Gulella adami, a new species of land snail from the Ivory Coast, West Africa (Gastropoda Pulmonata: Streptaxidae)

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Key words: Gastropoda; Pulmonata; Streptaxidae; *Gulella;* new species; Enidae; convergent evolution; Ivory Coast; West Africa.
Gulella adami spec. nov. is described from a classical West African locality, Assini in the Ivory Coast (Côte d'Ivoire). It is most unusual in showing two superficial parietal processes, which may also be interpreted as a double angular lamella, in the aperture of the shell. The shell closely resembles that of various Enidae in SE Europe and adjoining areas around the Mediterranean, thereby providing a striking example of convergent evolution.

Introduction

Among the papers left by Dr William Adam (1909-1988), late curator of molluscs of the Institut Royal des Sciences Naturelles de Belgique, Brussels, there is a plethora of notes on and figures of mainly African members of the pulmonate gastropod family Streptaxidae. Much of this material is eminently suitable for publication and some of it has already appeared under the authorship of Adam, Van Bruggen & Van Goethem (1993).

Among Adam's papers there is an extended file on the genus *Gulella* L. Pfeiffer, 1856, most of which hopefully will also be published eventually under the abovementioned joint authorship. In this file there are a few notes referring to an unusual new species, without, however, a formal description, or a figure. A search through the collections of the Brussels museum revealed the presence of three relevant specimens, labelled "*Gulella* n. sp." The shells were found by Dr Adam among a sample of the streptaxid *Ptychotrema breve* (Chaper, 1885). The species is formally described below and it seems fitting to associate the name of Dr William Adam with this remarkable new taxon.

The following abbreviations have been used: IRSNB for Institut Royal des Sciences Naturelles de Belgique, Brussels; MRAC for Musée de l'Afrique Centrale, Tervuren, Belgium; RMNH for Nationaal Natuurhistorisch Museum (National Museum of Natural History, formerly Rijksmuseum van Natuurlijke Historie), Leiden; l/d for the ratio length/major diameter of the shell, calculated from micrometer readings. In addition to the staff in charge of these collections, the author also acknowledges assistance by Dr A.J. de Winter (Wageningen) and Mr Th.E.J. Ripken (Delft). The professional figure was drawn by H. Heijn (Leiden University). Dr J.L. van Goethem (IRSNB) is hereby thanked for permission and encouragement to work on the material and papers of the late Dr Adam.

Descriptive part

Gulella adami spec. nov.
(fig. 1)

Material examined.— Ivory Coast, Assini (formerly 'Assinie', 5°07' N 3°17' W, i.e. almost on the coast and on the western borders of Ghana) [holotype (fig. 1) and one paratype IRSNB, one paratype RMNH 56855]; the label in Adam's handwriting further reads "ded. Ch. ALLUAUD 26.II.1887 mélangé avec *Ptychotrema (Adjua) breve* (CHAPER, 1885)" [det. W. Adam].

Diagnosis.— A species of *Gulella* characterized by a medium-sized, almost smooth, slightly tapering shell with six-fold apertural dentition, consisting of two palatal, two columellar, and two parietal processes, the latter two almost perpendicular to each other.

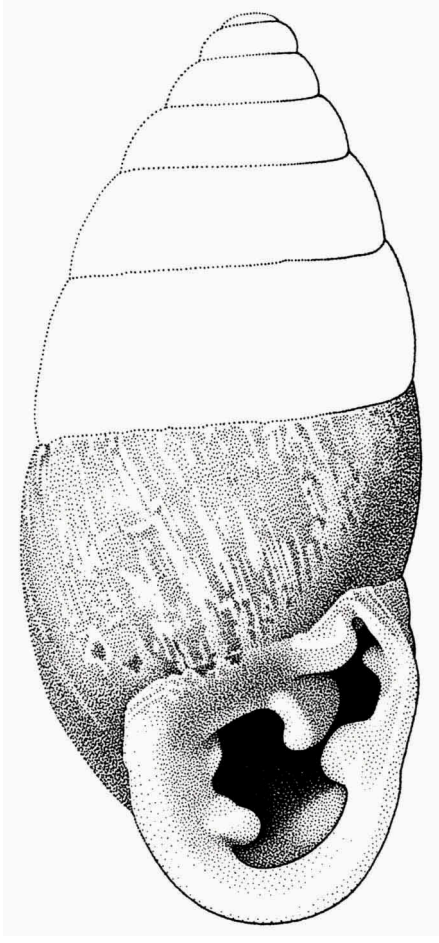

Fig. 1. Holotype shell of *Gulella adami* spec. nov., Assini, Ivory Coast, half-schematic; actual measurements 12.8 × 5.7 mm (IRSNB). H. Heijn del.

Description.— Shell (fig. 1) medium-sized, elongate-ovate to elliptical, narrowly to very narrowly rimate, whitish, transparent when fresh. Spire produced, sides convex, apex subacute, noticeably tapering, obtusely conical, smooth but faintly pitted. Whorls $7^1/_4$-$7^1/_2$, slightly convex, sculptured with insignificant, in some degree coarse, straight and oblique, and somewhat distant, growth striae, giving an overall impression of an (almost) smooth surface; sutures shallow and simple. Aperture ovate, labrum slightly incrassate and reflected, with six-fold dentition: a superficial, flattish and fairly small, angular lamella, in the form of a tubercle or slab, flattened in front view, narrowly connected with the apex of the labrum; a (fairly) deeply situated suprapalatal tubercle; a more superficial, medium-large labral complex, just above the middle of the labrum and almost touching the parietal lamella opposite, blunt and squarish to rounded in shape; a superficial left basal or rather lower columellar process in the form of an in-running lamella; a deeply situated, shelf-like inner (= upper) columellar process, in fact probably merely a twist in the lower columella; a less deeply situated, almost vertical, in-running mid-parietal lamella, with its base not far, but separate, from that of the angular lamella - angular and parietal processes more or less perpendicular to each other.

Measurements of shell: 11.9-12.6 × 5.7-5.9 mm, l/d 2.08-2.17, length last whorl 6.9-7.1 mm, aperture 4.6-4.9 × 4.0-4.2 mm, whorls $7^1/_4$-$7^1/_2$ (n = 3); for detailed data see table 1.

Animal unknown.

Distribution.— West Africa, south-eastern Ivory Coast (Côte d"Ivoire).

Table 1. Metric data of type material of *Gulella adami* spec. nov., Assini, Ivory Coast. The specimen marked with an asterisk is the holotype.

specimen	length × maj. diam.	l/d	length last whorl	aperture height × maj. diam.	number of whorls
RMNH	12.6 × 5.9 mm	2.15	7.1 mm	4.9 × 4.2 mm	$7^1/_2$
IRSNB*	12.5 × 5.7 mm	2.17	7.0 mm	4.6 × 4.0 mm	$7^1/_2$
IRSNB	11.9 × 5.7 mm	2.08	6.9 mm	4.6 × 4.1 mm	$7^1/_4$

The shell of the new species is unique among its congeners in possessing the peculiar assemblage of two parietal processes, i.e. a proper parietal lamella and an angular lamella, which, in addition, are arranged more or less perpendicularly to each other. Although these processes appear to be quite separate, a close scrutiny might cause one to interpret the complex as a single angular lamella dissolved into two components. It is therefore well-nigh impossible to indicate the closest allies of this striking new species.

Although Dr A.J. de Winter (Wageningen) remembers having seen material of the new species in the Paris museum, a search by Th.E.J. Ripken failed to reveal the existence of more specimens. Undoubtedly more material may be found in various museums with West African holdings (no material found in either MRAC or RMNH). The purpose of this description, therefore, is to draw attention to a very characteristic and possibly widely overlooked species.

Incidentally, the shell of the new species does not remotely resemble that of *Ptychotrema breve* (sensu Adam), among which it was found in the museum collections. The shell of *Ptychotrema* is characterized by two or more spiral furrows behind the labrum (corresponding to lamellae inside the labrum), while in *Gulella* at most there is a depression corresponding to the labral complex. Such a depression is hardly or not at all observed in the three shells of the new species. In addition, the apertural dentition of *P. breve* is evidently very different from that of *G. adami;* also the shell of the former is considerably larger (length 14.7-18.0 mm) than that of the latter (length 11.9-12.6 mm).

Usually the genus *Gulella* is divided into quite a number of subgenera (cf. Zilch, 1960: 569-573), although most of these are not well-defined. There are only a few, usually monotypic, subgenera that are easily recognized; however, few of the many subgenera seem to be monophyletic. The new species might be classified with one of the more generalized units, such as *Gulella* s.s. For the time being further classification of *G. adami* is not deemed opportune.

The curator of molluscs of the Leiden museum, Dr E. Gittenberger, pointed out that some Enidae have a similar type of shell. Specimens of *Euchondrus limbodentatus* (Mousson, 1854) (Cyprus), of *Chondrula quinquedentata* (Rossmässler, 1837) (former Yugoslavia), and of *Pseudochondrula tetrodon* (Morillet, 1854) (Georgia, former U.S.S.R.) (all RMNH) were examined. These shells are strikingly similar to *G. adami* in size, shape, surface sculpture and apertural dentition, but, of course, none was quite identical. This, indeed, is a case of convergent evolution of the shells in question. Examination of the animal, on the other hand, will at once show that the above streptaxid and the enids belong to entirely different families. Regrettably, the new *Gulella* is only represented by empty shells. Moreover, the distribution of the here discussed and kindred enid genera (generally SE Europe and adjoining areas around the Mediterranean) does not remotely touch upon the West African forest zone. In fact, there is no overlap here whatsoever.

Charles Alluaud (1861-1949), a Frenchman, was a well-known, widely-travelled collector of entomological specimens (Horn et al., 1990: 16), but he is also listed by one of the Paris museum authorities as a "récolteur" of molluscs (Fischer-Piette, 1951: 14).

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