

A collection of *Pisidium* from the island of Java, Indonesia

by

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Recently I received from Mr L. J. M. BUTOT (R.I.V.O.N., State Institute for Nature Conservation, Zeist, Netherlands), at the time curator of the Zoological Museum at Bogor, Indonesia (formerly: Buitenzorg, Netherlands East Indies), a collection of pisidia from the western part of the island of Java. An account of the localities and an analysis of these samples, which have all been taken in the neighbourhood of Bogor, are given here. The greater part of the specimens concerned are in the private collection of Mr BUTOT (abbreviated: LB), some other lots in the Zoological Museum, Amsterdam (abbreviated: ZMA/K).

I am indebted to Mr BUTOT for the kind loan of this interesting collection and for his permission to publish the results of my study.

1. — Bogor, sawah (flooded rice-field) Astana Gedeh, leg. A. Asman, 22.XII.1955. Many specimens of *Pisidium* (*Afropisidium*) *javanum* Van Benthem Jutting (ZMA/K 13787; LB/12981) and four specimens of *Pisidium* (*Odbneripisidium*) *dammermani* Odhner (ZMA/K 13788; LB/12981a).

2. — Bogor, Kebon Raya Indonesia (Botanical Gardens of Indonesia), altitude 750 ft., leg. L. J. M. Butot, 30.III.1955. Only *P. javanum* (ZMA/K 13789; LB/13917). Another sample similarly labelled, collected by Mr Butot, 13.XII.1955, consists also only of *P. javanum* (ZMA/K 13790; LB/12985).

3. — Bogor, sawah Sekola Pertanian Menengka Atas (Secondary School of Agriculture), leg. L. J. M. Butot, 7.IV.1955. Contains both *P. javanum* (LB/12981b) and *P. dammermani* (LB/12981c).

4. — Dagofalls near Bandung, altitude 3000 ft., leg. L. J. M. Butot & E. Nijland, 6.III.1949. A left valve of *P. javanum* (LB/14096).

5. — Tea plantation of the Central Testing Association near Tjiandjur, leg. L. J. M. Butot, 21.VIII.1955; rivulet along the road. One specimen of each of both species: *P. javanum* (LB/14368) and *P. dammermani* (LB/14368h).

Pisidium javanum Van Benthem Jutting (1931) belongs to the subgenus *Afropisidium* Kuiper (1962a) which is characterized by the presence of only one gill on each side and by the externally visible ligament (fig. 2); the position of the ligament-pit is extroverted (fig. 1). The distribution of the subgenus is circumtropic; it is also known from New Zealand. In the Indonesian archipelago *P. javanum* has been recorded on the islands of Java and Sumba.

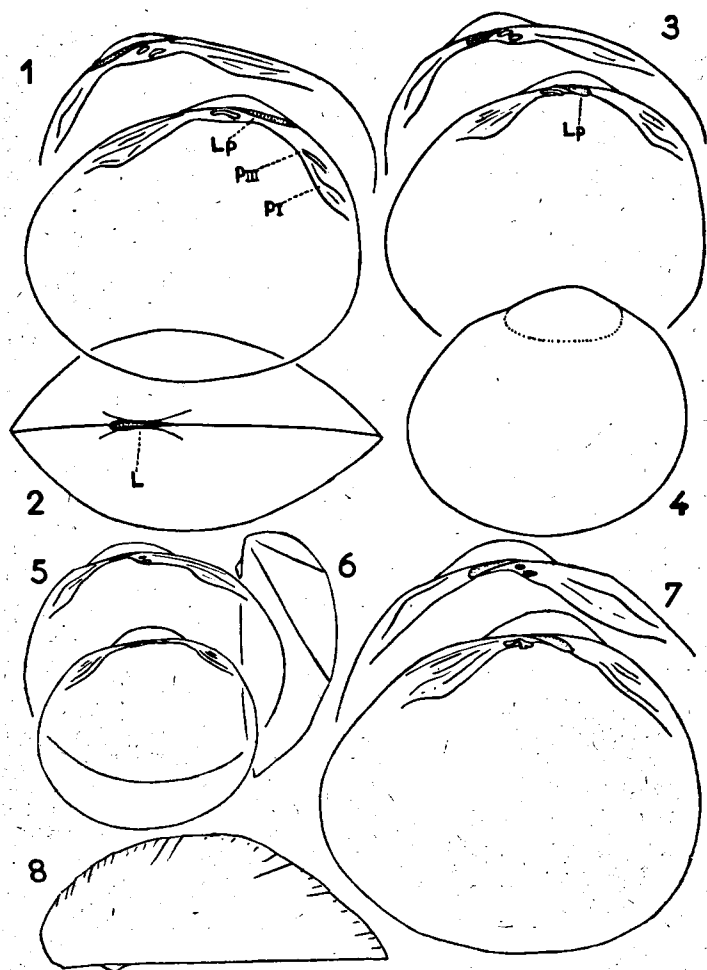


Fig. 1 & 2, *Pisidium javanum* Van Benthem Jutting. — Fig. 1, innerside, left valve on top; pIII and pI, posterior lateral teeth in the right valve; Lp, extroverted ligament-pit. — Fig. 2, dorsal view, left valve on top; L, externally visible ligament.

Fig. 3 & 4, *P. dammermani* Odhner. — Fig. 3, innerside, left valve on top; Lp, introverted ligament-pit. — Fig. 4, outline of adult specimen.

Fig. 5 & 6, *P. sumatranum* Martens. — Fig. 5, innerside of left valve (top) and right valve (bottom) of different individuals. — Fig. 6, profile view of single valve.

Fig. 7 & 8, *P. sundanum* Rensch. — Fig. 7, innerside; left valve on top. — Fig. 8, profile view of single valve.

Enlargement: fig. 1-6, 15×; fig. 7 & 8, 12×.

Species allied to *P. javanum* are: *P. clarkeanum* Nevill, India; *P. hodgkini* (Suter), New Zealand; *P. pirotshi* Jickeli, equatorial Africa and lower Egypt; *P. giraudi* Bourguignat, Lake Tanganyika; *P. fistulosum* Mandahl-Barth, Lake Victoria; *P. sterki* Pilsbry, Uruguay, Paraguay, Argentina.

Pisidium javanum is smaller than *P. clarkeanum*. It may be distinguished from the latter and from other related species by the shape and the position of its short exterior postlateral tooth, pII, which at its inner end bends towards the interior postlateral tooth, pI (fig. 1). This particularity is still more developed in the allied endemic Tanganyikan species *P. giraudi*. The sculpture of *P. javanum* consisting of close regular striae (about 8 on $\frac{1}{2}$ mm in the midst of the valve) is clearly shown by ODHNER (1940, pl. II, fig. 11). The shell is densely porous. In all specimens examined the umbones are not smooth, as stated by VAN BENTHEM JUTTING (1931, p. 12), but concentrically striate. The largest specimen of *P. javanum* (from locality 2) has the following measurements: length 4.9 mm, height 4.3 mm, diameter 2.9 mm. Most other specimens however are smaller than 4 mm.

Pisidium dammermani Odhner (1940) belongs to the subgenus *Odhneripisidium* Kuiper (1962a) which is characterized by its having only one gill on each side and by the internal position of the ligament, the ligament-pit being introverted (fig. 3). The subgenus is distributed in Eurasia only, as far as we know.

Species allied to *P. dammermani* are: *P. sundanum* Rensch, Java; *P. sumatranum* Martens, Sumatra; *P. annandalei* Prashad, reaching from Ceylon and India up to the Mediterranean region; a new not yet published species from Yatung, Himalayas, alt. 10,000 ft (Br. Mus. N. H., London); *P. dancei* Kuiper, Persia; *P. stewarti* Preston (= *vincentianum* Woodward = *prashadi* Odhner), western Siberia and the Himalayas; *P. tenuilineatum* Stelfox, western, central and eastern Europe, failing in northern and southern Europe; probably also *P. parvum* Mori, Japan. There are no representatives of the subgenus *Odhneripisidium* in North America, the American *P. punctatum* Sterki being specifically different from the European *P. tenuilineatum* Stelfox, as I tried to point out in my paper on this subject (1962b).

Pisidium sundanum needs some comment. In my paper on the systematics of the genus *Pisidium*, I suggested this species might belong to the subgenus *Afropisidium* owing to the position of the ligament-pit as figured by RENSCH (1934, figs. 15, 16). However, in the original publication the position of the ligament-pit is not correctly indicated. Through the courtesy of Dr. R. KILIAS, curator at the Zoological Museum of the Alexander Humboldt University, Ber-

lin, I had the opportunity to examine the holotype (Cat. No. 76338) of *P. sundanum* Rensch. This specimen appeared to have an inverted ligament-pit and an internal ligament (fig. 7), and consequently belongs to the subgenus *Odbneripisidium*. *Pisidium sundanum* may be distinguished from *P. dammermani* by its considerably larger and thicker shell (length 3.7 mm, height 3.4 mm, diameter 2.7 mm) and by its coarser striation (7 striae on $\frac{1}{2}$ mm in the midst of the valve).

Pisidium dammermani may be separated from *P. sumatranum* (figs. 5, 6) by its pentagonal shape, whereas the latter is more rounded. The hinge of *P. dammermani* is a little stronger, its shell heavier. The largest specimen of *P. dammermani* in this Javanese collection has the following dimensions: length 2.7 mm, height 2.4 mm, diameter 2.2 mm (from locality 1).

The above mentioned localities 1, 3 and 5 are the first records of associated species of the subgenera *Afropisidium* and *Odbneripisidium*.

Besides the three species mentioned (*P. javanum*, *P. dammermani* and *P. sundanum*) a fourth species of *Pisidium* has been recorded from Java viz. *P. floresianum* Rensch (1934) which I consider as a synonym of the cosmopolitan *P. casertanum* (Poli).

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