

***Planorbis exustus* Desh. and *Amerianna carinata*
(Adams) in Java**

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Planorbis exustus was found in Java by Dr G. BRAS in the neighbourhood of Djakarta. It was reported on by VAN BENTHEM JUTTING (1946, p. 221). In 1947 I collected many specimens of this species in the ponds of the Botanic Gardens at Bogor, Java, and found it also present in the indoor aquaria of that institute. In July 1951 I observed one specimen in a pond of the Hortus of the University of Indonesia, at Bandung, Java, but it has not occurred there since. Evidently it was introduced into the Bandung area with waterplants from Bogor. I have no other records of this invader.

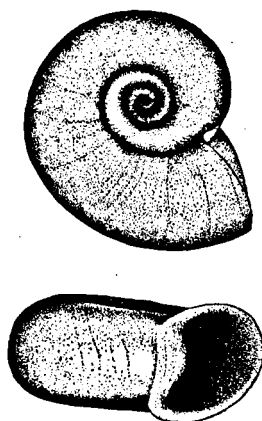


Fig. 1. *Planorbis exustus* Desh. $\times 3$ (Sutardja del.).

In 1951 several specimens of a sinistral shell were brought to me for inspection and identification. The snails were abundant in the aquaria of the Bogor Botanic Gardens. My assistant ASMAN brought me about 50 specimens of the same kind from his home aquarium and told me that similar snails occurred in the tanks of a chinese professional aquarist. Later on, when collecting *Lymnaea javanica* Mouss. in the ponds of the Botanic Gardens, he secured the same

species living in ponds in the open. From this place which is in open communication with the surrounding country by ditches and a stream it can easily spread into W. Java. It soon became evident that a new element of the Javanese fauna was lying before us. We have been trying to identify this new element and present the results in this periodical.

The specimens belong to the genus *Amerianna* Strand, 1928, new name for *Ameria* H. Adams, 1861 non Walker, 1854 (Lepidoptera). Four species of this genus are known to inhabit Indonesia. *Amerianna carinata* (Adams, 1861) and *A. reevii* (Ads. & Angas, 1864) are known from the Kei Islands, *A. obiana* (Rolle, 1903) from Obi and *A. buruana* (van Benthem Jutting, 1927) from Buru. VAN BENTHEM JUTTING (1937, p. 98) described *Ameria duboisi* as a Javanese fossil, stating that the genus *Ameria* is now extinct in Java. This fossil species, together with *Amerianna obiana*, *A. buruana* and two other species of the same genus (*A. bonushenricus* Ads & Angas, 1864, and *A. moesta* H. Adams, 1861) need not to be considered here as they are all quite different morphologically. *A. bonushenricus* is not even a typical member of the genus while *A. moesta* has a much more elevated spire. The excellent figures of *A. obiana* and *A. buruana* by VAN BENTHEM JUTTING (1927, pl. 1, figs 5, 6) make it easy enough to exclude both. The Java shells might be identified as *A. carinata* Adams or *reevii* Ads & Angas, *obesa* Adams, 1861, *cumingii* Adams, 1861, *truncata* Adams, 1861 or *A. compar* Iredale, 1943, as the shells under consideration agree more or less with the descriptions and figures of these species. We are therefore interested in the relationship of the species mentioned. E. A. SMITH (1882, p. 292) included *cumingii* and *truncata* in *Physa carinata* Adams as varieties. HEDLEY (1918, p. 21) stated that it is not necessary to provide *Physa truncata* Adams with a new name although it is preoccupied by *Physa truncata* Bourguignat, 1856, as *Physa reevii* Adams & Angas, 1864 seems to apply equally to *Physa truncata* Adams. IREDALE (1943, p. 221) however, referred only *truncata* Adams (it did have a new name: *gabrielii* Cotton, 1942) to *carinata*, enumerating *reevii* and *cumingii* as separate species. He even created a new „species”: *A. compar* in this series and gave *Physa obesa* Adams (non de Kay, 1843) a new name: *obesula*. *A. compar* is said to differ from the Burdekin River shells in the flattened spire which shows distinct concentric spiral striae. We now want to know what the Burdekin River shells are like. They are, as appears from the text under *A. obesula*, this species, which was figured by SOWERBY (1873, pl. 3, sp. 24) as *truncata*. Dealing with *A. carinata*, IREDALE (l.c. says: „It is possible that the next (= *obesula*) is merely an

ecological aberration, but is separable at present by its elevated apex, the others (i.e. *A. carinata*, *compar*, *reevii*, *cumingii* and *bonusbenricus*) having the apex depressed."

In the descriptions of *reevii*, *truncata* and *carinata* the spire is characterized as *truncata planulata*; *planata, lata, truncata*; *brevissima, apice planato* respectively. For *obesa* and *cumingii* we read: *brevissima* and *brevi*. It is clear that these differences are very small, and knowing that the species are very variable in this respect we may attach little importance to these minute differences. Concentric spiral striae on the flattened spire are present in my shells on the flattened upper part of the last whorl, sometimes distinct (lens $\times 12$), sometimes indistinct, but on the older whorls they are absent. Therefore I cannot accept this as a specific character and I must refer *A. compar* to one of the other species.

Before proceeding I offer a description of the Java shells.

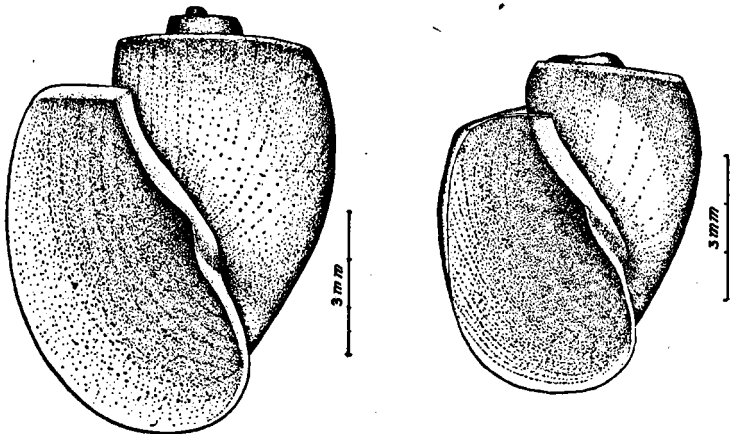


Fig. 2. *Amerianna carinata* (H. Ads) (Sutardja del.).

Shell sinistral, thin and fragile, of a uniform horny brown colour. There are three whorls which are sharply angular and flattened above, arched at the periphery and tapering to the base. The spire is very short but not sunken. Sometimes it hardly protrudes. The whorls are fixed at the shoulder of the preceding one, sometimes lower so that the spire has a steplike appearance, sometimes only the younger part of the last whorl descends towards the aperture. The shoulder is sharply rectangular, but there is no raised carina. The last whorl shows a sculpture of lines of growth only, on

the flattened upper part a very weak but distinct concentric spiral sculpture is visible. It seems present on the older whorls also but is not always visible there as it becomes too weak ($\times 12$ lens). The aperture is rectangular, the base rounded, the outer lip is sharp, only a little bent, or more rounded as the last whorl is sometimes swollen. The columella is twisted, entering the shell as a kind of fold. A thin, but clearly bordered callus connects columellar lip and labrum. The twisted columella leaves a slight umbilical slit open.

	<i>carinata</i> Ads pl. 43, f. 1	<i>truncata</i> Ads pl. 43, f. 9	<i>obesa</i> Ads pl. 43, f. 3	<i>cumingii</i> Ads pl. 44, f. 6	<i>reevii</i> Ads & Ang. pl. 43, f. 12
testa	subovata, tenuis	tenuis, turbinata (truncato- ovali, pellucida, fragili)	truncato- obesa, brevis, tenuis (ovato)	ovali, tenuis	inverse conica
color	pallide flavo-fusca	subviride- fusca (pallido- fusca)	fusca	pallide fusco	obscure fusco- subviridis
spira	brevissima, apice planato	planata, lata, truncata	brevissima	brevis	truncata, planulata
anfractus	3, superne planatis et valde carinatis	carinatis (3, valde carinatis)	3, postice carinatis et planatis	4, postice angulatis et planatis	superne carinatis
apertura	subovali	(subovali) angusta, intus pallide pur- pureo-rosea, antice sub- attenuata (peritremate continuo)	subovali, lata, peritre- mate continuo	subovata, peritre- mate continuo	superne angulata, inferne rotundata
columella	plica col. mediocri	plica col. tenuis, valde tortuosa (obsoleta)	plica col. obsoleta	plica col. mediocri	retorsim tortuosa

In this table the characters given in the original diagnosis are mentioned between brackets if they are not given in Clessin's descriptions. (Clessin 1886, p. 296—298).

Inside the outer lip a narrow brownish red or purplish vertical streak may be observed in fresh shells. Adult shells are 8 mm high and 6 mm wide. The height-width ratio is variable, some shells having very wide apertures owing to the last whorl being sometimes swollen; although the spire is more or less depressed, it never becomes as high as in *A. moesta* from which it also differs in not having: „anfr. 5, superne acute filiforme carinati.”

Comparing the above described Java shells with the original diagnosis of each of the five „species” under consideration and with their diagnoses and figures in CLESSIN (1886) the descriptions and the figures are found to be nearly identical as shown in the table on p. 68.

Somebody who has access to the types and large series of these shells will be able to definitely settle the synonymy of *Amerianna carinata* H. Adams. It is impossible for me to separate these „species” after having seen so many shells from Java. In my opinion E. A. SMITH (1882, p. 292) was right in uniting *cumingii*, *truncata* and *carinata*. It is true indeed that *Physa reevii* equally applies to *Physa truncata* as HEDLEY (1918, p. 21) told us. Furthermore it seems alright to include *obesa* Ads into *A. carinata*. IREDALE (1943, p. 221) stated that *obesula* is possibly an ecological aberration of *carinata*, but I found one population of the Javanese *carinata* shells containing specimens with an elevated apex as well as specimens having the spire depressed.

Therefore it is my opinion that the list of synonyms must run as follows:

Amerianna carinata (H. Adams, 1861)

- 1861 *Physa (Ameria) carinata* H. Adams, Proc. Zool. Soc. London, p. 143.
 1861 *Physa (Ameria) truncata* H. Adams, Proc. Zool. Soc. London, p. 144.
 1861 *Physa (Ameria) obesa* H. Adams, Proc. Zool. Soc. London, p. 144.
 1861 *Physa (Ameria) cumingii* H. Adams, Proc. Zool. Soc. London, p. 144.
 1864 *Physa (Ameria) reevii* A. Adams & Angas, Proc. Zool. Soc. London, 1863, p. 417.
 1942 *Amerianna gabrieli* Cotton, Trans. Roy. Soc. South. Austr., vol. 66, p. 77.
 1943 *Amerianna obesula* Iredale, Austr. Zool., vol. 10, p. 221.
 1943 *Amerianna compar* Iredale, Austr. Zool., vol. 10, p. 221.

I studied the radula of the Javanese *Amerianna carinata*. It has, as usual in Isidoridae, a bicuspid rhachis, the marginals are tricuspid and gradually pass into the elongated and serrate marginals. In the 7th lateral I found the innermost denticle twice incised, forming three sharp points, the 8th lateral is tricuspid again and in the 9th the outermost denticle is incised forming two sharp points. The 14th and subsequent teeth are serrated.

I have sent samples of the Bogor *Amerianna* to the Australian Museum for verification by Miss JOYCE ALLEN who was kind enough to compare the shells with the Australian species. Confirming my determination she identified my shells as *Amerianna carinata* (Adams) as it is known to Australian students.

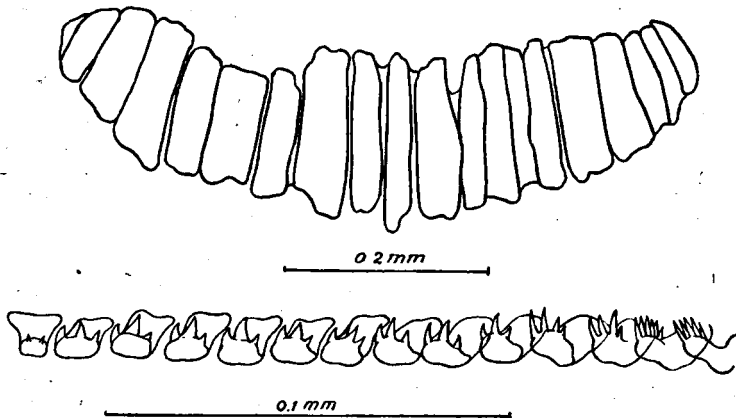


Fig. 3. *Amerianna carinata* (H. Ads), mandibula and radular teeth (Abdulkadir del.).

I cannot give exact information about the way in which *Amerianna carinata* reached Java in 1951. The Bogor Botanic Gardens have not imported aquatic plants or fish from Australia or the Kei Islands, but as it was discovered in fish tanks first, a professional aquarist might be responsible. Most likely it is a post-war invader, as I cannot accept its having been overlooked during pre-war years. From 1946 onwards I regularly searched the surroundings of Bogor and the ponds in the Botanic Gardens but never found it there. No records from other localities in Java are known.

REFERENCES

- ADAMS, A., & G. F. ANGAS, 1864. Descriptions of new species of freshwatershells. Proc. Zool. Soc. London, vol. for 1863, p. 417.
- ADAMS, H., 1861. Descriptions of a new genus and some new species of shells from the collection of Hugh Cuming Esq. Proc. Zool. Soc. London, vol. for 1861, pp. 143—145.
- CLESSIN, S., 1886. Die Familie der Limnaeiden. Syst. Conch. Cab., vol. 1 part 17, pp. 296—298.

- COOKE, A. H., 1889. On the generic position of the so called Physae of Australia. Proc. Zool. Soc. London, vol. for 1889, pp. 136—142.
- COTTON, B. C., 1942. South Australian freshwater Gastropoda. Trans. Roy. Soc. S. Austr., vol. 66, pp. 75—82.
- HEDLEY, CH., 1918. Mollusca. Proc. Roy. Geogr. Soc. Austr., S. A. Branch, vol. 1916—1917, pp. 1—21.
- IREDALE, T., 1943. A basic list of the freshwater mollusca of Australia. Austr. Zool., vol. 10, pp. 188—230.
- JUTTING, W. S. S. VAN BENTHEM, 1927. Fauna Buruana. Mollusca. Treubia, vol. 7, Suppl., pp. 1—35.
- , 1937. Non marine mollusca from fossil horizons in Java with special reference to the Trinil fauna. Zool. Meded. Leiden, vol. 20, pp. 98—101.
- , 1946. *Planorbis exustus* Desh. in Java. Journ. of Conch., vol. 22, p. 221.
- ROLLE, H., 1903. Einige neue Binnenmollusken von den Molukken. Nachrichtsbl. d. malak. Ges., vol. 35, pp. 23—24.
- SMITH, E. A., 1882. On the freshwater shells of Australia. Journ. Linn. Soc. London, Zool., vol. 16, pp. 255—317.
- SOWERBY, G. B., 1873. Monograph of the genus Physa, pl. 3, in: REEVE, L. A., 1874, Conch. Icon., vol. 19.
- STRAND, E., 1928. Miscellanea nomenclatorica zoologia et palaeontologica. Arch. Naturgesch., vol. 92A (for 1926) part 8, p. 63.