

REPORT ON THE FRESHWATER GASTRO  
POD MOLLUSCS OF LOWER  
MESOPOTAMIA

PART II.—THE FAMILY PLANORBIDAE.

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India.

I have examined shells of four species of this family from Lower Mesopotamia, three belonging to the genus *Gyraulus*, one to *Bullinus*. As all but one of these have recently been discussed in these "Records" and as the one species not hitherto considered is represented in the collections before me merely by empty shells, there is not much that can be profitably said here. I think, however, that it will now be convenient to treat *Bullinus* as the type-genus of a distinct subfamily, in which *Physopsis*, Krauss, may be provisionally included. At least one recent writer has talked of the family Bullinidae, but in view of the close resemblance between the young shell of certain species of *Planorbis* (s.s.) and the adult shell of *Bullinus*, this course seems to me to go too far.

Family PLANORBIDAE.

Subfamily PLANORBINAE.

Genus **Gyraulus**, Agassiz.

Of the three species found in Lower Mesopotamia, two have been discussed already in this volume. I have unfortunately no information about the anatomy of the third.

*Key to the species of Gyraulus of Lower Mesopotamia.*

1. Shell surrounded by a strong median keel ; mouth of shell sharply pointed externally ... *G. euphraticus.*
2. Median keel absent or poorly-developed ; mouth rounded or bluntly-pointed externally ... *G. convexiusculus.*
3. Mouth of shell relatively small, bluntly pointed externally ; a fairly strong basal keel on periphery of shell ... .. *G. intermixtus.*

**Gyraulus euphraticus** (Mousson).

1919. *Gyraulus euphraticus*, Annandale and Prashad, *Rec. Ind. Mus.*, XVIII, pp. 40, 53, 55, figs. 5c, 7a, 8a.

I have nothing to add to our recent observations on this species except to say that shells occur mixed with those of *G.*

*convexiusculus*, which is the more abundant of the two, at the edge of the lower Euphrates at all points at which deposits are formed by floods. Probably Mousson included both species under the name *Planorbis (Gyraulus) devians* var. *euphratica*. There are no fresh specimens in the collections examined.

### ***Gyraulus convexiusculus* (Hutton).**

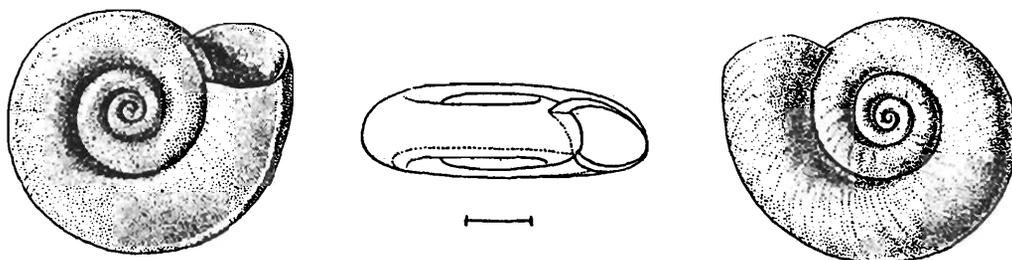
1919. *Gyraulus convexiusculus*, *idem*, *op. cit.*, pp. 40, 53, figs. 5e, 7b, 8b.

This is by far the most abundant species of the family in all the flood-deposits from Lower Mesopotamia from which I have examined shells. Capt. Boulenger obtained living specimens on mud-flats of the River Euphrates at Gurmud Ali, N. of Basra. As usual, the shell exhibits great individual variability and some examples come much nearer *G. euphraticus* than others. I can, however, detect no constant difference from series from India, Burma and China.

### ***Gyraulus intermixtus* (Mousson).**

1874. *Planorbis (Gyraulus) intermixtus*, Mousson, *Fourn. de Conchyl.* (3) XIV, p. 45.

This species is scarcer in the river-deposits of Lower Mesopotamia than either of the other two and I have only seen empty bleached shells. It is, however, widely distributed in this area.



*Gyraulus intermixtus* (Mousson).

It is closely related, as Mousson points out, to *G. euphraticus*, though that author did not recognize the identity of the latter species with the *P. compressus* of Benson and Hutton; but it differs in that the spiral is more transverse and deviates less below and in that the keel is situated at the base of the last whorl instead of round its middle. This is a very characteristic feature. Mousson refers to the sculpture as "*transverse tenuiter striata*." In the specimens before me I can detect no transverse striae, but they are perhaps slightly water-worn. They agree well in other respects with the original description.

### Subfamily **BULLININAE.**

#### Genus **Bullinus**, Adanson.

1918. *Bullinus*, Annandale, *Rec. Ind. Mus.*, XV, p. 167.

Mousson recognizes two species of this genus from flood-deposits in Lower Mesopotamia. He calls them *Physa (Isidora)*

*Brocchii*, Ehrenberg, and *Physa (Isidora) lirata*, Mousson, and distinguishes the latter by its more elongate body-whorl, regular spire, less distinct and less scalariform whorls, by the mouth of the shell being obtuse both above and below, and by the sculpture, which he describes as consisting of fine, sharp costae, which are somewhat distinct and represent lines of growth. The spiral and the form of the mouth in *B. contortus* (of which *Isidora brocchii*, Ehrenberg, is a synonym) are so variable and the sculpture so liable to be less or more distinct in different phases and individuals that I am inclined to regard these two forms as specifically identical, especially as I do not find that strong sculpture of the surface is always correlated with a more tightly wound shell or with any particular outline of the mouth.

### ***Bullinus contortus* (Michaud).**

1874. *Physa (Isidora) Brocchii*, var. *approximans*, and *P. (I) lirata* (?),  
Mousson, *op. cit.*, pp. 42, 43.  
1918. *Bullinus contortus*, Annandale, *op. cit.*, p. 168, pl. xx, figs. 6-11.  
1919. *Bullinus contortus*, Boulenger, *Ind. Fourn. Med. Res.*, VII, p. 19.  
1919. *Bullinus contortus*, Kemp and Gravely, *tom. cit.*, p. 255.

The varietal or subspecific name *approximans*, Mousson, may perhaps be retained provisionally, but it seems probable that it represents a mere phase the peculiarities of which are due to life in water of abnormal chemical composition or to some other circumstance of the environment. The most marked feature of this phase is the extreme variability of the shell, but a precisely similar variability occurs in a series of shells collected in Lake Ashangi in Abyssinia by the late Dr. W. T. Blanford. These shells are considerably larger than the majority of those from river-deposits in Lower Mesopotamia, but Capt. Boulenger obtained fresh shells almost as big in a drying marsh 5 miles S. of Amara and in a recently dried irrigation channel close to the River Tigris at the same place. The largest specimens in these series are 12 mm. long.

It is curious that the species has not been found alive in Mesopotamia, but Capt. Boulenger's specimens from Amara are entirely recent. Some of them even contain remains of the soft parts. *B. contortus* is a bottom-loving mollusc and perhaps in Mesopotamia, like *Melanoides tuberculatus* in the Lake of Tiberias,<sup>1</sup> it only lives in comparatively deep water.

Capt. R. B. Seymour Sewell, I.M.S., recently obtained a large shell of *B. contortus* (empty) near Gaza in southern Palestine, while I have no doubt that Preston's *Physa tiberidensis* from the Jordan just north of the Lake of Tiberias is identical with the closely allied species or variety *B. dybowskii*.

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<sup>1</sup> Annandale, *Fourn. As. Soc. Bengal* (n.s.) XI, p. 466 (1915).