In the Lucinidæ of Fischer, and in the species of *Cryptodon* of the Challenger (H), the outer plate of the gill is not transformed into a dorsally directed "appendage," but has altogether disappeared. For here again, as in *Tellina*, the branchial plate directed ventrally is homologous with the internal plate of the typical gill (E). In fact, its recurrent or reflected lamina is internal. The embryological facts also show, according to Lacaze-Duthiers,[1] that this plate is indisputably the internal.

From what has been said, it is not necessary to conclude, as Dall[2] has done, that the gills cannot be employed for purposes of classification. They may be so used, but in so doing we attend, as Ray Lankester[3] has shown, to their structure, and not, as Fischer did, to their number. All the Pelecypoda have, in fact, on each side only a single gill, each plate of which corresponds to half of the gill of Gastropod or Cephalopod. This can be very clearly seen in primitive gills like those of *Malletia*. But this single gill may be greatly modified in the great majority of Pelecypoda, either by enlargement or by reduction. Thus, as has been already explained, the gills come to have an appearance quite different from those of other Molluscs.

In a preceding publication[4] I was not in a position definitely to discuss Fischer's classification, which was not then fully published. But since the publication of Fischer's Manual, and my recent examination of a large number of Pelecypoda, I have become convinced that his classification is unnatural. It tends, that is to say, to separate forms so closely allied as *Lucina* and *Ungulina*, *Tellina* and *Psammobia*, *Aspergillum* and *Fistulana*, &c., to place *Malletia*, *Yoldia*, and *Nucula* among Tetrabranchs, and *Solenomya* among Dibranchs, though the gills in all cases are formed in essentially similar fashion; and, finally, to rank genera so peculiar as those of the "Anatinacea," studied above, which are destitute of true gills (*sensu stricto*), among the "Dibranchs," in which the gills are well developed.

The supposed parallel classification of Dibranchs and Tetrabranchs, which Fischer[5] suggests, shows nothing more than that the same reduction of gill may occur in different groups.

Apart from the two great works of Poli[6] and of Deshayes,[7] of which the former is already very old, the general morphology of the Pelecypoda has not been the subject of works extending over the entire group, or even over the greater part of it. Of late years it has been rather to the physiology of these organisms that investigation has been

[1] Mémoire sur le développement des branchies des Mollusques Acéphales Lamellibranches, *Ann. Sci. Nat.* (Zool.), sér. 4, t. v. p. 46.

[2] Report on the Mollusca, *Bull. Mus. Comp. Zoöl.*, t. xii. p. 281.

[3] Mollusca, Encycl. Brit., 9th ed. t. xvi. p. 691.

[4] Notice sur les Mollusques recueillis par M. le Capitaine Storms dans la région du Tanganyka, *Bull. Mus. Roy. Hist. Nat. Bely.*, t. iv., 1886, p. 120.

[5] Manuel de Conchyliologie, p. 1141.

[6] Testacea utriusque Siciliæ.

[7] Histoire naturelle des Mollusques (Exploration de l'Algérie).