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BERNICE P. BISHOP MUSEUM

OCCASIONAL PAPERS

VOLUME IX, NUMBER 11

HONOLULU, HAWAII

PUBLISHED BY THE MUSEUM

DECEMBER, 1930

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The novel forms described in this paper are few in number, but their individual characters render each of them particularly noteworthy. Naturally the intrinsic characters of each type and its geographical situation are the primary items, as in all taxonomic studies. But in the genus *Partula,* newly-discovered species gain added importance by virtue of the comprehensive biological and geographical scheme into which they enter.

It is well known that representatives of the genus *Partula* occur in certain islands of Polynesia, Micronesia, and Melanesia, and that as a rule each group of islands, each island of a group, and each valley of some islands possesses characteristic species, varieties, or local races that are not found elsewhere. At least 120 species are comprised in the whole taxonomic and geographical scheme. Although large areas of Oceania remain to be explored —areas undoubtedly possessing species of *Partula* that would be useful in the study of general problems of relationship and distribution, nevertheless, there is a substantial body of information, particularly for the Society Island forms, which renders the genus especially valuable for comprehensive studies on the evolution of terrestrial mollusca. Hence, these new species are worthy of record for the sake of their individual intrinsic interests as well as for their values as items in a relatively organized body of knowledge concerning the genus *Partula* and its distribution.

Partula cytherea, new species (Pl. I, *A*).

The shell is sinistral, flatly perforate, broadly ovate-conic, and solid in texture. Whorls 5 to 5½, slightly convex. Spire conic. The aperture is sub-auriform, with a strongly oblique axis. The lip is thickened, inwardly contracted, and rounded in profile; the margin is shouldered at its parietal insertion. Parietal callus well marked. The columella is straight and only slightly flaring at its insertion. Parietal tooth invariably present and usually well-developed.

The body-whorl is tawny to buckthorn brown. The spire is much deeper in color, and in almost all of the specimens its whorls are purplish-brown as the result of decortication; a few shells are decorticated throughout. Surface smooth and glossy, very faintly striated with lines of growth; the faint, microscopic decussations are almost evanescent on the body-whorl.

The embryonic young, while variable, are uniformly colored in some

shade of brown. The egg capsules are oblong-ovate, 3.6 mm. by 2.3 mm. The wall is strongly impregnated with calcareous salts.

The direct measurements of the two cotypes are: *a*, Bishop Museum, No. 10851, length 18.6 mm., width 11.8 mm., length of aperture 10.5 mm., width of aperture 7.7 mm.; *b*, Crampton collection, length 17.6 mm., width 11.1 mm., length of aperture 9.6 mm., width of aperture 7.2 mm.

Habitat: on the higher slopes of Mount Orohena, central portion of Papenoo Valley, Tahiti, Society Islands. Collected by K. P. Emory (1925) and G. H. McDaniels (1927). Paratypes no. 87053, Bishop Museum.

On account of its solid texture and general form, *Partula cytherea* seems on first inspection to be a near ally of the *otaheitana* series of varieties, and especially of *Partula otaheitana affinis* which is occasionally sinistral in the lower reaches of Papenoo Valley. Closer study reveals consistent differences of specific degree, notably in the obliquity of the aperture, in the more open umbilicus, and in the sub-auriform contour of the whole aperture; the form of the aperture suggests a relationship to *Partula mooreana* Hartman, of the neighboring island of Moorea. Furthermore, the shells are remarkably uniform in coloration, and the consistently purple-brown color of the spire is another point of contrast with the *P. otaheitana* series. Were it not for the consistent reversal in coil, the shells here named *P. cytherea* might be referred to *Partula stolida* Pease, a species of problematic status in the literature.

The comprehensive statistical description of 33 measurable adult shells is as follows:

Character	Range (class values)	Mean	Standard deviation
Shell, length, mm.	16.5 — 19.8	18.3318 ± .0696	0.8386 ± .0984
width, mm.	10.5 — 13.3	11.7666 ± .0505	0.6083 ± .0715
proportions, per cent	56.5 — 72.5	64.0455 ± .2890	3.4823 ± .4088
Aperture, length, mm.	8.9 — 11.9	9.6666 ± .0534	0.6432 ± .0755
width, mm.	6.5 — 8.7	7.6697 ± .0388	0.4674 ± .0549
proportions, per cent	67.5 — 83.5	76.9546 ± .3245	3.9087 ± .4589
Length aperture ÷ length shell, proportions, per cent	49.5 — 63.5	54.2273 ± .2323	2.7990 ± .3286

The habitat of *Partula cytherea* in the remote interior of Tahiti, is very difficult of access. For this reason it escaped the notice of Garrett and of others who have been concerned primarily with what

might be called the horizontal distribution of the species and varieties dwelling in the coastward portions of the valleys. Without doubt, other new species of *Partula,* with more or less restricted habitats, will come to light on more intensive exploration. From the neighboring island of Moorea 10 full species are now known, and from Raiatea more than a score. To Tahiti, a much larger island, 9 species are now accredited, including *Partula stolida* as a doubtful member of the list.

Partula lanceolata, new species (Pl. I. *B*).

Shell dextral, flatly rimate, long ovate-conic, rather thin. The spire is narrowly conic and produced, with almost straight sides. Whorls 5½, nearly flat, with vaguely marginated suture. The aperture is subovate and unusually simple, and the two insertions of the border approach one another; the intervening callus is thin and shining. The lip is notably thin and narrow, and slopes inwardly from the margin with a slight inner incrassation. The columella is dilated above. Parietal tooth very weakly developed in most of the shells is entirely absent in others.

The colors are chamois or cream-buff, lightened in some shells by decortication, excepting on the apex, which always retains the full neanic tints. Surface smooth, with faint and widely spaced lines of growth.

The egg capsules are elliptical and unusually large, measuring about 4.2 mm. by 2.5 mm.; their walls are impregnated with calcareous material.

The direct measurements of the two cotypes are: *a,* Bishop Museum, No. 10852, length 20.4 mm., width 11.6 mm., length of aperture 10.8 mm., width of aperture 7.3 mm.; *b,* Crampton collection, length 19.9 mm., width 10.7 mm., length of aperture 9.6 mm., width of aperture 6.9 mm.

Habitat: Mango Island (Maugo), Fiji, southwest limestone ridge, one-quarter to one-half mile inland, altitude 200 to 500 feet. Collected by E. H. Bryan, Jr. (1924). Paratypes, nos. 78940-78942, Bishop Museum.

This form is extremely important because hitherto the only species correctly recorded in the literature as an inhabitant of the Fiji islands is *Partula lirata* Mousson, a type that is remarkable for its occurrence in several islands of eastern Fiji as well as in Lauthala and Taviuni of western Fiji. E. H. Bryan, Jr., who collected the *Partula lanceolata* material, also obtained a few shells of *Partula lirata* on Mango, thus corroborating Layard (Ann. Carnegie Mus., p. 451, 1901-1902). A second species occurring in Fiji is *Partula nematoraphe* Pilsbry, hitherto of unknown locality and presumed to be a member of the New Hebrides series; an authentic collection of undoubted *nematoraphe* came from Moala Island, Fiji (Bishop Museum, collected by E. H. Bryan, Jr., No. 77131).

The new species, *Partula lanceolata,* now the third in the Fijian list, is obviously a close relative of *Partula lirata* from which it differs most markedly in the absence of the spiral ridges that render *P. lirata* unique within its genus. In addition, the growth lines of *P. lanceolata* are far less prominent than in its relative. Furthermore, the shells of *P. lirata* collected on Mango are consistently longer and narrower than those of the associated *P. lanceolata.*

The comprehensive statistical description of 53 adult and perfect shells is as follows:

Character	Range (class values)	Mean	Standard deviation
Shell, length, mm.	18.0 — 21.6	19.5867 ± .0837	0.8691 ± .0592
width, mm.	10.1 — 11.9	11.0061 ± .0416	0.4316 ± .0294
proportions, per cent	50.5 — 60.5	56.2551 ± .1893	1.9644 ± .1238
Aperture, length, mm.	9.5 — 11.3	10.2755 ± .0365	0.3761 ± .0266
width, mm.	6.5 — 7.7	7.1122 ± .0241	0.2504 ± .0170
proportions, per cent	65.5 — 72.5	69.1531 ± .1692	1.7560 ± .1196
Length aperture ÷ length shell, proportions per cent	49.5 — 54.5	52.4388 ± .1340	1.3910 ± .0947

Partula thurstoni, new species (Pl. I, *C*).

The shell is dextral, perforate, broadly ovate-conic, and very thin in texture. Whorls 5¼, markedly convex. Spire conic; body whorl inflated. Aperture ovate and simple. Lip thin and only slightly flaring, with a very weak internal thickness increasing toward the columellar insertion. Columella flaring above. Parietal callus excessively thin. No parietal tooth.

The general color is almost uniform dark olive-buff, lightened on the embryonic whorls; the suture is margined with white, and the outer rim of the lip is also white. Surface glossy, marked with faint lines of growth; the revolving sculpture is exceedingly weak.

The measurements of the type are as follows: length 18.5 mm., width, 11.9 mm.; length of aperture 10.0 mm., width of aperture 7.9 mm. Proportions of shell 64 per cent; proportions of aperture 79 per cent; proportions of aperture length to shell length 54 per cent.

Habitat: Ofu Island, Samoa, near the summit of the highest peak. Collected by Theodore Dranga (1926).

The original material of *Partula thurstoni* consists of six specimens obtained by Mr. Theodore Dranga for Mr. Lorrin Thurston during the course of an expedition to Ofu. Of the three individuals presented to the Bishop Museum, one is adult and two are juveniles.

Type, B. P. Bishop Museum no. 10853; two juvenile paratypes, no. 83121.

This species is clearly related to *Partula stevensoniana* Pilsbry, from Upolu Island, Samoa. It is a valuable addition to the *Partula* series of Samoa on its own merits, and also because it is authentically recorded from the small and remote island of Ofu. It must be exceedingly rare, as no additional material was found by Cooke, Judd, and Dranga in the course of a later visit extending over three days. Almost without question the animals dwell on the higher limbs of the trees. Dranga's original material was found on ti leaves a few days after a devastating hurricane had occurred, when the animals had apparently been shaken down from their accustomed situations. Ofu did not yield any *Partulae* of the *zebrina* series, which has its representatives on Tutuila, Upolu, and Savaii, and is in greatest abundance on Tutuila in the form of *Partula zebrina* itself.

Partula montana, new species (Pl. I, *D*).

The shell is dextral, perforate, ovate-conic, and rather thin in texture. Whorls 4 1/3, markedly convex, the protoconch strongly flattened; suture slightly impressed. Spire narrowly conic despite the convexity of the whorls and their small number. Aperture elliptical, very slightly oblique. Peristome thin, flattened, narrowed at its outer and inner insertions, and inwardly thickened. Columella straight, receding at its junction. Parietal tooth wanting.

Surface rough, with evanescent spirally-engraved lines, and with low revolving ridges weakly developed near the base. Color dull whitish, with a tawny epidermis remaining locally after extensive decortication. The egg capsule is large, 4 mm. by 3 mm., with impregnated walls.

The measurements of the unique specimen, in the Crampton collection, are: length 17.9 mm., width 11.5 mm.; length of aperture 10.8 mm., width of aperture 7.5 mm.; proportions of shell 64 per cent; proportions of aperture 69 per cent; proportions of aperture length to shell length 60 per cent.

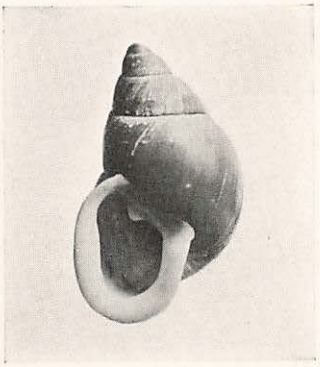
Habitat: high forest of the Afiamalu region, altitude about 2500 feet, near Tiapapala Pass, 5.75 miles south of Apia, Upolu, Samoa. Collected by Crampton (1909).

Although the fauna of Upolu is not well known, and in consequence the range of variation of the recorded species has not been determined, nevertheless, this unique snail presents so many points of contrast with each and all of the known species that it must be accorded full specific status.

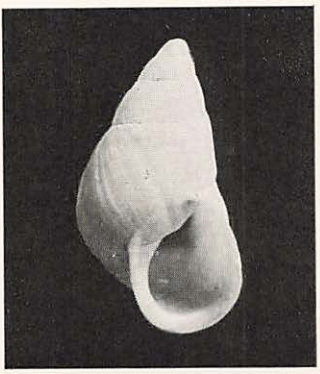
The dextral coil, general shape, and the form of the aperture suggest a relationship to *Partula stevensoniana* Pilsbry; but *P. montana* is much smaller, it is not so openly perforate, the columella is

not widely flaring at the insertion, and the color is different. The small number of whorls seems to relate it to the *P. zebrina* series, which is represented in Upolu by *Partula expansa* Pease, and which includes local races with shells not unlike *P. montana* in general form. But the peculiar protoconch of *Partula montana* definitely excludes it from such an association. Its rugose basal sculpture, weak as it is, suggests the type of ornamentation exhibited by the unique *Partula lirata* of the Fiji islands.

The possible identity of this new form with *Partula brazieri* Pease involves a number of considerations, of which only a few may be noted here. Pease's species was established on the basis of a single shell which Brazier asserts most positively was obtained by him at Tutuila; this shell is in the collection of the Academy of Natural Sciences of Philadelphia, and it is regarded as different from *P. montana* by Pilsbry as well as by Crampton. The fact that the single example called *Partula brazieri* does not agree closely with Pease's original description, and the further fact that it resembles well-authenticated species of the New Hebrides, are beside the point in the present discussion. It is certain that *P. montana* came from a locality in the high mountains of Upolu, and it is equally certain that it holds a distinct position with full specific status.

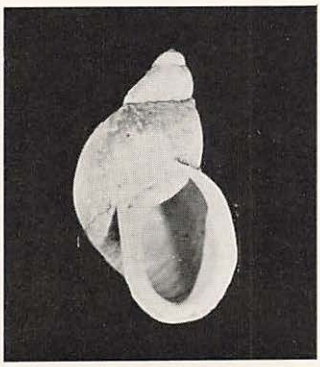


A



B

C



D

PLATE 1.—New species of Partula: *A*, Partula cytherea; *B*, Partula lanceolata; *C*, Partula thurstoni; *D*, Partula montana.