Selected original species descriptions of land snails from Guam, Mariana Islands, by Quoy & Gaimard (1832), Pfieffer (1857) and Quadras & Möllendorff (1894)

Translated and annotated by

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ACKNOWLEDGEMENTS

For much help along the way, I am indebted to Scott Bauman (Florida Museum of Natural History), Carl Christensen (Bernice P. Bishop Museum, Hawaii), and Barry Smith (University of Guam). I also thank Dirk H. R. Spennemann (Charles Sturt University, Australia) for his important online compilation of early German works on the natural history of Micronesia.

_Dankulu na Saina Ma’åse!_
SUMMARY

This report provides translations and annotations for most of the Latin and French taxonomic descriptions by the most prolific 19th-century collectors and taxonomists of land snails from the island of Guam, Mariana Islands, western Micronesia. The papers describe 51 species, for a total of 59 descriptions when including new genera and varieties. Of the latter tally, 40 descriptions (35 species and five varieties) are translated into English here. This constitutes just over 66% of the described species diversity endemic to Guam and the other islands of the Mariana archipelago.
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INTRODUCTION

This paper has been prepared as part of a study on the systematics of the terrestrial snails of the Mariana Islands, Micronesia. It presents selected translations from the Latin descriptions by the earliest, and among the most prolific collectors and taxonomist of Mariana Island snails, J. R. C. Quoy, J. P. Gaimard, L. Pfeiffer, J. F. Quadras and O. F. von Möllendorff.

Jean-René Constant Quoy and Joseph Paul Gaimard served as zoologists during two voyages around the world (Freycinet 1825; d'Urville 1834) and, as a result, they are remembered today amongst taxonomists for their many discoveries of species new to Western science. On each of their circumnavigations, they stopped at Guam for a short time and collected, among many other organisms, several land snails. On the other hand, Ludwig Karl Georg Pfeiffer, often as Lous Pfeiffer, an important describer of Marianas snails, never visited Guam, but described shells from Guam that had been collected by others. Likewise, Otto Franz von Möllendorff, one of the world's most well-known conchologist in his day and a specialist on terrestrial and aquatic species, appears not to have visited Guam, yet described many species collected from there by his colleague Quadras. von Möllendorff's profession in the German consulate office enabled

Figure 1. Dr. Otto Franz von Möllendorff, the most prolific describer of terrestrial snails from the Mariana Islands. (From his obituary in the Journal of Malacology; Plate XI in Kobelt 1903).
his travels and his correspondingly geographically wide studies of land snails, including those of the Philippines, beginning in 1886. Indeed, by his departure in 1896, he had described over 800 species from the Philippine islands, over half of the total of the 1500 species he described worldwide (Kobelt 1903). While stationed in Manila, Philippines, he met with another malacologist, the Spanish forester José Florencio Quadras. I can find very little information on D. Quadras, other than his botanical collections (several plants were named in his honour, e.g., Selaginella quadrasii Hieron), his long and fruitful collaboration with von Möllendorff, and his correspondence with the great Spanish biologist Dr. Joaquín González Hidalgo, with whom he apparently ceased collaboration shortly after the arrival in Manila of Möllendorff.

The aforementioned taxonomists together described numerous species of snails inhabiting the Mariana Islands. Quoy and Gaimard described numerous new plants and animals collected on their global voyages, including several snails, one of them endemic to the island of Guam, Mariana Islands. Pfeiffer in a paper describing 31 species collected world-wide by others, included three species from Guam. Quadras and Möllendorff co-authored two papers dedicated exclusively to the malacofauna of Guam. They were published in the German Malacological Society's journal, Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft. The papers provide 47 species descriptions, or 54 descriptions in total when including the two new genera and all five varieties. All of the material for their papers was apparently collected from Guam by Quadras. Their jointly authored papers contain no text beyond that of the taxonomic descriptions, and so we do not learn the context of the work, such as when Quadras was on Guam to collect. Still, his excursion(s) to the island must have been after Möllendorff's arrival in Manila in 1886 when he first revealed to Quadras the high diversity of tiny land molluscs (Kobelt 1903), yet prior to 1893 when Quadras published a catalogue of Philippine shells (Quadras 1893) that included the undescribed taxa from "Guajan" that were to form the subject of the two later papers in early 1894.

ABOUT THE TRANSLATIONS
The relevant publications were obtained as digital copies downloaded from the internet. Quoy & Gaimard's (1832), as well as Pfeiffer's (1857), descriptions were obtained from the Biodiversity Heritage Library (http://www.biodiversitylibrary.org/). The papers of Quadras & Möllendorff (1894a-b) were obtained from Digital Micronesia - An Electronic Library & Archive (http://marshall.csu.edu.au/) maintained by Charles Sturt University, Australia (see also Spennemann 2004). Because all of these papers were published well before 1923, international copyright has unambiguously expired (Hirtle 2012).

Table 1. Descriptions not translated herein from Quadras & Möllendorff 1894a-b.

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<td><em>Omphalotropis</em> (<em>Scalinella</em>) <em>pilosa</em> Q. et Mlldff.</td>
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<td><em>Omphalotropis</em> (<em>Scalinella</em>) <em>pilosa</em> var. <em>piolosella</em> Q. et Mlldff.</td>
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Thus, I include the original Latin and French descriptions with their translations together as columns of parallel text.

My knowledge of Latin and French is limited. Hence, I relied on the aid of dictionaries and on-line translators. The translations have not been checked by a proficient Latinist, but the French portion by Quoy & Gaimard has been eyeballed critically by a native gallophone and pronounced 'adequate' (contra élégant, I presume). As evident from the Table of Contents, I have organised this report into four sections, one for each publication. Then, within each section, the species descriptions appear in the order that they occurred in each published article. Page numbers from the original papers are given in square brackets, untranslated portions are noted by bracketed ellipses. Finally, I employ modern ICZN conventions regarding the rendering of the scientific names given in the papers, i.e., such names are italicised, specific epithets are not capitalised nor permitted diacrits. I make no taxonomic changes. Finally, there appears to be one possible typesetting error: Quadras & Möllendorff (1894b, p. 37) write "Operculum illi M. quadrasi simile."; the authors undoubtedly intend to refer to the previous and congeneric species *H. quadrasi*.

All of Quoy and Gaimard's (1832) and Pfeiffer's (1857) few descriptions of endemic snails are included, a total of four. A total of 35 translations of the 47 species descriptions in Quadras & Möllendorff (1894a-b), or 74%, are also provided. Species and varieties in these papers whose descriptions were not translated into English for this report are listed in Table 1. Whether or not a description was translated depended largely on whether a trustworthy and detailed, if necessarily secondary description in English of the species could be found elsewhere (e.g., Abbott 1949; Harry 1966). Further, sometimes other authors have also translated parts of Quadras & Möllendorff's work. Hence, I eagerly employed translations available in Pilsbry & Cooke's (1915-1916, 1916-1918) *Manual of Conchology* for four of Quadras & Möllendorff's original descriptions: *Tornatellina quadrasi*, *T. (Lamellina) microstoma*, *T. (L.) subcylindrica*, and *Vertigo (Prychochilus) quadrasi*.
DISCUSSION

Of the four authors considered here, only Quadras appears to have spent time collecting on Guam. Despite Quadras's potentially short time on the island, he found 47 species new to science. This constitutes about 80% of the currently described fauna endemic to the islands, or 56% when including more recently discovered undescribed taxa (see Bauman 1996a for the most recent comprehensive species list). Further, many of the species found by Quadras appear to be based on multiple specimens. Either Möllendorf described one to four varieties of a given species, or he mentions colour range for a species, indicating that he had in hand at least two specimens. Most telling of the abundance of many of the newly discovered species is the number of paralectotypes derived from the original type series that have made their way into major repositories worldwide. Quadras's Guam specimens, often as multi-specimen lots, are presently housed in the Academy of Natural Sciences, Philadelphia, the Museum of Comparative Zoology, Harvard University, and the Bernice P. Bishop Museum, Honolulu, as well as elsewhere.

Collecting that many specimens of that many species would take far longer today. This precipitous drop in catch per unit effort is apparently because of the intervening steep decline in snail populations on Guam (and elsewhere in the Pacific Islands) since the mid 20th c. due to habitat loss and the often intentional introductions of generalist molluscivores, i.e., gastropods and a bivalvial flatworm, to control an exotic gastropod agricultural pest (Hopper & Smith 1992). Several endemic species in the Mariana Islands, including those restricted to Guam, are undoubtedly now extinct, such as the non-Quadras & Möllendorf species Partula salifana Crampton, 1925 and P. langfordi Kondo, 1970 (see Smith 2008). Ominously, many Quadras & Möllendorf species have not been seen in nearly a century. Bauman (1996b; unpubl.) and Smith (2008) have made careful searches of several islands and were unable to find several species, such as Succinea spp. on Guam and Rota. These and others may well be extinct or, one hopes, maintain populations on the larger poorly sampled northern islands, at least those not devastated by recent volcanism. No one has really checked carefully on most
of them. Despite this certainly dire situation, many new species are still being discovered the Marianas. Bauman (1996a) lists 25 likely undescribed species from the Marianas, 12 of them from Rota, alone.

Kobelt (1903) wrote in an otherwise laudatory obituary that the only downside to Möllendorf’s prodigious output (he described over 1500 species and varieties!) was that he did not illustrate his specimens. Fortunately, many to all of his types acquired during his peregrinations and exchanges with colleagues he entrusted to the Senckenberg Museum, Dusseldorf, where they remain today for study. Later, Zilch (1953, 1962, 1967, 1973a-b, 1978) designated lectotypes from Möllendorf’s series and provided rather small, but still quite helpful photographs in apertural view, including all of the Guam species. As noted earlier, many paralectotypes from his type series have been distributed to other museums worldwide. We are indeed very fortunate to have such a good record of the Mariana Island species via Quadras's collections, Möllendorf’s descriptions and Zilch's illustrations, evidence of the enduring legacy of von Möllendorf's exquisite scholarship.

The charming tailpiece of a snail below is from the title page of Quadras (1893).

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University of Guam
Christmas Day 2012
Literature Cited


Smith, B.D. 2008. Seven Decades of Disruption, Decline, and Extinction of Land Snails in Aguiguan, Mariana Islands. Report to the Division of Fish and Wildlife


[Cyclostome a bandeau.]

**Cyclostomate** [i.e. shaped like other *Cyclostoma* (= *Omphalotropis*)], shell turrited, conical, spire pointed, whose whorls, five and one half in number, are separated by a deep suture; the body whorl, which is as big as the others combined, is a little inflated and completely covered in obliquely set, rugose bumps, clearly visible through a lens. A somewhat faint carina occurs, which is more distinct near the umbilicus. The umbilicus is semi-circular, and bordered by a distinct edge. The peristome is simple and continuous. These latter parts are

**Banded Cyclostome**

*Cyclostoma erosa*, n. sp.

PLATE 12, FIGURES 40-44

Cyclostoma, testa turrita, conica, perforata; apice acuta, ultimo anfractu semper erosa, violacea, aut rubra; spira luteola; apertura rubeola; peristomate simplici, integro, subovali; umbilicus canaliculato.

Petite espèce, de même forme, mais un peu plus grand que la précédente, conique, à spire pointue, dont les tours, au nombre de cinq et demi, sont arrondis à sutures profondes; le dernier, qui est aussi grand que tous les autres ensemble, est un peu ventru et constamment couvert de rugosités obliques, qu'on ne voit bien qu'à la loupe. Elles effacent en partie une carène, qu'on aperçoit cependant près de l'ombilic. Celui-ci est en fente demi-circulaire, et limité en dehors par un bourrelet. L'ouverture est demi-circulaire, un peu anguleuse en arrière. Le péristome est simple

*Cyclostoma erosa*, nob.

PLANCE 12, FIGURES 40-44
et continu. Ces dernières parties sont rosées. Cette coquille est rougeâtre ou violacé sombre à sa base, jaunatre au sommet avec de petites flammules rougeâtres.

L'animal porte un mufle assez long d'un jaune clair, surmonté d'une ligne violette en chevron brisé en avant de tentacules. Ces derniers sont gros, courts, et portent à leur base, sur un petit renflement, des yeux noirs et volumineux. Le pied est de la même couleur que la tête. L'opercule est membraneux, paucispiré.

Ce Mollusque habite l'île Guam, une de Marianes. Il n'y est pas très-répandu, car il nous avait échappé dans notre premier voyage.

The animal bears a fairly long proboscis of light yellow, surmounted by a violet line in the shape of a broken chevron in front of the tentacles. These are large, short, and have at their tips, a small bulge with large black eyes. The foot is of the same colour as the head. The operculum is membranous of few whorls.

This mollusk inhabits Guam, one of the Mariana islands. It is not very common, as we had missed it on our first voyage.

DIMENSIONS.  Height 4 mm, width 2 mm.

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<td>Longueur</td>
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<td>Epaisseur</td>
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[...]

[End Quoy & Gaimard 1832]
15. **Partula Mastersi**, Pfr. *T. dextrorsa*, anguste umbilicata, ovato-conica, solidula, spiraliter subconverte sub lente striata, lutea, carnea vel violacea, in anfractibus superioribus interdum fusco-fasciata; spira conica, acutiuscula; anfr. 5 convexiusculi, ultimus spiram subæquans, deorsum turgidus; columella superne subinflata, recedens; apertura obliqua, truncato-oblonga; perist. callosum, undique subæqualiter expansum, subplanum, album vel fusco-canneum.

Long. 18, diam. 9 2/3 mill.

16. **Succinea Guamensis**, Pfr. *T. conicovata*, tenuis, ruguloso-plicata et subgranulata, semipellucida, pallide cornea, albo irregulariter eroso-punctulata; spira brevis, vertice subpunctiformi; anfr. vix 2 1/2, penultimus umbilicate, ovate-conical, fairly solid, whorls almost crowded, becoming more widely spaced below, white, flesh coloured or violet, in the superior side of the whorls sometimes brown-banded; spire conical, fairly acute; whorls five almost convex, the last whorl not equal in size, base swollen, upper columellum not well expanded, receding; aperture oblique, truncate oblong; peristome callosed, spreading not quite equally on all sides, not quite flattened, white or brownish red.

Height 18 mm, width 9 2/3 mm.

Form B. Flesh coloured, basal whorl behind peristome marked in violet, a small white tooth deep underneath the penultimate whorl.

Locality, Guam.
convexus, ultimus 3/4 longitudinis subaequans, basi vix angustatus; apertura obliqua, ubicue incumbens, angulato-ovatis; perist. somplex, marginibus callo tenui junctis, columellari leviter arcuato, filari.

Long. 12, diam. 7, alt. 5 1/2 mill. (*Helix putris*, Fér. Hist. t. 10 A. f. 10.)

*Hab.* Isle of Guam.


Shell perforate, ovate-conic, fairly solid, closely packed striate, opaque, flesh coloured, vaguely marbled and banded in reddish; spire conical, acute; sutures shallow grooves; whorls 5.5, flattened somewhat, last whorl barely shorter, the umbilicus surrounded by a flattened carina; aperture barely oblique, oval; peristome thin, the right margin expanded a little, and basally by the umbilical carina, columella scarcely expanded.

Long. 6 1/2, diam. 4 mill. *Hab.* Isle of Guam.

[...]

[End Pfeiffer 1857]

[page 16]


Shell imperforate, ovate-globose, thin, pellucid, delicately striate, somewhat shining, pale buff-corneous; spire little elevated, the apex rather obtuse; whorls 3.5, a trifle convex, rapidly increasing, the last large, swollen; aperture moderately oblique, oval peristome simple, acute; columellar margin very slightly reflexed, appressed; parietal lamella strongly elevated, spirally entering; columella strongly lamellarly dilated, deeply excised at base in a right angle.

Diam. maj. 2, alt. 2.5 mm.


Shell subrimate, oblong-conic, thin, subpellucid, delicately striate, slightly shining, buff-corneous; spire turreted, sides slightly convex, apex acute; whorls 6.5, rather flattened, parted by slightly impressed suture, slowly increasing, the last spirally impressed, subsulcate before the aperture. Aperture rather oblique, rhombic; peristome simple, acute,
paullum dilatato, patente; columella valde spiraliter torta, lamellatim intrans, superne excisa, processu dentiformi extus porrecta. Lamella parietalis modice elevata intus longe procurtsa, palatalis una breviuscula, a margine remota.

Diam. 1.75, alt. 3.5 mm.

In junioribus columella trilamellata, lamella parietalis magis elevata, anfractus ultimus costis transversis internis denticulatis 3 sat distantibus in adultis omnino evanescentibus munitus.

10. **Tornatellina (Lamellina) subcylindrica** Q. et Mlldff.

Shell not rimate, subcylindric-turreted, delicately striatulate, thin, subpellucid, a little shining, buff-corneous; spire gradually tapering, the apex rather obtuse; whorls 6/5, rather convex, the last more distinctly plicate-striate, from the beginning rather deeply impressed spirally in the middle; aperture moderately oblique, rounded-trapezoidal, peristome simple and acute; columella dilated above, running forward forming a dentiform process, strongly twisted spirally, sub-dentate above; parietal lamella oblique, strongly elevated, extending deep within, no palatal plicae.
Diam. 1.5, alt. 3.33 mm.
In junioribus collumella bidentata, anfractus ultimus ut sp. praec. constis internis munitus.

11. **Vertigo** (*Prychochilus*) *quadrasi* Mlldff.
T. subperforata, oblonge ovata, tenuis, costulis tenuissimis subdistantibus sculpta, sericina, brunnea. Anfr. 5 convexi, lente accrescentes, sutura profunda discreti, ultimus antice vix ascendens, basi compressus, pone apertuam distincte scrobiculatus. Apert. fere verticalis, rotundatao-triangularis, peristoma sat expansum, fuscolabiatum, marginibus convergentibus, dextro profundiuscule sinuato, callo noduliformi munito. Plica angularis sat alta, extus curvata, cum nodulo marginis externi sinulum ellipticum formans, parietales 2, una valde elevata longe intrans, altera minima, columellares 2, palatales 3 profundae quorum dextra longiuscula, lamelliformis.

Width 1 mm; height 1.9 mm.

12. **Succinea** (*Neritostoma*) *quadrasi* Mlldff.
T. oblongo-ovata, tenuiuscula, pellucida, sat fortiter plicato-striata, indistincte malleata, fulva, sursum rubella. Anfr. 3 celriter

Shell subperforate, oblong-ovate, thin, sculptured with quite delicate, rather widely-spaced riblets, silky, brown; whorls five, convex, slowly increasing, separated by a deep suture, the last slightly ascending in front, compressed at base, distinctly pitted behind the lip; aperture nearly vertical, rounded-triangular, the peristome well expanded, with a brown thickening, the margins converging, right margin deeply sinuate, with a noduliform callus; angular lamellar rather high, curving outward, and together with the nodule of the external lip forming an elliptical sinulus; two parietal lamellae, one strongly elevated, entering deeply, the other smaller, two columellar lamellae, three deeply placed palatal plicae, of which the right one is rather long and lamelliform.
reddish. Three whorls quickly becoming wider, deep discrete suture, convex, the last somewhat inflated to 3/4 of the shell's height, aperture moderately oblique, almost exactly oval, peristome edge acute, columella not quite folded.

Shell width 8 mm, height 13.5 mm, aperture height 10 mm, width 5.5 mm


Shell oblong-ovate, thin with close-lying fold-like grooves, indistinct malleation, light yellowish-brown, yellow at apex, three convex whorls, the last rapidly descending, slightly flattened above, aperture slightly oblique and acuminate oval.

Width 7 mm, height 11.25 mm;, aperture height 8 mm and width 5 mm.

15. Palaina taeniolata Q. et Mlldff.

Shell sinistral, rarely dextral, rimate, ovate-conical, thin, almost transparent, widely spaced sharp axial ribs, yellowish through pale reddish-brown to reddish brown or horn brown; 6.5 rounded whorls, penultimate largest, ultimate whorl initially constricted; for most of the suture from the second whorl, there is sometimes a reddish brown material; aperture vertical, subcircular, peristome with four or five thin
peristoma multiplex, labiis 4--5 tenuibus lamellatim expansis sulcis profundusculis separatis sistens. Alt. 2.3, diam. max. 1.3 mm. Height 2.3 mm; maximal diameter 1.3 mm.

16. *Palaina hyalina* Q. et Mlldff. T. amphidroma, non rimata, ovata, tenuissima, pellucida, hyalina, costulis filiformibus acutis, sat distantibus sculpta. Anfr. 6 convexi, sutura profunda discreti, ultimus decrescens, initio valde constrictus, tum inflatulus, antice paullum ascendens. Apert. fere verticalis, subcircularis, peristoma dublex, externum expansum internum porrectum, vix expansum. Alt. 2.4, diam. 1.4 mm. Height 2.4 mm; maximal diameter 1.4 mm.

17. *Omphalotropis elongatula* Q. et Mlldff. T. rimata, oblongo-conica, transverse subtilissime striatula, lineis spiralibus impressis sat distantibus decussata, pallide flavescens aut rubella; spira turrita, fere exacte conica apice obtusulo. Anfr. 7 planiusculi, sutura parum impressa disjuncta rima valde approximata cinctus ad peripheriam confuse angulatus. Apertura vix obliqua, ovalis, peristoma vix expansum, intus sat labiatum, basi subeffusum. Alt. 8.25, diam. 4.5 mm. Height 8.3 mm; width 4.5 mm. 

*Var. brunnescens.* Corneo brunnea, var. *brunnescens.* Horn-brown colour,
interdum bifasciata, anfractibus paullo
convexioribus, carina basali paullo magis
distincta.

*Var. chrysostoma.* Anfr. paullo celerius
accrescentibus ultimo magis convexo,
colore vario: luteo-flava, carneo, rubello,
apertura intus laete flava aut aurantiaca aut
rubella.[page 20]

*Var. contracta.* Differt a var. praece., cui
proxima, anfr. 6 1/2, labro validiore, basi
magis effuso. Alt. 6.3, diam. 4 mm.


Shell narrow perforation, elongate pyramidal,
thin shelled, translucent, smooth, shiny,
reddish brown with yellowish blotches;
spire elongate, perfectly conical. Whorls
seven almost convex, suture thin and
discrete, last whorl almost angulate,
flattened basal carina, well exsert nearest
the perforation. Aperture almost vertical,
acuminate oval, peristome not flaring,
interior sublabiate.

Height 5.5 mm, width 3.20 mm.


Shell narrow perforation, a graceful conical
turrete, thin shell, translucent, shiny,
indistinct and microscopic crosshatched
decussata, burnneo-cornea, flavido-marmorata; spira turrita apice obtuso. Anfr. 8 lente accrescentes, sutura submarginata discreti, supremi convexiusculi, sequentes planiusculi, ultimus paullo convexior, infra medium obtuse angluatus, basi carina valida, bene exserta, perforationi approximata cinctus. Apert. fere verticalis, acuminato-ovalis, peristoma haud expansum, intus sublabiatum, pauci ad carinam subeffusum, ad columellam profundiuscule sinuatam.

Alt. 6,5, diam. 3.5 mm.

var. attenuata, paullo gracilior. anfr. ultimo vix angulato, columella magis sinuata, lineolis spiralibus paullo magis distinctis. Alt. 6, diam. 3 mm.

20. **Omphalotropis laticosta** Q. et Mldff.

Shell very narrowly perforate, gracefully elongated turrete, transverse striae, compact spiral lines, slender but distinctly crosshatched, strong wide but flattened costae, elegantly carved out in white, alternating yellow and reddish stripes; graceful elongate conical spire, apex obtuse. Whorls 8.5 convex, the last whorl submedially subacutely angulate, below this angle the basal portion is smooth, columellar groove fairly distinct. Aperture a little oblique, acuminated oval, peristome
obtusum, expansiusculum, intus obtuse, a little flaring, not quite labiate. sublabiatum.

Alt. 5.75, diam. 2.5 mm. Height 5.75 mm, width 2.5 mm.

21. Omphalotropis latilabris Q. et Mlldff. Shell wide perforation, ovate conical, solid, fairly compactly coiled with moderately separated and elevated spiral lines, a yellow or brownish horn or brown, sometimes as two stripes; a rather elevated cone-like spire, the sides a little convex, apex acute. Whorls six, flattened, carina quite exert, suture a deep discrete groove, last whorl quite large, whorls subequal, a flattened and crenulate basal carina surrounding at some distance from the perforation. Aperture a little oblique, acuminate oval, double peristome, continuous internally, separated from the coil above, a little bit flared, rather widely so for a member of the genus, ..., subalate, at the base confluent with the basal carina, auriculate. Operculum ordinary [for the genus].

Alt. 7.5, diam. 6 mm. Height 7.5 mm, width 6.0 mm.

22. Omphalotropis quadrasi Mlldff. Shell fairly open umbilicus, somewhat depressed turbinate, solid, transverse striae, lightly engraved with elevated, well-spaced, wavy spiral lines, horn brown or

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sculpta, corneo-fulva aut brunnea aut flava, interdum marmorata; spira fere exacte conica, apice obtusulo. Anfr. 6, supremi convexi, reliqui ad suturam profunde canaliculatam angulati, fum fere plani, ulti-[page 22] mus ad peripheriam carina acuta eleganter undulata et basi crista a perforatione valde remota, valde elevata, compressa, crenata cinctus. Apertura sat obliqua, acuminato-ovalis, peristoma duplex, internum continuum, superne appressum, expansiusculum, externum late expansum, superne ecisum, subalatum, ad carinam canaliculatum, ad columellam attenuatum. Operculatum normale.

Alt. 6, diam. 5,75 mm. Height 6 mm, width 5.75 mm.

23. Omphalotropis elegans Q. et Mlldff.

Shell narrow umbilicus, super turbinate, thin, subpellucida, costulis filiformibus distantibus sculpta, pallide conrea; spira exacte conica, apice acutulo. Anfr. 6 convexi, sutura profunda discreti, ultimus ad peripheram carina tenui, ad aperturam evanescente, altera basali valida a perforatione sat remota cinctus. Apertura parum obliqua, ovalis, sat excisa, peristoma rectum, vix labiatum, ad columellam profundiuscule sinuatum.

Alt. 4,25, diam. 6 mm. Height 4.25 mm high, width 6.0 mm.

Shell rimate, ovate conical, solid, subtly striatulate, yellow; gradually ascending, convex-conical spire. Whorls six with a impressed white-lined suture, convex but laterally compressed, the last whorl peripherally scarcely angulated, for the most part with a white stripe, pale basally, carina a little bit distinct, .... Aperture vertical, acuminate oval, peristome blunt, obtuse, internally labiate, base almost flaring, curved columella. Normal operculum.

Height 5 mm, width 3.5 mm.

[End Quadras and Moellendorff 1894a]

Shell rather open umbilicus, pyramidal, solid, quite subtle striae, narrow flattened and widely-spaced costae, horn brown; spire very elevated, almost exactly conical, fairly obtuse apex. Whorls six, slowly increasing in size, curving towards the upper suture very deeply and discretely, a subangular groove, then a little bit flattened, towards the inferior suture as a blunt crest, and on the last whorl towards the periphery a strong, blunt, crenulate and exsert carina, and the other, a lesser, medial basal carina, both extending to the peristome. Aperture almost vertical, rather elliptical, peristome in multiple layers, thickened, not spreading....

Alt. 3.33 diam. 3.25 mm.  

32. *Heteropma pyramis* Q. et Mlldff.  

Shell 2.8 mm high, 2.0 mm wide, rather open umbilicus, pyramidal, solid, subtlest of
foliaceis, distantibus sculpta, corneo-brunnea; spira valde elevata, fere exacte conica apice sat obtuso. Anfr. 6 lente accrescentes, sutura profunde canaliculata discreti, convexi sed lateraliter compressi, ultimus carinis 2 ad peripheriam et media basi obtusis sed bene exsertis cinctus, costulis in carinis in alas longiusculas elongatis. Apertura verticalis, late elliptica, peristoma rectum obtusum. Operculi lamina externa valde concava, marginibus andractuum sat elevatis.

Alt. 2.75, diam. 2 mm.


Ht. 2.75 mm, width 2 mm.

33. *Heteropma tuberculatum* Q. et Mldff. Shell perforate, conico-turritiform, solid, with closely spaced intersecting spiral lines, costae well separated, strong, slightly winding, horn yellow; spire well elevated, almost exactly conical, apex obtuse. Whorls 5.5, convex, laterally compressed, suture a deep disjunct groove, the last whorl with two thick carina but more exert at the costae. Aperture vertical, ellipsoidal, peristome blunt, obtuse, the upper margin receding, the middle extended and the columella somewhat deeply curved. Operculum similar to that of *[H.?]* quadrasi.
Alt. 3.1, diam. 2.5 mm.

34. *Heteropma turritum* Q. et Mldff.

T. anguste umbilicata, elongate conico-turrita, solidula, lineis spiralibus tenuibus valde confertis decussata, costis crassis valde distantibus, subtus tenuioribus sculpta, corneo-brunnea; spira valde elevata, exacte conica apice obtuso. Anfr. 6 lente accrescentes, sutura profunde canaliculata discreti, convexi, lateraliter compressi, ultimus carinis 2 crassiusculis, obtusis, bene exsertis, confertim tuberculatus cinctus, antice breviter solutus. Apertura verticalis, ellipsoidea, peristoma rectum, obtusum, mulitplicatum, sat porrectum.

Height 3.1 mm, width 2.5 mm.

35. *Heteropma fulvum* Q. et Mldff.

T. anguste umbilicata, turbinata, solidula, subtilissime stratula, costulis tenuibus foliaceis distantibus sculpta; spira sat elevata lateribus fere strictis, apice obtusulo. Anfr. 5 perconvexi, sutura profunda subcanaliculata discreti, ultimus ad peripheriam et media basi carinis obtusis sed bene exsertis, per costulas subalatis cinctus. Apertura sat obliqua, subcircularis, peristoma simplex, obtusum, margo superus ad insertionem valde recedens, fere excisus, medio prefunde

Height 3 mm, width 2 mm.

35. *Heteropma fulvum* Q. et Mldff.

Shell umbilicus narrow, turbinate, solid, with the subtlest of striae, slender, widely spaced ribbing, flattened costae, spire fairly well elevated, apex obtuse. Five convex whorls, deep distinct sutures, towards the base becoming surrounded by thick, but well-exserted carina, peripherally and mid-basally, subalate where it crosses the costae. Aperture rather oblique, subcircular, peristome simple, obtuse, the upper margin sinusoidal. The operculum like that of *H. quadrasi*. 

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sinuatus. Operculum illi H. quadrasi simile.
Diam. 2, 5, alt. 2,75 mm.  Height 2.5 mm, width 2.75 mm.


T. perforata, turbinata, vix striatula, subnitens, luteo-cornea; spira sat elevata, fere exacte conica, apice obtusulo. Anfr. 5 convexi, sutura profunda discreti. Apert. Fere verticalis, ovato-rotundata, peristoma simplex rectum obtusum. Diam. 2,3, alt. 2.3 mm.

Shell perforate, turbinate, scarcely striatulate, almost shiny, light horn colour, spire rather elevated, almost conical, apex obtuse, five convex whorls, suture deep and distinct, aperture nearly vertical, rounded ovate, simple unreflexed lip, peristome blunt. Width 2.3 mm, height 2.3 mm.

[...]

37. *Quadrasiella mucronata* Mlldff.

T. late et aperte umbilicata, depressa, plerumque fere discoidea, tenuis, lineis spiralibus valde confertis et costulis tenuibus foliaceis sat distantibus sculpta, corneo fulva; spira plus minusve elevata, lateribus [page 39] lateribus concavis, apice mucronato, obtusulo, rubello. Anfr. 5 convexi, sat celeriter accrescentes, sutura profunde canaliculata discreti, ultimus prope suturam obtuse angulatus, ad et infra peripheriam carinis obtusis sed exsertis cinctus, costulis in carinis elongatis, inter carina planulatus. Apertura fere verticalis, subcircularis, peristoma rectum obtusum. Operculum acuminato-ovale, anfr. 4 transverse plicato-striati, ultimus valde dilatatus undique apertuum suerans et circa

Shell wide and open umbilicus, shell flattened, for the most part discoidal, thin shelled, very strong and compact spiral lines, thin costae rather widely spaced, horn brown; spire very little elevated, ..., apex pointed, obtuse, reddish. Whorls five, convex, ascending quickly enough, discrete deep groove-like suture, last whorl becoming obtusely angular, near and below the periphery carinate, the costae crossing the carina elongate, flattened in between. Aperture almost vertical, subcircular, peristome quite blunt. Operculum acuminate oval, four plicate striatulate whorls, the last very broad, on all sides curving over the peristome.
peristoma revolutum, superne longe patens.

Diam. maj. (sine operculo) 4 alt. 2.25 apert. diam. 1.5, operculi long. 2, lat. 1.66 mm.

Forma conoidea: Diam 3.25, alt. 3 mm.

Maximum width 4.0 mm wide (without operculum), height 2.25 mm, aperture width 1.5 mm, operculum 2.0 mm by 1.66 mm

38. *Quadrasiella clathrata* Mldff.

Shell always with a wide open umbilicus, shell depressed conical, solid, elevated spiral lines and sharp costae giving a lattice appearance, hairy with short hairs all over, horn brown; spire fairly elevated, ..., apex acute and reddish. Whorls five convex, deep discrete suture, last whorl a little bit laterally compressed, not carinate. Aperture about vertical, wide oval, peristome blunt, obtuse. Operculum externally very concave, of four whorls, the last one with wide folds, margin crenulate, not reflexed, internally lamellate with transverse costae.

Diam. maj. 4, alt. 3.5 apert. long. 1.75, lat. 1.66, operc. long. 2.5, lat. 2 mm.

Maximum width 4 mm, height 3.5 mm, aperture 1.75 mm by 1.66 mm, operculum 2.5 mm by 2 mm.


Shell rimate, subcylindric turritiform, opaque, rather separated costa with 23 to 25 on the body whorl, yellowish white; spire
Anfr. superst. 5 convexi, sutura profunda discreti, ultimus basi crista compressa valida usque ad peristoma producta cinctus. Apertura verticalis, acuminato-ovalis, peristoma simplex, continuum, superne breviter adnatum, sat expansum, basi ad cristam leviter sinuatum, breviter effusum. Operculum ut praec.

Alt. 10, diam. maj. 4 mm.

**41. Truncatella expansilabris** Q. et Mlldff.


Alt. 10,5, diam. 4,5 mm.

**42. Truncatella (Taheitia) parvula** Q. et Mlldff.

T. imperforata, fere cylindrica, solidula, subpellucida, alba, costis validis latiusculis gradually narrowing. Whorls five, convex, deep discrete suture, .... Aperture vertical, acuminate oval, peristome simple, continuous, adjoining the whorl above, somewhat expanded, the base gently reflexed. Operculum as the preceding species.

Height 10 mm, maximum width 4 mm,

**41. Truncatella expansilabris** Q. et Mlldff.

Shell barely rimate, turrete, little bit solid, not quite translucent, strong narrow ribs with equally wide interstices, towards the sutures becoming subtuberculate, 31 ribs on the basal whorl, yellowish white. Basal whorls five rather convex, suture with a discrete margin, the last whorl in front slightly ascending, .... Aperture vertical, pointed oval, peristome exterior widely expanded, more flaring basally, a little bit folded at the bottom, towards the columella less expanded, the top the least expanded and joined to the whorl above. Operculum externally very convex with radiating folds.

Height 10.5 mm, width 4.5 mm.

**42. Truncatella (Taheitia) parvula** Q. et Mlldff.

Shell imperforate, almost cylindrical, fairly solid, not quite translucent, the strong ribs
well spaced with 13 to 14 on the basal whorl. The bottom whorls four, not a little flattened, ... Aperture vertical, slanted oval, peristome duplex, the external one rather expanded, very thick, ..., the internal one very extended ....

Height 5.5 mm in, width 2.5 mm.

43. *Truncatella (Taheitia) lamellicosta* Q. et Mlldff.

Shell not rimate, subcylindrical, turrete, narrow, ribs narrow, acute, sharp, rather separated - 18 on the last whorl. The lower whorls five, convex, slowly ascending, sture deep and discrete, strongly crest-like atop the last whorl, very flattened, .... Aperture vertical, slanted oval, peristome simple and free all around, rather expanded, the right margin rather flaring.

Height 7 mm, width 2.75 mm.

44. *Truncatella (Taheitia) alata* Q. et Mlldff.

Shell shell imperforate, elongate turritiform, rather solid, ribbed, 22 ribs on the last whorl, whitish; spire gradually attenuating, then decollate. Six lower whorls, suture

Alt. 7, diam. 2.75 mm.
sutura profunda disjuncti, ultimus basi haud cristatus. Apertura verticalis, anguste ovlais, peristoma duplex, internum sat expansum, incrassatulum, subporrectum, externum latissime expansum, sinuosum, superne magis dilatatum, alae instar patens. Operculum carilageum, extus convexum, costulis lamelliformibus ratiatis ornatum.

Alt. 10, diam. fere 3, apert. c. perist. lat. 3, long. fere 4, alt. 3,5 mm.


Alt. 2,5, diam, 2,5 mm.

46. *Georissa biangulata* Q. et Mlldff.
Shell globose conic, thin, fine striae, very thin membraneous costae sticking out, whitish or yellowish horn colour. Whorls four,
flavescens. Anfr. 4 convexi, lateraliter compressi, supra et infra peripheriam obtuse angulati, in angulis alis brevibus curvatis ornati. Apertura valde obliqua, late ovalis, truncata, peristoma rectum obtusum, margine columellari reflexo, appresso.

Alt. 1,75, diam. 1,5-1,66 mm.

[...]  
[End Quadras and Moellendorff 1894b]