

LIOTIIDAE AND ALLIED MOLLUSCS FROM THE DAMPIERIAN ZOOGEOGRAPHICAL PROVINCE*

BY CHARLES F. LASERON

(Figures 1-87)

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INTRODUCTION

This paper is based on two collections from Darwin, Northern Territory, which, as far as is known, are the only collections of small shells available from within the Dampierian Zoogeographical Province. The first collection was made by the author's son, John Laseron, from the beaches at Darwin during the war years, the second from a dredging in 17-20 fm of Pt. Charles, Darwin, by Mr. Mel Ward. As the field is so large it has been thought advisable to deal with these collections family by family rather than as a whole. Material from these collections has already been incorporated in papers dealing with both the Solanderian and Dampierian Provinces on the Cerithiopsidae, the Rissoinidae and Rissoidae, and the Ctiloceratidae (the last in co-authorship with Tom Iredale). The present paper, however, deals only with the Dampierian Province.

No species of Liotiidae has previously been recorded from within the Dampierian Province, but several species have been described from Torres Strait, where there is an overlap with the Solanderian fauna. The presence of some of these species at Darwin is not surprising, and shows them to be essentially Dampierian in range. One species from southern Queensland also occurs at Darwin, also a slightly divergent race of a Peronian species, the latter so far not recorded from any intermediate locality. With these exceptions all the species have been described as new. Generic revision has also been undertaken. All in all 28 forms are here reviewed and figured. Of these 7 have been previously described, 6 from Torres Strait and 1 from the southern Queensland coast. New species number 20 and in addition there is a new subspecies of a Peronian species. All have been divided into 17 genera of which 11 are proposed as new. None of these includes *Liotia* proper, which, however, is found on the Queensland coast, and will also probably be found in north Australia.

CLASSIFICATION

The limitations of Liotiidae as a family are not yet known. The genus *Liotia* Gray on which it is based is a heavy turbinate shell, relatively large, with strong cancellate sculpture, umbilicate, the aperture round and entire and surrounded by a heavy varix. The operculum, which separates it from the Turbinidae, is horny, with an external calcareous coat formed of separate, pearl-like, shelly particles spirally arranged. As the animals and opercula of very few species are known there is no data by which to arrive at the true classification of the majority of shells which at one time or another have been assigned to the family. It is probable that several distinct families are present, some of which may have little relationship with each other. For these reasons the term Liotiidae is here used in the widest sense, and is by no means considered to be the ultimate classification.

Earlier authors have adopted varying classifications. H. & A. Adams (1858) used Liotinae as a subfamily of the Trochiidae to contain such genera as *Liotia* and *Cyclostrema*, Umboniinae as another subfamily to include *Isanda*, *Chrysotoma* and others, while A. Adams' own genus *Teinostoma* was placed near *Neritula* in the Nassinae. Fischer (1887: 833) proposed a new family Cyclostrematiidae as distinct from Liotiidae to include *Cyclostrema* with various subgenera and *Teinostoma* (*Teinostoma*) of which *Moerchia* and *Cirsonella* were considered subgenera.

In Australia, Tate (1899) followed Fischer and used the two families Liotiidae and Cyclostrematiidae to cover Australian species, the former for heavy cancellate shells approximating to the true *Liotia*, the latter for small shells with depressed spires, thin to vitreous in texture, lightly sculptured or smooth, and generally umbilicate, though some with the umbilicus closed by a sheet of callus.

Cyclostrematiidae used in this way is rather unfortunate, for the true *Cyclostrema* is a heavy, cancellate shell, approximating to *Liotia*, though more depressed and without the heavy varix. Bush (1897: 99) recognized this when studying the American Atlantic species and states: "The family name Cyclostrematiidae constituted by Fischer should now be restricted to forms like the true *C. cancellata* Marryatt, and perhaps may prove to be closely related or synonymous with Liotinae as used by Adams and Chenu, Liotiidae as used by Tryon or Delphinuliidae as used by Fischer and Dall."

In the same paper the author (p. 107) introduced Vitrinellidae to include *Vitrinella* C. B. Adams and "all small, more or less hyaline, non-naereous species, varying in form, from those having a low spire and large umbilicus like *Circulus* to the higher spired genera like *Lissospira* and those with closed

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