala, at an altitude of 550 meters, which agrees most nearly with *C. pittieri*, but differs sufficiently to merit a distinct name. It differs from *C. pittieri* by its smaller size and less tapering early whorl, and by having the riblets more distantly spaced. The whorls, too, are slightly over-

hanging, giving rise to channeled sutures. The internal column differs from *C. pittieri* in having much more regular lamellæ, which are rarely interrupted. Between these lamellæ there appear irregularly rounded nodules and elongate tubercles. The base of the pillar is smooth below the twist in each whorl, as in *pittieri*.

The type has 9.9 whorls and measures: Length, 41.8 mm.; diameter of penultimate whorl, 14 mm.; diameter of fourth to last whorl, 14.3 mm.; diameter of first whorl, 7 mm.

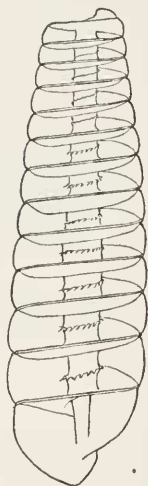


FIG. 5.—INTERIOR VIEW OF CŒLOCENTRUM ASTROPHOREA

PTYCHODONTA, new subgenus.

Shell with the exterior aspect of *Coelocentrum* ss. Internal pillar about one-third the diameter of the inside of the shell, thin, crossed by many thin, obsolete, oblique lamellæ. The pillar bears a moderately strong spiral lamella situated a little below the middle in each whorl, from which a series of slender, curved teeth project outward and forward into the cavity.



FIG. 6.—a, PILLAR OF THE THIRD AND FOURTH TO LAST WHORL OF CŒLOCENTRUM ASTROPHOREA; b, THE PILLAR OF THE PENULTIMATE WHORL OF CŒLOCENTRUM ASTROPHOREA.

In the penultimate whorl and the early whorls these teeth give place to broad, triangular spines, which gained the name *astrophorea* for the type species.

CŒLOCENTRUM (PTYCHODONTA) ASTROPHOREA Dall.

There are four specimens and two fragments of this form in the collection. Cat. No. 134696, U.S.N.M., collected by E. W. Nelson at Encarnacion, Hidalgo, Mexico.

Measurements of *Cœlocentrum* (*Ptychodonta*) *astrophorea*.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of seventh to last whorl.	Diameter of first whorl.
a 15	mm. 29.8	mm. 7	mm. 7.3	mm. 4.2
13	28.3	7	7.5	5
13	28	7	7.6	5.1
13	26.8	7.1	7.7	4.9

a Type.

CŒLOCENTRUM (SPARTOCENTRUM) IRREGULARE Gabb.

There are two specimens of this species in the collection. Cat. No. 107326, U.S.N.M., donated by the author. They are part of the type lot, which was collected at Mulege, Lower California. Both are decolored.

Measurements of Calocentrum (Spartocentrum) irregulare.

Number of whorls remaining.	Length.	Diameter of penultimate whorl.	Diameter of fifth to last whorl.
8, 1	mm. 14.8	mm. 4.3	mm. 4.5
7	14.5	4	3.8

CŒLOCENTRUM (SPARTOCENTRUM) MINORINUM GABBI Pilsbry.

There are two lots of this form in the collection of the U. S. National Museum, one, two specimens, Cat. No. 57934, U.S.N.M., is part of the type lot collected by W. M. Gabb at Mulege, Lower California; the other, Cat. No. 187484, U.S.N.M., collected by E. W. Nelson and E. A. Goldman at Guajadami, Lower California, contains sixteen specimens, eight of which are perfect. The following table gives a list of measurements:

Measurements of Calocentrum (Spartocentrum) minorinum gabbi.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of fifth to last whorl.	Diameter of second whorl.
		mm.	mm.	mm.	mm.
187484.....	20	29.1	4.6	4.6	1.6
187484.....	17	25	4.6	4.3	1.6
187484.....	17	26	4.5	4.5	1.7
187484.....	18	26.4	4.5	4.3	1.7
187484.....	20	28.7	4.8	4.6	1.7
187484.....	17	25.3	4.8	4.5	1.8
187484.....	18	25.3	4.5	4.3	1.7
187484.....	19	26	4.5	4.3	1.7
Average..	18.25	26.4+	4.6	4.4+	1.68
Largest...	20	29.1	4.8	4.6	1.8
Smallest..	17	25	4.5	4.3	1.6
57934.....	16	23.6	4.1	4.3	1.5
57934.....	16	23.6	4.2	4.2	1.5

The Guajadami specimens appear uniformly a little larger than our specimens from Mulege.

CŒLOCENTRUM (SPARTOCENTRUM) EISENI Pilsbry.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 160503, collected by G. Eisen at Cape St. Lucas, Lower California, and presented to the Museum by

Fred Button. One of these specimens is complete, the other has the apex decollated.

Measurements of Celocentrum (Spartocentrum) eiseni.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of sixth to last whorl.	Diameter of nucleus.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
23	26.3	3.6	3.7	1.4
-----	-----	3.6	3.8	-----

BERENDTIA TAYLORI Pfeiffer.

There are three specimens of this species in the collection of the U. S. National Museum. Two, Cat. No. 58653, U.S.N.M., from Mulege, Lower California, and the other, Cat. No. 160118, U.S.N.M., Lower California, without specific locality.

EPIROBIA POLYGYRA Pfeiffer.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 162319, U.S.N.M., collected by Godman, at Cordoba, Mexico.

Measurements of Epirobia polygyra.

Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of tenth whorl.	Diameter of apex.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
26	18.3	2.3	1.2	0.6
25	18.8	2.4	1.4	0.7

EPIROBIA POLYGYRELLA von Martens.

There are three specimens of this species in the collection of the U. S. National Museum, Cat. No. 162318, U.S.N.M., collected by Godman, at Coban, Guatemala.

Measurements of Epirobia polygyrella.

Number of whorls,	Length.	Diameter of penultimate whorl.	Diameter of eighteenth whorl.	Diameter of apex.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
23	14.8	2	2.3	0.8
21	13.2	2.2	2.3	0.8
22	13.9	2	2.3	0.8

EPIROBIA COAHUILENSIS, new species.

Plate IV, fig. 3.

Shell small, subulate-conic, light horn yellow. Nuclear whorls three, moderately inflated, smooth, forming a cylindrical tip. Succeeding whorls very low between the sutures, moderately rounded, ornamented by many, very regular and regularly spaced, decidedly sigmoid, thread-like riblets, which are about one-half as wide as the spaces that separate them. I counted fifteen in the space of 1 millimeter. The sigmoid curve of the riblets is better expressed on the later whorls than on the early ones. Some of the riblets are white and this lends the spire a somewhat mottled appearance. Sutures well impressed. Periphery of the last whorl decidedly angular, base very short, almost flattened, widely umbilicated, marked by the continuations of the ribs, which extend into the umbilicus. Last whorl shortly free, having the parietal wall of the aperture projecting for a short distance beyond the penultimate whorl. (Aperture fractured in the type.) Internal column without twist or fold, large, fully one-third the width of the entire shell, thin, translucent, concave in the center of each whorl, broadening toward both ends, crossed by rather distant, thread-like, axial riblets.

The two specimens in the U. S. National Museum collection, Cat. No. 187505, were collected by E. W. Nelson in the Sierra Guadalupe, Coahuila, Mexico. They are not quite adult and it is possible that fully adult specimens may show less of the umbilicus, or may have it completely closed, as in the other known *Epirobia*. The free last whorl of the type, however, argues against this.

Measurements of Epirobia coahuilensis.

Number of whorls.	Length.	Diameter of second whorl.	Diameter of tenth whorl.	Diameter of twentieth whorl.	Diameter of penultimate whorl.
a 23	mm. 10.8	mm. 0.7	mm. 1.8	mm. 2.9	mm. 2.7
22	9.5	0.7	1.8	2.9	-----

a Type.

PROPILSBRYA, new subgenus.

Exterior of shell, like *Epirobia*. Internal column slender, hollow throughout, having a somewhat submedian thread-like fold, which extends over the entire length of the axis. In several of the whorls preceding the last, this fold becomes very much enlarged, forming a strong, spiral lamella. The parietal wall is furnished with a narrow band-like lamella, which is pendant from the roof, and extends throughout the spire; in the three whorls preceding the penultimate,

this band bears small, forward-slanting teeth, the whole resembling the blade of a narrow saw.

Type.—*Epirobia (Propilsbrya) nelsoni*, new species.

EPIROBIA (PROPILSBRYA) NELSONI, new species.

Plate IV, fig. 8.

Shell subulate, horn colored with white riblets. Nuclear whorls two and one-half, somewhat inflated, smooth under ordinary magnification, but very minutely granulose when viewed under the compound microscope. Later whorls well rounded, crossed by many slender, quite regular, obliquely curved riblets, which are about one-third as wide as the spaces between them. The riblets are less developed on the early whorls than in the middle of the spire; in the middle I counted 11 in the space of 1 millimeter. They are strongest on the penultimate whorl, where only 8 were counted in the space of 1 millimeter. Periphery of the last whorl somewhat angulated, the angulation becoming less apparent toward the aperture. Base rounded, pierced by the small open umbilicus and marked by the continuation of the ribs which extend over it and into the umbilicus. Last whorl solute for about $1\frac{1}{4}$ mm. Parietal wall of the solute portion decidedly pinched at about one-third of the way to the left of the posterior lateral angle, which lends the parietal wall a sinuous aspect. The solute portion of the parietal wall is crossed by the continuation of the ribs of the outer wall.

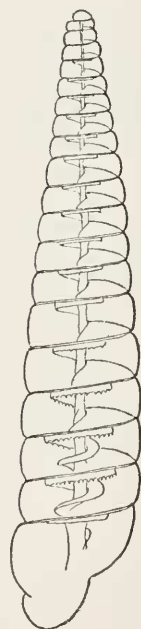


FIG. 7.—INTERIOR VIEW OF EPIROBIA NELSONI.

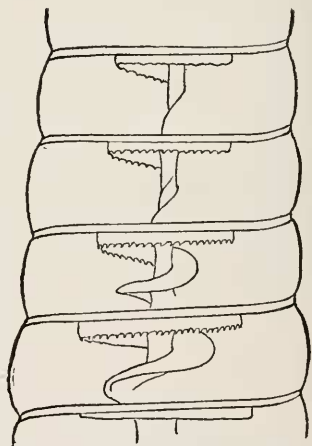


FIG. 8.—DETAIL OF INTERIOR OF EPIROBIA NELSONI.

Aperture semi-oval, the parietal wall representing the short diameter of the oval, angulated at the posterior lateral margin and at the junction of the columella and parietal wall; well rounded anteriorly, showing the weak parietal fold within. Peristome moderately effuse, but not revolute. Internal column slender, perforate, having a somewhat submedian thread-like fold, which extends throughout the entire spire. In the antipenultimate and penultimate whorl, this fold becomes very much enlarged, forming a strong lamella, which extends one-fourth of the way across the space between the pillar and the wall. This lamella tapers very rapidly both anteriorly and posteriorly. Transverse septa thin, trans-

parent, marked by a narrow spiral lamella, which is pendant almost from the middle of the roof of the whorls and extends throughout the entire spire. In the three whorls preceding the penultimate whorl this lamella is furnished with slender, forward-slanting teeth, the whole, in this part, resembling the blade of a narrow saw. There are two specimens of this species in the U. S. National Museum collection, Cat. No. 187504, and one in the Academy of Natural Science, Philadelphia, all collected by E. W. Nelson in the Sierra Guadalupe, Coahuila, Mexico.

Measurements of Epirobia (Propilsbrya) nelsoni.

Number of whorls.	Length.	Diameter of second whorl.	Diameter of tenth whorl.	Diameter of penultimate whorl.
a 20	mm. 15.2	mm. 9	mm. 1.9	mm. 3
22	18	9	1.9	2.9

a Type.

The second specimen has the strong fold on the pillar, extending over the four whorls preceding the penultimate.

HOLOSPIRA (HOLOSPIRA) GOLDFUSSI Menke.

and

HOLOSPIRA (HOLOSPIRA) GOLDFUSSI ANACACHENSIS, new subspecies.

Plate IV, fig. 4.

The members of this species in our collection group themselves about two centers of distribution. One of these centers, that of the typical form, is New Braunfels; the other has its center in the Anacacha Mountains. The two forms agree quite well in size, as is shown in the accompanying table of measurements. The western form has a lesser number and much more strongly developed ribs than typical *goldfussi* (see table), and may be known as *Holospira (Holospira) goldfussi anacachensis* (see table).

Measurements of *Holospira* (*Holospira*) *goldfussi*.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of tenth whorl.	Locality.	Collector.
8693.....	15	<i>mm.</i> 13.3	<i>mm.</i> 3.2	<i>mm.</i> 3.8	Blanco River.....	B. F. Shumard.
26554.....	15	13.2	3	3.8	do.....	Do.
Average.....	15	13.25	3.1	3.8		
58020.....	14	13.2	3.3	3.8	San Marcos.....	R. E. C. Stearns.
58020.....	14	13.1	3.2	3.8	do.....	Do.
58020.....	13	11.6	3.2	3.8	do.....	Do.
Average.....	13.66	12.63	3.23	3.8		
123753.....	13	12.5	3.4	3.9	New Braunfels..	Gurley.
123753.....	14	13.3	3.5	4.2	do.....	Do.
123753.....	13	12.3	3.3	3.9	do.....	Do.
123753.....	14	12.8	3.3	3.8	do.....	Do.
123753.....	13	12.3	3.7	4.2	do.....	Do.
123753.....	13	12.3	3.2	3.9	do.....	Do.
123753.....	14	13.1	3.2	3.9	do.....	Do.
97450.....	13	13.3	3.5	4.3	do.....	J. A. Singley.
97450.....	13	12.5	3.5	4	do.....	Do.
97450.....	13	12.3	3.2	3.8	do.....	Do.
97450.....	13	12.8	3.2	4	do.....	Do.
134209.....	13	12.5	3.2	3.8	do.....	Do.
134209.....	14	12.3	3.2	3.8	do.....	Do.
134209.....	13	13	3.6	4	do.....	Do.
134209.....	13	12.9	3.4	3.9	do.....	Do.
134209.....	13	13	3.3	3.9	do.....	Do.
Average.....	13.22+	12.7	3.35+	3.95+		
Total average.	13.96	12.86	3.22	3.85		

Measurements of *Holospira* (*Holospira*) *goldfussi anacachensis*.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Diameter of tenth whorl.	Locality.	Collector.
187543.....	11	<i>mm.</i> 13.2	<i>mm.</i> 3.4	<i>mm.</i> 4	20 miles north of Brackettsville, Hillecoal's ranch.	T. W. Stanton.
187543.....	14	14.2	3.4	4.1	do.....	Do.
187543.....	13	11	3	3.7	do.....	Do.
Average....	13.66+	12.8	3.26	3.93		
187544.....	15	14.5	3.3	4	Anacacha Mountains, 6 to 8 miles east of Spofford.	T. W. Stanton.
187544.....	13	12.8	3.5	3.9	do.....	Do.
187544.....	15	13.8	3.2	3.9	do.....	Do.
187544.....	13	12.5	3.4	3.7	do.....	Do.
187544.....	12	11.9	3	3.7	do.....	Do.
187544.....	13	13.2	3.3	4	do.....	Do.
187544.....	14	13.7	3.3	3.8	do.....	Do.
187544.....	13	12.6	3.3	3.5	do.....	Do.
187544.....	13	12.2	3.5	4	do.....	Do.
187544.....	13	13	3.3	4	do.....	Do.
187544.....	13	13.3	3.2	3.9	do.....	Do.
187544.....	14	13.5	3.3	4.1	do.....	Do.
187544.....	13	11.5	3.2	3.7	do.....	Do.
187544.....	13	12.6	3.1	4	do.....	Do.
187544.....	13	12.8	3.2	3.8	do.....	Do.

Measurements of *Holospira (Holospira) goldfussi anacachensis*—Continued.

Cat. No.	Number of whorls.	Length. ^a	Diameter of penultimate whorl.	Diameter of tenth whorl.	Locality.	Collector.
187544.....	13	mm. 12.7	mm. 3.2	mm. 3.9	Anacacha Mountains, 6 to 8 miles east of Spofford.	T. W. Stanton.
187544.....	13	12.8	3.4	4.2	.....do.....	Do.
187544.....	13	12.3	3.2	3.8	.....do.....	Do.
187544.....	13	12.3	3.3	3.8	.....do.....	Do.
187544.....	14	14.2	3.3	3.9	.....do.....	Do.
187544.....	12	12	3.4	4	.....do.....	Do.
187544.....	13	12.3	3.4	4	.....do.....	Do.
187544.....	13	12.2	3.2	3.8	.....do.....	Do.
187544.....	14	12.9	3.2	3.7	.....do.....	Do.
187544.....	14	13.2	3.2	3.8	.....do.....	Do.
Average ...	13.28	12.83	3.27+	3.87+		
Largest ...	15	14.5	3.5	4.2		
Smallest ...	12	11.5	3	3.5		
187545.....	14	14.5	3.6	4	Anacacha Mountains, near Frying Valley, 6 miles southwest of Cline, Tex.	T. W. Stanton.
187545.....	14	13.9	3.3	4	.....do.....	Do.
187545.....	13	12.3	3.3	3.8	.....do.....	Do.
187545.....	13	12.3	3.3	3.8	.....do.....	Do.
187545.....	13	12.1	3.1	3.8	.....do.....	Do.
187545 ^a	13	12.1	3.2	3.7	.....do.....	Do.
187545.....	13	11.2	3.2	3.7	.....do.....	Do.
187545.....	13	12.3	3.1	3.7	.....do.....	Do.
187545.....	13	12	3.1	3.6	.....do.....	Do.
187545.....	13	11.5	3.2	3.7	.....do.....	Do.
187545.....	13	11.5	3.2	3.7	.....do.....	Do.
187545.....	13	10.8	3.3	3.7	.....do.....	Do.
187545.....	12	10.7	3.2	3.4	.....do.....	Do.
187545.....	13	11.1	3.2	3.5	.....do.....	Do.
187545.....	12	10.3	3	3.4	.....do.....	Do.
Average ...	13	11.8+	3.22	3.7-		
Largest ...	14	14.5	3.6	4		
Smallest ...	12	10.3	3	3.4		
187546.....	15	16	3.3	4.1	Elm Creek, about 6 miles above Eagle Pass, Tex.	T. W. Vaughan and T. W. Stanton.
187546.....	15	14	3.3	4	.....do.....	Do.
187546.....	14	13.3	3.3	3.9	.....do.....	Do.
187546.....	14	13.2	3.2	3.7	.....do.....	Do.
187546.....	13	12.8	3.2	3.8	.....do.....	Do.
187546.....	13	12.2	3.2	3.8	.....do.....	Do.
187546.....	13	12	3.2	3.8	.....do.....	Do.
Average ...	13.88+	13.35	3.24+	3.87+		
Total average.	13.31	12.47-	3.25	3.83	Anacacha Mountain locus.	

^a Type.

Variation in the number of ribs in *Holospira* (*Holospira*) *goldfussi*.

Cat. No.	Number of ribs on penultimate whorl.	Number of ribs on tenth whorl.	Locality.
8693.....	40	56	Blanco River.
26554.....	32	56	Do.
58029.....	34	56	San Marcos.
123753.....	34	54	New Braunfels.
97450.....	36	56	Do.
Average.	35. +	55. +	

Variations in the number of ribs in *Holospira* (*Holospira*) *goldfussi anacachensis*.

Cat. No.	Number of ribs on penultimate whorl.	Number of ribs on tenth whorl.	Locality.
187543.....	26	36	20 miles north of Brackettsville.
187544.....	24	34	Anacacha Mountains, 6 to 8 miles east of Spofford.
187544.....	24	38	Do.
187545.....	22	36	Anacacha Mountains, 6 miles southwest of Cline.
187545.....	20	34	Do.
187546.....	24	36	Elm Creek, 6 miles above Eagle Pass.
187546.....	24	40	Do.
Average.	23+	36+	

Number of *Holospira* (*Holospira*) *goldfussi Menke* examined.

Cat. No.	Locality.	Number of specimens.	
		Perfect.	Immature and fragments.
8693.....	Blanco River, Texas.....	1	1
26554.....	do.....	1	8
58029.....	San Marcos, Tex.....	3	
123753.....	New Braunfels, Tex.....	7	
97450.....	do.....	4	
134209.....	do.....	5	
47085.....	Specific locality? Texas.....	3	
Total.....		24	9

Number of *Holospira* (*Holospira*) *goldfussi anacachensis* examined.

Cat. No.	Locality.	Number of specimens.	
		Perfect.	Immature and fragments.
152911.....	Edwards County, Tex.....		3
187543.....	20 miles north of Brackettsville, Tex.....	3	
187544.....	Anacacha Mountains, 6 to 8 miles East of Spofford, Texas.....	28	32
187545.....	Anacacha Mountains, 6 miles southwest of Cline, Texas.....	^a 17	13
187546.....	Elm Creek, 6 miles above Eagle Pass, Texas.....	7	
Total.....		55	48

^a One = type.

The type comes from Frying Pan Valley, 6 miles southwest of Cline, Texas. It has 13 whorls and measures: Length, 12.1 mm.; diameter of penultimate whorl, 3.2 mm.; diameter of tenth whorl, 3.7 mm. The penultimate whorl has 22 ribs, the tenth whorl, 30.

HOLOSPIRA (HOLOSPIRA) MEXICANA, new species.

Plate IV, fig. 9.

Shell subcylindric with gradually tapering terminal cone, yellowish horn color, with irregularly distributed whitish areas, resembling frosting. Nuclear whorls two and one-half, the second one inflated, all very finely granulose. Post-nuclear whorls quite well rounded, the greatest convexity falling a little posterior to the middle between sutures. The last three or four whorls are somewhat contracted anteriorly. The whorls are marked by irregular and irregularly spaced, ill-defined riblets, which are best developed on the early whorls and the last half of the last volution. On the fifth whorl there are about 56 of these slender, obliquely backward slanting threads, while the tenth shows no less than 80. On the penultimate whorl the riblets number 48, but are almost obsolete. Periphery and base of the last whorl well rounded, crossed by the riblets which continue into the small perforate umbilicus. The last two millimeters of the last whorl are solute and built out. There is a well-marked angle extending over the solute portion, at the junction of the parietal wall and the columellar margin. The outer surface of the solute portion is marked by quite strong riblets, which form concentric rings, and these are more closely crowded immediately behind the peristome than farther back. Peristome decidedly expanded but not reflected (accidentally bifid in the posterior lateral margin in the type), white-edged, fading gradually to light brown within. Folds not apparent in the aperture. Internal pillar thin, polished, hollow throughout, of almost uniform diameter posterior to the thirteenth whorl; where it is equal to about one-sixth the diameter of the shell, tapering gently anteriorly from the thirteenth whorl, marked by many irregularly spaced, obliquely backward-curved whitish lines. A low, obsolete, somewhat submedian twist extends over the entire pillar. In the antepenultimate and the whorl preceding this, the axis bears a strong lamella, which attains its maximum development in the whorl preceding the antepenultimate, beyond which it extends only a half of a turn posteriorly; anteriorly the fold diminishes gradually till it disappears in the penultimate whorl. In the whorl preceding the antepenultimate, a strong, somewhat outward-curved spiral lamella hangs from the middle of the roof and extends about halfway down across the chamber, while a strong, low, spiral lamella is raised up from the middle of the floor, leaving only the space of about one-third of the height of the chamber open between these two lamellæ. On the inside of the outer lip of the same whorl there is a low spiral keel, which is opposite the open space between the two spiral lamellæ just described, that is, a little posterior to the junction of the floor and outer wall.

The unique type, Cat. No. 73987 U. S. N. M., was collected by E. Lehnert in southwest Mexico. It has 17 whorls and measures: Length, 17.4 mm.; diameter of penultimate whorl, 3.6 mm.; diameter of tenth whorl, 4.1 mm.; diameter of second whorl, 0.8 mm.

HOLOSPIRA (HOLOSPIRA) PALMERI, new species.

Plate IV, fig. 6.

Shell small, slender, subcylindric, terminal cone tapering very gently; light-brown to flesh color. Nuclear whorls two and one-half, very minutely granulose. Succeeding whorls well rounded on the terminal cone, almost flattened on the cylindrical portion of the spire, crossed by many subequal and subequally spaced, regular, obliquely backward slanting thread-like riblets. These riblets are less strongly developed and more closely spaced on the middle of the spire than on the two ends. In the type I counted about 46 on the fifth, 80 upon the tenth, and 56 upon the penultimate whorl. Sutures well marked. Last whorl prolonged, having the periphery and base well rounded, both of which are crossed by the ribs, which extend into the deep and broad umbilical rimation. Base not perforate. The last two millimeters of the last whorl are solute and built out. The outside of this part is marked by strong continuous ribs, which form a series of concentric circles about it. The parietal wall in the free part is decidedly pinched at about one-third of the way to the left of its junction with the outer wall, which renders the posterior lateral angle keeled. Junction of parietal wall and columella well rounded. Outer wall of solute portion somewhat concave in the middle. Aperture subtriangular, white at the edge, grading to light brown within, peristome expanded but not reflected. Internal pillar slender, of uniform size, and hollow throughout, marked by an inconspicuous, submedian twist which appears to extend through the spire. In the penultimate whorl this twist is replaced by a strong spiral lamella, which does not extend much either way beyond the confines of this turn. A strong spiral lamella hangs from the roof in the penultimate and antepenultimate whorl; this is situated a little lateral to the middle of the space between pillar and wall and extends about one-third across the chamber. This lamella is strongly outward curved in the antepenultimate whorl. It is marked by many white lines that alternate with hyaline ones. The lines run parallel with the long axis of the lamella. The basal lamella is low, coextensive with the parietal one and opposed to it. The fourth lamella is represented by a low cord on the inside of the outer wall opposite the space between the parietal and basal lamella in the antepenultimate whorl. None of the lamellæ extend to the last whorl.

The collection contains 48 adults and 29 immature specimens and fragments of this species, Cat. No. 100388, U.S.N.M., from Alvarez Mountains, San Luis Potosi, Mexico, where they were collected by

Dr. E. Palmer, at an altitude of 7,200 feet. The following table gives measurements and average of twenty specimens:

Measurements of Holospira (Holospira) palmeri.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
100388 <i>a</i>	17	13.7	2.7	2.3
100388	16	13.5	2.7	2.3
100388	16	13	2.7	2.2
100388	16	12.5	2.7	2.3
100388	16	12.8	2.8	2.4
100388	16	12.4	2.7	2.4
100388	16	12	2.6	2.3
100388	15	11.6	2.7	2.4
100388	15	10.6	2.7	2.2
100388	15	12	2.8	2.2
100388	15	11	2.7	2.2
100388	15	12.1	2.9	2.4
100388	15	10.7	2.7	2.3
100388	16	12.3	2.8	2.3
100388	15	11.2	2.7	2.1
100388	15	11.3	2.8	2.2
100388	15	10.8	2.7	2.2
100388	15	11.2	2.8	2.3
100388	15	11.8	2.8	2.4
100388	15	12.2	2.7	2.4
Total	15.5—	11.93+	2.73+	2.29
Largest	17	13.7	2.9	2.4
Smallest	15	10.6	2.6	2.1

*a*Type.

HOLOSPIRA (HOLOSPIRA) INFANTA, new species.

Plate III, fig. 4.

Shell very small, cylindrical, with a short terminal cone. General color bluish white, mottled here and there at widely spaced intervals by dots or streaks of horn color, terminal cone yellow-horn color. Nuclear whorls a little more than two, well rounded, shining, very minutely granulose. Later whorls moderately rounded on the early part of the terminal cone, decidedly flattened on the cylindrical part of the spire. The terminal cone is quite strongly, obliquely, ribbed, while on the cylindrical portion of the spire the ribs become much reduced and are almost obsolete. On the last whorl they are again better developed and pass quite strongly over the slightly angulated periphery and well rounded base into the small umbilical perforation. Base yellowish brown. The last whorl is very shortly free; the parietal wall is decidedly pinched about one-third to the left of its junction with the outer wall. Outer wall slightly concave in the middle behind the peristome. Aperture well rounded anteriorly, angulated at the junction of the outer and peripheral wall, the latter sinuous. Peristome somewhat expanded and slightly reflected, white. Internal column slender, hollow, with a slightly submedian, obsolete twist extending throughout the length of the spire. In the penultimate whorl the twist on the pillar is replaced by a strong, thick lamella

which is restricted to this volution, appearing only as a strong twist in the last and in the antepenultimate turns. The parietal, basal, and peripheral lamellæ are also confined to the penultimate whorl. The parietal one is large and very strongly outward curved, the free edge bent toward the peripheral lamella, which forms a strong keel and is located about one-third the height of the chamber above the floor. The basal lamella is thick and strong and apposes the outer edge of the columellar fold and not the parietal one as is usually the case. Two narrow slits are thus formed, one between the parietal and peripheral fold, the other between the columellar and basal folds.

The unique type, Cat. No. 187650, U.S.N.M., was collected by E. W. Nelson in the Sierra Guadalupe, Coahuila, Mexico. It has 13½ whorls and measures: Length 9.7 mm.; diameter of tenth whorl 2.9 mm.; diameter of penultimate whorl 2.7 mm.

The diminutive size and the very regular cylindrical outline distinguish this species from all the other known *Holospiras*.

HOLOSPIRA (HOLOSPIRA) PAINTERI, new species.

Plate III, fig. 5.

Shell small, pupoid, flesh colored to light brown. Nuclear whorls two, well rounded, shining, very minutely granulose. Succeeding whorls rather inflated, those of the conical portion decidedly rounded, the rest rounded on the posterior third between the sutures, the lower two-thirds becoming flattened and somewhat contracted anteriorly. Penultimate whorl somewhat lower than the rest and well rounded. The entire surface is marked by well developed, regular, and regularly spaced obliquely backward-slanting riblets. These riblets are a little more crowded on the middle of the spire than on the cone; in general, they will average about one-half the diameter of the spaces that separate them; this, however, does not hold on the last two turns; here they are decidedly more distantly spaced. The type has about 67 ribs upon the fifth, 86 upon the eighth, and 60 upon the penultimate whorls. Periphery of the last whorl very slightly angulated. Base yellow horn-color, imperforate. Both periphery and base are crossed by the riblets which continue into the umbilical rimation. Last whorl free and built out for about one millimeter. The free portion is crossed by sublamellar riblets, which form a series of wavy, concentric rings, that become closely crowded behind the peristome. The solute portion of the outer wall is concave in the middle and the parietal wall is decidedly pinched about one-fourth of the way to the left of its junction with the outer wall. This renders the posterior lateral angle keeled, and gives to the aperture a channeled appearance at this place. Aperture well rounded anteriorly, having the parietal and lateral walls somewhat sinuous. The parietal and columellar folds are both visible deeply within the aperture. Peristome decidedly ex-

panded and somewhat revolute, white, fading to light brown within. Internal pillar slender, hollow throughout, having a low submedian twist, which extends over the entire spire. In the last and penultimate whorl this twist is replaced by a moderately strong, rather thick spiral lamella, which is of about equal strength in the two whorls mentioned; it can be easily seen within the aperture, but does not extend into the penultimate whorl. The parietal lamella extends through the last two turns and is also visible deeply within the aperture; it is slender, quite wide and decidedly outward curved, the free edge pointing toward the rounded, cord-like peripheral fold, which is located a little below the middle on the inside of the outer wall; it transverses only part of the penultimate whorl. A narrow slit only separates these two lamellæ. The basal lamella is very much reduced and surpasses the peripheral lamella in height only for about a quarter of a turn. The peripheral fold is visible on the outside of the whorl as a white thread. The collection contains 44 specimens, Cat. No. 187675, U.S.N.M., all collected by J. N. Rose and J. H. Painter, at Tehuacan, Puebla, Mexico. The following table gives measurements of twenty specimens:

Measurements of Holospira (Holospira) painteri.

Cat. No.	Number of whorls.	Length.	Diameter of eighth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
187675 ^a	10.5	8.4	2.7	2.3
187675	11	8.7	2.7	2.3
187675	10	8.1	2.7	2.2
187675	10.5	8.3	2.7	2.4
187675	10.5	8	2.7	2.2
187675	10.5	8.2	2.7	2.2
187675	11	9.1	2.9	2.5
187675	10.5	8.1	2.7	2.2
187675	11	9.1	2.7	2.2
187675	10	8	2.6	2.1
187675	11	8.5	2.6	2.2
187675	11	8	2.6	2.2
187675	11	8.1	2.7	2.3
187675	11	8.6	2.7	2.3
187675	11	8.9	2.8	2.2
187675	10.5	7.8	2.7	2.2
187675	11	9.1	2.7	2.3
187675	10	8.8	2.7	2.2
187675	10	8.2	2.6	2.2
187675	11	8.3	2.7	2.2
Average ...	10.65	8.41	2.7	2.23
Largest ...	11	9.1	2.9	2.5
Smallest ...	10	7.8	2.6	2.1

^aType.

HOLOSPIRA (HOLOSPIRA) NELSONI Pilsbry.

The U. S. National Museum has 43 specimens of this species, Cat. No. 187785, collected by E. W. Nelson and E. A. Goldman at Sierra Guadalupe, Coahuila, Mexico, at an altitude of 9,500 feet. The following table gives measurements of twenty individuals:

Measurements of *Holospira (Holospira) nelsoni*.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of thirteenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
187785.....	16	16.8	4.3	4.9	4.5
187785.....	16	16.8	4.6	4.8	4.3
187785.....	16	16	4.3	4.9	4.5
187785.....	16	16.9	4.4	4.9	4.5
187785.....	17	18.5	4.2	4.9	4.5
187785.....	15	15.8	4.7	5.2	4.7
187785.....	16	18.5	4.5	5	4.3
187785.....	16	17.5	4.2	4.8	4.6
187785.....	16	16.9	4.3	4.8	4.3
187785.....	16	16.6	4.3	4.9	4.5
187785.....	16	16.3	4.3	4.9	4.4
187785.....	15	16	4.4	5	4.6
187785.....	16	16	4.5	5.1	4.7
187785.....	16	17.5	4.4	5	4.7
187785.....	16	17.5	4.3	5.1	4.6
187785.....	15	16.4	4.6	4.9	4.5
187785.....	16	16.3	4.5	5	4.5
187785.....	16	15.4	4.6	5.1	4.5
187785.....	15	16.2	4.5	5.1	4.3
187785.....	16	16.2	4	4.7	4.2
Average ...	15.85	16.7	4.43	4.95	4.48
Largest ...	17	18.5	4.7	5.2	4.7
Smallest ...	15	15.4	4	4.7	4.2

HOLOSPIRA (HOLOSPIRA) OAXACANA, new species.

Plate IV, fig. 5.

Shell quite large, strong, cylindric conic, white. Nuclear whorls two, moderately large, well rounded, very minutely granulose. Terminal cone evenly tapering, the last six whorls of the spire quite cylindrical. The whorls of the cone are a little more rounded than those of the cylindrical portion; they are all crossed by obliquely backward slanting thread-like riblets, which are a little more strongly developed and more distantly spaced on the early and last whorls than the middle ones. There appear to be about 56 of these riblets on the fourth, 160 upon the eighth, and 100 upon the penultimate whorl in the type. Sutures well marked. Periphery of the last whorl slightly angulated. Base short and well rounded. The periphery and base are crossed by the continuations of the riblets, which extend undiminished into the rather deep umbilical rimation. Last whorl free for about one millimeter. Aperture semioval, the parietal wall representing the short diameter of the oval white. Peristome broadly expanded but not reflected, white. Internal column very slender, hollow, with an obsolete submedian twist. In the penultimate whorl this twist is replaced

by a moderately developed, spiral lamella, which extends feebly into the first half of the last whorl anteriorly, and hardly reaches to the antepenultimate posteriorly. The parietal lamella is one turn long and is chiefly located in the penultimate whorl, the very much attenuated anterior portion only extending partly into the last volution. In its greatest development the lamella extends about halfway across the chamber; the lamella is thin and decidedly outward curved in the direction of the peripheral fold. Peripheral fold slender, a mere thread extending through about half a volution, situated about one-third of the height of the chamber above the floor. Basal fold low, coextensive with the parietal member.

There are three specimens in the collection of the U. S. National Museum, Cat. No. 175085, collected by C. R. Orcutt at Tomellin, Oaxaca, Mexico.

Measurements of Holospira (Holospira) oaxacana.

Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
a 12	17.5	5.3	4.8
12	15.5	5.2	4.7
12	15.5	5.1	4.6

a Type.

TRISTEMMA, new subgenus.

Holospiras having three internal lamellæ, i. e., an axial, a parietal, and a basal.

Type.—*Holospira ferrissi* Pilsbry.

Two species belong to this subgenus, *Holospira (Tristemma) ferrissi* Pilsbry and *Holospira (Tristemma) pfeifferi* Menke.

HOLOSPIRA (TRISTEMMA) FERRISSI Pilsbry.

The U. S. National Museum contains three specimens, Cat. No. 189875, of this species, collected by J. H. Ferriss at Manilla Mine, Huachuca Mountains, Arizona. These are part of the original lot and were donated by H. A. Pilsbry.

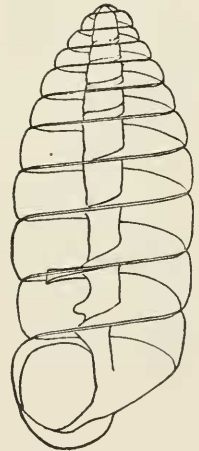


FIG. 9.—INTERIOR VIEW OF HOLOSPIRA FERRISSI.

Measurements of Holospira ferrissi.

Cat. No.	Number of whorls.	Length.	Diameter of eighth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
189875 a	11	8.1	3.4	3.2
189875	11	8	3.5	3.1
189875	11	8.3	3.4	3.2

a Specimen figured.

HOLOSPIRA (EUDISTEMMA) ARIZONENSIS Stearns.

There are fourteen fragments and one perfect specimen of this species in the collection of the U. S. National Museum, Cat. No. 104392, collected by Vernon Bailey in a cave at Dos Cabezas, Arizona. The perfect specimen, which is the type, has 12 whorls and measures: Length, 12.8 mm.; diameter of tenth whorl, 4.2 mm.; diameter of penultimate whorl, 3.8 mm. This is the type of *Eudistemma* Dall.

HOLOSPIRA (DISTOMOSPIRA) BILAMELLATA Dall.

The U. S. National Museum collection contains 35 fragments and 8 perfect specimens of this species, Cat. No. 129990, collected by Maj. E. A. Mearns, on the top of Hachita Grande Mountains, New Mexico. This species is the type of "*Distomospira*," Dall. The eight perfect specimens measure:

Measurements of Holospira (Distomospira) bilamellata.

Cat. No.	Number of whorls.	Length.	Diameter of twelfth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
129990 <i>a</i>	17	20.5	4.9	4.2
129990	17	19.5	5.5	4.5
129990	17	20.2	5	4.3
129990	16	20	5.5	4.4
129990	16	20.1	5	4.4
129990	16	19.1	5.3	4.4
129990	15	16	4.8	4.3
129990	14	16	5	4.4
Average ...	16	18.3	5.22	4.36
Largest ...	17	20.5	5.5	4.5
Smallest ...	14	16	4.8	4.2

a Type.

HOLOSPIRA (DISTOMOSPIRA) MEARNSI Dall.

There are 6 perfect and 3 fragments of this species in the U. S. National Museum collection, Cat. No. 129991. They were collected by Maj. E. A. Mearns on the top of the Hachita Grande Mountains, Grant County, New Mexico.

Measurements of Holospira (Distomospira) mearnsi.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
129991	<i>a</i> 14	14.6	4.3	4
129991	14	15.8	4.5	-----
129991	14	15.4	4.5	4
129991	14	14	4.4	3.8
129991	14	15	4.2	3.8
129991	14	15	4.5	4
Average ...	14	15	4.4	3.92
Largest ...	14	15.8	4.5	4
Smallest ...	14	14.6	4.2	3.8

a Type.

This species was made the type of the section *Haplostemma* by Doctor Dall, which is characterized as having a short, stout, axial lamella only. There was one specimen in the collection which had the outer wall on one side removed to expose the pillar; the removal of the wall seems to have carried away a small portion of the septum, separating the last whorl from the penultimate, and this unfortunately happened to be just the place upon which the short (poorly developed) basal fold is situated.

Haplostemma, therefore, must be considered a synonym of *Distomospira*. The basal fold extends over about one-fifth of a turn on the floor of the penultimate whorl.

HOLOSPIRA (BOSTRICHOCENTRUM) TRYONI Pfeiffer.

There is one specimen of this species, Cat. No. 107325 U.S.N.M., in the collection which comes from Salle, and was collected at the type locality, Matamoras de Izucar, Puebla, Mexico. The specimen has 15 whorls and measures: Length, 12.5 mm.; diameter of tenth whorl, 4.4 mm.; diameter of penultimate whorl, 3.8 mm.

HOLOSPIRA (BOSTRICHOCENTRUM) PILSBRYI Dall.

There are two lots of this species in the collection, one specimen, Cat. No. 21762 U.S.N.M., labeled Mexico, without specific data, the other, Cat. No. 56932, U.S.N.M., containing 120 specimens, was collected about the sulphur springs around the city of Puebla, Puebla, Mexico, by the Mexican Geographic Commission. The following table gives measurements of 20 specimens from the last lot containing the type:

Measurements of Holospira (Bostrichocentrum) pilsbryi.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
56932 ^a	14.5	13.6	3.8	3.4
56932	12.5	10.5	3.5	3.3
56932	13	11.3	3.7	3.5
56932	12.5	11.1	3.8	3.6
56932	12	10.3	3.8	3.4
56932	13	11.3	3.7	3.5
56932	13	12.2	3.9	3.7
56932	14	13	3.7	3.4
56932	14	12.9	3.7	3.4
56932	12	11	3.8	3.4
56932	14	13.3	4.1	3.7
56932	13.5	12.7	3.8	3.2
56932	13	12.8	4	3.7
56932	12	10.2	3.7	3.3
56932	13	10.4	3.7	3.2
56932	13	11.1	4	3.6
56932	13	12.4	3.9	3.7
56932	13.5	12.2	3.8	3.3
56932	13	11.6	3.7	3.3
56932	12	10.6	3.6	3.2
Average...	13.05	11.75	3.78	3.44
Largest...	14.5	13.6	4.1	3.7
Smallest...	12	10.2	3.5	3.2

^aType.

HOLOSPIRA (BOSTRICHOCENTRUM) VERACRUZIANA Dall.

There are three specimens of this species in the collection of the U. S. National Museum, Cat. No. 56933, collected by the Mexican Geographic Commission, at Mizantla, Vera Cruz, Mexico. They give the following measurements:

Measurements of Holospira (Bostrichocentrum) veracruziana.

Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
a 17	17.5	5.6	5.1
b 15	15.4	5.4	5
b 15	15	5.4	5

a Type.

b Not quite mature.

HOLOSPIRA (BOSTRICHOCENTRUM) GOLDMANI, new species.

Plate IV, fig. 1.

Shell cylindric-conic, thick, white. Terminal cone short, broadly conic. Nuclear whorls one and three-fourths, well rounded, very finely granulose. The four whorls of the terminal cone are well rounded and crossed by many quite regular and regularly spaced oblique riblets, whorls of the cylindric portion of the spire are almost flattened and marked by ill-defined, irregular indications of oblique riblets. On the last half of the last whorl the riblets again assume a stronger character, but are not as regular as on the terminal cone. Periphery of the last whorl obsolete angulated. Base well rounded, crossed by the ill-defined riblets which extend into the minute umbilical perforation. The last whorl is very shortly free and quite strongly angulated in the posterior lateral angle. Aperture broadly pyriform; peristome expanded, but not revolute, somewhat thickened, white. Internal pillar moderately large, of uniform diameter throughout the cylindrical portion, somewhat narrower in the last turn, marked by a low submedian fold, which becomes sublamellar in the antepenultimate and penultimate turn and disappears altogether before reaching the aperture.

There are 22 specimens in the collection of the U. S. National Museum, Cat. No. 187793. They were collected by E. W. Nelson and E. A. Goldman, at Tamazulapan, Oaxaca, Mexico.

The following table gives a list of measurements:

Measurements of *Holospira* (*Bostrichocentrum*) *goldmani*.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
187793.....	14	15.8	5.9	5.4
187793.....	13	15	5.5	5
187793.....	13	16.4	5.4	4.8
187793.....	13	16	5.8	5.4
187793.....	13	16	5.8	5.4
187793.....	13	15	5.5	5.1
187793.....	12	11.5	5.6	5
187793.....	13	15.4	5.8	5.2
187793.....	12	14.3	5.8	5
187793.....	13	15.1	5.7	5.4
187793.....	12	13.9	5.9	5.2
187793.....	12	14.5	6.3	5.3
187793 ^a	13	14.9	5.6	5.1
187793.....	12	13.4	5.6	5.1
187793.....	12	14.6	5.5	5
187793.....	13	16	5.7	5.2
187793.....	13	14.6	5.3	5
187793.....	12	13.4	5.4	4.7
187793.....	12	13.8	5.6	* 5.1
187793.....	13	15.1	5.7	5
187793.....	12	14.3	5.3	4.7
187793.....	12	13	5.7	5.2
Average ...	12.59	14.7	5.64	5.1
Largest ...	14	16.4	6.3	5.4
Smallest ...	12	13	5.3	4.7

^a Type.

In some specimens the part succeeding the terminal cone is the broadest part of the shell, the rest of the spire tapering gradually toward the last whorl.

HOLOSPIRA (BOSTRICHOCENTRUM) CROSSEI Dall.

There are 12 perfect and 10 immature and imperfect specimens in the collection of the U. S. National Museum, Cat. No. 129989, all collected by Maj. E. A. Mearns, at the highest peak of the Hachita Grande Mountains, New Mexico. The 12 perfect individuals give the following measurements:

Measurements of *Holospira* (*Bostrichocentrum*) *crossei*.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
129989 ^a	13	11.6	3.8	3.7
129989.....	13	12	3.8	3.7
129989.....	12	11.9	4.2	3.9
129989.....	13	12.3	4	3.8
129989.....	13	11.6	3.9	3.5
129989.....	13	11.5	4.1	3.7
129989.....	13	11.2	3.7	3.7
129989.....	12	11.6	3.9	3.5
129989.....	13	12.2	3.9	3.5
129989.....	12	11	3.8	3.4
129989.....	12	10.4	3.5	3.5
129989.....	13	12.3	3.9	3.7
Average ...	12.26	11.63	3.87	3.65
Largest ...	13	12.3	4.2	3.9
Smallest ...	12	11	3.5	3.4

^a Type.

As Doctor Pilsbry has pointed out,^a there is a weak, short fold, more like a tooth upon the axis, in the penultimate whorl, near the basal wall. There is also a weak submedian twist, which extends through the spire. The ribbing of the exterior varies from very decided, as shown in the figure of the type,^b to subobsolete on the middle of the cylindrical portion, as shown by Doctor Pilsbry's figure.^c

HOLOSPIRA (BOSTRICHOCENTRUM) HIDALGOENSIS, new species.

Plate IV, fig. 12.

Shell slender, elongate, cylindric-conic, white. Terminal cone gradually tapering. Nuclear whorls 3, moderately rounded, increasing regularly in size, very minutely granulose. The first nuclear whorl is broad and lends the apex a somewhat truncated appearance. Succeeding whorls flattened, the early ones of the terminal cone slightly overhanging, all marked by strong, curved, somewhat distantly spaced sublamellar ribs, of which about 28 occur upon the first sculptured whorl (i. e., the fourth whorl), 40 upon the tenth, and 26 upon the penultimate whorl. The ribs are placed closest posteriorly and become gradually more distantly spaced toward the penultimate whorl. The wide spaces between the ribs are crossed by several irregular secondary riblets, which lend them a longitudinally crinkled appearance. Periphery of the last whorl somewhat angulated. Base well rounded; the strong continuation of the ribs extend into the umbilical rimation. The last portion of the last whorl free for about 3 mm. Parietal wall somewhat pinched a little to the left of its junction with the outer wall, which lends the posterior lateral angle a slightly carinated appearance. The free parietal wall is marked by the continuation of the ribs, which are less strongly developed and more closely crowded immediately behind the aperture. Aperture subquadrate, parietal border somewhat sinuous, owing to the pinched portion alluded to above; peristome decidedly expanded, but not revolute. Internal pillar slender, bearing an obsolete submedian spiral twist that is strengthened to form a low lamella, which extends through the antepenultimate whorl. There are two specimens in the collection of the U. S. National Museum, Cat. No. 187982, donated by A. L. Herrera. They were collected at Zimapan, Hidalgo, Mexico.

^a Proc. Acad. Nat. Sci. Philadelphia, 1905, p. 217.

^b Proc. U. S. Nat. Mus., XIX, 1896, pl. xxxi, fig. 2.

^c Proc. Acad. Nat. Sci. Philadelphia, 1905, pl. xxvi, fig. 8.

Measurements of Holospira (Bostrichocentrum) hidalgensis.

Number of whorls.	Length	Diameter of tenth whorls.	Diameter of penultimate whorl.
α 17	<i>mm.</i> 20.5	<i>mm.</i> 4.2	<i>mm.</i> 3.8
16	20.3	4.3	4

α Type.

HOLOSPIRA (BOSTRICHOCENTRUM) TAMAULIPENSIS, new series.

Plate IV, fig. 2.

Shell elongate-conic, horn-colored, with strong white riblets. Nuclear whorls two, light yellow-horn-color, very minutely granulose. Terminal cone long and gently tapering, having the whorls moderately well rounded. Cylindrical portion of the spire consisting of the last three or four volutions. All the whorls are strongly and quite regularly ribbed. The ribs are slender, somewhat compressed laterally, forming low lamellæ, about one-fourth as wide as the spaces which separate them. In the type there are 40 upon the second ribbed (i. e., the fourth) whorl, 56 upon the ninth, and 54 upon the penultimate volution. Sutures well impressed. Last whorl somewhat elongated and narrowed basally. Periphery slightly angulated. Base well rounded, marked by the rather crowded continuations of the ribs, which extend strongly into the umbilical rimation. Last whorl shortly free behind the aperture; the free portion is marked by strongly lamellar riblets, which become decidedly crowded and weaker behind the peristome. The free portion of the parietal wall is decidedly pinched a little to the left of its junction with the outer wall, which lends it a somewhat sinuous outline. It is marked by the continuation of the riblets of the outer wall. Aperture oblique, semioval, the short diameter of the oval being represented by the parietal wall. Peristome quite strongly expanded but not reflected, white. Internal pillar slender, hollow throughout, marked by an obsolete submedian twist, which gives place to a weak, short fold in the penultimate whorl. This fold extends only over about half a turn and almost rests upon the floor. There are 32 specimens of this species in the collection of the U. S. National Museum, Cat. No. 187979, collected by E. W. Nelson and E. A. Goldman at Camargo, Tamaulipas, Mexico.

The following table gives measurements of the type and 14 specimens:

Measurements of Holospira (Bostrichocentrum) tamaulipensis.

Cat. No.	Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
187979.....	12	12	4.1	4.2
187979.....	13.5	13.4	4.1	3.8
187979 ^a	12	12.5	4.1	3.9
187979.....	12	12.1	4.3	4.2
187979.....	11	11.5	4.2	4.1
187979.....	12.5	12.5	4.2	4.1
187979.....	12	12.3	4.2	4.1
187979.....	12	12.1	4	3.7
187979.....	11.5	11.3	4.3	3.9
187979.....	12	11.8	3.9	3.8
187979.....	11.5	11.3	4.1	3.9
187979.....	10.5	9.9	3.7	3.7
187979.....	12	12.1	4.4	4.3
187979.....	11.5	11.2	4.2	4.1
187979.....	13	12.8	1.3	4
Average...	11.93	11.92	4.14	3.98+
Largest....	13.5	13.4	4.4	4.3
Smallest...	11	9.9	3.7	3.7

^a Type.

HOLOSPIRA (BOSTRICHOCENTRUM) CIONELLA Pilsbry.

The collection of the U. S. National Museum contains one specimen of this species, Cat. No. 173848, presented by Dr. H. A. Pilsbry and collected by J. H. Ferris, at Fort Bowie, Arizona, the type locality. It has 13 whorls and measures: Length, 12.5 mm.; diameter of tenth whorl, 3.7 mm.; diameter of penultimate whorl, 3.6 mm.

HOLOSPIRA (BOSTRICHOCENTRUM) COCKERELLI Dall.

The unique type of this species, Cat. No. 173845, U.S.N.M., was found by O. B. Metcalfe in the débris of the Rio Grande, at Mesilla, Sierra County, New Mexico, and donated to the Museum by Prof. T. D. A. Cockerell. It has 13½ whorls and measures: Length, 12.8 mm.; diameter of tenth whorl, 3.8 mm.; diameter of penultimate whorl, 3.6 mm.

HOLOSPIRA (BOSTRICHOCENTRUM) REGIS Pilsbry and Cockerell.

There are two specimens (topotypes) in the collection of the U. S. National Museum, Cat. No. 185388, collected by O. B. Metcalfe, near Kingston, Sierra County, New Mexico, and donated by Prof. T. D. A. Cockerell. One of these is not quite perfect; the perfect individual has 13 whorls and measures: Length, 11.1 mm.; diameter of tenth whorl, 3.4 mm.; diameter of penultimate whorl, 3.2 mm.

HOLOSPIRA (BOSTRICHOCENTRUM) CHIRICAHUANA Pilsbry.

There are two lots of this species in the U. S. National Museum collection; one, Cat. No. 173847, U. S. N. M., contains 6 specimens col-

lected by J. H. Ferris, at Cave Creek, Chiricahua Mountains, south-east Arizona, the type locality, which were donated by Dr. H. A. Pilsbry.

Measurements of Holospira (Bostrichocentrum) chiricahuana.

Cat. No.	Number of whorls.	Length.	Diameter of eighth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
173847.....	11	9	3	2.9
173847.....	12	10	3.2	3
173847.....	11	8.4	3.1	2.9
173847.....	12	10.2	3.2	3
173847.....	12	9.4	3	2.9
173847.....	12	10	3.1	3
Average...	11.66+	9.5	3.1	2.95

The other lot, Cat. No. 173846, U. S. National Museum, contains one perfect specimen and some fragments collected by the donor, J. H. Ferris, at Fort Bowie, Arizona. The perfect specimen has 11 whorls, and measures: length, 9.2 mm.; diameter of eighth whorl, 3.2 mm.; diameter of penultimate whorl, 3 mm.

LIOSTEMMA, new subgeneric name.

The species *Holospira (Haplostemma) mearnsi* Dall was given as the type of *Haplostemma* Dall. *Holospira mearnsi* Dall, however, has a subobsolete submedian fold on the axis, running throughout the spire, which places this species in the subgenus *Bostrichocentrum*. *H. (Haplostemma) hamiltoni* Dall would have served better as the type of the group, which is now rechristened *Liostemma*, having as type *H. (Liostemma) hamiltoni* Dall. This subgenus is distinguished from *Bostrichocentrum* by having the pillar smooth, without twist or fold, except in the penultimate whorl, where there is a short, stout, axial lamella.

HOLOSPIRA (LIOSTEMMA) HAMILTONI Dall.

There are 8 perfect and 1 young specimen of this species in the collection of the U. S. National Museum, Cat. No. 107759, which were collected by James M. Hamilton, on Selaginella, in the Rio Grande Mountains, Brewster County, Texas, at an altitude of 3,500 feet.

The following table gives measurements of the 8 specimens:

Measurements of Holospira (Liostemma) humiltoni.

Number.	Number of whorls.	Length.	Diameter of ninth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
107759 <i>a</i>	13.5	22	5.1	4.4
107759	12.5	19.3	5	4.5
107759	12.5	19.7	5.1	4.5
107759	12.5	19	4.8	4
107759	12.5	19.5	5	4.2
107759	13	19.8	4.8	4
107759	13	20	5	4.2
107759	13	20	4.9	4.2
Average ...	12.8	19.9	4.96	4.25
Largest ...	13.5	22	5.1	4.5
Smallest ...	12.5	19	4.8	4

a Type.

HOLOSPIRA (LIOSTEMMA) DURANGOENSIS, new species.

Plate III, fig. 8.

Shell very large, solid, cylindric-conic, white. Nuclear whorls 2, large, inflated, minutely granulose. Succeeding whorls moderately rounded. Terminal cone gently tapering. The whorls are crossed by numerous very oblique, obsolete threads, which are a little more distinct on the early whorls than the rest, and become practically altogether lost on the cylindrical part of the spire. The penultimate whorl becomes decidedly narrowed basally, and is crossed by a series of quite distinct riblets, which are more strongly developed below the slightly angulated periphery and on the rounded base than near the summit. Base deeply rimate. Last whorl decidedly disjunct; the union of the parietal and outer wall is marked by a slender carina, which extends from behind the peristome to the point of dissolution. The entire free portion is marked by more or less regular, circular threads, which become weak and closely crowded behind the peristome. Aperture roughly circular, with a *very broadly expanded*, but not reflected, peristome. Internal pillar slender, of uniform width in the cylindrical part, somewhat wider in the terminal cone, hollow, smooth, without twist or fold, except in the penultimate turn, where a low cord encircles it a little above the floor.

This is the largest of the known *Holospira*.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 187981, which were received from Prof. A. L. Herrera. They were collected at Durango, Durango, Mexico.

Measurements of Holospira (Liostemma) durangoensis.

Number of whorls.	Length	Diameter of ninth whorl.	Diameter of penultimate whorl.
a 12	mm. 34.5	mm. 8.8	mm. 8
12	33	8.9	8.1

a Type.

HOLOSPIRA (LIOSTEMMA) YUCATANENSIS, new species.

Plate III, fig. 2.

Shell cylindric-conic, having the greatest diameter at the whorl next to the termination of the terminal cone, with the cylindrical portion gently tapering toward the base, flesh colored, with horn-brown apex. Nuclear whorls two, well rounded, shining, very minutely granulose. Whorls of the evenly tapering terminal cone moderately rounded, early one crossed by regular, well marked, oblique riblets, which gradually decrease in strength on the later whorls, and become quite obsolete on the somewhat flattened turns of the cylindrical part of the spire, which are marked by irregular lines of growth only. On the narrow penultimate whorl the riblets are again present, forming slender curved white threads, which are about one-third as wide as the spaces between them, and extend prominently over the angulated periphery and short rounded base into the narrow umbilical rimation. Last whorl shortly free, the free portion slightly angulated at the junction of the parietal and outer wall, marked by the continuous riblets, which become decidedly crowded behind the peristome. Aperture subcircular, with decidedly expanded, broad, flat, not reflexed, white peristome. Internal pillar hollow throughout, of uniform size from the third to last whorl posteriorly to the terminal cone, where it becomes somewhat enlarged. In the penultimate whorl it is less wide than in the preceding volution and encircled by a moderately well developed slightly submedian lamella. In the last whorl the pillar is quite slender and decidedly oblique.

There is one perfect and one broken specimen in the U. S. National Museum, Cat. No. 187980, which were collected by E. W. Nelson and E. A. Goldman, at Mujeres Island, Yucatan, Mexico. The perfect specimen, the type, has 12 whorls and measures: Length, 18.1 mm.; diameter of ninth whorl, 5.9 mm.; diameter of penultimate whorl, 4.9 mm.

HOLOSPIRA (HAPLOCION) PASONIS Dall.

Of this, the type species of the subgenus *Haplocion*, the U. S. National Museum collection has 3 lots. Two, Cat. No. 129032, U.S.N.M., the type lot, and Cat. No. 134210, U.S.N.M., two specimens, were collected in Mule Canyon, El Paso County, Texas, at an altitude of 4,000 feet, by J. A. Singley. The third lot, Cat. No. 152642, U.S.N.M., 12 specimens, was collected by Dr. T. W. Stanton, at Red Bull Canyon, El Paso County, Texas. The following table gives the measurements of the perfect specimens:

Measurements of *Holospira (Haplocion) pasonis*.

Cat. No.	Number of whorls.	Length.	Diameter of ninth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
129032 <i>a</i>	11.5	22.5	6.7	6.2
129032	12	22.7	6.2	5.6
129032	11	23	6.8	6.3
134210	12	24.6	6.8	6.3
134210	12	22.7	6.5	6
152642	12	24.7	6.6	6.4
152642	12	23.7	6.8	6.6
152642	12	22.3	6.3	6.1
152642	12	23.8	6.6	6.2
152642	12	24.6	6.4	6.1
152642	11.5	22.6	6.5	6.3
152642	12	23.3	6.7	6.2
152642	12	22.9	6.3	5.7
152642	12	24.2	6.6	6.3
152642	12	22.5	6.4	6.2
Average ...	11.86	23.34	6.54	6.16
Largest ...	12	24.7	6.8	6.4
Smallest ...	11	22.3	6.2	5.6

a Type.

HOLOSPIRA (HAPLOCION) SEMISCUPTA Stearns.

There are three specimens in the type lot, Cat. No. 102310, U.S.N.M., which were collected by Dr. T. W. Stanton in the canyon above San Carlos, Chihuahua, Mexico.

Measurements of *Holospira (Haplocion) semisculpta*.

Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
14	22.2	5.8	5
14	23.1	6	4.6
14	.....	5.6	4.6

HOLOSPIRA (HAPLOCION) COAHUILIENSIS W. G. Binney.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 9150, one perfect, the type, and the other a half-grown individual. They were collected by Xantus at

Cienaga Grande, Coahuila, Mexico. The perfect specimen has 12 whorls and measures: Length, 23 mm.; diameter of eighth whorl, 6.5 mm.; diameter of penultimate whorl, 5.6 mm.

HOLOSPIRA (HAPLOCION) MINIMA von Martens.

There are two lots of this species in the collection of the U. S. National Museum. One, Cat. No. 126124, U.S.N.M., collected by G. Eisen, in Sonora, Mexico, contains 5 specimens. The other, Cat. No. 56960, U.S.N.M., 6 specimens, donated by W. M. Gabb, comes from Hermosillo, Sonora, Mexico. These specimens give the following measurements:

Measurements of Holospira (Haplocion) minima.

Cat. No.	Number of whorls.	Length.	Diameter of ninth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
126124.....	12	13.3	4.7	4.2
126124.....	12	13.3	4.2	4
126124.....	12	13	4.2	3.9
56960.....	12	13.4	4.4	4
56960.....	12	13.4	4.1	3.9
56960.....	12.5	14.6	4.6	4
56960.....	12	13.6	4.5	4.1
56960.....	11.5	11.8	4.8	4.5
56960.....	12	12.7	4.2	4
Average...	12	13.23	4.41	4.06
Largest....	12.5	14.6	4.8	4.5
Smallest...	11.5	11.8	4.1	3.9

HOLOSPIRA (HAPLOCION) TOWNSENDI, new species.

Plate IV, fig. 13.

Shell white, cylindrical-conic. Nuclear whorls two, very large, projecting decidedly beyond the outline of the spire. The first of these is large, inflated, and well rounded. The second is a little more depressed and decidedly keeled in the middle. Terminal cone long and gently tapering, composed of the seven whorls succeeding the nucleus. These whorls are somewhat overhanging, well rounded and ornamented by many equal and equally spaced obliquely backward curved ribs. Whorls of the cylindrical portion well rounded, having the ribs a little more distantly spaced on the anterior than the posterior volution. There appear to be about 38 ribs upon the third whorl (i. e., the first postnuclear whorl), 60 upon the tenth and 38 upon the penultimate volution. Sutures well impressed. Periphery of the last turn angulated, having the ribs somewhat strengthened at this place. Base quite short, rounded, marked by the continuation of the ribs, which taper gradually as they pass into the rather deep umbilical rimation. Last portion of last whorl very shortly free, the expanded portion of the peristome almost touching the outer wall of the preceding turn. Aperture almost circular, with a broadly ex-

panded, flattened, but not revolute peristome. Internal column thin, hollow throughout, smooth, marked only by lines of growth, somewhat oblique and contracted in the last whorl, wider in the penultimate and increasing gently in diameter posteriorly to the beginning of the terminal cone. The column in its widest place is equal to about one-fourth of the diameter of the shell. The unique type has 15 whorls and measures: Length, 16 mm.; diameter of eleventh whorl, 4.5 mm.; diameter of penultimate whorl, 4.2 mm.

The type, Cat. No. 109215, U.S.N.M., was collected by C. H. T. Townsend, at Cerro Chilicote, Chihuahua, Mexico.

HOLOSPIRA (HAPLOCION) FUSCA von Martens.

There are three specimens of this species in the collection of the U. S. National Museum, Cat No. 162323, U.S.N.M., collected by Godman, at Omilteme, Guerrero, Mexico. The two perfect specimens measure:

Measurements of Holospira Haplocion fusca.

Number of Whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
17	12.8	3.8	3.2
17	12.6	3.8	3.1

HOLOSPIRA (HAPLOCION) LICHENOPHORA, new species.

Plate IV, fig. 7.

Shell cylindric-conic, dark horn brown, beautifully variegated with irregular white blotches, which appear as white incrustations upon the brown background when examined under the microscope. Nuclear whorls moderately rounded, very minutely granulose, scarcely differentiated from the succeeding turns. Terminal cone gently tapering, having the whorls moderately rounded and marked with ill defined and irregularly spaced riblets. The whorls of the cylindrical portion are moderately rounded, and have the greatest convexity a little posterior to the middle, which lends them a somewhat shouldered appearance. The riblets on the cylindrical part of the spire are represented by mere lines of growth. Sutures decidedly impressed. Last whorl with the lines of growth strengthened, scarcely ribbed, periphery slightly angulated. Base short, well rounded, marked by the strong lines of growth which extend into the moderately broad, open, umbilicus. Last whorl decidedly free at its extremity. The free portion is a little more than 2 mm. wide at the decidedly angulated junction of the parietal and outer wall. The junction of the columellar and parietal wall is also somewhat angulated and the parietal wall itself is not flat,

but somewhat sinuous. The entire free portion is encircled by strong lines of growth, which as usual become weaker and more crowded behind the peristome. Aperture small, oblique, broadly oval, the parietal wall representing the short diameter of the oval. Peristome very thin, moderately expanded and somewhat reflexed. Internal pillar large, about one-fifth the diameter of the shell, straight and narrowed to less than half the diameter in the last whorl, thin, marked only by whitish lines of growth. There are three specimens of this species in the collection of the U. S. National Museum, Cat. No. 134699, collected by E. W. Nelson at Encarnacion, Hidalgo, Mexico. The perfect specimen, the type, has 17 whorls and measures: Length 15.2 mm.; diameter of thirteenth whorl, 4.2 mm.; diameter of penultimate whorl, 4 mm.

HOLOSPIRA (HAPLOCION) TANTALUS, new species.

Plate III, fig. 6.

Shell small, pupoid, yellowish white. Nuclear whorls one and one-half, well rounded, very minutely granulose. Terminal cone gently tapering, having the sloping whorls somewhat overhanging; whorls of the cylindrical portion of the spire moderately rounded. The entire post-nuclear spire is marked by feeble, obliquely backward slanting riblets, which are better developed and a little more distantly spaced on the terminal cone and the last two volutions than on the middle of the spire. There are about 52 of these riblets upon the third whorl, about 100 upon the seventh and about 85 upon the penultimate turn. Sutures well marked. Periphery of the last whorl slightly angulated. Base short, well rounded, deeply rimate, marked by the little riblets. Last whorl scarcely free, the peristome adnate to the outer wall of the preceding volution. Aperture moderately large, subcircular, with a decidedly thickened white peristome, which is broadly expanded and very slightly reflected. Internal column slender, straight, increasing gradually in diameter from the last whorl to the early whorls of the terminal cone, smooth, marked only by whitish lines of growth.

There are two specimens of this species in the collection of the U. S. National Museum Cat. No. 29303. They were collected by Dr. Edward Palmer somewhere in Arizona or New Mexico. They have been cited in several places as *Holospira pilsbryi* Dall, but their internal structure, as well as other features, mark them as quite distinct. The two specimens measure:

Measurements of Holospira (Haplocion) tantulus.

Number of whorls.	Length.	Diameter of eighth whorl.	Diameter of penultimate whorl.
a 11	mm. 10.2	mm. 3.3	mm. 3.1
11	8.3	3.2	3.1

a Type.

HOLOSPIRA (METASTOMA) ROEMERI Pfeiffer.

There are twelve lots, 47 specimens, in the collection from diverse localities. The extent of their variation in size, etc., is noted in the subjoined table.

Measurements of Holospira (Metastoma) roemeri.

Cat. No.	Number of whorls.	Length.	Diameter of eighth whorl.	Diameter of penultimate whorl.	Locality.	Collector.
123769.....	12	mm. 11	mm. 3.8	mm. 3.3	New Braunfels.....	Gurley.
34084.....	13	13	4	3.6	Bexar County.....	J. G. Wetherby.
126418.....	14	13.8	4	3.5	Helotes, Bexar County	Do.
126418.....	12	12.1	4.2	3.8	.....do.....	Do.
188176.....	12	11.9	4	3.3	Japonia, Kerr County	M. Surber.
188178.....	14	14.1	4	3.5	Headwaters of Nueces River, Edwards County, and Round Mount, on Uvalde River, Uvalde County.	T. W. Stanton and T. W. Vaughan.
188178.....	13	12.8	4.5	3.7	.....do.....	Do.
188178.....	14	14	4.1	3.2	.....do.....	Do.
188178.....	14	13.8	4.2	3.3	.....do.....	Do.
188178.....	14	12.8	4	3.5	.....do.....	Do.
152940.....	13	12.8	4.2	3.5	Edwards County.....	T. W. Vaughan.
152940.....	13	13.3	4	3.3	.....do.....	Do.
188174.....	13	12.5	4.2	3.2	13 miles south of Juno, Valverde County.	M. Surber.
188174.....	13	13.3	4.1	3.2	.....do.....	Do.
118393.....	13	13.3	4.8	4.1	Devils River.....	Lloyd.
160841.....	15	17	4.5	4	Near Pecos high bridge, in canon of Pecos River, Val Verde County.	F. M. Bailey.
160841.....	15	15.3	4.5	4	.....do.....	Do.
160841.....	15	15.6	4.5	3.6	.....do.....	Do.
160841.....	15	17	4.5	3.7	.....do.....	Do.
160844.....	15	15.8	4.7	3.5	.....do.....	Do.
160844.....	12	12.2	4.5	3.4	.....do.....	Do.
118388.....	16	17.2	4.3	3.6	Painted Cave, Pecos River, Valverde County.	Lloyd.
118388.....	14	13.5	4.3	3.5	.....do.....	Do.
188177.....	15	14.5	4.2	3.5	Near Spofford.....	T. W. Stanton.
188177.....	14	13	4	3.5	.....do.....	Do.
188177.....	13	12.5	4.2	3.5	.....do.....	Do.
188177.....	14	13.8	4.1	3.4	.....do.....	Do.
188177.....	14	13.7	4.3	3.7	.....do.....	Do.
188177.....	13	12	4	3.3	.....do.....	Do.
188177.....	14	13.5	4.2	3.3	.....do.....	Do.
188177.....	12	11.7	3.8	3.3	.....do.....	Do.
188177.....	15	15.1	3.9	3.4	.....do.....	Do.
188177.....	13	12	3.8	3.2	.....do.....	Do.
188177.....	13	13.2	3.8	3.2	.....do.....	Do.
188177.....	14	14	4	3.2	.....do.....	Do.
188177.....	14	14.2	3.7	3.2	.....do.....	Do.
188177.....	13	13.1	3.8	3.3	.....do.....	Do.
188177.....	13	13.2	3.7	3.2	.....do.....	Do.
188177.....	13	12.6	4.1	3.3	.....do.....	Do.
188177.....	13	13	4.1	3.6	.....do.....	Do.
Average.....	13.6	13.58	4.14	3.46		
Largest.....	16	17.2	4.8	4.1		
Smallest.....	12	11	3.7	3.2		

HOLOSPIRA (CÆLOSTEMMA) ELIZABETHÆ Pilsbry.

There are 3 lots in the collection, 20 specimens, all from Amula, which has an altitude of about 6,000 feet and lies between Tixtla and Chilapa, in the State of Guerrero, Mexico. The specimens give the following measurements:

Measurements of *Holospira (Cælostemma) elizabethæ*.

Cat. No.	Number of whorls.	Length.	Diameter of twelfth whorl.	Diameter of penultimate whorl.	Collector.	Donor.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		
101868.....	21	19.7	5.7	4.9	H. H. Smith.....	H. A. Pilsbry.
101868.....	19	17.3	5.6	4.9	.....do.....	Do.
101868.....	18	15	5.4	4.5	.....do.....	Do.
149600.....	20	19.1	6	5	.....do.....	Do.
149600.....	19	17.5	6.1	5.2	.....do.....	Do.
149600.....	18	16.1	5.8	4.5	.....do.....	Do.
162322.....	21	19.2	5.5	4.8	Godman.....	Godman.
162322.....	20	17.3	5.2	4.6	.....do.....	Do.
162322.....	20	19.2	5.6	4.9	.....do.....	Do.
162322.....	19	17.7	5.7	5.2	.....do.....	Do.
162322.....	19	17.7	5	4.8	.....do.....	Do.
162322.....	18	16.4	5.2	4.3	.....do.....	Do.
162322.....	19	17.4	5.1	4.4	.....do.....	Do.
162322.....	18	16.3	5.4	4.4	.....do.....	Do.
162322.....	18	14.9	5.6	4.8	.....do.....	Do.
162322.....	18	15.6	5.7	4.4	.....do.....	Do.
162322.....	17	15.1	5.1	4.7	.....do.....	Do.
162322.....	18	15.3	5.5	4.7	.....do.....	Do.
162322.....	16	13.7	5.5	4.9	.....do.....	Do.
Average..	18.73+	16.87-	5.21+	4.73+		
Largest..	21	19.7	6.1	5.2		
Smallest..	16	13.7	5	4.3		

HOLOSPIRA (CÆLOSTEMMA) DALLI Pilsbry.

There are 76 specimens of this species in the collection of the U. S. National Museum, Cat. No. 188179, which were collected with the type by E. W. Nelson in the Sierra Guadalupe, Mexico, at an altitude of 9,500 feet, not 6,500, as stated by Dr. Pilsbry.^a The subjoined table gives a list of measurements of 25 specimens selected to show the limits of variations in length, diameter, and number of whorls.

^a Manual of Conchology, XV, 1904, p. 101.

Measurements of *Holospira* (*Cælostemma*) *dalli*.

Cat. No.	Number of whorls.	Length.	Diameter of twelfth whorl.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
188179.....	22	18.7	4.5	4.3
188179.....	23	19.6	4.9	4.2
188179.....	22	17.5	4.2	4.1
188179.....	20	17.9	4.1	4.2
188179.....	21	18	5	4.4
188179.....	20.5	18.5	5	4.7
188179.....	21	18.3	4.5	4.4
188179.....	22.5	18.3	4.7	4.8
188179.....	20	16.6	4.5	4.2
188179.....	23	18.2	4.7	4.1
188179.....	22	16.5	5	4.2
188179.....	23	17.5	5	4.6
188179.....	21	16.9	5.3	4.6
188179.....	20	17.2	5.3	5.3
188179.....	19	16	5.4	4.8
188179.....	21	17.4	5.4	4.7
188179.....	21	17	5.4	4.7
188179.....	19	15.7	5	4.5
188179.....	20	16	5.5	4.8
188179.....	19	16	5.3	4.7
188179.....	19	14.6	4.6	4.1
188179.....	18	14.1	4.6	4.3
188179.....	17	14.3	5	4.6
188179.....	17	15	5.1	5
188179.....	18	14.4	5.3	4.8
Average....	20.36	16.84	4.94+	4.52+
Largest....	23	19.6	5.5	5.3
Smallest....	17	14.1	4.2	4.1

HOLOSPIRA (CÆLOSTEMMA) HERRERÆ, new species.

Plate IV, fig. 14.

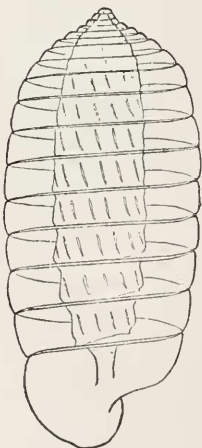


FIG. 10.—INTERIOR VIEW OF HOLOSPIRA HERRERÆ.

Shell rather large, broadly club shaped, bluish flesh colored. Nuclear whorls one and one-half, minutely granulose, light horn yellow. Terminal cone short, increasing very rapidly in width. The first two whorls succeeding the nucleus light brown, the rest bluish white. The greatest diameter of the shell coincides with about the tenth whorl, from this the spire tapers very gradually anteriorly to the penultimate turn. The first two or three turns are marked by quite regular, oblique riblets, but these soon give way to mere irregularly developed lines of growth on the succeeding volutions. The whorls of the terminal cone are well rounded, while those of the cylindrical portion of the spire are almost flattened. Sutures weak, appearing as lightly impressed lines. On the penultimate whorl the lines of growth become stronger, forming poorly defined riblets. Periphery of the penultimate whorl decidedly angulated. Base of the last whorl short, brown, minutely punctured in the type (deeply rimate in the second specimen) crossed by the riblets, which are much better developed here than on the

spire, and continue into the perforation. Last whorl free at its anterior extremity for about $1\frac{1}{2}$ mm., the free portion marked by rings of riblets, which become crowded behind the peristome. Free portion of the parietal wall somewhat sinuous. Junction of the parietal and outer wall slightly obtusely angulated. Aperture moderately large, brown within, semioval, the short diameter of the oval being represented by the parietal wall. Peristome decidedly expanded, and somewhat reflected, edged with white. Internal column very large, about one-half the greatest diameter of the shell in its widest part, widest near the terminal cone, tapering gradually anteriorly. In the penultimate whorl it is only about one-half as wide as it is at the junction of the cylindrical portion of the spire with the terminal one. In the last whorl it is much narrower and smooth. The column is thin, semi-transparent, marked by thread-like riblets, which extend from the roof of the whorls to the floor. There are about twenty-four of these riblets in the penultimate and thirty-two in the twelfth whorl. In addition to the riblets the column has a weak spiral fold, which is situated a little above the floor. There is also a tendency to form nodules at the place where the riblets cross this fold.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 188180. They were donated by Prof. A. L. Herrera, and come from Silaca Yoapan, Oaxaca, Mexico.

Measurements of Holospira (Calostemma) herrera.

Number of whorls.	Length.	Diameter of tenth whorl.	Diameter of penultimate whorl.
a 17	mm. 16.7	mm. 7.4	mm. 6
18	19	6.7	5.8

aType.

STALACTELLA, new subgenus.

Holospira having a spiral swelling on the pillar, which terminates anteriorly in a strong lamella; and a spiral line of slender teeth pending from the parietal wall in the anterior volutions.

Type.—*Holospira (Stalactella) rosei*, new species.

HOLOSPIRA (STALACTELLA) ROSEI, new species.

Plate IV, fig. 10.

Shell cylindrical-conic, white. Nuclear whorls two, more inflated than the succeeding ones, minutely granulose. Terminal cone long, gently tapering, with the whorls well rounded. Whorls of the cylindrical portion flattened, shouldered a little below the summit and

somewhat contracted at the periphery, thus forming decidedly strongly marked sutures. The whorls are crossed by numerous, quite regularly spaced, obliquely backward slanting thread like riblets, which are about one-fifth as wide as the spaces which separate them. These riblets are not as well developed on the middle of the spire as on the anterior and posterior extremity of the shell. Antepenultimate whorl decidedly less high than the preceding or succeeding volution. Base and outer wall of the last whorl pinched to form a low keel at the periphery, which extends back from the peristome over the solute

portion. Anterior part of base well rounded, marked by the strong continuation of the riblets, which pass uninterrupted from periphery over the base into the rather broad, open umbilicus. Parietal wall of the free portion somewhat sinuous and pinched a little to the left of the junction with the outer wall. The junction of the parietal and outer wall is marked by a low broad keel that extends over the solute area. Junction of the parietal and columellar wall angular. The entire solute portion is marked by concentric rings of riblets, which become crowded behind the peristome. Aperture irregularly semioval, somewhat contracted in the middle of the outer and parietal wall, having the posterior lateral angle decidedly rounded and forming almost a right angle at the junction of the parietal and columellar walls, well rounded, and somewhat effuse anteriorly, white. Peristome expanded and slightly reflected.

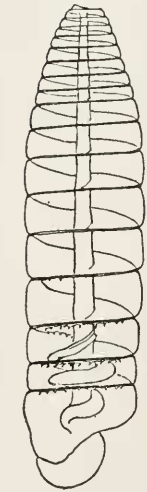


FIG. 11.—INTERIOR VIEW OF HOLOSPIRA ROSEL.

Internal column slender, very thin, translucent, showing many oblique white lines of growth and bearing a low keel or swelling, which is located a little posterior to the middle in each whorl. In the last three turns this keel is replaced by a very strong

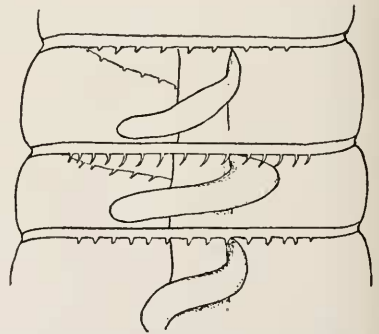


FIG. 12.—DETAIL OF INTERIOR OF HOLOSPIRA ROSEL.

lamella, which attains its maximum development in the middle and gradually decreases in size posteriorly and anteriorly, the attenuated extremity being visible deeply within the aperture on the columellar wall. The greatest width of the lamella is equal to about one-half of the diameter of the whorl and its greatest thickness to a little more than one-fourth of the height of the chamber. In the last three whorls, coextensive with the columellar fold, there is a spiral line of slender, sharp, regularly spaced, forward and outward curved

teeth, pending from the parietal wall. These teeth are placed upon a slender raised spiral thread, which disappear anteriorly and posteriorly with the teeth. The teeth are not apparent in the aperture. The internal septa are extremely thin and transparent. The type has 17 whorls (the nucleus and probably the first two of the succeeding turns being lost), and measures: Length, 14.5 mm.; greatest diameter, 3.6 mm.

Two specimens and three fragments of this species, Cat. No. 188181 U.S.N.M., were collected by J. N. Rose and J. H. Painter at Tehuacan, Puebla, Mexico. The other specimen also has the nucleus and a few more of the succeeding whorls, decollated. It has 13 whorls remaining and measures: Length, 12.2 mm.; diameter, 3.6 mm.

HENDERSONIELLA Dall.

Shell discoid, with a single internal parietal lamina, the aperture and part of the last whorl free from the disk and recurved so that the holostomatous aperture lies above the disk and with the plane of its margin nearly or quite parallel with the plane of the shell coil. Soft parts resembling those of *Holospira*.

This genus is dedicated to John B. Henderson, jr., known in connection with his studies of the Antillean land shells. It is an animal of the Urocoptid group which has taken upon itself a discoid form, something hitherto unknown in that assembly and therefore of unusual interest.

HENDERSONIELLA PALMERI Dall.

Hendersonia palmeri DALL, Smith. Misc. Coll. (Quart. Issue), III, 1905, p. 187, pl. XLIV = *Hendersoniella palmeri* DALL, Idem, p. 239.

Plate V, figs. 1-4.

Shell thin, depressed, nearly flat above, with the periphery compressed and keeled; the umbilicus wide, shallow, saucer like, its margin subangular; the suture distinct, rather deep, not channelled but with the whorls between distinctly rounded; nuclear whorl polished, rather prominent, the eight subsequent whorls subequal, closely coiled; the termination of the last whorl divergent, wholly free from the body, curved upward with the aperture nearly or quite in the plane of the surface of the spire, dilated and cup-like toward the aperture. the peristome continuous, expanded, and slightly reflected, with an obscure wave on the proximal side; surface striated with feeble lines of growth, color about that of *Polygyra microdonta* Deshayes, a pale horn color or ashy brown, whitish on the peristome; lumen of the whorls subrectangular before becoming solute; about one-fourth of the last whorl contains a single prominent, somewhat oblique elevated lamina on the body side, which diminishes gradually toward each end, the distal end becoming obsolete about the point where the last whorl leaves the coil and begins to grow independently; the wave in the free portion seems to be a reminiscence of the infold in ordinary *Holospiras*, but is almost

evanescent; diameter, major, 12.5; minor, 9.0; height, 2.0; length of free portion of whorl varying from 1.0 to 3.0 mm. Diameter of aperture, long, 3.0; short, 2.0 mm.

Habitat.—Alvarez Mountains, San Luis Potosi, at 7,200 feet elevation; Dr. Edward Palmer, of the U. S. Agricultural Dept.

Type.—Cat. No. 110385, U.S.N.M.

The remarkable feature of this animal, apart from its discoid form, is the manner in which the termination of the last whorl is freed from the rest and turned upward, as in *Anostoma* or *Hypselostoma*, so that, in crawling, the shell must be dragged on what would ordinarily be the



Fig. 13.

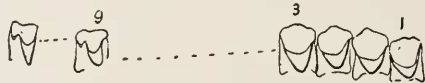


Fig. 14.

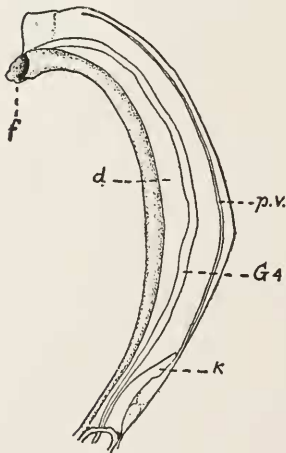


Fig. 15.

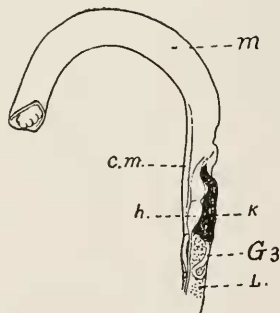


Fig. 16.

FIG. 13.—Sketch of jaw of *Hendersoniella palmeri*.

FIG. 14.—Teeth of radula, showing (1) rhachidian, first three laterals, ninth lateral, and outer lateral.

FIG. 15.—Anatomical details; *k*, kidney; *G* 4, intestine; *p. v.*, pulmonary vein; *d*, lung.

FIG. 16.—*m*, mantle; *c. m.*, contractor muscle, *h*, heart; *k*, kidney; *G* 3, undeveloped genitalia; *L*, liver. All magnified; taken from drawings by Dr. H. A. Pilsbry.

upper surface; a fact which is confirmed by the worn condition in each case of this part of the shell. The aperture strongly recalls that of *Urocoptis*, suggesting at first glance that we have to do with a discoid member of that family. However, the internal lamina and the general aspect of the shell, except the umbilical region, are not very unlike the discoid *Polygyras*.

One of the two specimens containing the animal was submitted to Doctor Pilsbry as the most competent expert in the anatomy of the Pulmonata, who reports as follows:

"The specimen was preserved in alcohol and had retreated somewhat more than one whorl within the aperture. It was opened by dissolving the upper surface of

the shell with acid until the body could be lifted out unbroken. The foot projected shortly from the rather thick collar of the mantle. It is short and proportioned about as in *Holospira*. The narrow lung extends somewhat more than half a whorl. Its surface is plain, without perceptible venation, except for the long pulmonary vein (*p. v.*). The kidney (*K*) is wedge-shaped and but slightly longer than the pericardium, exactly as in *Holospira* as figured in the Manual of Conchology, *Urocoptida*, pl. 27, fig. 37. It is bright pink and 3 mm. long. There is apparently no secondary ureter, nor is there any groove along the intestine (*G. 4*). The intestine is of the usual four-folded type, and penetrates only a short distance behind the heart and kidney.

The very long liver and the ovotestis occupy the whole of the earlier whorls.

"The genitalia were undeveloped and thread-like. There is a rather long atrium and an excessively long vagina. The penis was represented by a minute bud-like tubercle only, and was evidently not yet developed. Its retractor was not seen if present.

"The jaw is very thin, arcuate with faint, well-spaced vertical striae, as in *Holospira*. The radula has teeth of the *Holospira* type. The rhachidian and six laterals are unicuspid, the cusps obtuse and as long as the basal plates. The marginal teeth have a small ectocone and the mesocone becomes longer."

In a letter Doctor Pilsbry adds: "This is the most interesting thing which has turned up in Mexico since *Metostreacon*, . . . Your surmise that it was a Urocoptid turns out to be correct. The very short kidney, scarcely longer than the pericardium, alone settles it. These organs, as well as the jaw and teeth, are exactly as in *Holospira*, next to which it evidently belongs."

Since the edition of the original publication of this remarkable species was rather limited, I have considered it advisable to repeat Doctor Dall's description and to give his figures in this connection.

There are eight specimens in the type lot. Six of these are perfect and give the following measurements:

Measurements of Hendersoniella palmeri.

Cat. No	Major diameter	Minor diameter.	Height.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
110385	a 12.5	9	2
110385	13	10.1	2.5
110385	12.4	9.6	2.3
110385	11.6	9.7	2.4
110385	11.5	10	2.3
110385	11.5	10.1	2.3
Average	12.08	9.75	2.3
Largest	13	10.1	2.5
Smallest	11.5	9	2

aType.

UROCOPTIS (COCHLODINELLA) POEYANA VARIEGATA Pfeiffer.

There are seven lots, 38 specimens of this form in the collection of the U. S. National Museum from Florida. They come from the following localities and give the measurements of the subjoined table:

Measurements of *Urocoptis* (*Cochlodinella*) *poeyana variegata*.

Cat. No.	Number of whorls remaining.	Length.	Greatest diameter.	Diameter of penultimate whorl.	Locality.	Collector or donor.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		
8698.....	10	13.8	3.4	3	Florida.....	W. G. Binney.
26555.....	9	12.5	3.3	3	do.....	Do.
26555.....	9	9.9	2.6	2.4	do.....	Do.
117174.....	9	12.3	3.4	3.2	do.....	A. A. Gould.
117174.....	10	12.8	3.8	3.4	do.....	Do.
117174.....	9	13	3.4	3.2	do.....	Do.
117174.....	13	14	3.4	3	do.....	Do.
117174.....	9	11.8	3.3	3	do.....	Do.
117174.....	9	12.5	3.4	3.2	do.....	Do.
117174.....	9	12.3	3.3	3.1	do.....	Do.
117174.....	9	11.7	3.3	3	do.....	Do.
117174.....	9	12.3	3.3	3	do.....	Do.
117174.....	9	10.7	3.1	3	do.....	Do.
117174.....	8	10.1	2.8	2.6	do.....	Do.
117174.....	9	10.1	3	2.9	do.....	Do.
117189.....	10	13	3.2	3	Fort Dallas.....	J. G. Cooper.
117189.....	9	11	3	2.9	do.....	Do.
36006.....	9	11.9	3.3	3.1	Key West.....	H. Hemphill.
36006.....	9	11.9	3.1	2.9	do.....	Do.
36006.....	10	11.4	3.1	2.8	do.....	Do.
36006.....	9	11.9	3.1	2.8	do.....	Do.
36006.....	9	11.4	2.9	2.7	do.....	Do.
36006.....	9	10.8	3	2.8	do.....	Do.
61221.....	10	12.4	3.1	3	do.....	W. H. Rush.
61221.....	9	11.8	3.1	2.8	do.....	Do.
61221.....	10	12.3	3.2	2.9	do.....	Do.
61221.....	9	11.5	3	2.8	do.....	Do.
61221.....	10	12.4	3	2.8	do.....	Do.
61221.....	10	11.2	2.9	2.8	do.....	Do.
30669.....	9	11.5	3.2	3	Tortugas.....	Holder.
30669.....	9	12	3	2.8	do.....	Do.
Average...	9.15	11.87	3.18	2.93		
Largest....	13	14	3.8	3.4		
Smallest...	9	9.9	2.6	2.4		

UROCOPTIS (COCHLODINELLA) POEYANA JEJUNA Gould.

There are two lots of this species in the collection of the U. S. National Museum from Florida, Cat. Nos. 159442, collected by William Offer at Miami, and 117170, five specimens from A. A. Gould, without specific locality.

Measurements of *Urocoptis* (*Cochlodinella*) *poeyana jejuna*.

Cat. No.	Number of remaining whorls.	Length.	Greatest diameter.	Diameter of penultimate whorl.	Locality.	Collector or donor.
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		
117170.....	8	9.4	3	2.6	Florida.....	A. A. Gould.
117170.....	9	9.9	2.6	2.2	do.....	Do.
117170.....	8	9.6	2.7	2.6	do.....	Do.
117170.....	8	8.5	2.6	2.3	do.....	Do.
117170.....	8	9	2.8	2.5	do.....	Do.
159442.....	8	9.2	2.8	2.6	Miami.....	W. Offer.
159442.....	9	9.7	2.7	2.6	do.....	Do.
159442.....	8	10	2.8	2.6	do.....	Do.
159442.....	8	9.2	2.6	2.5	do.....	Do.
159442.....	9	9.2	2.8	2.5	do.....	Do.
Average...	8.2	9.37	2.74	2.5		
Largest....	9	10	3	2.6		
Smallest...	8	8.5	2.6	2.2		

BRACHYPODELLA MORINI Morelet.

There are two specimens of this species in the collection of the U. S. National Museum, Cat. No. 32083, collected by Sarg, in Guatemala. Both have lost the apex.

Measurements of Brachypodella morini.

Number of whorls.	Length.	Greatest diameter.	Diameter of penultimate whorl.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
14	13.2	2.5	2.1
17	13.3	2.5	2.1

BRACHYPODELLA BOURGUIGNATIANA Ancy.

There is one specimen of this species in the collection of the U. S. National Museum, Cat. No. 159594, which has the last ten whorls and measures: Length, 9.6 mm.; greatest diameter, 2.4 mm.; diameter of penultimate whorl, 2.2 mm. The specimen bears the locality label "Honduras."

MICROCERAMUS PONTIFICUS Gould.

There are three lots, 15 specimens, in the collection of the U. S. National Museum, which give the following measurements and data:

Measurements of Microceramus pontificus.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Locality.	Collector or donor.
		<i>mm.</i>	<i>mm.</i>		
8702.....	12	12.5	4.7	Florida.....	Type.
117153.....	12	12	4	.....do.....	Binney coll.
117153.....	12	12.5	4.4	.....do.....	Do.
117153.....	11	10.1	3.8	.....do.....	Do.
117153.....	12	12.3	4.3	.....do.....	Do.
117153.....	11	10.8	4	.....do.....	Do.
117153.....	11.5	11.3	4.1	.....do.....	Do.
117153.....	11	10.1	3.6	.....do.....	Do.
159435.....	11	9.5	3.8	Miami, Fla.....	Wm. Offer.
159435.....	11.5	10.5	3.6	.....do.....	Do.
Average ..	11.5	11.16	4.03		
Largest....	12	12.5	4.7		
Smallest...	11	9.5	3.6		

MICROCERAMUS FLORIDANUS Pilsbry.

There are eight lots of this species in the collection of the U. S. National Museum, 48 specimens in all. Two lots, Cat. Nos. 47484 U. S. N. M., and 188182 U. S. N. M., are labeled Florida, without specific locality. The other six lots furnish the following data:

Measurements of Microceramus floridanus.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Locality.	Donor or collector.
		<i>mm.</i>	<i>mm.</i>		
37631.....	10	7.9	2.9	Sarasota Bay.....	R. E. C. Stearns.
37631.....	9	6.7	2.8	.....do.....	Do.
37631.....	9	7	2.7	.....do.....	Do.
37631.....	9	6.3	2.7	.....do.....	Do.
37631.....	9.5	7.4	2.8	.....do.....	Do.
37631.....	9	6.2	2.7	.....do.....	Do.
37631.....	9.5	7.2	2.9	.....do.....	Do.
37631.....	9	6.8	2.8	.....do.....	Do.
30614.....	9	8.1	3.2	.....do.....	E. Jewett.
30614.....	9	8	3.2	.....do.....	Do.
30614.....	9	8.1	3	.....do.....	Do.
30614.....	10	7.8	3	.....do.....	Do.
30614.....	9	7.5	3.1	.....do.....	Do.
30614.....	10	7.9	3	.....do.....	Do.
30614.....	10	8.2	3	.....do.....	Do.
30614.....	10	8	3.2	.....do.....	Do.
31644.....	10	8.8	3.3	Savata Bay.....	W. H. Dall.
31644.....	10	8.8	3.2	.....do.....	Do.
121345.....	9	7.6	3.1	Shaws Point, Fla.....	John B. Henderson and C. T. Simpson.
124345.....	9	7.8	3.1	.....do.....	Do.
36005.....	10	9.3	3.4	Key West, Fla.....	H. Hemphill.
36005.....	10	8.9	3.2	.....do.....	Do.
36005.....	10	8.7	3.2	.....do.....	Do.
37695.....	10	8.3	3.2	Key Vaccas, Fla.....	Do.
37695.....	9	7.5	3.1	.....do.....	Do.
37695.....	9	7.6	2.8	.....do.....	Do.
Average..	9.46	7.78	3.02		
Largest..	10	9.3	3.3		
Smallest..	9	6.2	2.7		

MICROCERAMUS TEXASIANUS Pilsbry.

There are four lots, 56 specimens, in the collection of the U. S. National Museum. Three of these, Cat. Nos. 97456, 123766; and 134211, U. S. N. M., come from New Braunfels, Tex. The other, Cat. No. 126419, U. S. N. M., is from Helotes, Bexar County. Subjoined is a list of 20 average specimens from New Braunfels and that of the Helotes individual.

Measurements of Microceramus texasianus.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>
123766.....	10	10.2	3.8
123766.....	10	10	3.8
123766.....	10	9.7	3.7
123766.....	10	9.4	3.6
123766.....	10	10	3.7
123766.....	10	9.6	3.8
123766.....	10	9.8	3.8
123766.....	10	9.7	3.7
123766.....	10	9.6	3.8
123766.....	9.5	8.5	3.3
123766.....	10	10	3.5
123766.....	10	9.6	3.7
123766.....	10	10.3	3.4
123766.....	10	9.8	4
123766.....	9	8	3.2
123766.....	10	9.4	3.4
123766.....	10	9.3	3.7
123766.....	10	10.6	3.9
123766.....	10	10.4	3.7
123766.....	10	10.2	3.7
Average...	9.92	9.7	3.64
Largest....	10	10.6	4
Smallest...	9	8	3.2
126419.....	9	8.6	3.3

MICROCERAMUS MEXICANUS Pfeiffer.

There are five lots, 24 specimens, of this species in the collection of the U. S. National Museum, which furnish the following data:

Measurements of Microceramus mexicanus.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.	Locality.	Collector or donor.
		<i>mm.</i>	<i>mm.</i>		
172398.....	9	7.8	3.2	Victoria.....	H. A. Pilsbry.
172398.....	9	7.1	3.2	Tamaulipas.....	Do.
172398.....	9	7.5	3.2	do.....	Do.
172398.....	9	7.7	3.3	do.....	Do.
172398.....	9	7.8	3.4	do.....	Do.
172398.....	9	7.3	3.2	do.....	Do.
110389.....	10	10.2	4	Alvarez Mts., San Luis Potosi.	E. Palmer.
110389.....	10	9.5	3.8	do.....	Do.
110389.....	10	9	3.7	do.....	Do.
110389.....	9	9.6	3.8	7,200 feet altitude.....	Do.
110389.....	9	9.8	3.9	do.....	Do.
160146.....	9	8.3	3.7	City of Mexico.....	Woodworth.
160146.....	9	8.4	3.5	do.....	Do.
188184.....	9	8.4	3.4	Morelos.....	Do.
24961.....	9	7.8	3.3	Mexico.....	Do.
Average...	9.2	8.41	3.5		
Largest....	10	10.2	4		
Smallest...	9	7.3	3.2		

MICROCERAMUS CONCISUS Morelet.

There are two lots of this species in the collection of the U. S. National Museum, Cat. No. 188185, from Campeche, Campeche, Mexico, consisting of three specimens collected by E. W. Nelson, and

Cat. No. 162507, U.S.N.M., one specimen from Dr. H. von Ihering, collected at Alta Vera Paz, Guatemala. The latter is decidedly more obese than those from Campeche. The following table gives a list of measurements:

Measurements of Microceramus concisus.

Cat. No.	Number of whorls.	Length.	Diameter of penultimate whorl.
		<i>mm.</i>	<i>mm.</i>
188185....	11	11.1	3.6
188185....	11	10.1	3.1
188185....	10	8.3	3.2
162507....	11	11.2	4.1

EXPLANATION OF PLATES.

PLATE III.

- FIG. 1. *Anisospira (Dissotropis) stearnsi*. Length 30 mm. p. 113.
 2. *Holospira (Liostemma) yucatanensis*. Length 18.1 mm. p. 143.
 3. *Anisospira (Dissotropis) blandi*. Length 33.7 mm. p. 114.
 4. *Holospira (Holospira) infanta*. Length 9.7 mm. p. 129.
 5. *Holospira (Holospira) painteri*. Length 8.4 mm. p. 130.
 6. *Holospira (Haplocion) tantalus*. Length 10.2 mm. p. 147.
 7. *Coclocentrum pittieri*. Length 60.7 mm. p. 116.
 8. *Holospira (Liostemma) durangoensis*. Length 34.5 mm. p. 142.
 9. *Eucalodium decollatum guatemalensis*. Length 60.9 mm. p. 110.

PLATE IV.

- FIG. 1. *Holospira (Bostrichocentrum) goldmani*. Length 14.9 mm. p. 136.
 2. *Holospira (Bostrichocentrum) tamaulipensis*. Length 12.5 mm. p. 139.
 3. *Epirobia coahuilensis*. Length 10.8 mm. p. 121.
 4. *Holospira (Holospira) goldfussi anacachensis*. Length 12 mm. p. 124.
 5. *Holospira (Holospira) oaxacana*. Length 17.5 mm. p. 132.
 6. *Holospira (Holospira) palmeri*. Length 13.7 mm. p. 128.
 7. *Holospira (Haplocion) lichenophora*. Length 15.2 mm. p. 146.
 8. *Epirobia (Propilsbrya) nelsoni*. Length 15.2 mm. p. 122.
 9. *Holospira (Holospira) mexicana*. Length 17.4 mm. p. 127.
 10. *Holospira (Stalactella) rosei*. Length 12.2 mm. p. 151.
 11. *Coclocentrum pittieri guatemalensis*. Length 41.8 mm. p. 117.
 12. *Holospira (Bostrichocentrum) hidalgoensis*. Length 20.5 mm. p. 138.
 13. *Holospira (Haplocion) townsendi*. Length 16 mm. p. 145.
 14. *Holospira (Coelostemma) herrera*. Length 19 mm. p. 150.

PLATE V.

Hendersoniella palmeri Dall.

All figures magnified two and one-half diameters.

- FIG. 1. View from below. p. 153.
 2. Profile.
 3. Specimens with the whorl broken away to show the internal spiral lamina.
 4. View from above.