On the thalassoid genus Coxiella

by
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Coxiella is a genus belonging to the family of the Truncatellidae, a family which is characterized according to Jeffreys by: spire truncated on the animal when arriving at maturity, the opening thus made being filled up with a fresh layer of shell. The line of fracture where the first-formed whorls were rubbed off is conspicuous, adult specimens have half the number of whorls of the young ones. The mouth of the shell is oval, with a complete peristome and furnished by a horny operculum. This operculum is, in the single generic representative of the European seas, ear-shaped with an eccentric nucleus. Before the operculum of the Australian genus *Coxiella* was studied, this genus was placed among the *Truncatellas*. These Australian *Truncatellas*, have however, a concentric operculum and although placed among other genera as *Blanfordia* and *Pomatiopsis*, they prooved not to be congeneric with them and therefore a new genus *Coxiella* was proposed in honour to Cox who described and figured the shells from South Australia, Victoria and Tasmania.

I wish to tell something about the history of the genus *Coxiella*. The famous explorer of Australia Felix, Sir Thomas Mitchell, collected the first shells in a saline lake, he discovered more than a hundred miles distant from the sea and near the present western boundary of Victoria; here it occured in association with *Salicornia* and considerable quantities had been thrown up by the waves. Mitchell

named the lake "Mitre Lake" and his shells were transmitted to the famous English conchologist Sowerby who named them *Truncatella filosa* in Mitchell's "Three Expeditions" II p. 190 in the year 1838.

Sowerby promised to give a fuller account in a scientific serial and gave four years later a good figure but changed the name into *Truncatella striata.*

Taylor mentioned the shells in the year 1886 in "Our Island Continent" and noted: Along the banks of the brackish Lake Corangamite, are layers of small shells, which the wind heaps and piles up in singular-looking drift lines. Hedley from the Australian Museum, Sydney, saw this *Coxiella* once as a pure formation of millions of shells packed in wind-rows on the beach of the bitter waters near Camperdown, Victoria.

Cox was the first conchologist who explained that there was not a single species, but that there occurs an eastern and a western species. Cox accepted the generic name *Blanfordia* and named both species, one as *Blanfordia pyrrhostoma* and the the other *Blanfordia striatula,* misapplying the name *striatula* by Menke, given in the year 1842 for a *Truncatella* who is a member of the genus *Coxiella.* The figures by Reeve and Küster show how distinct they are, as *C. striatula* increases more rapidly in breadth and is moreover imperforate showing no trace of an umbilicus. Moreover this western species, as described by Menke attains a much larger size, 18 × 7 mm. in the six remaining whorls. We see thus that Cox's two names belong to the same species although he wished to identify two different ones.

Till the year 1904 the name *striatula* of Menke was constantly given to the shells we are treating here and it was Charles Hedley who pointed out that our shell was already described in the year 1879 by Johnston as *Pomatiopsis badgerensis* from a fossil shell from the islands of Bass Strait. Belonging to the valid genus *Coxiella,* its name is therefore according to Hedley, *Coxiella badgerensis* (Johnston).

I am, however, not satisfied with Hedley's nomenclature. By a curious coincidence *Truncatella striatula* Menke and *Truncatella striata* Sow. were both published in the year 1842. For the western species Menke's name is to accept, but the much smaller eastern species is according to Hedley himself, published by Sowerby in Reeve, Conch. Syst., II., p. 94, pl. 182, fig. 4. If this is indeed a valid publication we have to accept *striatula* and *striata* as two different specific names and although Pfeiffer united both species as *Truncatella striata*, the name *striata* as given by Sowerby has priority above the name of *badgerensis*. The name of the eastern species is therefore *Coxiella striata* (Sowerby) and it seems to me that there are no objections against this name. I have accepted this name on the labels for the distribution of specimens to institutes of our country.

The genus *Coxiella* belonging to the operculate gastropods, is confined to Australia and Tasmania. The animals dwell in saline pools, which are sometimes salter than the sea. The genus has its focus of distribution in Western Australia, whence it migrated east through South Australia and Victoria to Tasmania. It is probably of a high antiquity. Hedley observes that future research may perhaps distinguish physiogical features to correspond with the unusual environment.

The allied genus *Truncatella* is very probably a true marine species and not a thallassoid one although there is no agreement as to the observers of living *Truncatellas*. There are careful and longcontinued experiments by Lowe, published in 5th volume of the "Zoological Journal". According to this author *Truncatella* is truly marine, as one of his specimens has lived 14 weeks constantly immersed in sea-water; moreover *Truncatella* is provided with a branchial apparatus. *Truncatella* lives on muddy shores near highwater mark, under stones according to Jeffreys. It inhabits the Atlantic shores of France, both sides of the Mediterranean as well as the Adriatic and Aegean seas. In a fossil state it occurs according to Philippi in Sicily.

Now it is a curious fact and very noteworthy that other gastropods belong to what the French malacologist Bourguignat, an early worker in this field, called with the term "thalassoid". In our own country of the Netherlands we know that members of the genus *Hydrobia* although inhabitants of fresh and pure water, often frequent estuaries, as well as pools and ditches close to the sea-shore which are liable to be occasionally overflowed by the tide, and the water of such pools is more or less brackish. One of these *Hydrobias* the *H. stagnalis* is especially found on *Ruppia* where it lives on the green algae which cover the plants, and another species *H. ulvae* is still more adopted to marine life and never found out of the reach of the tide, although the two species are often found together.

Because the genus *Ruppia* is widely distributed all over the world and is found not only in brackish water but also in sea-water and even, according to Prof. Baas Becking's observations near Bombay in water twice as saline as the common sea-water, we may expect that there are other gastropods living in *Ruppia*-formations in the various localities over the world.

It is futher very striking that such gastropods have often a truncated spire too and I will call attention here on such genera as *Potamides,* represented in our Malayan Archipelago and the genus *Melania* which has a very large distribution. One species of *Melania (M. tuberculata* Müll.) is found in North Africa. I saw it from Tunis near Gafsa where it was collected by Pitard in ditches on algae, it is widely distributed and probably occurs over British India to New Guinea. It was also found among *Ruppia rostellata,* collected by Ehrenberg in Arabia near El Tor in the year 1825 together with other gastropods as *Hydrobia.* Unfortunately the degree of salinity is rarely known in the various localities. In this matter much field work is to do and studies of the environment are highly necessary.

Among the *Coxiellas* collected by Prof. Baas Becking and kindly presented to me for inspection there are lots of a

Plaat no. 4.

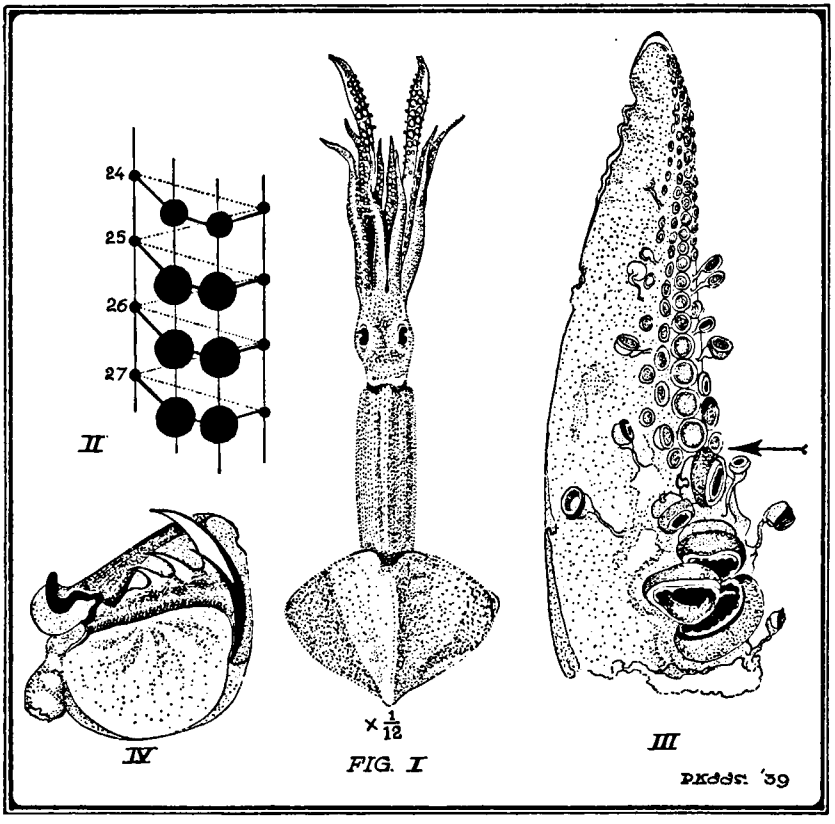

Fig. I *Ommatostrephes (Todarodes) sagittatus* (L a m a r c k) op 1/12 × w.g.
Fig. II Seriatie van de zuignappen op de rechter tentakel. (schematisch).
Fig. III Distale uiteinde van de linker tentakel van *O. sagittatus.*
Fig. IV Doorsnede door een zuignapje van het midden van de linker dorsale arm.

Plaat no. 5.

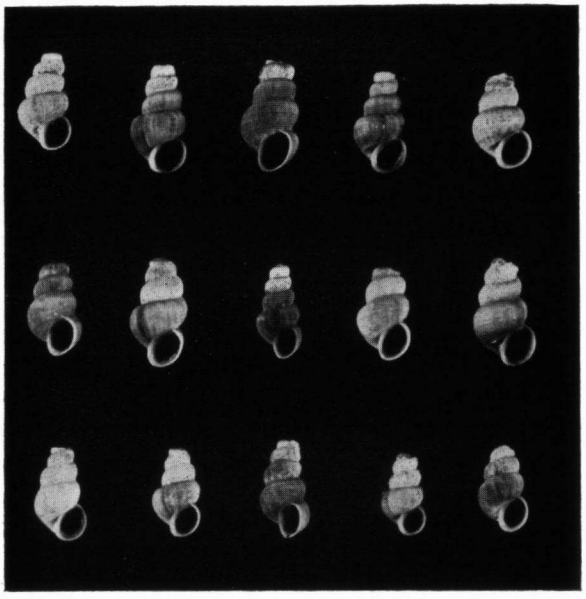

Fig. 1. *Coxiella striata* (Sowerby)
Yorke Peninsula, Marion Bay, S.A. × 3.

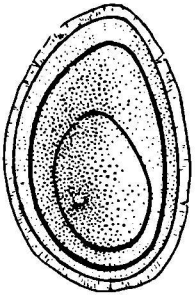

Fig. 2. Operculum of *Coxiella striata* (Sowerby) × 20.

Crustacea of the order of the Ostracoda and the family of the Cypridae. Although these Cypridae often occur in fresh water they are undoubtedly observed in brackish water too. On a scientific trip to the island of Voorne in the Netherlands, the molluscs were studied in extenso, among them we noted that some species of the well-known genus *Lymnaea* as *L. ovata* Drap. live in brackish water and *Hydrobia Jenkinsii* f.i. was found in the lake "de Waal" which is "thalassoid", the vegetation around that lake is distinctly "saline". Now the carapaces of a small ostracod of the genus *Cypris* were often observed in the waters of the island of Voorne. They were, if found without the animal, not rarely regarded as a shell by young members of the biological groups. It is therefore a fact that *Cypris* in our country too can live in brackish water. The Australian Cypridae, although commonly indicated as living in swamps, lakes and ditches with the term "fresh water species" are found together with the *Coxiellas* in water, salter than the sea. The determination of these saline Australian Cypridae was very difficult as no material for comparison was at my disposal. In Chapman's paper on an Ostracod and Shell Marl of Victoria, the author mentions, that the ostracoda of the genera *Cypris* and *Candonopsis* are chiefly of freshwater character, while the genus *Cythere* is a true marine ostracod. For the moment I concluded that the specimens at hand probably belonged to *Cypris sydneia* King, originally described from specimens taken near Sydney but also observed in lagoons of New Zealand. I am, however, obliged to refer these specimens to more competent zoologists, who may be able to determine them exactly.

The locality where Prof. Baas Becking collected the *Coxiellas* is given by him as: Yorke Peninsula, Marion Bay, State of South Australia. They were collected on 25 March of the year 1936.

A fine series of beautifully coloured examples from this locality is given here by me on the foto; they were provided with the horny operculum. This operculum was so far as I

could find never figured and I found it therefore interesting to give it here, 20 times enlarged to show the position of the nucleus.

A full account of the literature of this species was given by H e d l e y in the Victoria Naturalist Vol. XL. (1923) No. 4.

Prof. L. G. M. B a a s B e c k i n g, director of the Botanical Garden at Leiden, collected these interesting gastropods when he studied the salt problems during his voyage in Australia. I have to express my sincere thanks to him for the opportunity he gave me to study these curious molluscs.