

**A List of the Species referred to the Genus
Diplommatina (Mollusca, Prosobranchia
Cyclophoridae) recorded from Borneo**

By F. F. LAIDLAW

The *Cyclophoridae* have been divided up into several families by Tielecke (1940). *Diplommatina* and several other genera have been put by him in a separate family the *Cochlostomatidae*. I use the older name probably largely as a matter of habit; and partly because, I believe that sub-family rank is sufficient.

The Director of the Raffles Museum has been good enough to send me a small collection of species of *Diplommatina* which he made in January 1949, on two hills Gunong Kapor and Gunong Kawa, in the Bau District of Sarawak, lying about 15-20 miles S.W. of Kuching. He suggested that a list of the Bornean species of the genus would be of some use, as lists have recently been published of the Javanese and Malayan species (V. B. Jutting 1948 and Laidlaw 1949). It happens that none of the five species collected by him are undescribed, but at least three of them are little known, and one has not been recorded for the Bornean fauna.

I have in my own collection a number of examples of species described by the late Mr. H. C. Fulton, but not figured. I believe these are all part of his original series which he had from A. Everett, and that they may be taken as topotypes, though this is not definitely indicated on the labels. I have had figures of some of these drawn by Mr. Wilkins, as in this genus a good figure is of greater value for identification than any description. The figures given by Godwin Austen are so good that none of his species needed refiguring, but I have refigured one or two species described by Mr. E. Smith in cases where his original figures did not seem to me to be adequate.

In addition Mr. Tweedie has made outline drawings from photographs of seven type specimens of Bornean species kindly supplied by the British Museum authorities, to whom, and in particular to Dr. Rees, I am indebted for permission to make use of them.

I have arranged the species in groups, as I did with the Malayan forms. The groups are very roughly of equivalent value, and will I believe help to make diagnosis a little simpler.

The division into dextral and sinistral forms has some systematic value. I have never seen, or heard of a "reversed"

individual¹. The qualifications "large", "medium-sized" and "small" are of course relative. Large means anything of 5 mm. or upwards in length, small species are those with a length of 2.5 mm. or less. The magnification of the drawn figures is shown by a millimetre scale in each case. The measurements given are in each case those of a single shell.

All or nearly all of the "Cyclophoridae" reinforce the mouth of the shell on reaching their full size. I apply the name "metastome" to this reinforcement, which is much more marked in some species, and genera, than in others. The metastome is the cause of the appearance in the description of most species of the genus of the remark "lip double" or comment to that effect. This character seems to be confined to the family.

Another character, also peculiar to the Cyclophoridae is the development of various devices whose function appears to be to allow the outside air to "bypass" the operculum when the animal is withdrawn into the shell. The value of these contrivances is difficult to estimate, but they are so widely distributed in the family that one is forced to believe that they must have some functional significance. It is puzzling to find moreover that a number of instances are known where of two closely related species one has a well developed tube or siphon of this sort, the other has lost it completely.

Among the *Diplommatinae* the Bornean species *bicoronata* shows a strange development of the tube, to which I call attention when discussing that species.

A. Dextral species.

- i. Species of medium size, shell elongate, rather turretted, of about 7-8 whorls, with pointed spire, descending regularly and increasing slowly to the penultimate, which is the largest. The last whorl narrows slightly about its beginning.

Mouth vertical, beaked. Columellar fold usually well developed. Sculpture consists of radial ribbing, generally strongly and fairly regularly developed, roughly about 20 ribs on the penultimate whorl.

D. schmidtii von Martens.

VON MARTENS 1908, p. 279, pl. 5, f. 17.

Length 4.2 mm. breadth 1.75 mm. Long slender form; of nearly 9 whorls. Sculpture well developed, mouth with definite beak.

¹. There are in the Raffles Museum collection sinistral specimens of *D. canaliculata* (one) and *D. nevilli* (three), but they are very rare.—Ed.

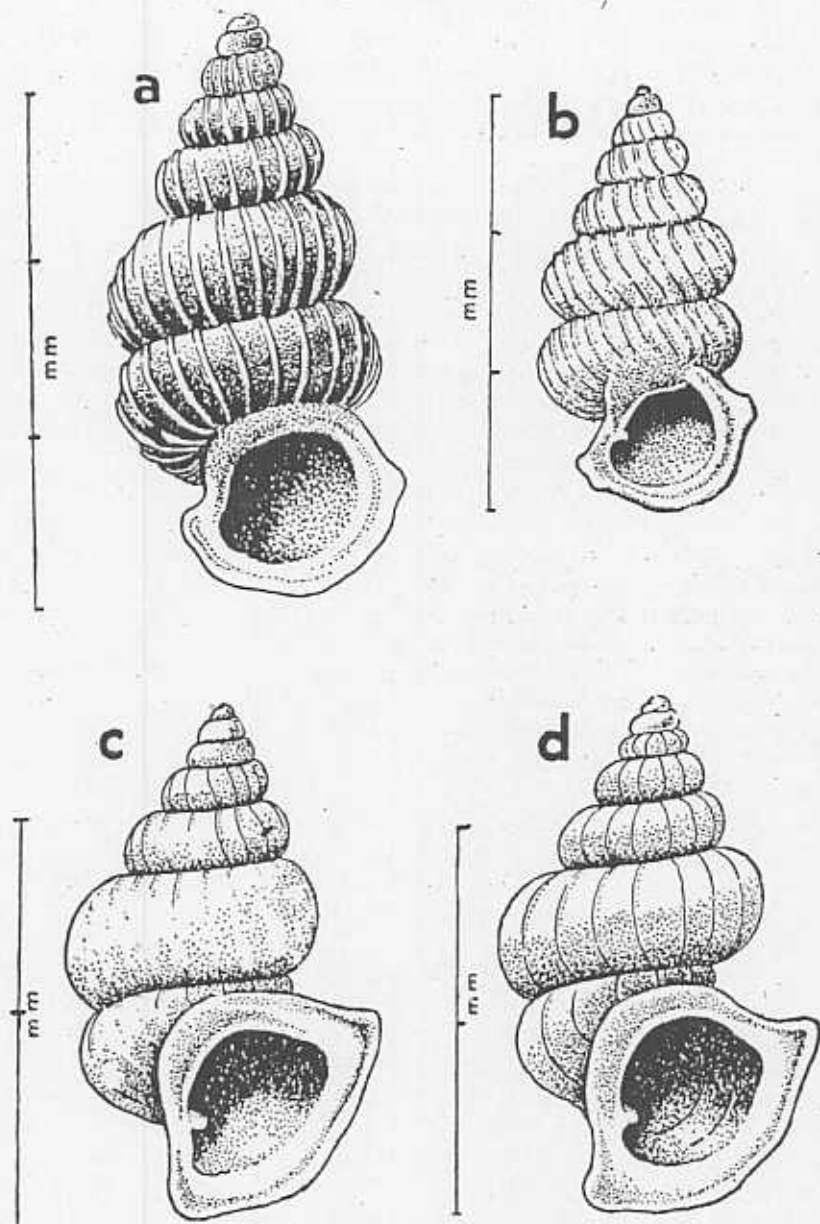


Fig. 1. a, *Diplommatina gomantonensis*; b, *D. congener*; c, *D. onyx*; d, *D. baritensis*.

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This is a geographical species of the same stock as *canaliculata* from Malaya which it resembles closely. The shell of the Malayan stock shows local differences and *schmidtii* lies within the range of such variation.

Described by v. Martens from a specimen from Kari-Orang E. Borneo. His figure is adequate.

D. aldrichi Godwin-Austen.

GODWIN-AUSTEN 1890, p. 245, pl. 7, f. 3.

Length 3.75 mm.; breadth 1.75 mm. Rather smaller than the last, a trifle stouter, with 8 whorls. Outer lip scarcely angled; sculpture as in the last species to which I judge it to be allied.

Described from a single specimen from S. E. Borneo.

D. gomantonensis Smith. Fig. 1a.

SMITH 1893, p. 349, pl. 25, f. 19 (*D. symmetrica* praeocc.).
SMITH 1894, p. 464.

Length 3.3 mm.; breadth 1.5 mm. About $7\frac{1}{2}$ whorls, suture well marked, penultimate whorl a trifle broader than ultimate. Mouth with well-developed beak, outer lip with a distinct spur near its middle. Columellar tooth obsolete.

Gomanton N. Borneo. I have before me four specimens of this species from Fulton. One of these is the specimen figured.

D. congener Smith. Fig. 1b.

SMITH 1894, p. 464, pl. 16, f. 18.

Length 3 mm.; breadth 1.2 mm. Whorls 7. Mouth with well-marked beak. Columellar tooth also well developed. Peristome of outer lip with "spur" as in the last species. Ribbing not so pronounced.

Originally recorded from the Natuna Islands and I believe not so far listed from Borneo itself.

I have 4 specimens acquired a long time ago from Preston, said to have been collected in North Borneo. Fifteen examples were taken by Tweedie on Gunong Kawa in January 1949. Unfortunately these are all badly worn, and without exception have lost the apex of the spire. The specimen figured is one of Preston's.

D. concinna H. Adams. Fig. 3e.

ADAMS 1872, p. 13, pl. 3, f. 22.

Length 3 mm.; breadth 1.5 mm. About 6 whorls, the penultimate rather strongly inflated. Mouth beaked, columellar tooth evident, outer lip rounded.

"Borneo".

- ii. Species of medium size, with $6\frac{1}{2}$ -8 whorls, which increase rapidly to the penultimate. This is inflated and usually much broader than the last whorl. Mouth vertical, angled or beaked at junction of columellar and outer limbs of the peristome. Columellar tooth strongly developed. Sculpture feeble or obsolete.

(Differ from preceding group in being relatively stouter, and in some species rather of a "peg-top" shape. Owing to the inflation of the penultimate whorl the spire has rather convex sides, and the narrowing of the last whorl, which starts at about its commencement, makes the part of the suture immediately before the mouth run horizontally, or even to trend a little upwards. This group does not seem to be represented in Java or Malaya but I have a species from Tonkin, not identified, which resembles *niahensis*).

D. niahensis Godwin-Austen.

GODWIN-AUSTEN 1889, p. 349, pl. 38, f. 6.

Length 4.4 mm.; breadth 2.7 mm. Ovate, with 8 whorls, increasing rapidly after the fifth, to the penultimate, spire with flat sides, suture tending to rise towards the mouth. Mouth beaked, and strongly angled at the upper outer margin. Fine costulations on the upper four whorls, indistinct on the remainder.

Taken by A. Everett on the Niah Hills, Sarawak.

D. onyx Fulton. Fig. 1c.

FULTON 1901, p. 244.

Length 2.75 mm.; breadth 1.5 mm. Ovate-conic, with 7 whorls, increasing to penultimate which is the widest. Sculpture consists of very faint, rather oblique costulae, especially on the upper whorls. These are so fine that they suggest the thread of a spider's web. Mouth vertical, with prominent beak, and a bold angle at the upper part of the outer lip.

Collected by A. Everett on the Busau Hills, N. Borneo. Tweedie also took a number on Gunong Kawa in the Bau District of Sarawak, in January 1949. As his specimens are all rather worn I have figured an individual in my own collection acquired from Fulton.

D. baritensis Smith. Fig. 1d.

SMITH 1893, p. 350, pl. 25, f. 22.

Length 2.9 mm.; breadth 1.5 mm. Relatively a little slenderer than the last species, otherwise not unlike it, except that in *baritensis* the sculpture is as a rule much more marked.

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Shape of the mouth very similar. Smith (1895, p. 123) remarks that the type, from Barit Mountain shows more distinct lamellae than those from elsewhere.

The species is recorded from Barit Mountain, Busau, Kinabalu, Rembang and Banguay Islands. The specimen figured is from Barit, in my series from Fulton.

D. plecta Fulton. Fig. 3d.

FULTON 1901, p. 244.

Length 2.75 mm.; breadth 1.3 mm. Whorls 7, increasing rapidly to penultimate which is broader than the last. Mouth with well-marked beak, outer lip with angle at its upper third. Sculpture consists of fine, oblique costae, rather distant from each other.

Collected on Mt. Kinabalu by A. Everett. The specimen figured is the type, from the British Museum.

D. tenuilabiata Fulton. Fig. 3g.

FULTON 1901, p. 245.

Length 2.75 mm.; breadth 1.5 mm. Whorls 7 the penultimate the broadest, relatively just perceptibly broader than in the last species. Beak of mouth not quite so prominent as in the last three species, but still well-developed. Columellar limb of lip descending vertically, angle on upper part of outer limb nearer the upper end than in *pecta*. The last two whorls are almost entirely smooth.

Collected by A. Everett on Banguay Island. The figure is of the type, in the British Museum.

D. laevis Fulton. Fig. 2a.

FULTON 1899, p. 217, pl. 11, f. 14.

Length 4 mm.; breadth 2 mm. Whorls 7, the penultimate a trifle broader than the last. Mouth rounded, but with an angle at the junction of the outer and columellar limbs of the aperture, with some projection outwards. Columellar tooth strong. Margin of aperture broad. The surface of the shell is smooth, with scarcely any indication of costulation.

From Pulo Laut, S. E. Borneo. The specimen figured is from Fulton. The species is referred by Kobelt (1902, Das Tierreich. 16, Cyclophoridae) to the genus *Gastroptychia*, but I believe it is correctly put here. His correction to *levis* (smooth) probably represents the author's intention, but cannot stand.

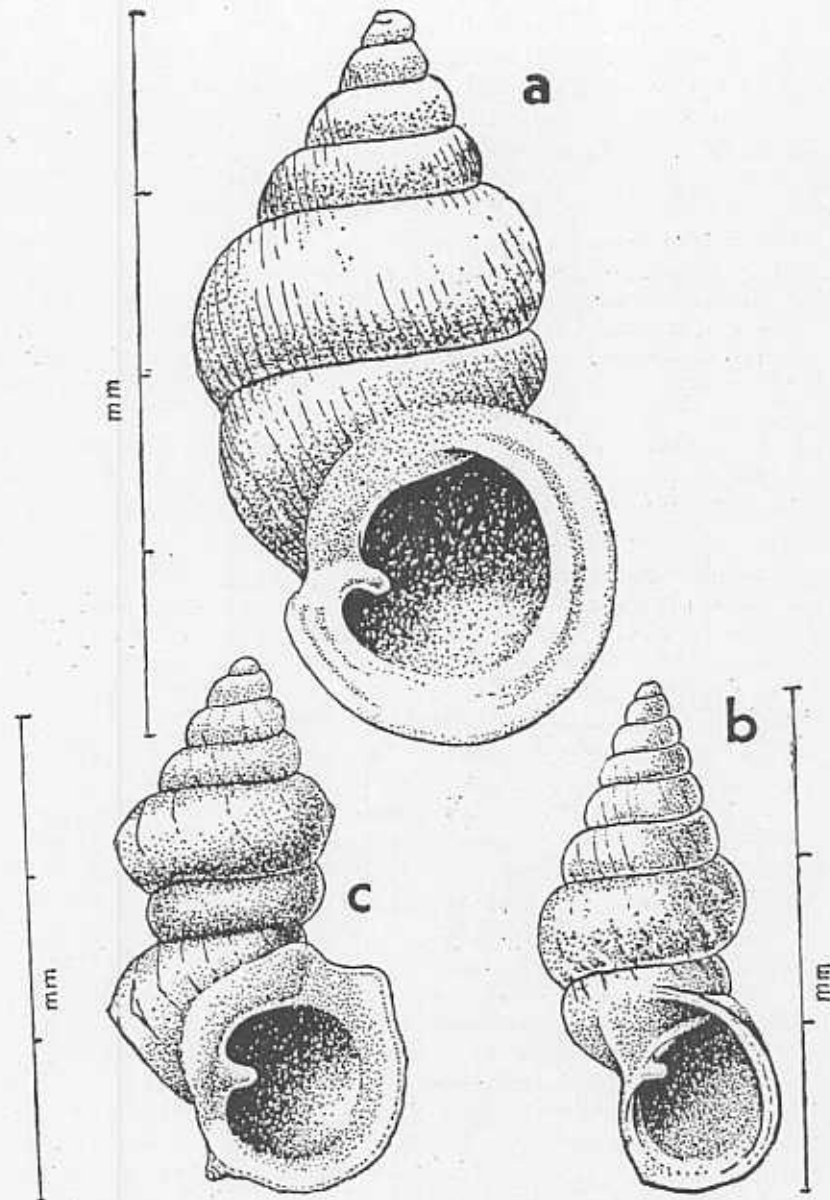


Fig. 2. a, *Diplommatina laevis*; b, *D. sykesi*; c, *D. everetti*.

D. sykesi Fulton. Fig. 2b.

FULTON 1901, p. 244.

Length 3 mm.; breadth 1.35 mm. Shell elongate, whorls 8, increasing rather gradually to the penultimate which is the broadest. Aperture with outer lip rounded, angle at junction of outer and columellar limbs not prominent. Lower whorls smooth, almost polished. Upper whorls with faint, oblique striae.

From Gomanton, N. Borneo. The specimen figured is from Fulton. An aberrant member of this group, distinguished especially by its long, narrow shape.

- iii. *Penultimate* whorl contracted at or near its commencement, the last whorl expanding again, so that the shell has an extraordinary strangulated appearance. Ribbing distant. Mouth beaked, the outer lip sharply angled above.

In the two species of this group the narrowing of the whorl has been carried back to an earlier stage, and to a more exaggerated degree than in other groups. At present it is impossible to give any explanation of this. The figures show how very striking the narrowing is. They also show that these two species resemble in other respects the members of the last group, and I believe that they are best treated as highly specialized derivatives from the same ancestral type as that from which such species as *niahensis* and *aldrichi* are derived.

Möllerndorff (1895, p. 88) put them in a special subgenus *Paradiancta*, type *philippinica* Quatras and Möllerndorff, 1895.

This was given as a subgenus of *Diancta*, a name proposed by v. Martens for a group represented by the curious Ternate species *constricta* described by him (v. Martens, 1867 p. 264, pl. 4, f. 15). But *constricta* is definitely a *Palaina*, or a specialized derivative of *Palaina*, showing, it is true, the same sort of specialization as the Bornean species discussed below but as a parallel development. I do not know *philippinica*, but I think that until the whole series of *Diplommatina* and *Palaina* species has been revised, it is the best course to keep the Bornean species in a special "group" of *Diplommatina*, allowing that they may well prove to deserve at least subgeneric rank in the future.

D. everetti Smith. Fig. 2c.

SMITH 1893, p. 349, pl. 25, f. 21.

Length 3.3 mm.; breadth 2 mm. Whorls 7, the first five increasing regularly, and with feeble and distant costulation. The fifth is definitely shouldered. The sixth whorl, the penultimate narrows at its commencement and is without any costulation. The last whorl becomes inflated and finally is as broad as the fifth. The mouth is strongly beaked, and the outer lip has a bold angulation at its upper end. The columellar tooth is well developed. The mouth is very like that of *baritensis* or *onyx*.

Collected by Everett on the Barit Mountains N. Borneo. The specimen figured was obtained from Fulton.

D. excentrica Smith. Fig. 3f.

SMITH 1893, p. 349, pl. 25, f. 20.

Length 3 mm.; breadth 1.5 mm. Whorls 7, the first five increasing regularly and with weak, distant ribbing. The sixth, the penultimate, narrows at its commencement, but not to the same extent as in *everetti*. It retains the ribbing, and appears to be rather excentric, this is the result of the narrowing. Mouth as in *everetti* which it closely resembles.

Collected by Everett on Mount Molu. The figure is of the type specimen in the British Museum.

- iv. Large species. Whorls about 8, which increase regularly to the last, and are rather inflated with a well impressed suture, and acute apex.

The last four whorls carry a regularly arranged, single series of tubules on their periphery, but are not ribbed. Aperture rather circular, with well developed columellar tooth. Metastome reflected up onto the front of the last whorl.

D. bicoronata von Martens.

VON MARTENS 1884.

GODWIN-AUSTEN 1889, p. 349, pl. 38, f. 1 (*D. spinosa*).

Length 5.5 mm.; breadth 2.8 mm. The tubules on the lower whorls have a maximum length of about 0.2 mm. when not abraded. There are about 15 of them on the last whorl. There is a very slight narrowing of this whorl which can be made out immediately over the middle of the aperture.

v. Martens' type is from Kari-Orang S. E. Borneo. Godwin-Austen records his example of *spinosa* from "cave exploration" and Tweedie collected three from the Bau District, Sarawak.

The tubules are formed by the development of a small notch or sinus on the margin of the mantle at the periphery of the growing whorl. This appears and disappears rhythmically during growth as the response to some stimulus repeated at regular intervals. The result is that on each occasion a minute tube is produced which is comparable in its development to the single tube of (say) *Opisthoporus*, though of course in that genus the tube is formed in a different position, and only once, when the animal is approaching maturity. Spines, found in other species of *Diplommata* and in some species of *Opisthotoma* are due to exaggerated growth of a part of the ribbing of the shell, and are in consequence gutter-shaped, not tubular. They may well be due to a stimulus of the same nature as that which produces the tubules of *bicoronata*.

As to the stimulus, I suggest that this has to do with some daily change in temperature, humidity or light-incidence; in which case a single tube would be produced daily. This would give a growth period of roughly 8 weeks. The stimulus evidently ceases to be effective when the animal reaches maturity.

- v. Species of small or medium size, ovate or ovate-fusiform in shape, of 6-7 convex whorls, with suture well impressed. Whorls descend regularly, and increase slowly to the penultimate which is of about the same breadth as the last, or a trifle broader. Aperture rounded without definite beak; peristome not angled. Columellar tooth present. Surface of whorls with fine, close-set ribbing.

D. recta Smith.

SMITH 1895, p. 122-123, pl. 4, f. 11.

Length 3 mm.; breadth 1.5 mm. Whorls about 6. Apex acute. The last two whorls are sub-equal in breadth.

Collected by A. Everett on Kinabalu, Smith (loc. cit.) records a small form of the species from Balabac.

D. recta is related to the species which I put in the group "*seimundi*" from Malaya, and to Javanese species).

B. Sinistral species.

- i. Species of medium size, elongate, with about 8 convex whorls, increasing regularly to the last, with a slight narrowing at the middle of the last. Mouth very oblique, rather rounded, peristome continuous, slightly reflexed. Columellar tooth well developed, Sculpture regular, rather close-set ribbing.

D. isseli Godwin-Austen.

GODWIN-AUSTEN 1889, p. 348, pl. 38, f. 5, 5a.

Length 4 mm.; breadth 2.2 mm. Spire high, tapering. Suture well impressed.

This species is the only Bornean representative of its group so far, it differs from the Malayan species of the group (*superba* etc.) in that the whorls are rounded peripherally.

- ii. Large, medium or small species, generally rather ovate. Whorls 6-7, strongly convex, not angled, descending regularly, and with the penultimate whorl of the same size or slightly larger than the last. Mouth vertical, peristome with a small spur on the columellar side. With radial, rather distant ribbing, well developed.

D. busanensis Godwin-Austen.

GODWIN-AUSTEN 1889, p. 348-349, pl. 37, f. 4.

Length 3.4 mm.; breadth 2 mm. Whorls 6, with very convex sides, apex rather acute. Suture deep. The penultimate whorl is slightly wider than the last. Ribbing rather oblique, regular, about 18 ribs on penultimate whorl. Mouth nearly circular, outer lip not angled, "spur" of peristome on columellar limb well developed.

Tweedie collected a number of examples on Gunong Kapor, Bau District, Sarawak. Godwin-Austen's specimens were taken by Everett on the Busau Hills, a name which Godwin-Austen evidently read as "Busan".

D. whiteheadi Smith.

SMITH 1898, p. 34, pl. 2, f. 26.

Length 1.25 mm.; breadth 0.75 mm. Whorls about $4\frac{1}{2}$. Apex rather blunt, penultimate whorl broader than the last. Ribbing most marked on the lower whorls where it is also more distant. Columellar tooth very small. "Spur" present but feebly developed.

Recorded by Smith from Kinabalu.

D. moluensis Smith. Fig. 3c.

SMITH 1893, p. 348, pl. 25, f. 18.

Length 5 mm.; breadth 2.4 mm. Whorls 7, increasing slowly and regularly to the last, convex with well-impressed suture. Mouth vertical, columellar margin straight, outer lip rounded. A small "spur" projects from the peristome outwards, just below the level of the columellar tooth. The whorls are

DIPLOMMATINA FROM BORNEO

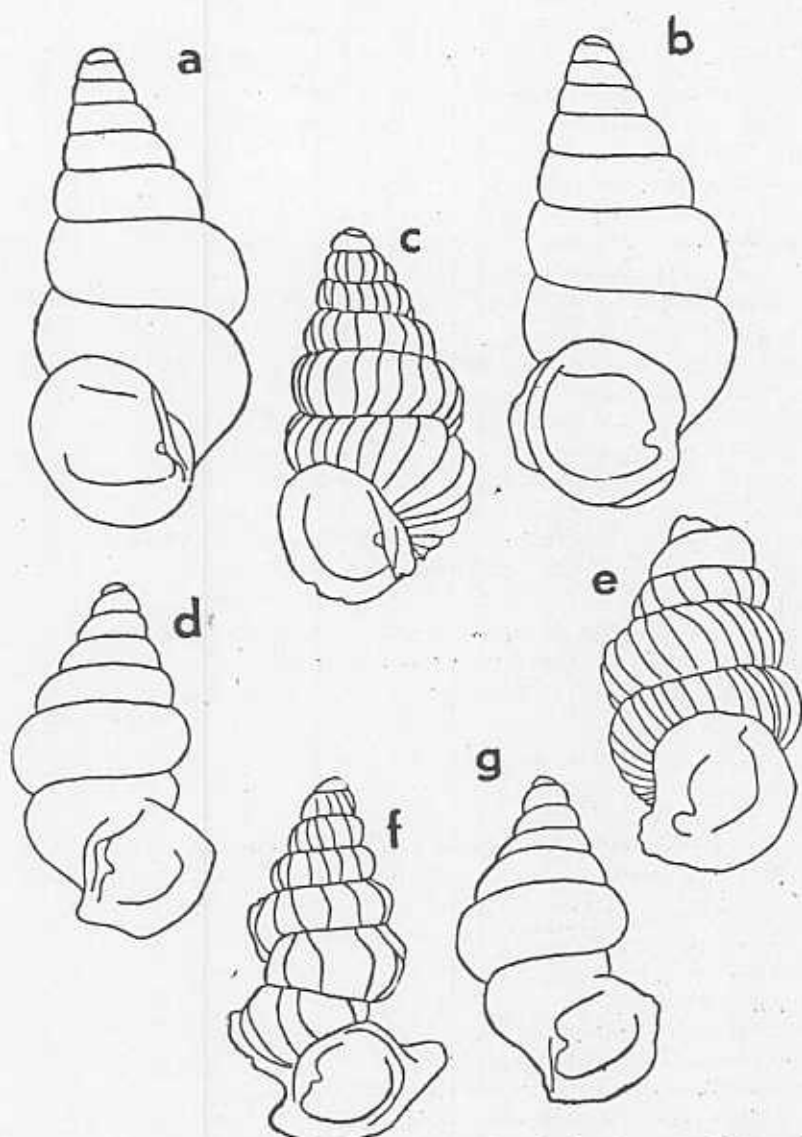


Fig. 3. Outline drawings from photographs of the type-specimens of:
 a, *Diplommata sulphurea* Smith (Mt. Molu); b, *D. electa*
 Fulton (N. Borneo); c, *D. moluensis* Smith (Mt. Molu); d, *D.*
plecta Fulton (Kina Balu); e, *D. concinna* H. Adams (Borneo);
 f, *D. excentrica* Smith (Mt. Molu); g, *D. tenuilabiata* Fulton
 (Banguey Is.).

ribbed regularly, and rather distantly, very much as in *busanensis*, but this species, besides being much larger is relatively more elongate with a slenderer spire.

Collected by A. Everett on Mount Mulu, Sarawak. The figure is from the type in the British Museum.

This species was referred to *Gastroptychia* by Kobelt, and I am a little doubtful as to its proper place. Its general appearance is so like that of *busanensis* and its ribbing so unlike that of Bornean species of *Gastroptychia* that it seems more at home here, in spite of its size, than in that genus.

- iii. Large species, fusiform or rather elongate, of about $7\frac{1}{2}$ whorls, which are not very convex so that the suture is not deeply impressed. Apex acuminate. Mouth vertical, rounded or rather quadrate, not beaked but with slight angle at junction of columellar and outer parts of the lip. The upper ends of the inner and outer limbs of the lip are carried up on to the surface of the last whorl, sometimes reaching to the level of the suture between the penultimate and ultimate whorl on the front of the shell. Sculpture generally very fine, radial and often obsolete.

Species of this group were put by Kobelt in a distinct genus *Gastroptychia*, in this genus however he included some species which do not seem to me to be related. Genotype *adversa* H. & A. Adams, 1851.

D. *adversa* H. and A. Adams.

H. and A. ADAMS 1851.

Height 6 mm.; breadth 3 mm. (Specimens from Gunong Kawa range from 5.6 mm.—7 mm. in height). Pupaeiform, apex acuminate; upper part of shell with slightly concave outline. Whorls $7\frac{1}{2}$ descending and increasing regularly to the last which is flared up shortly before the aperture. This whorl also has a slight constriction at its commencement, visible at the top of the mouth. This has its margin broad, the columellar lip straight, bisected by the columellar fold. The margin of the metastome makes a very definite semicircular belt round the lower half of the aperture. Above the enamelled surface of the metastome is carried right up or even a little beyond the suture between the two last whorls of the shell. Some specimens show traces of fine radial striation, others are quite polished in appearance even under the lens. Most of Tweedie's specimens are white, but two are yellowish, and four or five amber coloured especially at the apex.

DIPLOMMATINA FROM BORNEO

Tweedie took a number of specimens on Gunong Kawa, where *adversa* is evidently abundant. It has a wide range especially in low-lying districts in Borneo. A race has been named from the Natuna Islands (*natunensis* Smith, 1895) but I cannot distinguish it. *Adversa* also occurs in Palawan and has been recorded from Singapore and "Malacca" where it has perhaps been introduced.

D. rubicunda von Martens.

VON MARTENS 1867, p. 164-165, pl. 4, f. 17.

Length 7.5 mm.; breadth 4 mm. (Type). Size appears variable to judge from specimens in the British Museum. Some of these are not more than 6 mm. in height. Very near the last species, differs chiefly in having the mouth less specialized, that is to say the peristome and metastome do not encroach so far onto the surface of the last whorl. As in *adversa* the penultimate whorl is just perceptibly broader than the last.

I am disposed to think that this may be a local form of the same stock as the preceding.

D. beccarii Issel.

ISSEL 1874, p. 441-442, pl. 6, f. 20-22.

Length 4.5 mm., breadth 2.5 mm.

I have not been able to see this medium sized species, the smallest Bornean member of the group. It too is very much like the two preceding species, differing so far as one can judge from Issel's account and good figures chiefly in its much smaller size. It is recorded from the "Territory of Sarawak", and Issel writes that he had a number of specimens. (The remaining Bornean species of the group differ in being rather more turretted, with a longer spire relatively, and a smaller, more normal aperture. The three named forms are again very closely related among themselves. Unfortunately the type of one of them is lost).

D. rubra Godwin-Austen.

GODWIN-AUSTEN 1889, p. 349-350, pl. 38, f. 7.

Length 6.4 mm.; breadth 3.3 mm. Not such a "stumpy" shell as any of the last three, the last two whorls of about equal breadth. The radial striation, though fine is more evident than in *adversa*. The margin of the aperture reaches barely half-way up the surface of the last whorl, and the band formed by the metastome is longer and not so well-marked. I have seen specimens from about 5,000 feet on Kinabalu (now in the Raffles Museum) which agree well with Godwin-Austen's account and figure. The colour on which he lays stress is probably

variable. One of the Kinabalu specimens was pale primrose yellow, which shaded into an almost rosy pink at the apex.

Recorded from the Niah Hills, and it or a very similar form is found at considerable height on Mount Kinabalu.

Smith (1895, Proc. Zool. Soc. London: 122) puts *rubra* into the synonymy of *rubicunda*. This is I believe unjustified, the two seem to me quite distinct, and I think Smith may have been misled by the name. On the other hand *rubra* and the next species to be listed look to me very similar.

D. sulphurea Smith. Fig. 3a.

SMITH 1893, p. 348, pl. 25, f. 17.

Length 7 mm.; breadth 3 mm. Spire relatively long and narrow. Mouth rather quadrate, with angle at junction of columellar and outer part of lip. Last whorl as wide as the penultimate. Peristome not reaching more than one-third of the height of the last whorl. Upper part of spire not concave. Sculpture (of type specimen) worn, but consisting of fine, oblique radial striation.

Recorded from Mount Molu.

D. electa Fulton. Fig. 3b.

FULTON 1905, p. 94.

Length 6.5 mm., breadth 3.5 mm. Like the last, but slightly stouter, with the outer lip more regularly rounded, and with the angle at the point where it joins the columellar lip rather more produced. Also the striation is in the type a little more distant and more strongly marked than in *sulphurea*.

Collected in "N. Borneo" by Waterstradt.

In addition to the species of *Diplommatina* listed there are two tiny species of the genus *Leucarinia* recorded from Borneo. As they bear a fairly close resemblance at first sight to small *Diplommatina* it is worth noting them here.

Both are pupa-shaped, with a circular mouth, with no trace of a columellar fold. The apex is flattened, evidently the animal when newly hatched must have a shell that is discoidal. There are about five whorls, the third increases rapidly and from its commencement the whorls descend rapidly and regularly, the last two whorls are of equal breadth throughout. They are marked with fine radial costulation.

The genus is closely allied to *Palaina*. The Bornean species are *borneensis* Smith 1893, and *similis* Smith 1893. They have a length of 1.5 to 1.75 mm., and breadth 1 mm. The genus has its headquarters in the Philippine Islands and is found also in Celebes, and Flores.

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In the table given below I have listed all the species of the genus that I can find to have been recorded from Malaysia. For Borneo, Java and Malaya I have arranged them in groups parallel with the Bornean groups given above. This grouping is tentative and will without doubt be much amended when the genus is better known; but for the present it may serve to mark how considerably the faunas of these lands differ among themselves.

A. Dextral species.

BORNEO	JAVA	MALAYA
i. <i>schmidti</i> v. Martens <i>aldrichi</i> Godwin-Austen <i>gomantonensis</i> Smith <i>congener</i> Smith <i>concinna</i> Adams, H.	<i>auriculata</i> Mlldff. <i>calcarata</i> Mlldff. <i>hortulana</i> Leschke. <i>ornithorica</i> Jutting	<i>nevillei</i> Crosse <i>canaliculata</i> Mlldff. <i>ventriculus</i> Mlldff.
ii. <i>niahensis</i> Godwin-Austen <i>onyx</i> Fulton <i>baritensis</i> Smith <i>plecta</i> Fulton <i>tenuilabiata</i> Fulton <i>laevis</i> Fulton <i>sykesi</i> Fulton		
iii. <i>everetti</i> Smith <i>excentrica</i> Smith		
iv. <i>bicoronata</i> v. Martens		
v. <i>recta</i> Smith	<i>cyclostoma</i> Mlldff. <i>perpusilla</i> Mlldff. <i>duplicilabra</i> Jutting	<i>demorgani</i> Laidlaw <i>seimundi</i> Laidlaw <i>maduana</i> Laidlaw
Not represented		<i>crossiana</i> Godwin-Austen
Not represented	<i>tetragonostoma</i> Mlldff.	<i>pentaechma</i> Laidlaw <i>streptophora</i> Laidlaw

B. Sinistral species.

BORNEO	JAVA	MALAYA
i. <i>isseli</i> Godwin-Austen		<i>superba</i> Godwin-Austen <i>lenggongensis</i> Tomlin <i>parabates</i> Laidlaw <i>attenuata</i> Laidlaw
ii. <i>busanensis</i> Godwin-Austen <i>whiteheadi</i> Smith <i>moluenensis</i> Smith	<i>javana</i> Mildff. <i>sulcicollis</i> Mildff. <i>heteroglypha</i> Jutting	<i>laidlawi</i> Sykes <i>tweediei</i> Laidlaw
iii. <i>adversa</i> H. & A. Adams <i>rubicunda</i> v. Martens <i>beccarii</i> Issel <i>rubra</i> Godwin-Austen <i>sulphurea</i> Smith <i>electa</i> Fulton	<i>planicollis</i> Mildff.	<i>skeati</i> Sykes <i>adversa</i> H. & A. Adams
Not represented		<i>acme</i> Laidlaw <i>diminuta</i> Mildff.

From Sumatra only one species has been recorded. This is the dextral *liwaensis* Aldrich, 1898. I have not seen the species which is said to have a height of 4 mm., and breadth of 1.75 mm. But from the description, and as Kobelt says, it is not unlike *gracilis* Beddome, but larger and with finer ribbing, I judge that it will find a place in the same group as *nevillei* and *ventriculus*.

In addition Rensch (1931, Zoolog. Jahrb. 61: 386-390) has listed the following from Bali—

baliana Fulton 1899.

auriculata Mildff.

javana orientalis Rensch 1931.

diplostoma Rensch 1931.

Lastly mention should be made of *D. brunonis* Smith 1895 (*strubelli* Smith, 1894 nom. praeocc.). This is from the Natuna Islands. It is related to *pecta* and *tenuilabiata*.

DIPLOMMATINA FROM BORNEO

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