

## The Land Mollusca of the Treasury Islands, Solomon Islands

R. K. DELL<sup>1</sup>

IN THE COURSE of war service in the Solomon Islands the writer was stationed on Stirling Island in the Treasuries from December 10, 1943, to January 13, 1944. A collection of land snails was made and subsequently this was supplemented by a collection made on Mono Island at about the same time by Mr. N. Gardner. Smith (1885) recorded a number of species collected by Guppy from the group, but since that time little has been added. A great deal of scattered work has been published on the land snails of the Solomons but few faunal lists have been prepared for any specific island or group. The writer has recently (Dell, 1955) given an account of the land snails of an island in the northern Solomons (Nissan) and the present account presents another step towards a fuller understanding of the zoogeography of the Solomon Islands.

The Treasury Group consists of two main islands, Mono and Stirling. Mono is a compound volcanic and coral deposit island some five and one half by nine miles in extent rising to 1,150 feet. Stirling, slightly to the south, is an elevated barrier reef with a comparatively flat surface rising to no more than 71 feet (Guppy, 1887). Most of the surface of both islands was clothed in thick tropical vegetation.

The following account is not complete as the exigencies of military service did not

allow for comprehensive collecting and smaller species undoubtedly were missed. Smith's records have been incorporated. The writer is deeply indebted to Mr. N. Gardner who freely made the results of his collecting available and has presented specimens of a number of new species to the Dominion Museum.

### LIST OF SPECIES

- Leptopoma vitreum* (Lesson, 1830), Stirling  
*Pupina solomonensis* Smith, 1885, Mono  
*Diplommatina aerari* n. sp., Mono  
*Diplommatina solomonensis* n. sp., Mono  
*Palaina gardneri* n. sp., Mono  
*Sturanya modesta* (Pfeiffer, 1853), Mono, Stirling  
*Sturanya solomonensis* (Smith, 1885)  
*Geophorus agglutinans* (Sowerby, 1843), Stirling  
*Palaeohelicina egregia* (Pfeiffer, 1885), Stirling  
*Pseudocyclotus levis levis* (Pfeiffer, 1885), Mono  
*Omphalotropis nebulosa* Pease, 1872, Mono  
*Papusuccinea simplex* (Pfeiffer, 1885), Mono  
*Orpiella* (*Owaraha*) *treasuryensis* (Tryon, 1886), Mono  
*Dendrotrochus cineraceus cineraceus* (H. & J., 1841), Mono, Stirling  
*Skeba bombroni* (Pfeiffer, 1856), Mono, Stirling  
*Papuina* cf. *gamelia* (Angas, 1867), Mono, Stirling  
*Partula* sp., Mono  
*Placostylus* (*Placocharis*) *founaki* H. & J. 1854, Mono  
*Opeas gracile* (Hutton, 1834), Mono

<sup>1</sup> Dominion Museum, Wellington, New Zealand.  
Manuscript received October 9, 1954.

***Leptopoma vitreum* Lesson, 1830**

This species was comparatively common on vegetation on Stirling Island. It has been recorded elsewhere in the area from Guadalcanar, Malaita and Santa Anna (Rensch, 1936), Shortland Islands and Simbo (Smith, 1885), Bismarck Archipelago (Rensch, 1937), Nissan Island (Dell, 1955), and the writer has specimens from Savo Island, coll. R. R. Foster, -4-1944.

***Pupina solomonensis* E. A. Smith, 1885**

Smith in his original description recorded this species from Treasury Island, but it does not appear to have been collected since from that locality. Species of this genus are, however, often local and may be overlooked easily. The distinction between this species and *P. keraudreni* Vignard appears to be slight, and the two forms have a similar range throughout the Solomon Islands.

***Palaina gardneri* n. sp.**

Fig. 1c, d

Shell small, dextral, turretted, light brown in colour, but generally stained. First one and a half whorls with numerous fine axials. Subsequent whorls with numerous thin, raised, rather oblique lamellae which are more widely spaced on the body whorl (24 on penultimate).

Whorls six and a half, the first one and a half whorls mammillate, the following whorls gradually increasing, resulting in a turretted outline. Suture impressed, periphery rounded. A constriction in the shell of the body whorl above the aperture, the axials much finer and closer in the constriction. Aperture rounded, toothless, peristome continuous, the parietal portion compressed against the body whorl, margin thickened, expanded.

Height, 4.64 mm.; diameter, 2.27 mm., height of aperture, 1.64 mm.

HOLOTYPE: (M. F. 2516) and paratype (M. F. 2517) in Dominion Museum, Wellington. Two paratypes in the collection of Mr. N.

Gardner, Auckland, New Zealand. All specimens collected by N. Gardner, 1944.

LOCALITY: In leaf mould from ridge above Seveke River, Mono Island, Treasury Group.

This appears to be the first species of the genus to be recorded from the Solomon Islands, although it is known from many of the surrounding island groups, e.g., Bismarck Archipelago (Rensch, 1937), New Hebrides (Ancey, 1905), New Caledonia and Lord Howe Island. The turretted outline distinguishes this species from any of the geographically neighbouring forms.

The species is named for Mr. N. Gardner who collected the type series and generously donated this and other material to the Dominion Museum.

Iredale (1944: 303) has discussed the question of the type species of *Palaina* and shown that it must be one or other of the only two identifiable species listed originally by Semper. Of these two species Iredale has selected *macgillivrayi* Pfeiffer from Lord Howe Island as type.

***Diplommatina aerari* n. sp.**

Fig. 1b

Shell small, sinistral, spindle shaped, light brown. Whorls five and a half, apical whorls worn but first one and a half whorls apparently smooth. Following whorls with numerous raised, somewhat oblique lamellae, becoming more widely spaced on body whorl. Interstices with fine growth lines. The first one and a half whorls are mammillate, following three rapidly increasing, body whorl somewhat restricted. The major part of the body whorl above the aperture considerably depressed. The axials finer and more numerous in the depression. Body whorl rather angled at each side of the depression. Suture impressed. Aperture rather oblique, peristome continuous, subcircular, almost fused to the body whorl at the depression. A rather weak tooth in the centre of the peristome on the columellar side. Margin thickened, slightly channelled.

Height, 3.91 mm.; diameter, 2.18 mm.; height of aperture, 1.64 mm.

HOLOTYPE: (M. F. 2514) in Dominion Museum, Wellington. Collected by N. Gardner, 1944.

LOCALITY: In leaf mould from ridge above Seveke River, Mono Island, Treasury Group.

This and the following species are apparently the first records of the genus from the Solomon Islands. Species of *Diplommatina* have not as yet been recorded from the Bismarck Archipelago. The genus is probably quite widely distributed in both groups, but smaller land snails have undoubtedly been neglected in both groups. Thorough conchological exploration, especially of the larger islands, would certainly yield a rich harvest.

*Diplommatina aerari* bears a striking resemblance to *Palaina commixta* Rensch from New Britain but differs of course in the possession of the columellar tooth and in the outline of the aperture.

*Diplommatina solomonensis* n. sp.

Fig. 1a

Shell small, dextral, subcylindrical but upper whorls gradually tapering to a widely rounded apex, pale yellowish brown. Whorls six and a half, regularly increasing to about the fourth whorl, suture impressed. The last two whorls approximately the same width. The first one and a half whorls sculptured with very fine axials, followed on subsequent whorls by fairly regular, numerous, raised lamellae, microscopic spirals between the lamellae. Body whorls flattened in the middle above the aperture.

Aperture rounded, entire, flared outwards, closely appressed to body whorl at the flattened portion. A small, but prominent, tooth on the columella side of the peristome. Peristome margin wide, slightly channelled. The region behind the peristome on the body whorl considerably thickened, the thickened portion clearly marked off by a prominent raised axial rib.

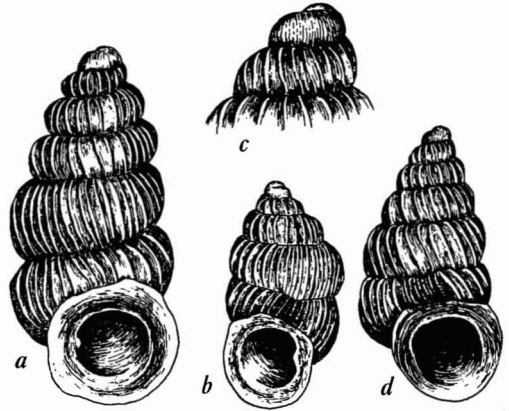


FIG. 1. a, *Diplommatina solomonensis* n. sp., holotype (3.09 × 1.45 mm.); b, *Diplommatina aerari* n. sp., holotype (3.91 × 2.18 mm.); c, *Palaina gardneri* n. sp., protoconch; d, *Palaina gardneri* n. sp., holotype (4.64 × 2.27 mm.).

Height, 3.09 mm.; diameter, 1.45 mm.; height of aperture, 1.18 mm.

HOLOTYPE: (M. F. 2515) in Dominion Museum, Wellington. Collected by N. Gardner, 1944.

LOCALITY: In leaf mould from ridge above Seveke River, Mono Island, Treasury Group.

*Diplommatina solomonensis* n. sp. differs at sight from *D. aerari* in being dextral, in having a much narrower shell, and a very different spire outline.

The remaining 14 species are members of the family Helicinidae. The forms of this family from the Solomons and indeed from the Pacific islands generally are urgently in need of revision. Wagner's works on the genus are not available in this country but the figures and descriptions that have been published are usually totally inadequate for the fine discrimination of species. Figures such as those of Reeve are too small and indefinite. The systematics of the group is a problem that can be solved only by those having access to the type specimens and to adequate, carefully localized series of specimens. The following species have been recorded from the Treasury Group but the identifications should be taken as provisional only.

***Sturanya modesta* (Pfeiffer, 1853)**

This species was recorded from the Treasury Group by Smith (1885) and there are specimens in the Suter Collection of land shells (now in the Dominion Museum), sent to Suter by Hedley from the same locality. A small yellow helicinid was common in vegetation on Stirling Island but, unfortunately, the specimens collected by the writer were lost in transit.

***Sturanya solomonensis* (Smith, 1885)**

Specimens from Treasury Island were recorded by Smith in his original description of the species. Rensch (1936: 682) indicated that this species probably was synonymous with *modesta* (Pfr.).

***Geophorus agglutinans* (Sowerby, 1843)**

The writer collected a single specimen from Stirling Island which is close to, if not identical with, this species. There are also similar specimens in the Suter Collection (ex Beddome) from "Treasury Islands."

***Palaeohelicina egregia* (Pfeiffer, 1853)**

Specimens which are referable to this species were collected by N. Gardner from Stirling Island.

***Pseudocyclotus levis levis* (Pfeiffer, 1855)**

N. Gardner collected this species from Mono Island. From the Solomon Group it has been recorded from Bougainville, Faro, Shortland Island, Choiseul, New Georgia, Guadalcanar, Santa Anna (Rensch, 1936); Nissan (Dell, 1955); and is known to the writer from Galera (Suter Collection) and from Savo, collected by R. R. Foster. -4-1944.

***Omphalotropis nebulosa* Pease, 1872**

This species also was collected from near the Seveke River, Mono Island by N. Gardner.

***Papusuccinea simplex* (Pfeiffer, 1854)**

The species was recorded from Treasury by Smith (1885).

Iredale introduced his new genus *Papusuccinea* for the New Guinea form, which he regarded as distinct from the widespread *Succinea simplex* Pfeiffer originally described from "Solomon's Islands" (not the New Hebrides as stated by Iredale), without giving any concrete differences between it and related forms. The genus may well be used until anatomical investigation determines its validity.

***Orpiella* (Owaraha) *treasuryensis* (Tryon, 1886)**

1885 *Helix* (*Nanina*) *nitidissima* Smith, *Zool. Soc. London, Proc.* 1885: 589, pl. 36., fig. 1.

1886 *Nanina* (*Eurypus*) *Treasuryensis* Tryon, *Man. Conch.* (2) 2: 111, pl. 37, f. 100, 1, 2. (New name for *nitidissima* Smith, 1885, now Moellendorff.)

1923 *Fretum treasuryensis* (Tryon); Clapp, *Harvard Univ., Mus. Compar. Zool., Bul.* 65: 357.

1936 *Orpiella treasuryensis* (Tryon); I. Rensch and B. Rensch, *Rev. Suisse de Zool.* 43 (32): 657.

Originally, this species was described from Treasury but does not appear to have been collected there since. Rensch (1936: 657) records it also from Guadalcanar.

**Genus *DENDROTRUCHUS* Pilsbry, 1894**

Orthotype: *Helix heliconoides*, H. & J. (= *Helix* (*Geotrochus*) *cleryi simboana* Smith).

Baker (1941: 256) has shown that *heliconoides* (Jacquinot) Pfeiffer must be considered to be preoccupied by Mousson. The first valid name for this species appears to be *Helix* (*Geotrochus*) *cleryi simboana* Smith. Rensch (1924) has considered a number of the species of *Dendrotrochus* from the Solomons and the Bismarck Archipelago to form a "Rassenkreis" and has utilized *heliconoides* as the nominate form using *cineraceus* (H. & J.) in a subspecific sense. *Helix heliconoides* H. &

J. dates from 1849 and *Helix cineraceus* (H. & J.) from 1841, so that *cineraceus* as the oldest valid name, should have been used as the nominate form. The available names for the Solomon Island members of the "Rassenkreis" that Rensch considered would be as follows:

*Dendrotrochus cineraceus cineraceus* (H. & J., 1841)

Choiseul and Shortland Island (Rensch),  
(Hombron and Jacquinot gave New Guinea).

*Dendrotrochus cineraceus cleryi* (Recluz, 1851)  
Solomon Islands.

*Dendrotrochus cineraceus meridionalis* (Smith, 1885)  
Santa Anna.

*Dendrotrochus cineraceus simboana* (Smith, 1885)  
Simbo.

*Dendrotrochus cineraceus septentrionalis* (Smith, 1885)

Choiseul Bay, Shortland, Treasury Islands.

*Dendrotrochus cineraceus cyrene* (Crosse)  
Ugi.

*Dendrotrochus cineraceus tenera* (I. and B. Rensch, 1935)

Guadalcanar, Savo, Ysabel.

The type locality of *cineraceus* is in some doubt but from the original figure Rensch seems to have placed it fairly satisfactorily in the Bougainville Strait area. Smith's *septentrionalis* would then be an exact synonym of *cineraceus* and in Rensch's opinion, *simboana* Smith should be treated as equivalent to *heliconoides*. Rensch also considers that *cyrene* Crosse and *meridionalis* Smith are synonyms of *cleryi* Richy. Accepting these conclusions the following subspecies should be recognized:

*Dendrotrochus cineraceus cineraceus* (H. & J., 1841)

Choiseul, Shortland, Treasury.

*Dendrotrochus cineraceus simboana* (Smith, 1885)  
Simbo, Hammond, Ysabel, Guadalcanar, Malaita, Vella Lavella (Dominion Museum).

*Dendrotrochus cineraceus cleryi* (Recluz, 1851)  
San Cristobal, Santa Anna, Ugi, Ulawa, Bio.

*Dendrotrochus cineraceus tenera* (I. and B. Rensch, 1935)

Guadalcanar (Savo specimens are intermediate between *tenera* and *simboana*).

This grouping is essentially that of Rensch, although at first sight the nomenclature appears very different.

### *Dendrotrochus cineraceus cineraceus* (H. & J., 1841)

A single specimen from Stirling Island, collected by N. Gardner is referable to this form. As already noted, Smith (1885) recorded this form from the Treasuries as *cleryi simboana*.

### *Sheba hombroni* (Pfeiffer, 1856)

A specimen was collected by the writer from Mono Island and two from Stirling Island by N. Gardner. There are other specimens in the Dominion Museum from the group (Suter Collection) and one from Shortland Island.

### *Papuina* (Solmopina) aff. *gamelia* Angas, 1867

Three specimens of a *Papuina* have been seen by the writer from the group, one from Stirling and two from Mono. The species centred round *gamelia* and *hargreavesi* Angas have not been clearly defined. *P. gamelia* was described from St. Stephen and Ysabel. Smith (1885) added Shortland, Treasury and Choiseul. Rensch (1935) made *hargreavesi* Angas a synonym and added Bougainville to the list of localities. It is unfortunate that Rensch did not figure any of the large series he had from Choiseul (170 shells). The Treasury shells that the writer has seen do not agree with the figures of *gamelia* given by Angas in Tryon, being comparatively shorter. Nor do they agree with shells from Bougainville. Until this group of *Papuina* from around Bougainville Strait can be accurately defined there can be no finality in the matter.

The Treasury shells have the following dimensions: Height, 14.8, 17.4, and 15.0 mm.; diameter, 20.5, 21.8 and 21.2 mm., respectively. All three specimens have a comparatively sharp angulation on the periphery of the body whorl. The development of the dark brown spiral bands varies somewhat. A faint suprasutural band develops on the penultimate whorl to continue across the body whorl as a thin band above the periphery, and a stronger spiral band encircles the body whorl below the periphery. The columella is white tinged with faint pinkish purple.

Genus *PARTULA* Férussac, 1821

Subgenus *MELANESICA* Pilsbry, 1909

Clench (1941: 19) supplied a résumé of progress in knowledge of the Solomon Islands members of the group, and commented that there was little to report subsequent to Pilsbry's review of the group in 1909. Identifications of Solomon Island material using the literature available has proved to be impossible and it is obvious that a critical review of the group based upon the type material and ample localized series is long overdue.

*Partula* (*Melanesica*) cf. *cinerea* Albers  
Fig. 2

A single specimen has been seen from the Treasury Islands which could be identified from the literature with any one of a number of forms. It is figured here for the benefit of a future monographer. The other available Solomon Island material will be described later.

Smith (1885:955) identified specimens from Treasury Island collected by Guppy as *P. cinerea* Albers and also recorded the same species from Gulph Island (coll. Brenchley) and Guadalcanar (coll. Macgillivray). Sowerby and Fulton recorded *micans* Pfeiffer from the nearby Shortland Islands (*vide* Pilsbry, 1909: 295). Clench (1941: 20) synonymises both *cinerea* Albers and *perlucens* Hartman with

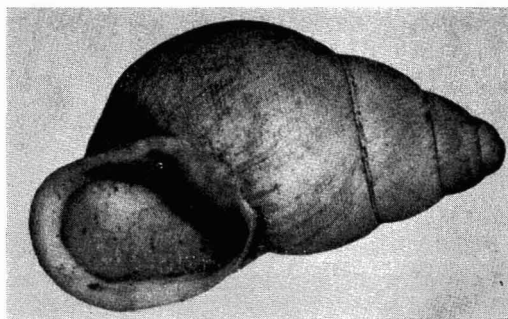


FIG. 2. *Partula* (*Melanesica*) cf. *cinerea* Albers. Treasury Islands (12.7 X 7.3 mm.).

*micans* Pfeiffer and indicates that the record by Sowerby and Fulton probably is based on another species. *M. micans* apparently occurs on a group of islands around Ugi, San Cristoval.

The single Treasury specimen of four and a half whorls is considerably smaller than any specimens seen from Guadalcanar. Height, 12.7 mm.; diameter, 7.3 mm.; height of aperture, 6.4 mm., width of aperture, 4.5 mm.

*Placostylus* (*Placocharis*) *founaki*  
(Hombron and Jaquinot) Rousseau, 1854

A number of specimens were collected at Falimai, Mono Island, by N. Gardner. Clench (1941: 8) has recently summarized our knowledge of the species which has been recorded from a number of localities about Bougainville Strait (Bougainville, Choiseul, Faro, and Treasury) and from Ysabel.

*Opeas gracilis* Hutton, 1854

Specimens of this widely distributed species were collected from near the Seveke River, Mono Island, by N. Gardner.

DISCUSSION

Any discussion of the distribution of the land snails of the Solomons is hampered by our lack of knowledge of the exact distribution of any species within the group. Thus the three species that apparently are endemic to the Treasuries, *Diplommatina aerari*, *D.*



*solomonensis*, and *Palaina gardneri*, very probably occur elsewhere but have not been collected. Of the 19 species recorded here, the following eight have a wide range of distribution throughout the group: *Papusuccinea simplex*, *Pupina solomonensis*, *Sturanya modesta*, *Palaeohelicina egregia*, *Pseudocyclotus levis*, *Leptopoma vitreum*, *Omphalotropis nebulosa*, and *Opeas gracilis*. Two species, *Orpiella treasuryensis* and *Partula* sp. appear to have affinities with the fauna of the southern Solomons. A significant three species have a distribution restricted to the islands surrounding Bougainville Strait. Thus *Dendrotrochus cineraceus cineraceus* is, as far as is known, confined to Choiseul, Shortland, and Bougainville, whereas *Placostylus founaki* and *Papuina gamelia* both apparently extend to Bougainville and as far south as Ysabel. However, neither of these species reach Vella Lavella, Gizo or New Georgia where the genera are represented by very different species. The land snail relationships appear to extend from Bougainville via Shortland and Treasury, Choiseul and Ysabel, but not via Vella Lavella to New Georgia. This point will be dealt with more fully on a later occasion.

## REFERENCES

- BAKER, H. B. 1941. Zonitid snails from the Pacific islands. Parts 3 and 4. *Bernice P. Bishop Mus., Bul.* 166: 205–370.
- CLENCH, W. J. 1941. The land Mollusca of the Solomon Islands (Succineidae, Bulimulidae and Partulidae). *Amer. Mus. Novit.* 1129: 1–21.
- DELL, R. K. 1955. The land Mollusca of Nissan Island, Solomon Islands. *Pacific Sci.* 9 (3): 324–334.
- GUPPY, H. B. 1887. *The Solomon Islands: Their geology, general features and suitability for colonization.* vii + 152 pp. Swan Sonnenschein, Lawrey & Co., London.
- IREDALE, T. 1941. A basic list of the land Mollusca of Papua. *Austral. Zool.* 10: 51–94.
- PILSBRY, H. A. 1909. [Tryon, G. W. and H. A. Pilsbry] *Manual of Conchology.* Ser. 2, vol. 20. v + 336 pp., 43 pls. Academy of Natural Sciences of Philadelphia, Philadelphia.
- RENSCH, I. 1934. Studies on *Papuina* and *Dendrotrochus*, pulmonate mollusks from the Solomon Islands. *Amer. Mus. Novit.* 763: 1–26.
- 1937. Systematische und Tiergeographische Untersuchungen über die Landschnecken — Fauna des Bismarck-Archipels II. *Arch. f. Naturgesch. (N. F.)* 6: 525–644.
- RENSCH, I., and B. RENSCH. 1936. Systematische und Tiergeographische Studien über die Landschnecken der Solomonen II. *Rev. Suisse de Zool.* 43: 653–695.
- SMITH, A. E. 1885. On a collection of shells (chiefly land and freshwater) from the Solomon Islands. *Zool. Soc. London, Proc.* 1885: 588–609.