

**Notes on terrestrial molluscs of the island of Sulawesi.  
The genus *Diplommatina* (Gastropoda, Caenogastropoda, Diplommatinidae)**

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This paper deals with the systematics of the *Diplommatina* species (Diplommatinidae) occurring in Sulawesi, Indonesia. Eighteen species are described as new to science, viz. *Diplommatina beckmanni*, *D. bonensis*, *D. boucheti*, *D. burleyi*, *D. celebensis*, *D. conditoria*, *D. dumogaensis*, *D. isolata*, *D. kittelorum*, *D. mongondowensis*, *D. obliquistriata*, *D. pseudopolita*, *D. riedeli*, *D. silanensis*, *D. suprallemellata*, *D. tammesboltae*, *D. torajaensis*, and *D. vermeuleni*. The unpublished designation of lectotypes for *D. masarangensis* and *D. sopotensis* by the late Dr. L. Forcart (Basel) is validated by this publication.

Key words: Gastropoda, Prosobranchia, Diplommatinidae, *Diplommatina*, taxonomy, distribution, Indonesia, Sulawesi.

INTRODUCTION

During fieldwork in Sulawesi, Indonesia (1995, 2001, 2002) the author collected material representing a fairly large number of species of land molluscs. Important series of additional material were received from Mr. K. & Ms. T. Kittel, Wiesthal (1991, 1995), from Dr. J. J. Vermeulen, Leiden (1985, 2002), and from Dr. P. Bouchet, who collected very interesting material during an expedition of the Muséum National d'Histoire Naturelle, Paris (1991). Some additional samples were received from Mr. E. Schwabe (Zoologische Staatssammlung, München), Ir. H.P.M.G. Menkhorst (Krimpen aan de IJssel), Mr. R. Moolenbeek (Zoölogisch Museum, Amsterdam) and Dr. E. Gittenberger (Nationaal Natuurhistorisch Museum *Naturalis*, Leiden). After contributions by Maassen & Kittel (1996) and Maassen (1998, 2003), this is the fourth publication on this material.

So far, only two *Diplommatina* species were known from Sulawesi, viz. *D. sopotensis* Sarasin & Sarasin, 1899, and *D. masarangensis* Sarasin & Sarasin, 1899. Type material of these two species was received on loan from the Naturhistorisches Museum, Basel. In the material that could be studied now, another eighteen species were discovered, all of which apparently new to science. These are described in this paper. Many samples are available for study now, but some species were collected in only a few specimens. Most probably these snails live in habitats that are not easily accessible to collectors.

In view of the limited number of collecting sites, the total number of species must be much higher. Many extensive limestone areas in Sulawesi are still unexplored, so that a fairly high number of new species can be expected from such areas. From for example the two large eastern peninsulas, where large limestone areas are known to exist, not a single diplommatinid species is known.

As Vermeulen (1993) noted, Sulawesi does not share any taxa of the genus *Diplommatina* with Borneo. It turned out that this is also the case with Java.

After each reference to material seen by the author the number of specimen is given after a slash. Unless stated otherwise, the specimens mentioned as belonging to the new species are to be considered paratypes.

Abbreviations for shell characters: B, width; H, height. For collections: KW, K. Kittel, Wiesthal; MD, W.J.M. Maassen, Duivendrecht (eventually this material will be deposited in RMNH); NMB, Naturhistorisches Museum, Basel (Sarasin collection); MNHN, Muséum National d'Histoire Naturelle, Paris; RMNH, Nationaal Natuurhistorisch Museum Naturalis, Leiden (formerly: Rijksmuseum van Natuurlijke Historie); VS, Dr. J.J. Vermeulen, Leiden; ZMA, Zoölogisch Museum, Universiteit van Amsterdam; ZSM, Zoologische Staatssammlung München.

## SYSTEMATIC PART

Family Diplommatinidae L. Pfeiffer, 1856

Genus *Diplommatina* Benson, 1849; type species *Bulimus folliculus* L. Pfeiffer, 1846 (Bengalia).

Key to the *Diplommatina* species from Sulawesi

1a. Shell dextral	.2
1b. Shell sinistral	.5
2a. With flaring radial ribs	<i>supralamellata</i>
2b. With low radial ribs	.3
3a. Aperture clearly tilted against the coiling axis	.4
3b. Aperture not tilted	<i>conditoria</i>
4a. Conical, with flat sides	<i>obliquestriata</i>
4b. Conical, with slightly concave sides	<i>silanensis</i>
4c. Conical, with distinctly concave sides	<i>boucheti</i>
5a. Shell high-conical	.6
5b. Shell more depressed conical	.9
6a. Shell large [H > 4.3 mm]	<i>vermeuleni</i>
6b. Shell smaller [H < 3.5 mm]	.7
7a. With distinct spiral sculpture	<i>burleyi</i>
7b. With indistinct spiral striation	.8
8a. Aperture with rounded columellar corner	<i>masarangensis</i>
8b. Aperture with angular columellar corner	<i>dumogaensis</i>
9a. Outer peristome with two edges [N. Sulawesi only]	.10
9b. Outer peristome with one edge at most	.12
10a. Aperture ascending	<i>riedeli</i>
10b. Aperture not ascending	.11
11a. More ribs on the penultimate whorl	<i>soputensis</i>
11b. The same number of ribs on last two whorls	<i>mongondowensis</i>
12a. Whorls flattened, suture shallow	.13
12b. Whorls convex, suture deep	.14
13a. Shell height < 2.2 mm	<i>tammesboltae</i>
13b. Shell height > 2.5 mm	<i>bonensis</i>
14a. Shell height > 2.0 mm	.18
14b. Shell height < 2.0 mm	.15
15a. Apex somewhat oblique	<i>isolata</i>
15b. Shell more regularly coiled	.16

- 16a. Only the body whorl with some radial ribs ..... *pseudopolita*  
 16b. Entire shell with radial ribs and spiral sculpture ..... **17**  
 17a. Shell height < 1.7 mm; with widely spaced radial ribs (9-11/0.5 mm) .... *torajaensis*  
 17b. Shell height > 1.9 mm; with densely spaced radial ribs (12-14/0.5 mm) ... *kittelorum*  
 18a. Shell height < 2.3 mm ..... *beckmanni*  
 18b. Shell height > 2.7 mm ..... *celebensis*

*Diplommatina supralamellata* spec. nov. (figs 1-3)

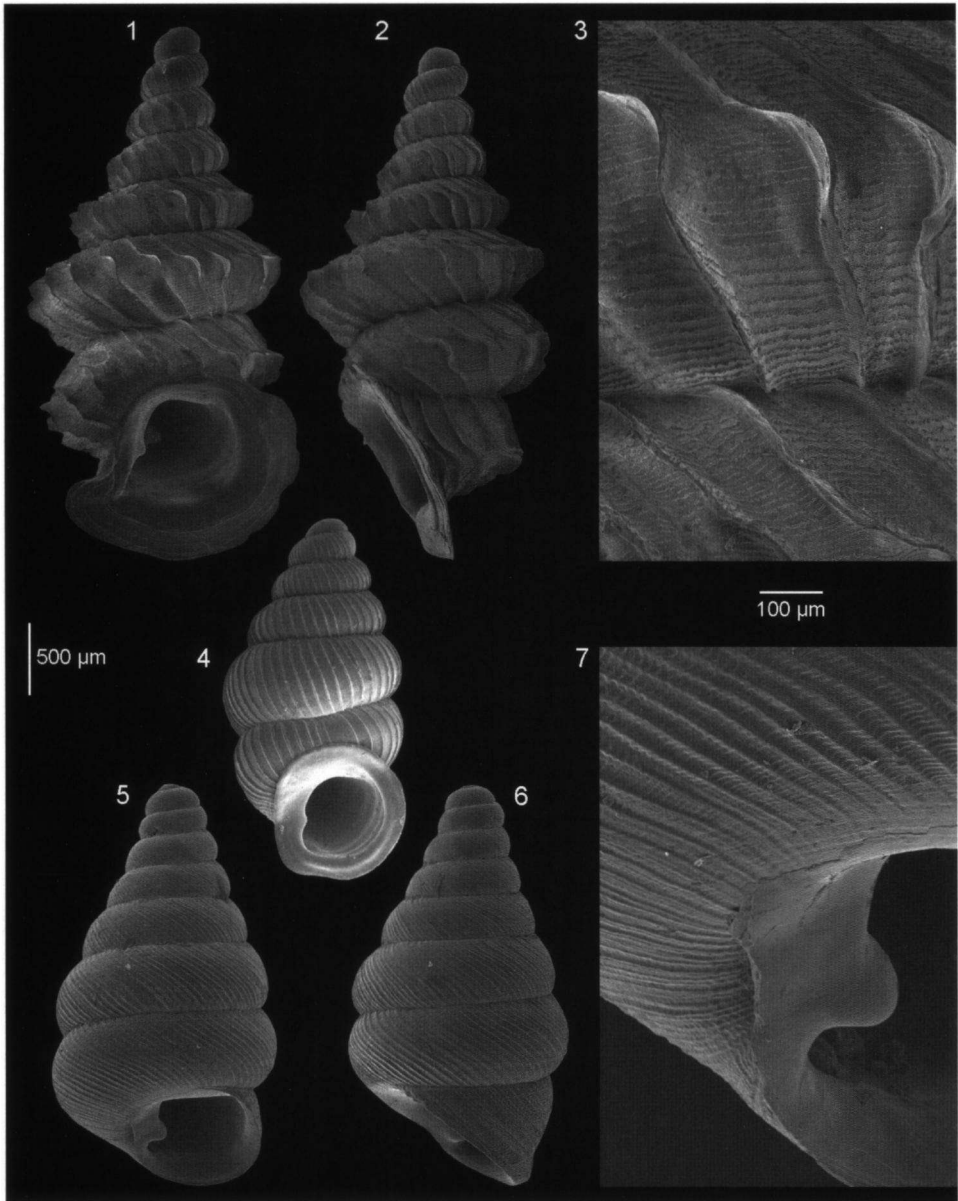
Material examined. – Indonesia, South Sulawesi: Tanah Toraja, Rantepao, Se'pom, 500 m N of Gunung Singki, under the tau-tau on the E-side, 02°58'S 119°58'E, depleted forest on limestone hill, leg. H. Turner, 21.x.1992 (VS 4317/2); Tanah Toraja, Rantepao, Gunung Singki, lower slopes, E side, 2°58'S 119°58'E, almost completely deforested limestone hill, leg. H. Turner, 21.x.1992 (VS 4242/18); Tanah Toraja, Lemo, near burial caves, SE of Rantepao, 700 m alt., v.1995 (MD 28/5); Tanah Toraja, 1/2 km SW of Rantepao, leaf litter near limestone outcrop, 750 m alt., 02°58.23'S 119°53.51'E, v.1995 (RMNH 108663/holotype, MD 24/60); do., 11.vii.2002 (MD 95/25); Tanah Toraja, Tampolang, 1.5 km W of Rantepao, 750 m alt., 02°57.18'S 119°53.63'E, 28.vii.2002 (MD 110/25); Tanah Toraja, Buntu Pune, 4 km SE of Rantepao, 800 m alt., 8.vii.2002, 02°59.51'S 119°54.09'E (MD 94/1); Tanah Toraja, 5 km N of Rantepao along Sadan River in direction Pangli, 750 m alt., 02°57.05'S 119°56.10'E, 13.vii.2002 (MD 96/10); Tanah Toraja, burial caves near Suaya, E of Makale, 03°05.63'S 119°54.17'E, 23.vii.2002 (MD 108/10); Tanah Toraja, 3 km from Rantepao in direction Palopo, ii.2002, leg. J.J. Vermeulen (MD 86/1); limestone rocks along Makalé-Kalossi road, near km mark 5, 700-800 m alt., ix.1948, leg. G.A. Tammes-Bolt (ZMA/5); Lake Matano area, Mt. Wawonseru, W of Soroako, closed forest on limestone, 650 m alt., 23.ix.1991, leg. P. Bouchet (MNHN/10); between limestone rocks, 6 km W of village Wasuponda, 33 km W of Soroako, 02°37.34'S 121°13.58'E, 19.vii.2002 (MD 104/15); limestone rocks along Malili-Soroako road, 2004, leg. J.J. Vermeulen (MD 122/15).

Indonesia, Central Sulawesi: Tomado, coffee plantation, 5.viii.1995 (KW/4); Pendolo/Boé, Lake Poso, Makilo, 700 m alt., 14.viii.1995 (KW/5); Bancea, Lake Poso, Ohrid Forest, 13.viii.1995 (KW/20); Tomado, Lake Lindu, Island Bolaj, 6.viii.1995 (KW/50); Bancea, primary forest W-side Lake Poso, NW of Pendolo, viii.1997, leg. H. Menkhorst (MD 70/1); Peruhumpenai Mountain Reserve, 15 km S of Pendolo, viii.1997, leg. H. Menkhorst (MD 69/1).

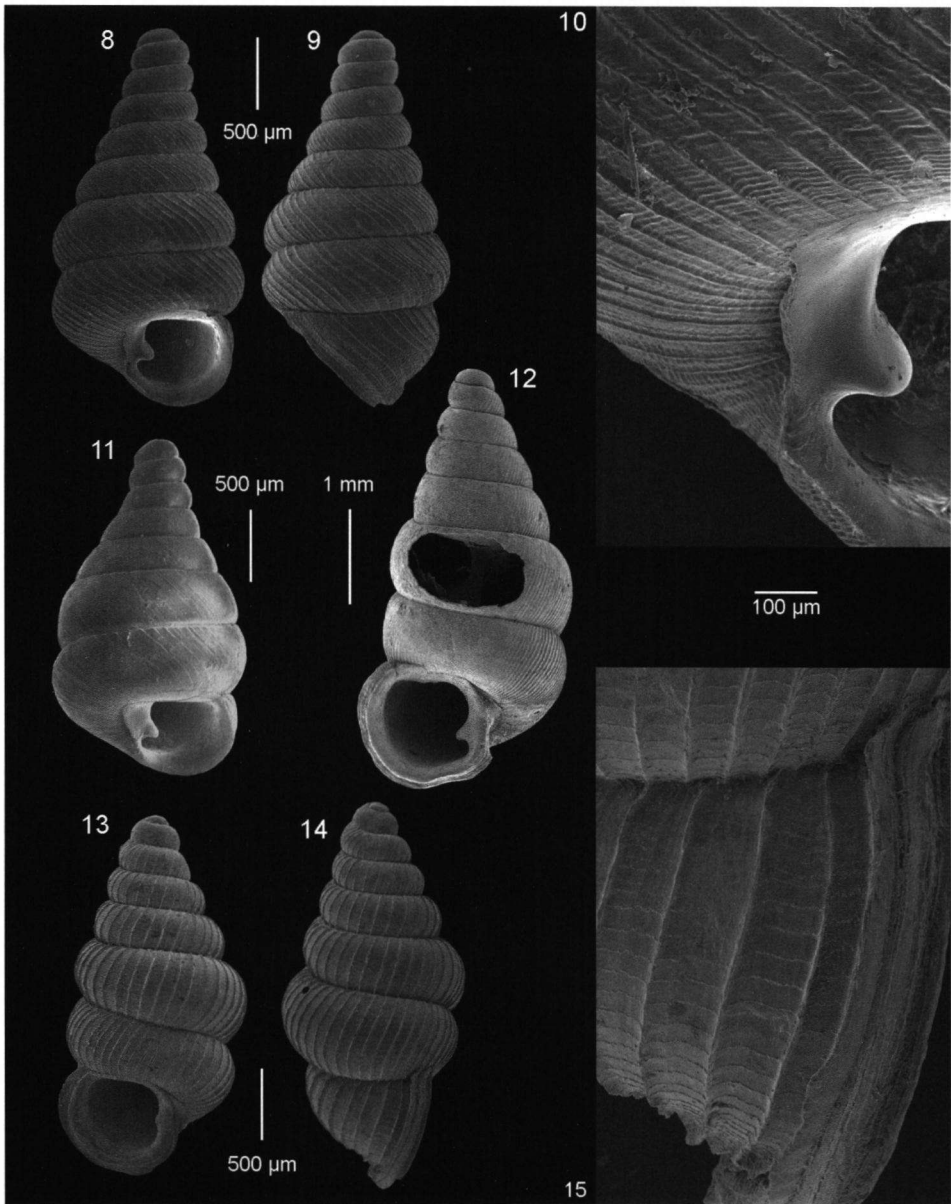
Description. – Shell dextral, high-conical, transparent, white, with convex sides; penultimate whorl widest. With 7 whorls; the upper ones with visible pits, the following with radial ribs and spiral threads. Radial ribs like periostracal lamellae; low and rather densely spaced near the top, but elsewhere more widely spaced (7 ribs/1 mm on the body whorl above the aperture), very high (highest in the middle), white, and rather thin and fragile. All ribs slightly sinuous, halfway the whorls with a loop to the right. Suture deeply impressed. Constriction situated at the parietal side of the penultimate whorl just above the peristome at the columellar side; with a transversal palatalis, a columellaris, and a parietalis. Umbilicus closed. The aperture somewhat tilted against the coiling axis, expanding beyond the peristome; with a small but distinct columellaris and a distinct notch at the junction of the columellar side and the basal lip. Peristome not continuous, double, fragile, expanding, with a regularly rounded palatal and basal side; columellar side with an edge. Outer lip of the peristome with a somewhat flattened basal side and a rounded palatal side; with a distinct and sharp edge at the columellar side.

Dimensions: H 3.2-3.8 mm; B 1.4-2.0 mm; H/B 2.1-2.3.

Derivatio nominis. – The epithet refers to the extraordinary sharp and high radial lamellae of this characteristic new species.



Figs 1-7. *Diplommatina* species. 1-3, *D. supralamellata* spec. nov., paratype (RMNH), Tanah Toraja, 0.5 km SW of Rantepao, actual height 3.4 mm; 4, *D. conditioria* spec. nov., holotype (RMNH 108664), Tanah Toraja, Londo, actual height 2.5 mm; 5-7, *D. obliquistriata* spec. nov., holotype (RMNH 108665), Maros Karst, Bantimurung, actual height 2.8 mm.



Figs 8-15. *Diplommatina* species. 8-10, *D. silanensis* spec. nov., holotype (RMNH 108666), Tanah Toraja, Silanen, actual height 2.6 mm; 11, *D. boucheti* spec. nov., holotype (MNHN), Batu Ranpun Bampa Puang, actual height 2.3 mm; 12, *D. vermeuleni* spec. nov., holotype (RMNH 108667), Tanah Toraja, Silanen, actual height 4.4 mm; 13-15, *D. burley* spec. nov., paratype (RMNH), North Sulawesi, 25 km N of Gorontalo, actual height 2.8 mm.

Remarks. – Restricted to Tanah Toraja in the north of South Sulawesi and the neighbouring Lake Poso area in Central Sulawesi. So far, conchologically similar species are not known from elsewhere in Sulawesi. The populations from the Poso area differ somewhat from the Tanah Toraja populations. In the Poso populations the radial lamellae are less high and the spiral threads are finer.

*Diplommatina conditioria* spec. nov. (fig. 4)

Material examined. – Indonesia, South Sulawesi: Tanah Toraja, 6 km S of Rantepao, Londo, next to the burial caves, limestone hills, deforested except for the highest parts, 19.x.1992, leg. H. Turner (RMNH 108664/holotype, VS 4292/1 juvenile).

Description. – Shell dextral, more or less conical with convex sides; penultimate whorl widest. With 6 convex whorls, increasing regularly in width and height. Suture impressed. Constriction situated halfway at the parietal side of the peristome. As only the holotype was available the internal teeth could not be investigated. With straight, rather distinct, rather low and thin, densely spaced (16 ribs/1 mm on the body whorl above the aperture) radial ribs, and spiral threads. Umbilicus closed. Aperture hardly tilted against the coiling axis; with a rather inconspicuous columellaris, flat and only visible in oblique view. Peristome double, continuous, expanding. Outer peristome expanding over half the penultimate whorl at the parietal side; with an inconspicuous edge at the columellar side. Inner peristome protruding beyond the outer one, and with both a palatal and a basal lip.

Dimensions: H 2.5 mm; B 1.2 mm, H/B 2.1.

Derivatio nominis. – The epithet refers to the type-locality: burial caves = *conditiorium*.

Remarks. – This is one of the five dextral *Diplommatina* species known from Sulawesi. It differs from *D. supralamellata* by the absence of periostracal radial lamellae and from the following three species here described by the presence of an aperture which is not tilted. This species is only known from the type locality in the northern part of South Sulawesi in a single adult and a juvenile specimen.

*Diplommatina obliquestriata* spec. nov. (figs 5-7)

Material examined. – Indonesia, South Sulawesi, Maros Karst, Bantimurung National Park, 20 km E of Maros, v.1995, leg. W.J.M. Maassen (IND.16) (RMNH 108665/holotype).

Description. – Shell solid, dextral, conical with slightly concave, almost flat sides; body whorl widest. With 7 convex whorls, increasing very regularly in width and height; with a slightly impressed suture. The constriction could not be studied in detail because of the solid shell wall; only a very long longitudinal palatalis, running parallel with and near the suture could be seen in the holotype when moistened. Since only the holotype was available, the internal teeth could not be investigated. The apical whorls have small, clearly visible pits. Radial ribs rather low, very oblique, rather distinct, densely spaced (16 ribs/1 mm on the body whorl above the aperture), forming a somewhat granulated, silky surface with the distinct spiral threads. Umbilicus only partly covered by the expanded peristome, so that a very narrow fissure is left. Aperture small compared to the length of the shell, tilted c. 45 % against the coiling axis; columellaris distinct, directed more or less downwards. Peristome continuous, double, hardly expanded, not sinuous, and without edges. Outer peristome somewhat expanded basally; inner peristome without palatal lip, free and erect at the columellar side, not expanding at the parietal side.

Dimensions: H 2.8 mm; B 1.6 mm, H/B 1.75.

Derivation nominis. – The epithet refers to the oblique striation, which is characteristic for this and the following two species.

Remarks. – Known from only the type locality, in a single specimen. It must be a very rare species because in about 25 litres of leaf litter from different sites only a single specimen could be found. Three conchologically very similar species are also always collected in very small numbers. Maybe the optimal habitat for these species has not been located yet. See also the remarks with *D. silanensis* and *D. boucheti*.

*Diplommatina silanensis* spec. nov. (figs 8-10)

Material examined. – Indonesia, South Sulawesi, Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.09'S 119°51.53'E, 7.vii.2002 (RMNH 108666/holotype, MD 92/1); Tanah Toraja, Silanen (= Baturandan), coarse limestone scree slope, deep between boulders at a freshly cut roadside, 03°11.88'S 119°51.17'E, 28.ii.2002, leg. J.J. Vermeulen (MD 85/3).

Description. – Shell solid, dextral, conical with concave sides; last whorl widest. With 7 convex whorls, increasing very regularly in width and height; suture slightly impressed. The constriction could not be studied in detail because of the solid shell wall; only a very long longitudinal palatalis, running parallel with and close to the suture could be seen in moistened specimens. As only a very limited material was available for study, the remaining internal teeth could not be investigated. The apical whorls have small, but clearly visible pits. Radial ribs rather low, very oblique, rather distinct, densely spaced (13 ribs/1 mm at the body whorl above the aperture), forming a somewhat granulated, silky surface with the distinct spiral threads. Umbilicus only partly covered by the expanded peristome; a very small and narrow fissure is left. Aperture tilted for c. 45 % against the coiling axis; columellaris distinct, more or less clearly directed downwards. Peristome continuous, double, hardly expanding, not sinuous, and without edges. Outer peristome somewhat expanding; inner peristome without palatal lip, free and erect at the columellar side, not expanding at the parietal side.

Dimensions: H 2.6 mm; B 1.3 mm, H/B 2.0.

Derivatio nominis. – The epithet refers to the type locality, the old village Silanen at the south border of Tanah Toraja.

Remarks. – Known from only the type locality in a small number of somewhat eroded specimens. *Diplommatina silanensis* differs from *D. obliquestriata* by its more slender shell, the less delicate spiral striation, and the more widely spaced ribs. See also the remarks sub *D. boucheti*.

*Diplommatina boucheti* spec. nov. (fig. 11)

Material examined. – Indonesia, South Sulawesi: Enrekang-Cakke road, Batu Ranpun Bampa Puang (S of Makale), secondary forest with limestone boulders, leaf-litter, 530-600 m alt., 15.ix.1991, leg. P. Bouchet (MNHN/holotype, 2 paratypes); N of Cakke, 33 km S of Makale; 7.vii.2002; 03°17.89'S, 119°49.36'E (MD 91/2).

Description. – Shell solid, dextral, conical with distinctly concave sides; last whorl widest. Whorls 7, somewhat flattened. Initial whorls convex, increasing rather regularly in width and height; next whorls increasing suddenly in width and flattened. Body whorl convex. Suture slightly impressed. The constriction could not be studied in detail because of the solid shell wall; only a very long longitudinal palatalis, running parallel with and

close to the suture could be seen in moistened specimens. As only a very limited material was available, the other internal teeth could not be investigated. Apical whorls with small, clearly visible pits. Only on the last three whorls some irregularly spaced radial ribs are visible. Radial ribs very low, very oblique, hardly distinct. No trace of spiral threads is seen. Umbilicus only partly covered by the expanded peristome, so that a very small and narrow fissure is left. Aperture tilted c. 45 % against the coiling axis; columellaris distinct, directed more or less downwards. Peristome continuous, double, hardly expanding, not sinuous, without edges. Outer peristome somewhat expanding; inner peristome without palatal lip, free and erect at the columellar side, not expanding at the parietal side.

Dimensions: H 2.2-2.5 mm; B 1.3-1.4 mm, H/B 1.7-1.8.

Derivation nominis. – The species is named after Dr. P. Bouchet (Paris), who collected this species and many others and made his entire collection available for study.

Remarks. – Known from only two neighbouring localities, south of the population of *D. silanensis*, in a number of somewhat eroded specimens. *Diplommatina boucheti* differs from both *D. obliquistriata* and *D. silanensis* by the almost smooth four initial whorls, without any spiral striation and by the flattened last whorls.

*Diplommatina vermeuleni* spec. nov. (fig. 12)

Material examined. – Indonesia, South Sulawesi, Tanah Toraja, Silanen (= Baturandan), coarse limestone scree slope, from deep between boulders, freshly cut roadside, 03°11.88'S 119°51.17'E, 28.ii.2002, leg. J.J. Vermeulen (holotype RMNH 108667, MD 85/7); Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.09'S 119°51.53'E, 7.vii.2002 (MD 92/1).

Description. – Shell sinistral, with 7.5 slightly convex whorls, high-conical with straight sides; body whorl and penultimate whorl equally wide. Apical whorls smooth; the following ones with radial ribs but without any spiral threads. Radial ribs low and densely spaced (20 ribs/1 mm on the body whorl above the aperture). Suture rather impressed. Constriction situated in between the palatal and the columellar side; with a transverse palatalis, a distinct columellaris, and a longitudinal parietalis. Umbilicus closed. Aperture not tilted against the coiling axis; with a distinct columellaris. The palatal and the basal lip well rounded; the parietal and the columellar side more or less straight. At the junction of the basal and the columellar lip, just below the columellaris, there is an angular edge. Peristome not continuous, double, fragile, expanding, with a well rounded palatal and basal side; columellar side with an edge, expanding beyond the outer peristome. The outer lip of the peristome more or less circular, with an indistinct edge at the columellar side and an additional edge covering the umbilicus once more.

Dimensions: H 4.3-4.5 mm; B 2.2-2.3 mm; H/B 1.90-1.96.

Derivatio nominis. – Named in honour of my friend Dr. J.J. Vermeulen (Leiden), who discovered this and many more species in Sulawesi.

Remarks. – Known from only the type locality in some heavily eroded specimens. The holotype, although heavily damaged, is the only shell with a well preserved sculpture. As this species is by far the largest *Diplommatina* known from Sulawesi, with a densely striated surface, it can easily be recognized.

*Diplommatina burleyi* spec. nov. (figs 13-15)

Material examined. – Indonesia, North Sulawesi: limestone hills about 25 km N of Gorontalo, on the road to Kawang, 1990, leg. J. Burley (RMNH 108668/holotype, VS/35).



Description. – Shell sinistral, with 7.5 convex whorls, high-conical with convex sides; body whorl and penultimate whorl about equally broad. Apical whorls smooth, the following ones with radial ribs with distinct spiral threads in between. Radial ribs rather high, sharp, widely spaced (10 ribs/1 mm on the body whorl above the aperture). Suture impressed. Constriction situated just above the columellar side; with a transversal palatalis and a longitudinal palatalis just above and parallel with the umbilicus, a distinct columellaris, and a longitudinal parietalis. Umbilicus closed. Aperture ascending and hardly tilted against the coiling axis; with a distinct but rather flat columellaris. The palatal and the basal lip well rounded; the parietal and columellar lips more or less straight, but with a rounded angular edge. Peristome not continuous, double, fragile, expanding, and without any edges; with a well rounded palatal and basal side, expanding beyond the outer peristome.

Dimensions: H 2.4-3.0 mm; B 1.3-1.6 mm; H/B 1.9-2.1.

Derivatio nominis. – The species is named in honour of its collector, J. Burley, who donated the material to Dr. J.J. Vermeulen, who presented the specimens for study.

Remarks. – Known from the original collection only. The species can be recognized by its distinct spiral threads, its outer peristome without any edges and the widely spaced radial ribs.

*Diplommatina masarangensis* Sarasin & Sarasin, 1899 (fig. 16)

*Diplommatina masarangensis* Sarasin & Sarasin, 1899: 59, pl. 4 fig. 44 ("Vulkan Masarang bei Tomohon").  
*Palaina (Palaina) masarangensis*, Kobelt 1902: 400.

Material examined. – Indonesia, North Sulawesi: Volcano Masarang near Tomohon (NMB 2255a/lectotype [design. nov.], paralectotypes NMB/2255a'/4); at foot of Volcano Lokon near Tomohon (NMB 2255b/1 paralectotype); at shore of Lake Limbotto (NMB 2255c/1 paralectotype). New record: N-arm of Sulawesi, Bolaäng Mongondow, E of Kotamobagu, S of lake Mooat, 1050 m alt., dead on landangs in undisturbed montane forest [loc. 1985-12 (IV)] (VS/3).

Description. – Shell sinistral, with 7.0-7.5 convex whorls, high-conical with slightly convex sides; body whorl widest. Apical whorls smooth; the following ones with radial ribs, in most specimens without spiral threads, but sometimes extremely subtle spiral threads are visible. Radial ribs rather high, widely spaced (13-14 ribs/1 mm on the body whorl above the aperture). Suture impressed. Constriction situated just above the columellar side, with a transversal palatalis, and a longitudinal palatalis just above and parallel with the umbilicus, a columellaris not visible in front view, and a longitudinal parietalis. Umbilicus closed. Aperture slightly ascending, hardly tilted against the coiling axis, no columellaris is visible in frontal view. The palatal and the basal lip well rounded; parietal and columellar sides more or less straight, but with a rounded angular edge. Peristome not continuous, double, fragile, expanding; with a distinct edge at about the junction of the basal and the columellar side. Inner peristome expanding beyond the outer.

Dimensions: H 3.1-3.3 mm; B 1.5-1.6 mm; H/B 2.0-2.1.

Remarks. – Known from a number of localities in the extreme northern part of Sulawesi. The species can be separated from *D. vermeuleni* by the absence of a columellaris, more widely spaced radial ribs, and smaller dimensions. It differs from *D. burleyi* by its outer peristome with an edge near the columellar side and by the shell sculpture. See the remarks with the next species. Apparently, the late Dr. L. Forcart has designated lectotypes from the original Sarasin samples in NMB. These designations have not been pub-

lished however, and are not available therefore. Here the designations by Dr. L. Forcart are accepted and validated properly.

*Diplommatina dumogaensis* spec. nov. (fig. 17)

Material examined. – Indonesia, North Sulawesi: N-arm Sulawesi, Bolaäng Mongondow, Dumoga Valley, confluence of rivers Tumpah and Topaut, ladangs in remnants of primary forest mixed with bekar, 300 m alt. (loc.1985-2 (III) (RMNH 108669/holotype, VS/14); do., N-slope Gunung Mogogonipa, (disturbed) lower montane forest, 600 m alt., alive on fallen, much decayed log, in humus (loc. 1985-3 (III) (VS/2); do., N-slope Gunung Mogogonipa, ladangs in undisturbed primary forest, 500 m alt. (loc. 1985-4 (III) (VS/4).

Description. – Shell sinistral, with 7.0-7.5 convex whorls, high-conical with slightly convex sides; body whorl widest. Apical whorls smooth; the following ones with radial ribs, in most specimens without spiral threads, but sometimes extremely subtle spiral threads are visible. Radial ribs rather high, widely spaced (10-11 ribs/1 mm on the body whorl above the aperture). Suture impressed. Constriction situated just above the columellar side, with a transversal palatalis and a longitudinal palatalis just above, and parallel with the umbilicus, a columellaris, hardly visible in frontal view, and a longitudinal parietalis. Umbilicus closed. Aperture slightly ascending, hardly tilted against the coiling axis; columellaris just visible in frontal view. The palatal and the basal lip well rounded; parietal and columellar side more or less straight, forming two angles at the extremities of the columellar lip. Peristome not continuous, double, fragile, expanding, with a distinct edge at about the junction of the basal and the columellar side; in some specimens an edge in the middle of the basal lip. Inner peristome expanding beyond the outer one.

Dimensions: H 2.7-3.1 mm; B 1.3-1.4 mm; H/B 2.0-2.2.

Derivatio nominis. – The epithet is derived from the type locality, the Dumoga Valley in the northern part of Sulawesi.

Remarks. – Known from only a small number of samples from the Dumoga Valley. For differences between this species and *D. vermeuleni* and *D. burleyi*, see the remarks under those species. *Diplommatina dumogaensis* tends to be smaller, more slender and more widely ribbed with higher, sharper radial ribs than *D. masarangensis*.

*Diplommatina riedeli* spec. nov. (fig. 18)

Material examined. – Indonesia, North Sulawesi: Kotamobagu, Matalibaru, road to Torosik, Gunung Tongara, 800-900 m alt., 5.xii.1999, leg. A. Riedel (ZSM/holotype, 7 paratypes, 4 paratypes in alcohol 70%).

Description. – Shell sinistral, with 6.0-6.5 convex whorls, low-conical with slightly concave sides; penultimate whorl widest. Apical whorls with small pits, the following whorls with radial ribs without intermediary spiral threads. Radial ribs rather high, sharp, densely spaced (21 ribs/1 mm on the body whorl above the aperture). Suture slightly impressed. Constriction is situated just behind the palatal side at the back of the shell at the start of the outer peristome; with a transversal palatalis, and a longitudinal palatalis just above, and parallel with the umbilicus and partly covered by the parietal lip; a distinct columellaris forming a strong lamella around the columella, a longitudinal parietalis. Umbilicus closed. Aperture ascending, tilted against the coiling axis for c. 30%, with a distinct columellaris, well rounded. Peristome not continuous, double, fragile, expanding; with two distinct edges at the basal side. Inner peristome expanding beyond the outer.

Dimensions: H 2.7-3.0 mm; B 1.7-1.9 mm; H/B 1.6-1.7.

Derivatio nominis. – The epithet is composed in honour of the entomologist Dr. A. Riedel (Munich), who collected some molluscs in northern Sulawesi.

Remarks. – Known from only the type locality. The species can easily be recognized by its peculiar shape and the long tuba.

*Diplommatina soputensis* Sarasin & Sarasin 1899 (fig. 19)

*Diplommatina soputensis* Sarasin & Sarasin, 1899: 58, pl. 4 fig. 45, pl. 5 fig. 59, pl. 8 fig. 90 (“am Vulkan Soputan bei ca 1150 m in der Minahassa”); Kobelt 1902: 473.

Material examined. – Indonesia, North Sulawesi: Volcano Soputan, 1500 m alt. (NMB/2263b/lectotype [design. nov.], 2263b/6 paralectotypes). New records: Kotamobagu, Matalibaru, road to Torosik, Gunung Tongara, 800-900 m alt., 5.xii.1999, leg. A. Riedel (ZSM/2); N-arm Sulawesi, Bolaäng Mongondow, E of Kotamobagu, S of Lake Mooat, dead on landangs in undisturbed montane forest, 1050 m alt., loc. 1985-12 (IV) (VS/15); N-slope Gunung Mogogonipa, (disturbed) lower montane forest, alive on fallen, much decayed log, in humus, 600 m alt., loc. 1985-3 (III) (VS/15); Tangkoko Nature Reserve, near Batiputih, 450m alt., 5.viii.2001 (MD 81/2); 2 km E of Desa Kakaskasen II, leaf litter in remains of secondary forest, 600 m alt., 01°21.39'N 124°50.95'E, 21.vii.2001 (MD 75/2); E-shore Lake Tondok, 12.5 km E of Kotamobagu, 00°43.44'N 124°26.40'E, 28.vii.2001 (MD 80/1);

Description. – Shell sinistral, with 7 slightly convex whorls, slightly opaque, conical with convex sides; body whorl just widest. Suture impressed. Constriction situated near the junction of the columellar and the parietal side; with a transversal palatalis, a longitudinal palatalis just above the columellar side, a more or less distinct columellaris, and a longitudinal parietalis. Radial ribs more or less sinuous, with a slight edge to the right on the lower half of the whorls; ribs low but distinct, densely spaced (10-12 ribs/1 mm on the body whorl above the aperture; 12-15 ribs/1 mm on the penultimate whorl). Always more densely ribbed on the penultimate whorl than on the body whorl. Spiral threads are not always discernible, sometimes only under high magnification. Umbilicus closed; near the umbilicus a distinct ridge. Aperture ascending, hardly tilted against the coiling axis; columellaris small but usually distinct. Peristome double, expanding. Outer peristome with a palatal side that may be moderately sinuous; basal side with two edges. Basal and columellar edge rather sharp; inner peristome usually with a palatal lip.

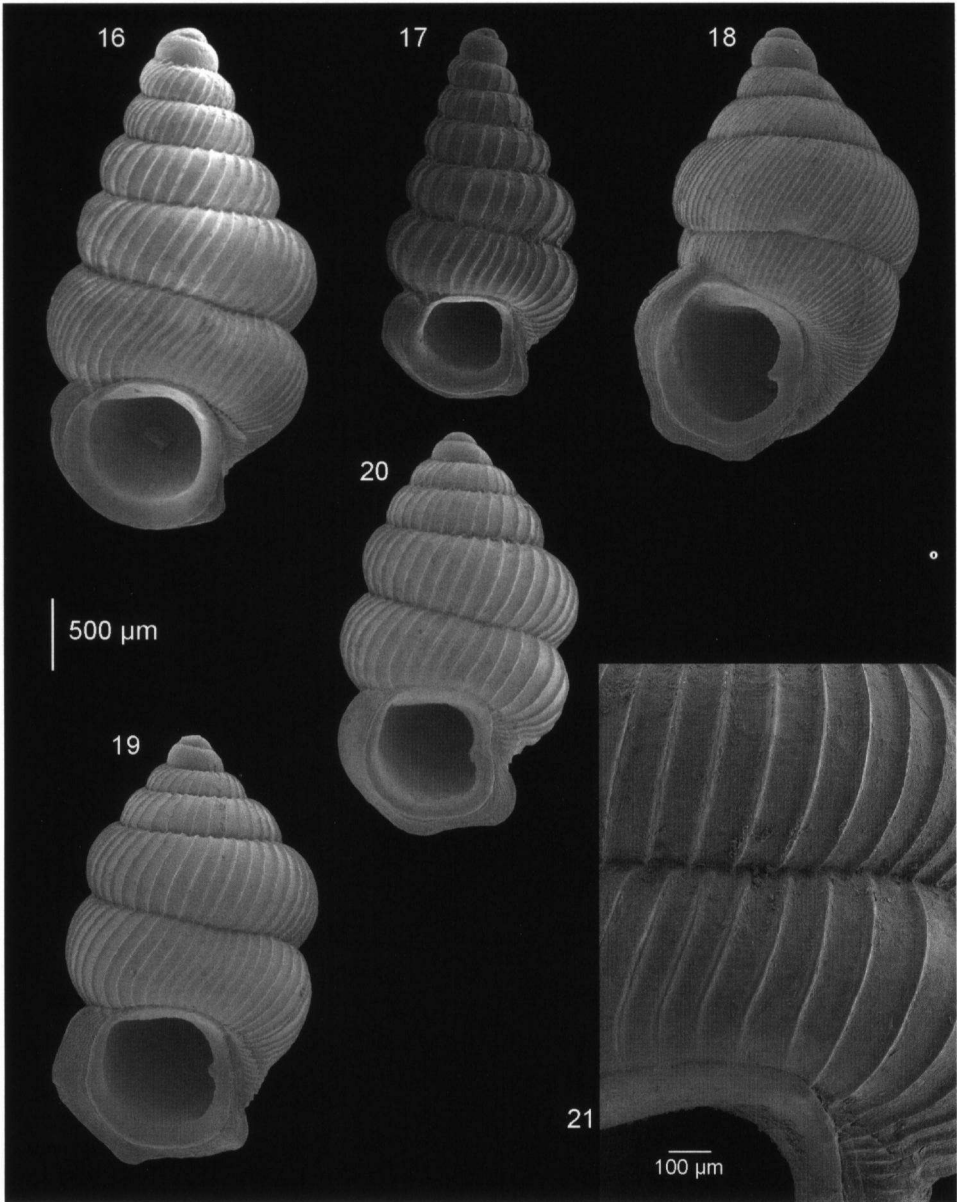
Dimensions: H 2.6-3.0 mm; B 1.6-1.8 mm, H/B 1.65.

Remarks. – The only species with two distinct edges and a similar shape is *D. riedeli*. This species however, has a much longer tuba and a distinctly ascending aperture.

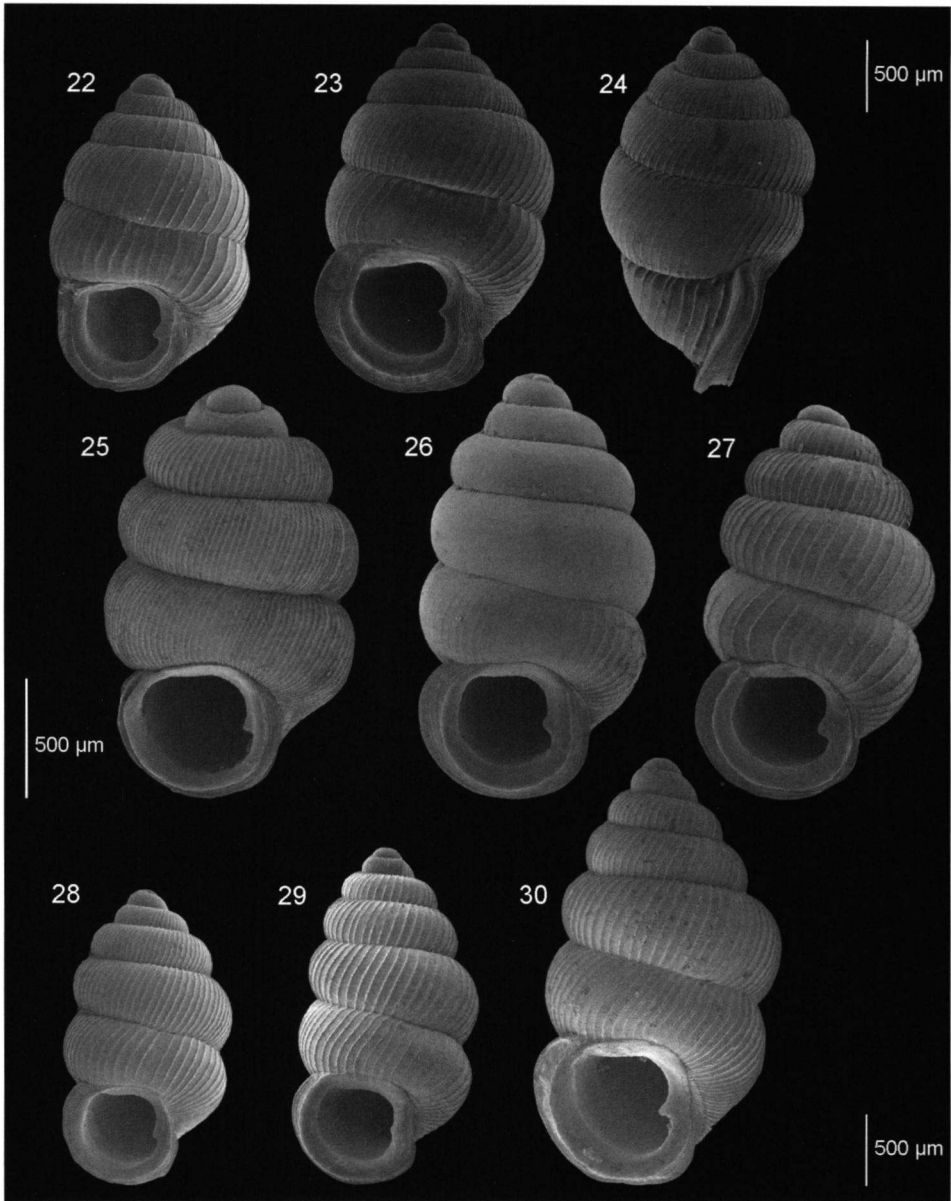
The Sarasin samples from NMB have the indications lectotype or paralectotype on the labels; apparently an initiative of the late Dr. L. Forcart. Since these designations have never been published they are not valid. In this paper the designations of Forcart are accepted and formally validated. The alleged ‘paralectotype’ from the upper Bone-Valley, E of Gorontalo (NMB/2263a/1) does not belong to *D. soputensis*, but to *D. mongondowensis* spec. nov.

*Diplommatina mongondowensis* spec. nov. (figs 20-21)

Material examined. – Indonesia, North Sulawesi: N-arm Sulawesi, Bolaäng Mongondow, mouth River Mongondow, W-side, 1 km N Solor, uplifted coral reef with dense, low primary forest, among limestone rocks, 20 m alt. (loc.1985-8 [III]) (VS/10); do., at km 7 along road from Kotamobagu to N-coast, 400 m alt., low and dense primary forest on slope of limestone ridge, dead in recent landangs (loc.1985-11



Figs 16-21. *Diplommatina* species. 16, *D. masarangensis* Sarasin & Sarasin, 1899, paralectotype (NMB 1155a'), North Sulawesi, Volcano Masarang near Tomohon, actual height 3.2 mm; 17, *D. dumogaensi* spec. nov., paratype (RMNH), North Sulawesi, Bolaäng Mongondow, Dumoga Valley, actual height 2.9 mm; 18, *D. riedeli* spec. nov., paratype (ZSM), North Sulawesi, Matalibaru, Gunung Tongara, actual height 2.8 mm; 19, *D. soputensis* Sarasin & Sarasin, 1899 (RMNH), North Sulawesi, Gunung Mogogonipa, actual height 2.8 mm; 20-21, *D. mongondowensis* spec. nov., paratype (RMNH), Bolaäng Mongondow, 7 km from Kotamobagu to N-coast, actual height 2.8 mm.



Figs 22-30. *Diplommatina* species. 22, *D. tammesboltae* spec. nov., paratype (RMNH), Ujunglamuru to Watampone road at 140 km mark, actual height 2.0 mm; 23-24, *D. bonensis* spec. nov., paratype (RMNH), Ujunglamuru to Watampone road at 140 km mark, actual height 2.6 mm; 25, *D. isolata* spec. nov., paratype (RMNH), Tanah Toraja, Silanen, actual height 1.7 mm; 26, *D. pseudopolita* spec. nov., paratype (RMNH), South Sulawesi, Maros Karst, Bantimurung, actual height 1.7 mm; 27, *D. torajaensis* spec. nov., paratype (RMNH), Tanah Toraja, Rantepao, actual height 1.7 mm; 28, *D. kittelorum* spec. nov., paratype (RMNH), Central Sulawesi, Poso Lake area, Tomado, actual height 1.9 mm; 29, *D. beckmann* spec. nov., paratype (RMNH), South Sulawesi, Bamba Puang, actual height 2.2 mm; 30, *D. celebensis* spec. nov., paratype (RMNH), Tanah Toraja, Tampolang, W of Rantepao, actual height 3.0 mm.

[III] (RMNH 108670/holotype, VS/25); limestone area, W of Lobang, W of Kotamobagu, 150 m alt., 00°46.02'N 124°14.77'E, 26.vii.2001 (MD 78/10); limestone area, W of Lobang, W of Kotamobagu, 150 m alt., 00°45.90'N 124°15.91'E, 27.vii.2001 (MD 79/3); 2 km E of Desa Kakaskasen II, leaf litter in remains of secondary forest, 600 m alt., 01°21.39'N 124°50.95'E, 21.vii.2001 (MD 75/1); "upper Bone-Valley, E of Gorontalo" (NMB/2263a/1, paralectotype of *D. sopotensis*).

Excluded from the type series: Kotamobagu, Matalibaru, road to Torosik, Gunung Tongara, 800-900 m alt., 5.xii.1999, leg. A. Riedel (ZSM/3);

**Description.** – Shell sinistral, with 7 slightly convex whorls, slightly opaque, conical with convex sides; body whorl just the widest. Suture impressed. Constriction situated near the junction of the columellar and the parietal side; with a transversal palatalis, a longitudinal palatalis just above the columellar side, a more or less distinct columellaris, and a longitudinal parietalis. Radial ribs more or less straight, low but distinct, densely spaced; with about the same number of ribs on the body whorl above the aperture and on the penultimate whorl (10-12 ribs/1 mm). Spiral threads clearly visible, at least under high magnification. Umbilicus closed, near the umbilicus behind the columellar side of the peristome, there is a distinct ridge. Aperture ascending by the expanding peristome, hardly tilted against the coiling axis; columellaris small but mostly distinct. Peristome double, expanding. Palatal side of the outer peristome moderately sinuous or not; basal side with usually one edge; columellar edge rather sharp, a basal edge is usually rather obscure or even missing. Inner peristome usually with a palatal lip

Dimensions: H 2.8-2.9 mm; B 1.5-1.6 mm, H/B 1.81.

**Derivatio nominis.** – The epithet is derived from the river Mongondow in northern Sulawesi, near the type locality of this species.

**Remarks.** – This species is found sympatric with *D. sopotensis* at 2 km E of Desa Kakaskasen II. It can be separated from that species by its more slender shape, about the same number of radial ribs on the penultimate and the last whorl (in *D. sopotensis* this number differs) and by the fact that usually the basal edge is missing.

#### *Diplommatina tammesboltae* spec. nov. (fig. 22)

**Material examined.** – South Sulawesi, Bone Karst: Oedjong Lamoeroe (= Ujunglamuru) - Watampone road near km marker 140, under limestone rock, 18.viii.1948, leg. G.A. Tammes-Bolt (ZMA/1); do., pass in limestone area near km marker 140/141, 300-400 m alt., 28.ix.948, leg. G.A. Tammes-Bolt (ZMA/2); do., near km marker 140, near tunnel, leaf litter in limestone area, v.1995 (RMNH 108671/holotype, MD 23/3); Bone karst, Nengo village, Liina Ajeng Ale district, (Maros-Bone road), secondary forest, 450-500 m alt., 10.ix.1991, leg. P. Bouchet (MNHN/9).

Excluded from the type series: South Sulawesi, Tanah Toraja, 5 km N of Rantepao along Sadan River in direction Pangli, 750 m alt., 02°57.05'S 119°56.10'E, 13.vii.2002 (MD 96/4).

**Description.** – Shell sinistral, with 6.5 flattened whorls, ovate with convex sides; the last whorl slightly moved inwards at the backside. Final two whorls widest. Suture slightly impressed. Constriction at the middle of the parietal side of the penultimate whorl; with a transversal palatalis, a longitudinal palatalis, a parietalis, and a columellaris. The columellaris large, slightly directed downwards, running as a rather strong lamella along the columellaris. Last whorl distinctly compressed and flattened above the aperture, moving somewhat inwards. Radial ribs straight, rather distinct, low, not sharp, densely spaced (c. 8 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is present on the upper whorls, but hardly visible on the last whorl. Umbilicus closed. Aperture small, not protruding from the profile of the shell, somewhat tilted against the coiling axis.

Peristome double, hardly expanding, parallel with the suture of the last whorl. Outer peristome with palatal side rounded; basal side rounded without edge. Inner peristome more or less straight at the parietal side, usually with a palatal lip; both the palatal and the basal side rounded.

Dimensions: H 2.0-2.1 mm; B 1.3-1.4 mm, H/B 1.5.

Derivatio nominis. – The epithet *tammesboltae* refers to Mrs. G.A. Tammes-Bolt, who collected terrestrial molluscs in Sulawesi for the Zoological Museum (ZMA) in Amsterdam, among which some new species (*Opisthostoma aspastum* Van Benthem Jutting, 1951 [= *O. javanica* Van Benthem Jutting, 1932], *Discocharopa microdiscus* Van Benthem Jutting, 1951 [= *D. aperta* (Moellendorff, 1888)], and *Gyliotrachela concreta* Van Benthem Jutting, 1949).

Remarks. – *D. tammesboltae* differs from *D. bonensis* in being smaller (2.0-2.1 mm versus 2.6-2.7 mm), with a larger columellaris, directed downwards, and by the presence of a [inconspicuous] spiral striation. The species is only known with certainty from the Bone Karst, an isolated limestone area, west of Watampone.

#### *Diplommatina bonensis* spec. nov. (figs 23-24)

Material examined. – South Sulawesi, Bone Karst: Oedjong Lamoeroe (= Ujunglamuru)-Watampone road near km marker 140, under limestone rock, 18.viii.1948, leg. G. A. Tammes-Bolt (ZMA/15); do., pass in limestone area near km marker 140/141, 300-400 m alt., 28.ix.1948, leg. G. A. Tammes-Bolt (ZMA/9); do., near km marker 140, near tunnel, leaf litter in limestone area, v.1995 (holotype RMNH 108672, MD 23/35); S-Sulawesi, between Ujunglamuru and Watampone, near km marker 140, rocks in forest near tunnel, 04°32.04"S 120°05.00"E, 5.vii.2002 (MD 89/8); Nengo village, Liina Ajeng Ale district, (Maros-Bone road), secondary forest, 450-500 m alt., 10.ix.1991, leg. P. Bouchet (MNHN/5).

Description. – Shell sinistral, ovate with convex sides, with 6.5 flattened whorls and the last whorl slightly moved inwards at the backside; last two whorls widest. Suture slightly impressed. Constriction at the middle of the parietal side of the penultimate whorl; with a transversal palatalis, a longitudinal palatalis, a parietalis, and a columellaris. The columellaris is small but distinct, running as a rather strong lamella along the columellaris. Last whorl distinctly compressed and flattened above the aperture, moving somewhat inwards. Radial ribs straight, rather distinct, low, not sharp, densely spaced (c. 8 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is not present on the upper whorls, and hardly visible on the last whorl. Umbilicus closed. Aperture normal, protruding from the profile of the shell, somewhat tilted against the coiling axis. Peristome double, expanding, ascending; outer peristome with palatal side rounded and basal side rounded with an edge at the columellar side. Inner peristome more or less straight at the parietal side, usually with a palatal lip; both the palatal and the basal side rounded.

Dimensions: H 2.6-2.7 mm; B 1.6-1.7 mm, H/B 1.6.

Derivatio nominis. – The epithet *bonensis* refers to the area where the type locality is located.

Remarks. – Known from only the "Bone Karst", an isolated limestone area, west of Watampone. The species lives sympatric with *D. tammesboltae*. *Diplommatina bonensis* is larger and more densely ribbed on the penultimate whorl and has a relatively larger aperture.

*Diplommatina isolata* spec. nov. (fig. 25)

Material examined. – South Sulawesi: Tanah Toraja, Silanen (= Baturandan), coarse limestone scree slope, from deep between boulders, freshly cut roadside, 03°11.88"S 119°51.17"E, 28.ii.2002, leg. J.J. Vermeulen (RMNH 108673/ holotype, MD 85/25); Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.09"S 119°51.53"E, 7.vii.2002 (MD 92/6).

Description. – Shell sinistral, very small, with 5.5 convex whorls, pupiform with convex sides, transparent and colourless; last two whorls widest. Suture deeply impressed. Constriction at the middle of the parietal side of the penultimate whorl; with a transversal palatalis, a longitudinal palatalis, a parietalis, and a columellaris. The columellaris is small but distinct. Radial ribs straight, distinct, low, sharp, very densely spaced (c. 20 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is also present. Umbilicus partly covered by the outer peristome. Aperture small, not protruding from the profile of the shell, somewhat tilted against the coiling axis. Peristome double, hardly expanding, not ascending but more or less parallel with the suture of the last whorl; outer peristome with palatal side rounded; basal side rounded, with an inconspicuous edge at the columellar side. Inner peristome more or less straight at the parietal side, usually with a palatal lip; both the palatal and the basal side rounded.

Dimensions: H 1.65-1.80 mm; B 1.05-1.10 mm, H/B 1.6.

Derivatio nominis. – The epithet *isolata* refers to the isolated type locality (near an almost unknown tourist 'attraction' south of the Tana Toraja area).

Remarks. – Known from only the type locality. Amongst the Sulawesian *Diplommatina* species this one is easy to recognize because of its small aperture, dense spiral striation, very convex whorls with a deep suture, and an open umbilicus. This almost smallest Sulawesian species is collected together with the largest one, *D. vermeuleni*.

*Diplommatina pseudopolita* spec. nov. (fig. 26)

Material examined. – Indonesia, South Sulawesi, Maros Karst, Maros Mts., Bantimurung National Park, 20 km E of Maros: at the foot of limestone cliffs, leg. W. F. Prud'homme van Reine, 1990 (VS 1761/4); leaf-litter in open forest, 30 m alt., 9.ix.1991, leg. P. Bouchet (MNHN/1); leaf-litter near cave at foot of limestone rocks, v.1995 (RMNH 108674/holotype, MD 16/25).

Description. – Shell sinistral, transparent, slender ovoid with convex sides, with 6 whorls, which are distinctly convex and increase very regularly in height and width; last two whorls are widest. Suture well impressed. Constriction situated at the parietal side of the peristome just halfway the columellar and the palatal side; with a parietalis, a columellaris, a transversal palatalis and a longitudinal palatalis. The longitudinal palatalis is situated about halfway the height of the body whorl. Apart from some inconspicuous radial, low and rounded ribs on the last whorl, the shell is smooth. In some specimens a distinct spiral striation is present. Umbilicus closed. Peristome double, somewhat expanding. Outer peristome rounded, expanding beyond the inner one, with only slight edges at the junctions with the body whorl. Columellaris distinct, small and blunt. Aperture somewhat tilted against the coiling axis, rounded at the basal and the columellar side, more or less straight at the palatal and parietal side..

Dimensions: H 1.6-1.9 mm; B 0.9-1.0 mm; H/B 1.8.

Derivatio nominis. – The epithet *pseudopolita* refers to the almost entirely polished surface of the shell, with only some faint radial ribs.

Remarks. – Only known from the type locality, where it was found by three collectors.



The species can be recognized easily by the small shell with a polished surface. All other species from Sulawesi are more or less clearly sculptured.

*Diplommatina torajaensis* spec. nov. (fig. 27)

Material examined. – Indonesia, South Sulawesi: Tanah Toraja, near Rantepao, leaf litter near limestone outcrop, 700 m alt., v.1995 (RMNH 108675/holotype, MD 24/25); Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.09'S 119°51.53'E, 7.vii.2002 (MD 92/2); Tanah Toraja, Buntu Pune, 4 km SE of Rantepao, 800 m alt., 02°59.51'S 119°54.09'E, 8.vii.2002 (MD 94/10); Tanah Toraja, 5 km N of Rantepao along Sadan River in direction Pangli, 750 m alt., 02°57.05'S 119°56.10'E, 13.vii.2002 (MD 96/15); Tanah Toraja, 3 km E of Marante, 7 km E of Rantepao, S-side of the road to Palopo, among and below limestone rocks, 30.iv.1997, leg. E. Gittenberger (RMNH/108676); road from Palopo to Rantepao, 700-800 m alt., km marker 23 from Makalé, below rocks, 13.x.1946, leg. G. A. Tammes-Bolt (ZMA/2); Tanah Toraja, Rantepao, Se'pom, c. 500 m N of Gunung Singki, under the tau-tau on the E-side, 2°58'S 119°58'E, depleted forest on limestone hill, 21.x.1992, leg. H. Turner (VS/4).

Excluded from the type series: along road from Oedjong Lamoeroe to Watampone, near km mark 140, in litter beneath limestone rock, 18.viii.1948, leg. G. A. Tammes-Bolt (ZMA/5); pass in limestone mountain between Oedjong Lamoeroe and Watampone near km mark 140/141, 300-400 m alt., 28.ix.1948, leg. G. A. Tammes-Bolt (ZMA/5); near limestone rocks at Pangkadjene near Makassar, leaf litter, 9.v.1948, leg. G. A. Tammes-Bolt (ZMA/2); Camba, 23 km E of Bantimurung, 300 m alt., 05°03.78'S 119°44.11'E, 5.vii.2002 (MD 88/3); between Ujunglamuru and Watampone, near km-mark 140, rocks in forest near tunnel, 04°32.04'S 120°05.00'E, 5.vii.2002 (MD 89/15).

Description. – Shell sinistral, transparent, slender ovoid with convex sides, with 6 distinctly convex whorls, increasing very regularly in height and width; last two whorls widest. Suture well impressed. Constriction at the parietal side of the peristome, just above the columellar side; with a parietalis, a columellaris, a transversal palatalis and a longitudinal palatalis. The longitudinal palatalis is situated about halfway the height of the body whorl. Radial ribs straight, distinct, low, sharp, quite widely spaced (c. 9-11 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is present. Umbilicus closed. Peristome double, somewhat expanding. Outer peristome rounded, expanding beyond the inner, with only slight edges at the junctions with the body whorl. Columellaris distinct, sharp and quite large. Aperture somewhat tilted against the coiling axis, rounded at the basal and the columellar side, and more or less straight at the palatal and parietal side.

Dimensions: H 1.45-1.70 mm; B 0.80-0.95 mm, H/B 1.8.

Derivatio nominis. – The epithet *torajaensis* refers to Tanah Toraja, from where the most samples were collected.

Remarks. – *D. torajaensis* is one of the smallest species of *Diplommatina* so far known from Sulawesi. The species looks like a small *D. pseudopolita* (1.45-1.70 mm in *D. torajaensis*, versus 1.6-1.9 mm in *D. pseudopolita*). However, *D. torajaensis* differs from *D. pseudopolita* in being not only smaller, but also by the more widely spaced ribs and the presence of a conspicuous spiral striation

*Diplommatina kittelorum* spec. nov. (fig. 28)

Material examined. – Indonesia, Central Sulawesi, W of Tentena, Saluopa Waterfall near Tonusu, 18.8.1995 (KW/1); Lore Lindu National Park, 3.8.1995 (KW/4); Lake Poso, Ohrid forest, 13.8.1995 (KW/5); Tomado, coffee plantation, 5.8.1995 (holotype RMNH 108677, KW/6); Mountain between Tawaeli and Tobili, NE of Palu, viii.1997, leg. H. Menkhorst (MD 68/5).

Description. – Shell sinistral, transparent, slender ovoid with convex sides, with 6 distinctly convex whorls, increasing very regularly in height and width; last two whorls widest. Suture well impressed. Constriction situated at the parietal side of the peristome, just above columellar side; with a parietalis, a columellaris, a transversal palatalis and a longitudinal palatalis. The longitudinal palatalis is situated close to the umbilicus. Radial ribs straight, distinct, low, sharp, quite densely spaced (c. 12-14 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is present. Umbilicus closed. Peristome double, somewhat expanding. Outer peristome rounded, expanding beyond the inner one, with only slight edges at the junctions with the body whorl. Columellaris distinct, small and blunt. Aperture somewhat tilted against the coiling axis, rounded at the basal and the columellar side, more or less straight at the palatal and the parietal side.

Dimensions: H 1.9-2.0 mm; B 1.1-1.2 mm, H/B 1.7.

Derivatio nominis. – The epithet *kittelorum* is in honour of Mr. Klaus and Ms. Theresia Kittel, Wiesthal, both friends for many years, who collected many molluscs in South East Asia.

Remarks. – Conchologically most similar is *D. torajaensis*, but *D. kittelorum* differs from that species in being larger (1.9-2.0 mm versus 1.45-1.70 mm), with more densely spaced ribs (12-14 ribs versus 9-11 ribs/0.5 mm) and a much smaller, indistinct columellaris.

#### *Diplommatina beckmanni* spec. nov. (fig. 29)

Material examined. – Indonesia, South Sulawesi, Enrekang-Cakke road: Batu Ranpun Bampa Puang, secondary forest with limestone boulders, leaf-litter, 530-600 m alt., 15.ix.1991, leg. P. Bouchet (MNHN/25); Enrekang-Cakke road, natural forest valley of Mata Allo river, 150 m alt., 16.ix.1991, leg. P. Bouchet (MNHN/25); Enrekang D., Dollok on road to Kalosi, in leaf litter, dry vine thicket, 750 m alt., 31.x.1991, leg. V. Kessner (VS/4); Lemo, SE Rantepao, 700 m alt., v.1995 (MD 28/10); near Bamba Puang, 58 km S of Makale, N of Enrekang, 03°27.71'S 119°47.16"E, 7.vii.2002 (RMNH 108678/holotype, MD 90/50).

Description. – Shell sinistral, transparent, slender ovoid with convex, with 6 distinctly convex whorls, increasing very regularly in height and width; final two whorls widest. Suture well impressed. Constriction at the parietal side of the peristome, just above columellar side; with a parietalis, a columellaris, a transversal palatalis and a longitudinal palatalis. The small longitudinal palatalis is situated very close to the umbilicus. The radial ribs are straight, distinct, low, sharp, quite densely spaced (c. 8-10 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is present. Umbilicus closed. Peristome double, somewhat expanding. Outer peristome rounded, expanding beyond the inner one, with a slight edge at the columellar side. Columellaris distinct, small and blunt. Aperture somewhat tilted against the coiling axis, rounded at the basal and the parietal side, more or less straight at the palatal and the columellar side.

Dimensions: H 2.1-2.3 mm; B 1.1-1.2 mm, H/B 1.7.

Derivatio nominis. – The epithet *beckmanni* is in honour of my malacological friend for many years, the late Dr. Karl-Heinz Beckmann. He was mainly interested in molluscs from isles in the Mediterranean area, and was a council member of the Deutsche Malakozoologische Gesellschaft and the Friedrich Held Gesellschaft.

Remarks. – The conchologically most similar species is *D. kittelorum*. *Diplommatina beckmanni* differs from that species in being somewhat larger (2.1-2.3 mm versus 1.9-2.0 mm), with less densely spaced ribs (8-10 ribs versus 12-14 ribs/0.5 mm) and a distinct edge at the columellar side.

*Diplommatina celebensis* spec. nov. (fig. 30)

Material examined. – Indonesia, South Sulawesi, Tilangnga, SE Rantepao, 700 m alt, v.1995 (MD 29/20); Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.09'S 119°51.53'E, 7.vii.2002 (MD 92/?); Tanah Toraja, Silanen (= Baturandan), 3 km W of Mebali, 750 m alt., 03°12.70'S 119°51.01'E, 7.vii.2002 (MD 93/?); Tanah Toraja, Buntu Pune, 4 km SE of Rantepao, 800 m alt., 02°59.51'S 119°54.09'E, 8.vii.2002 (MD 94/8); Tanah Toraja, 1/2 km SW of Rantepao, 750 m alt., 02°58.23'S 119°53.51'E, 11.vii.2002 (MD 95/15); Tanah Toraja, 5 km N of Rantepao along Sadan River in direction Pangli, 750 m alt., 02°57.05'S 119°56.10'E, 13.vii.2002 (MD 96/20); Tanah Toraja, Lemo, 18 km S of Rantepao, 03°02.58'S 119°52.69'E, 16.vii.2002 (MD 98/1); Tanah Toraja, Tilangna, near "swimming pool", S of Rantepao, 03°02.15'S 119°53.23'E, 16.vii.2002 (MD 99/1); Tanah Toraja, 2 km N of Tilangna, along fourth-path in direction Londa, S of Rantepao, 03°01.69'S 119°53.29'E, 16.vii.2002 (MD 100/2); Tanah Toraja, Londa, S of Rantepao, at burial caves, 03°00.90'S 119°52.55'E, 22.vii.2002 MD 106/10); Tanah Toraja, Tampolang, 1.5 km W of Rantepao, 750 m alt., 02°57.18'S 119°53.63'E, 28.vii.2002 (holotype RMNH 108679, MD 110/20); Tanah Toraja, along main road, 10 km SE of Makale, Kampung Kanaan, denuded limestone slope at the foot, x.2003, leg. J.J. Vermeulen (MD 117/15); Tanah Toraja, (= Baturandan), coarse limestone scree slope, from deep between boulders, freshly cut roadside, 03°11.88'S 119°51.17'E, 28.ii.2002, leg. J.J. Vermeulen (MD 85/xx); Tanah Toraja, c. 6 km S of Rantepao, Londo, next to the burial caves, limestone hills, deforested except on the tops, 19.x.1992, leg. H. Turner (VS/12); Tanah Toraja, Rantepao, Se'pom, c. 500 m N of Gunung Singki, under the tau-tau on the E-side, 2°58'S 119°58'E, depleted forest on limestone hill, 21.x.1992, leg. H. Turner (VS/25); Palopo area, Kattun, on Palopo-Rantepao road, leaf-litter in degraded forest, 850 m alt., 25.ix.1991, leg. P. Bouchet (MNHN/5); Tanah Toraja, Palatokke, near Rantepao, 810 m alt., limestone outcrop, 26.x.1991, leg. P. Bouchet (MNHN/6); road from Palopo to Rantepao, 700-800 m alt., km marker 23 from Makalé, below limestone rock, 13.x.1946, leg. G. A. Tammes-Bolt (ZMA/1); Tanah Toraja, 3 km E of Marante, 7 km E of Rantepao, S-side of the road to Palapo, 30.iv.1997, leg. E. Gittenberger (RMNH 108680/1);

Excluded from the type series: Maros Karst, Bantimurung National Park, 20 km E of Maros, v.1995, (MD 16/8); Caves near Leang-Leang, 15 km O Maros, v.1995 (MD 17/1); Between Ujunglamuru and Watampone at km marker 140 near tunnel, v.1995 (MD 23/25); Bantimurung national park, 05°00.96'S 119°40.91'E, 5.vii.2002 (MD 87/20); Malino, leaf-litter in degraded vegetation patches, 900 m alt., 13.ix.1991, leg. P. Bouchet (MNHN/25); Maros karst: Bantimurung national park, 20 km E of Maros, leaf-litter in open forest, 30 m alt., 9.ix.1991 leg. P. Bouchet, (MNHN/2); Maros karst: Karaengta Forest Reserve, in hills above Bantimurung, 280 m alt., 8.ix.1991, leg. P. Bouchet, (MNHN/4); Timpuseng-Camba area: hills above Mattajang village, leaf-litter in open forest with limestone blocks, 530 m alt., 8.ix.1991, leg. P. Bouchet (MNHN/25); Along road Oedjong Lamoeroe to Watampone at km marker 140, litter beneath limestone rocks, 18.viii.1948, leg. G. A. Tammes-Bolt (ZMA/1); Pangkadjene, Nymphenbad, sea level, 14.x.1948, leg. G. A. Tammes-Bolt (ZMA/6);

Description. – Shell sinistral, transparent, slender ovoid with convex sides, with 6 convex whorls, increasing very regularly in height and width; last two whorls widest. Suture well impressed. Constriction at the parietal side of the peristome, just before the columellar side; with a parietalis, a columellaris, a transversal palatalis and a longitudinal palatalis. The longitudinal palatalis is situated at some distance from the angular edge at the body whorl. Radial ribs more or less oblique, distinct, low, sharp, quite widely spaced (c. 7-9 ribs/0.5 mm on the penultimate whorl). A conspicuous spiral striation is present. Umbilicus closed. Peristome double, somewhat expanding. Outer peristome rounded, expanding beyond the inner one, with only slight edges at the junctions with the body whorl. Columellaris distinct and sharp. Aperture somewhat tilted against the coiling axis, rounded at the basal and columellar side; more or less straight at the palatal and parietal side

Dimensions: H 2.7-3.2 mm; B 1.7-2.0 mm, H/B 1.8.

Derivatio nominis. – The epithet *celebensis* refers to the old name of Sulawesi, Celebes.

Remarks. – *Diplommatina celebensis* is a somewhat problematic species. The separation from the other species is sometimes difficult, but the species is always larger than the other conchologically similar species with a distinct columellaris.

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