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NOTES ON HAWAIIAN LAND SHELLS.

BY

DR. HENRY A. PILSBRY

AND

C. MONTAGUE COOKE, JR.

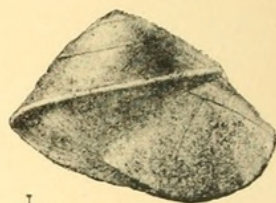
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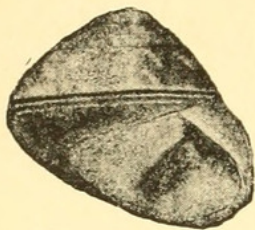
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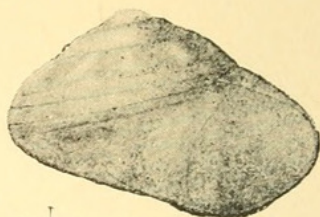
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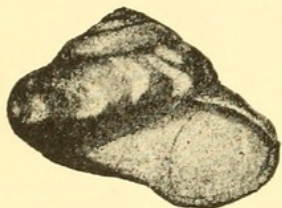
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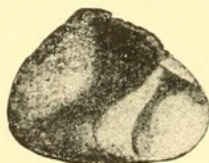
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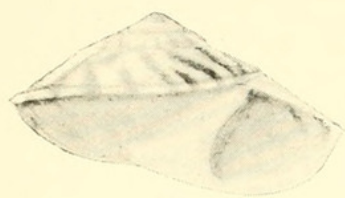


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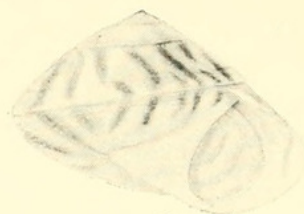
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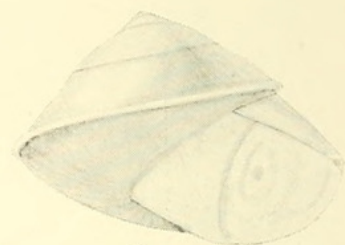




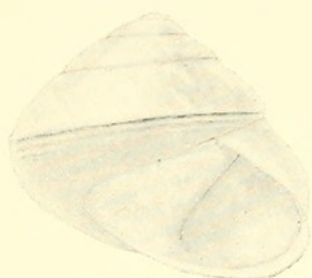
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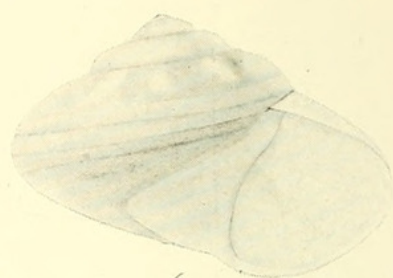
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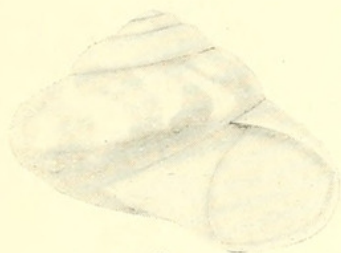
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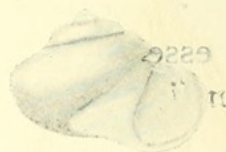
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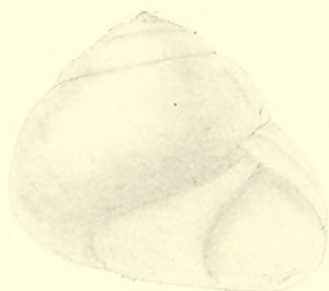
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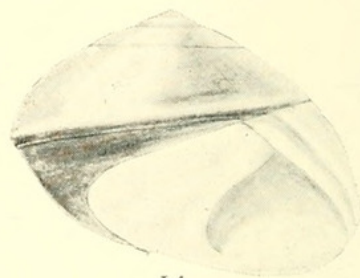
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Hawaiian Species of *Helicina*.

BY HENRY A. PILSBRY AND C. MONTAGUE COOKE, JR.

HELICINA, in company with other genera of the smaller Hawaiian land shells, has so far received very little attention from the local collectors. The present paper is based mainly on a series collected for the Bishop Museum by the junior author.

The Hawaiian species are very seldom found alive in open or partly open country. They are usually collected in rather damp and heavily wooded sections of the islands. The only exception is *H. baldwini*, which occurs in a rather open belt of hala (*Pandanus odoratissimus*), on the fallen leaves.

The representatives of this genus, from the Hawaiian Islands, seem to belong to three groups. The characters upon which these groups are based, at present, are only those of the shell.

I. Group of *H. laciniosa*. In this group the spire is conic or depressed-conic, the periphery is more or less angular and the last whorl is flat or nearly flat above the periphery. This group contains: *laciniosa* and its numerous varieties, *oahuensis*, *sulculosa*, *nuuanuensis* and *baldwini*.

II. Group of *H. rotelloidea*. This group is characterized by the shells having a somewhat rounded periphery, the whorls are distinctly convex. The species belonging to this group are as follows: *rotelloidea*, *hawaiiensis*, *knudseni* and *kauaiensis*.

III. Group of *H. uberta*. In this group the periphery is rounded, the whorls are nearly flat, the spire rather high with distinctly convex outlines and the aperture is sometimes slightly contracted. The species belonging to this group are: *uberta* and its var. *magdalenæ*, *berniceia*, *lymaniana* and *juddii*.

***Helicina oahuensis*, n. sp.**

Fig. 1.

The shell is lenticular, with the periphery acutely carinate, slightly sinuous and minutely crenulated by the growth-striæ, thin, slightly diaphanous, striate with lines of growth, with two or three faint impressed spiral lines on the upper portion of the whorls

and strongly impressed just above and below the peripheral keel. Color reddish alternating with somewhat zigzag light flammules, which are almost white at the periphery, base brownish, except around the callus where there are traces of reddish flammules. Spire low conical, apex acute. Suture lightly impressed, margined above. Whorls nearly 4, almost flat, the last two slightly projecting at the periphery; the embryonic nearly smooth; the last flat above the carinate periphery, slightly convex below, not descending in front. Aperture nearly triangular; outer lip thin, forming a straight line above the periphery, arcuate below. Callus whitish about the axis, the rest very thin, transparent and minutely punctate. Operculum wanting. Maj. diam. 5.0, total length 2.7 mm.

Oahu: Waianae Mountains and Mt. Tantalus (Cooke). The locality of the type specimen is, back of the Leilehua Ranch-house, Waianae Mts.

Type No. 14,911, Bishop Museum.

This shell has been referred to *H. sandwichiensis*, Soul., by various authors and collectors. Its nearest relative is *H. laciniosa*, Migh., var. *delta*, P. & C., from which it is easily distinguished by its much more depressed contour.

***Helicina laciniosa* Migh.**

Helicina laciniosa Mighels, P. Bost. Soc., ii, 1845, p. 19. *Helicina laciniosa* Gould, U. S. Exp. Exp., Moll., pl. vii, fig. 108. *Helicina sandwichiensis* Souleyet, Voy. Bonite, Zool., ii, 1852, p. 529, pl. xxx, figs. 1-5.

Unfortunately we do not have before us a typical shell of this species, though some of its numerous varieties are the most abundant of the *Helicinae* found on the Hawaiian Islands. Specimens which would be hard to separate from this species, except as varieties, occur on Kauai, Oahu, Molokai, Maui and Hawaii.

From Souleyet's description it would be hard to separate his species from *laciniosa* even as a variety. *H. bronniana*, Phil., and *H. dissotropis*, Ancey, have been retained as varieties. Both of these differ but slightly from Mighel's description. Probably the form described by Mighels is one of the extremely local forms and it does not seem to have been rediscovered by any of the later collectors. Gould's description (U. S. Exp. Exp., Moll., p. 99, pl. vii, fig. 108) agrees closely with that of Mighels. Unfortunately

the figure does not agree very closely with the description. Mighels gives the diameter as 3.8 mm; Gould's measurements are: axis 2.5, base 3.8 mm.

var. **bronniana** (Philipi).

Helicina bronniana Philipi, Zeitsch. Malak., iv, 1847, p. 124. *Helicina rotelloidea* Pfeiffer, Conch. Cab., *Helicina*, p. 23, pl. iii, figs. 40-43.

This variety is decidedly larger than the typical *laciniosa*. Philipi does not mention any spiral lines. The flat whorls and the rotundate-angulate periphery bring his species very close to the typical *laciniosa*. This is probably one of the very local forms.

Philipi's measurements are: alt. 4.2, diam. 5.25 mm.

var. **dissotropis** (Ancey).

Helicina dissotropis Ancey, P. Malac. Soc. London, vi, 1904, p. 127, pl. vii, figs. 22, 23.

M. Ancey, in a note, says, "Surely not a variety of *H. sandwichiensis*, Souleyet, of which I have typical specimens from the Waianae Mountains, Oahu (D. D. Baldwin)." The shells distributed by Mr. Baldwin as *H. sandwichiensis* Souleyet are not this species—which equals *H. laciniosa* Migh.—but *H. oahuensis*.

In the variety *dissotropis* the shell is more compressed and flattened and the periphery is more angulated than in the typical form of *laciniosa*.

M. Ancey's measurements are: diam. 4.2, alt. 2.25, alt. apert. (oblique) almost 2 mm.

The habitat is: Oahu, Nuuanu (Thaanum).

var. **delta**, n. var.

Fig. 2.

The shell is somewhat lenticular, carinate at the periphery, striate with lines of growth, with 4-6 low and not very conspicuous spiral ridges grouped above and below the peripheral keel. Bright red, distinctly and closely marked with numerous zigzag yellowish white flammules. Spire depressed conic, apex subacute. Suture lightly impressed, margined above. Whorls $4\frac{1}{2}$, nearly flat, the embryonic smooth, the penultimate slightly projecting, the last flat above the carinate periphery, slightly convex below,

not descending in front. Aperture oblique, semicircular-triangular, not contracted; outer lip with a thin edge. Callus thin, whitish about the axis, the rest transparent, minutely punctate. Operculum corneous, thin, minutely punctate.

Maj. diam. 4.4, total length 2.9 mm.

Kauai: Ekaula, below Puukapele.

Type No. 14,901, Bishop Museum.

This variety somewhat approaches *H. oahuensis*. It is, however, quite closely related to *H. laciniosa*. This is the nearest relative to *laciniosa* so far reported from the island of Kauai.

var. **gamma**, n. var.

Fig. 3.

The shell is biconic, acutely carinate at the periphery, nearly smooth, finely striate with lines of growth, without spiral lines, but distinctly impressed just above and below the peripheral keel. Color light cinnamon, nearly uniform, overlaid with a thin yellowish cuticle. Spire depressed-conic, apex subacute. Suture simple. Whorls 4, nearly flat, the embryonic nearly smooth, the second and third slightly convex, the last flat above the carinate periphery, convex below, descending slightly in front. Aperture oblique, subtriangular, not contracted; outer lip with a thin edge. Callus thick and whitish about the axis, the rest very thin and transparent, minutely punctate. Maj. diam. 5.0, total length 3.5 mm.

Oahu: Ewa (Cooke), Wahiawa (Lyman, Cooke).

Type No. 14,902, Bishop Museum.

This is one of the most distinct of the varietal forms of *laciniosa*. The relatively high spire and pronounced carination easily distinguish it from the other varieties.

var. **beta**, n. var.

Fig. 4.

The shell is globose-conic, with the periphery rotundate-angulate, nearly smooth, faintly striate with lines of growth, encircled at and immediately below the periphery with three raised, rounded keels. Color a uniform dull claret, spire slightly eroded. Spire conic, with slightly convex outlines, apex slightly obtuse. Suture

faintly impressed, simple, indistinctly margined above on the third whorl. Whorls $4\frac{1}{2}$, slightly convex, the embryonic slightly eroded, the last rotundate-angulate, slightly descending in front. Aperture oblique, nearly semicircular, not contracted; outer lip with a thin edge. Callus thick, minutely punctate. Operculum dull claret, minutely punctate. Maj. diam. 4.5, total length 4.0 mm.

Oahu: Kapalama (Lyman).

Type No. 14,903, Bishop Museum.

This variety differs not only in size and in its relative proportions, but also in its dull claret color which has not been observed in any of the other varieties of this species.

var. **alpha**, n. var.

Fig. 5.

The shell is globose-conic, with the periphery strongly angular, quite smooth, striate with lines of growth and encircled with 5-7 impressed spiral lines, the two most prominent being just above and below the peripheral keel. Color a nearly uniform light cinnamon red with a slight suffusion or spotting from incipient surface decay, sometimes broken by very indistinct lighter flammules. Spire straightly conic, apex rather acute. Suture scarcely impressed, indistinctly margined. Whorls nearly 4, almost flat, the embryonic very minutely transversely striate, the last nearly flat above the strongly angular periphery, very convex below it, slightly descending in front. Aperture oblique, subtriangular, not contracted; outer lip thin. Callus quite thick, whitish about the axis, the rest nearly transparent, minutely punctate. Operculum reddish corneous, thin, very minutely punctate. Maj. diam. 3.2, total length 2.6 mm.

Oahu: Mt. Tantalus (Cooke).

Type No. 14,904, Bishop Museum.

This variety comes nearer the true *H. laciniosa* in form and sculpture than any of the other varieties of this species mentioned herein. It differs in its higher spire and smaller size. It is intermediate between *H. laciniosa* Migh. and *H. sulculosa* Ancey.

***Helicina sulculosa* Ancey.**

Helicina sulculosa Ancey, P. Malac. Soc. London, vi, 1904, p. 127, pl. vii, fig. 25.

This species and *H. laciniosa* Migh. var. *alpha* are very closely related. The spire of the former is more depressed, the whorls are slightly more convex and the aperture is more rounded.

This is the only species so far reported from the island of Hawaii. M. Ancey's measurements are: diam. 3.33, alt. 2.5, alt. apert. 1.5 mm.

Hawaii: Olaa (Thaanum).

***Helicina hawaiiensis*, n. sp.**

Fig. 6.

The shell is depressed with a conical spire, periphery rounded, quite thin, nearly smooth, under a strong lens minutely striate with lines of growth and, in type specimen, with five fine raised spiral striae, two above, one encircling and two below the periphery. Color a dull yellowish green interspersed with a few irregular light reddish flammules above. Apex somewhat acute. Suture simple, well impressed. Whorls $3\frac{2}{3}$, convex, the embryonic minutely striate, the last rounded with the base somewhat flattened, slightly descending in front. Aperture elongate-semicircular, not contracted; outer lip thin. Callus small, thin, transparent, minutely granulose. Operculum whitish, thin, granulose. Maj. diameter 5.5, total length 3.7 mm.

Oahu.

Type No. 58,384, Phil. Ac. Nat. Sci.

This species approaches *H. knudseni* in form. Its larger size, the absence of forwardly descending wrinkles and the presence of raised spiral lines enable it to be easily distinguished from the Kauaian species. Its closest relative is *H. rotelloidea* Migh. The two differ considerably in size, color pattern, etc.

***Helicina knudseni*, n. sp.**

Fig. 7.

The shell is depressed with a conic spire, the periphery rounded, quite thin, nearly smooth, minutely striate with lines of growth, under a strong lens these are intersected, almost at right

angles, by very fine, close, forwardly-descending wrinkles. Color light brownish-red, darker on the spire, interspersed with irregular, zigzag yellowish white flammules forming spots on the periphery, and absent on the base except close to the callus. Apex somewhat obtuse. Suture simple, well impressed. Whorls about $3\frac{3}{4}$, quite convex, slightly projecting above the suture, the embryonic nearly smooth, the last somewhat flattened above and below the rounded periphery, not descending in front. Aperture nearly semicircular; outer lip thin. Callus whitish about the axis, the rest transparent, thin, granular. Operculum punctate, of a light cinnamon color. Maj. diam. 4.9, total length 3.6 mm.

Kauai: Olokele (type loc.), Waiakoali (Cooke).

Type No. 14,905, Bishop Museum.

This species has nearly the same form as *H. rotelloidea* Migh. It is easily distinguished by its larger size, the absence of spiral striæ, and the peculiar sculpture of the forwardly descending wrinkles over the growth lines.

***Helicina kauaiensis*, n. sp.**

Fig. 8.

The shell is subglobose-conic, with the periphery well rounded, quite thin, nearly smooth, under a lens minutely striate with lines of growth, with several (in the type specimen about eight) widely spaced, thin, raised spiral cuticular striæ, three above, one on, and the rest below the periphery, the upper striæ extended on the spire nearly to the embryonic whorls. Color orange-red, with distinct light yellow flammules at and above the periphery. Spire convexly conical, with the apex slightly acute. Suture simple, well impressed. Whorls $3\frac{3}{4}$, distinctly convex, under a lens the embryonic whorls are transversely striate, the last rounded, not descending in front. Aperture slightly oblique, semicircular, not contracted; outer lip thin. Callus slightly whitish about the axis, the rest very thin, transparent, very minutely punctate. Maj. diam. 3.2, total length 2.4 mm.

Kauai: The upper part of Milolii (Cooke).

Type No. 14,906, Bishop Museum.

This species recalls *H. rotelloidea* Migh., in form. It is slightly larger, darker colored, with more distinct flammules, higher spire, and is also distinctly marked with spiral cuticular striæ.

***Helicina rotelloidea* Migh.**

Fig. 9.

Helicina rotelloidea Mighels, Proc. Bost. Soc., ii, 1845, p. 19.

The shell is depressed, with a low conoidal spire and a well rounded periphery, thin, nearly smooth, dull, under a lens showing minute lines of growth and two or three faint spiral lines above the periphery. Color a uniform dull cinnamon more reddish on the spire (sometimes of a uniform light greenish yellow). Spire convexly conoidal, apex subacute. Suture simple, well impressed. Whorls $3\frac{2}{3}$, distinctly convex, at first slowly and regularly then rapidly increasing, the last wide, well rounded, convex below the periphery, hardly descending in front. Aperture quite oblique, semicircular, not contracted; outer lip thin. Callus thin, becoming thick and whitish about the axis, the outer portion transparent, of the color of the shell, very minutely punctate. Operculum very thin, whitish, minutely punctate. Maj. diam. 3.0, total length 2.0 mm.

Oahu: Nuuanu (Cooke). This species is sometimes terrestrial in habitat. It is usually found on growing plants two or three feet above the ground.

Type of the above description, No. 14,907, Bishop Museum.

Mighels' type is probably lost. Unfortunately the species is insufficiently described and there are no figures of authentic specimens of this species. Pfeiffer's figures (Conch. Cab., *Helicina*, pl. iii, figs. 40-43) undoubtedly refer to *H. bronniiana* Phil. Mighels' measurements (2.5-5.8 mm.) include at least two species, the smaller of which has been chosen to represent the species.

The specimen selected differs from his description in the absence of "obscure light spots." These are, however, found in other specimens from another part of Nuuanu Valley.

H. rotelloidea is characterized by its small size, convex whorls and rounded periphery.

***Helicina nuuanuensis*, n. sp.**

Fig. 10.

The shell is subglobosely conic, slightly angular at the periphery, thin, nearly smooth, minutely transversely striate and with four or five fine raised spiral striæ, of which two are above, the

rest below, the slightly angular periphery. Color of a uniform greenish yellow or cinnamon brown. Spire conoidal, apex obtuse. Suture simple, well impressed. Whorls $3\frac{3}{4}$, flatly convex, slowly and regularly increasing, the last flattened and sloping above the slightly angular periphery and very convex below it, gradually descending in front. Aperture oblique, semicircular, not contracted; outer lip thin. Callus thick and white near the axis, the rest very thin, of the same color as the shell, minutely punctate. Operculum very thin, of the same color as the shell and minutely punctate. Maj. diam. 2.9, total length 2.5 mm.

Oahu: Nuuanu, upper part (Cooke).

Type No. 14,908, Bishop Museum.

Nuuanuensis is easily distinguished from the other Hawaiian species. In size it approaches *H. rotelloidea* Migh., but differs by its higher spire, less convex whorls, the last of which is flattened above the inconspicuous peripheral angle. It is apparently most nearly related to *H. laciniosa* Migh.

***Helicina berniceia*, n. sp.**

Fig. 11.

The shell is globosely depressed, with a rounded periphery, quite thin, smooth, minutely marked with growth-striæ. The spire is rather high, with convex outlines and a slightly conoidal summit. Suture simple, slightly impressed. Whorls 4, very slightly convex, regularly increasing, the last rounded, slightly flattened below, hardly descending in front. Aperture oblique, semicircular, not contracted; outer lip thin. Callus thin, smooth. Operculum wanting. Maj. diam. 3.5, total length 3.1 mm.

Kauai: Limahuli, fossil (Judd, Cooke).

Type No. 14,909, Bishop Museum.

This species is somewhat related to *H. laciniosa* Migh., though it lacks the spiral lines and the angular periphery. Its nearest relative appears to be *H. nuuanuensis*, from Oahu. From this species it differs slightly in size, in the convexity of the spire and whorls, and the lack of spiral lines. At present this species is only known in its fossil state.

This species is dedicated to Bernice Pauahi Bishop, in whose memory the Museum, which bears her name, was founded.

***Helicina lymaniana*, n. sp.**

Fig. 12.

The shell is semiglobose, with the periphery rounded, quite thin, nearly smooth, not polished, minutely striate with lines of growth and with a few slightly raised longitudinal striæ on the last whorl. Color a pale dull red under a yellowish cuticle. Spire very convex. Suture well impressed, simple. Whorls about 4, slightly convex, regularly increasing, the last slowly but rather deeply descending in front, well rounded. Aperture contracted, very oblique, small, semicircular; outer lip slightly thickened, minutely duplicate above. Callus whitish, reddish towards the outer edge, thick, minutely punctate. Operculum wanting. Maj. diam. 3.0, total length 3.0 mm.

Oahu: Waialua (Lyman).

Type No. 14,910, Bishop Museum.

Another form from Waihiawa, Oahu, though slightly larger, undoubtedly belongs to this species.

Lymaniana is somewhat related to *H. uberta* Gld. Its smaller size and more globose form easily separate it from Gould's species.

***Helicina juddii*, n. sp.**

Fig. 13.

The shell is semiglobose, with a flattened base and a rounded periphery, solid, nearly smooth, but under a lens fine growth-lines are seen intersected at right angles by fine, close, forwardly descending wrinkles. Spire elevated, with convex outlines. Suture simple, well impressed. Whorls $4\frac{3}{4}$, slightly convex, the last rather abruptly descending in front, rounded at the periphery and above, flattened below. Aperture contracted, semicircular, very oblique; outer lip thickened within, though thin at the edge, duplicate above the periphery. Callus very thick, smooth. Operculum wanting. Maj. diam. 4.8, total length 4.6 mm.

Kauai: Koloa beach, in a fossil state (Judd).

Type No. 14,898, Bishop Museum.

This species is easily recognized by its semiglobose form, flattened base, large size and by the minute corrugation of its sur-

face. It is only known, at present, from bleached specimens found on the Koloa beach.

So far this is the only representative of the group related to *H. uberta* from the island of Kauai.

***Helicina uberta* Gould.**

Helicina uberta Gould, Proc. Bost. Soc., ii, 1847, p. 202. *Helicina uberta* Gould, U. S. Exp. Exp., Moll., p. 94, pl. vii, fig. 114.

Gould reported the habitat to be Maui and Oahu. The only locality from which typical forms are collected at present is in the Waianae mountains. Specimens from back of Leilehua, in the Waianae mountains, agree very closely with the type shell (No. 5516, Smithsonian Institution).

var. ***magdalenæ* (Ancey).**

Fig. 14.

Helicinæ magdalenæ Ancey, Bull. Soc. Malac. France, vii, 1890, p. 342.

The variety is only found on the Pauoa side of Mt. Tantalus. No representatives of the typical form or of the variety have been reported, so far, from the region between the Waianæ mountains and Mt. Tantalus.

The variety differs from the typical form in size, and in the former there is usually an impressed spiral line just below the periphery. A shell of the type form measures: maj. diam. 4.5, total length 3.8 mm.

The variety is from 4.9–5.6 mm. in diameter, while the total length is from 3.3–4.0 mm. The variety is usually of a redder color. Both the variety and the typical form are characterized by a thick, pinkish parietal callus.

***Helicina baldwini* Ancey.**

Helicina baldwini Ancey, P. Malac. Soc. London, vi, 1904, p. 126, pl. vii, fig. 24.

This is the largest species so far reported from the Hawaiian Islands. It is chiefly characterized by its relative large size, depressed conical form which is angular at the periphery, and

by several faint impressed spiral lines, above, on and below the periphery. M. Ancey's type measured: maj. diam. 6.0, alt. 4.0 mm. A rather large specimen from the type locality measures: maj. diam. 7.6, total length 4.8 mm.

The species has only been reported from Kipu, Kauai.

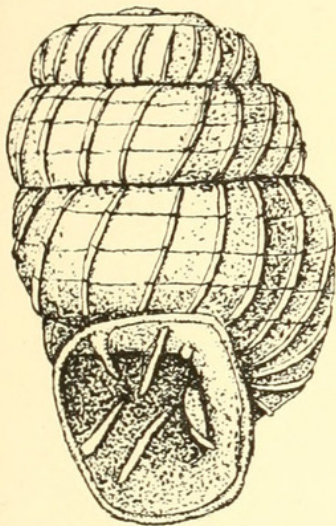
Presented August 23, 1907.

A New Species of *Lyropupa* from Hawaii

BY C. MONTAGUE COOKE, JR.

Lyropupa truncata, n. sp.

THE shell is rimate, sinistral, cylindrical, dark brown, clathratulate, with about 14 well developed lamelliform costæ on the last whorl (between the costæ 5-8 minute striæ) and with 3-4 raised spiral striæ on each whorl. Spire cylindrical, apex almost



flat, giving the shell a truncate appearance. Suture simple, depressed. Whorls 5, the embryonic without transverse costæ but with numerous minute close spiral striæ, increasing rather rapidly, the rest convex, clathratulate, increasing slowly, the last slightly narrower than the penultimate, with two distinct longitudinal depressions corresponding to the palatal plicæ. Aperture perpendicular, quadrate ovate, with 7 folds, viz.: three parietal lamellæ,—the angle lamella slightly arcuate, extending nearly to the margin of the peristome, the parietal a little deeper situated, strongly

developed, and a minute dentiform infraparietal lamella; a deeply situated but well developed columella lamella; three nearly parallel palatal plicæ,—the lower palatal extending nearly to the peristome, the upper palatal more deeply situated and a very short deeply situated basal plica. Peristome continuous, slightly expanded. Length 2.6, diam. 1.66, length of ap. 1.1, diam. of ap. 1.0 mm.

Hawaii: Kohala Mts. (Thaanum).

Type No. 15,411, Bishop Museum Coll.

This is one of the most distinct species of *Lyropupa* so far reported. In fresh specimens this species is distinctly clathratulate, as are, also, *L. lyrata* Gld., from West Maui (*nec L. lyrata* (Gld.)

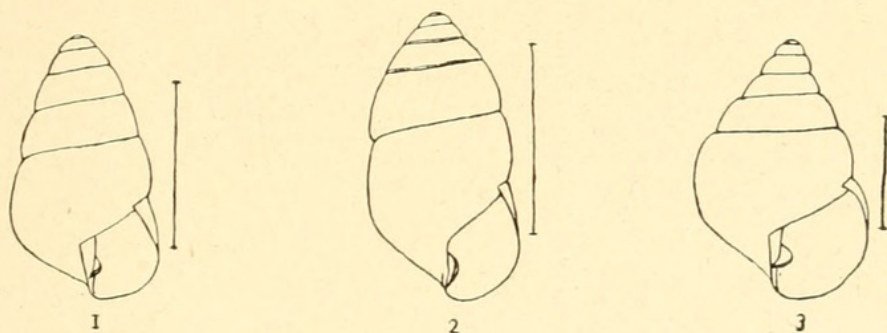
Ancey, from Hawaii) and *L. clathratula* Anc., from Hawaii. The transverse striæ are strongly developed, with cuticular margins which are easily broken. As in *L. clathratula*, the spiral striæ are cuticular and are probably deciduous. The apex is almost flat, giving the shell a somewhat truncate appearance. The aperture is furnished with more lamellæ and plicæ than any other species of the genus so far reported.

Presented June 27, 1908.

Three New Species of *Amastra* from Oahu

BY C. MONTAGUE COOKE, JR.

DURING the last few months Mr. Irwin Spalding has found a number of interesting forms of *Amastra*. Three of these are entirely distinct from any of the species already described. Some of the other forms do not agree with any description but may be referred, as varieties, to some of the species already described. It seems strange that all of the three species described here are found within five miles of Honolulu.



Amastra irwiniana, n. sp.

Fig. 3.

The shell is minutely (though distinctly) perforate, dextral, globosely conical, with slightly concave outlines, thin, distinctly irregularly and closely striate with lines of growth, not glossy, the upper whorls and the base of the last whorl light brown with a slightly yellowish tinge, the upper portion of the last whorl of a dark chestnut. Spire slightly concavely conic, apex acute. Suture simple, well impressed. Whorls $6\frac{1}{4}$, the embryonic slightly swollen, the fourth and fifth slightly flatter, the last convex, tumid, with an almost obsolete angle at the periphery, tapering towards the base. Aperture rather large, bluish within, in the form of a slightly oblique sector of a circle, very slightly oblique. Columella straight; columellar fold almost median, rather large,

thin and slightly oblique. Outer margin of lip thin, slightly thickened within, erect, regularly curved, forming an angle with the base of the columella; columellar margin thin, reflexed above the umbilicus. Umbilicus minute, semicircular. Length 11.2, diam. 7.2, length of ap. (diagonal) 5.9 mm.

Oahu: Summit of Lanihuli, at 2700 ft. (Spalding).

Type No. 16,633, Bishop Museum Coll.

This species is undoubtedly related to *A. breviata* Baldwin. It is, however, smaller, with a more acute and slightly concave spire, and the arrangement of its color is different.

A second specimen has the following measurements: length 10.8, diam. 6.9 mm.

***Amastra spaldingi*, n. sp.**

Fig. 2.

The shell is imperforate, dextral, cylindrically ovate, somewhat thin, irregularly and faintly striate with lines of growth, the third whorl distinctly and diagonally striate, the third and fourth whorls having a distinct spiral thread just above the sutures, the first three whorls light brown with a yellowish tinge, the lower three of a uniform dark resinous chestnut. Spire subcylindrical, with slightly convex outlines, apex somewhat obtuse. Suture simple, hardly impressed. Whorls $6\frac{1}{2}$, increasing somewhat regularly, the embryonic somewhat convex, the rest flatly convex, the last cylindrical, tapering gradually towards the base. Aperture subpyriform, bluish within, scarcely oblique. Columella nearly straight, hardly twisted; columellar fold basal, rather small, thin, oblique, flexuous. Outer margin of lip regularly curved, erect, thin, forming a slight angle with the base of the columella; columellar margin thin, appressed, adnate. Length 18.9, diam. 9.6, length of ap. (diagonal) 8.1 mm.

Oahu: Summit of Konahuanui, at 3300 ft. (Spalding).

Type No. 16,451, Bishop Museum Coll.

A. spaldingi is not closely related to any of the already described species. Its nearest congener is, probably, the species wrongly described and figured by Reeve as *A. ventulus* Fér.

(Conch. Icon., Achatinella, No. 31). It is much larger than any specimens of Reeve's species and more cylindrical in outline. The spiral thread on the third and fourth whorls is peculiar, as are the rather pronounced striæ on the third whorl.

A second specimen, in the Bishop Museum collection, is younger, with 6+ whorls. It is slightly more convex in outlines and measures: length 17.2, diam. 9.7 mm.

***Amastra davisiana*, n. sp.**

Fig. 1.

The shell is perforate, dextral, subconic, with slightly convex outlines, obtusely and faintly angular at the periphery, with a somewhat flattened base, rather solid, nearly smooth, distinctly and almost regularly striate just below the sutures, slightly glossy, dark reddish brown, with an indistinct broad dark band just above the periphery and continued on the spire just above the sutures. Spire almost conic, apex very obtuse. Suture minutely crenulate, scarcely impressed, yellowish along its edge. Whole $6\frac{3}{4}$, the embryonic rather large (for the genus), the rest increasing slowly and very regularly, almost flat, the last descending slightly near the aperture. Aperture small, subquadrate, oblique, bluish within. Inner margin of the columella slightly diagonal, outer margin nearly straight; columellar fold nearly basal, strong, thick, slightly oblique. Outer margin of lip thin, slightly thickened within, nearly straight above, curved below, forming something of an angle with the base of the columella; columellar margin thin, reflexed above the umbilicus. Umbilicus small, semicircular. Length 16.5, diam. 9.2, length of ap. (diagonal) 7.0 mm.

Oahu: About a mile from the summit of Konahuanui (Davis); summit of Konahuanui (Spalding).

Type No. 16,454, Bishop Museum Coll.

I know of no species to which this is at all related. It is entirely distinct from any of the other species of *Amastra*. The blunt apex and very regularly coiled and almost flat whorls are very peculiar. The single type specimen was originally collected

by Mr. Elmer Davis, about a mile from the summit of Kona-huanui. Additional specimens were found later by Mr. Spalding at the summit. These are smaller, slightly darker and have about $\frac{1}{4}$ less whorls. One of these (No. 16,453, Bishop Museum) measures: length 14.4, diam. 8.5 mm.

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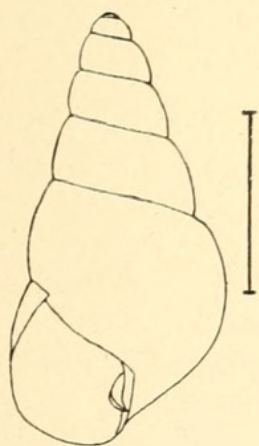
Amastra (*Laminella*) *kuhnsi*.

BY C. MONTAGUE COOKE JR.

SPECIMENS of a *Laminella* from West Maui under the name of *Laminella erecta* Pease were kindly sent the Bishop Museum by Mr. D. Thaanum. The shells were, I think, identified by Mr. D. D. Baldwin. Lately the specimens were compared with Pease's description and were found to differ considerably from the description. As there is no description with which it agrees I venture to describe it as a new species. I have followed Mr. Sykes in placing *Laminella* as a subgenus of *Amastra*.

Amastra (*Laminella*) *kuhnsi*, n. sp.

The shell is minutely perforate, sinistral, elongately conical, nearly solid, minutely and irregularly striate with lines of growth (the striae slightly stronger just below the sutures), the first four whorls glossy, the rest somewhat glossy, cinnamon brown (apex darker), with a few indistinct irregular zig-zag transverse brown lines on the penultimate and last whorls. Spire elongately conic, apex obtuse. Suture minutely crenulate, slightly oblique, well impressed. Whorls 6, the embryonic smooth, convex, the rest increasing slowly and regularly, convex, the last somewhat rotundate, tapering towards the base. Aperture rather large, broadly subovate, oblique, whitish within. Columella nearly straight; columellar fold median, oblique, not strongly developed, thick, blunt. Outer margin of lip convex, erect, thin; columellar margin thin, adnate above, below free, reflexed over the umbilicus. Umbilicus minute, circular. Length 13.4, diam. 6.5, length of ap. (diagonal) 5.5 mm.



West Maui: Kahakuloa (Kuhns, Baldwin).

Type No. 15,142, cotypes 16,662, Bishop Museum Coll.

This species differs from *A. erecta* Pse., as all the specimens are sinistral and are minutely perforate. The brown epidermis covers the whole of the shell and is not fugacious as in all the other species of *Laminella*. The darker zigzag markings are in the epidermis and are, also, not fugacious. There is a straw-colored variety of which I have seen a single specimen.

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