

CLASSIFICATION OF THE BRITISH SPECIES OF THE GENUS SOLEN, LINNÉ.¹

BY H. H. BLOOMER.

Having recently described some of the chief features in the anatomy of the species of *Solen*, I now purpose considering how they bear on the question of the present classification. For this purpose it will be sufficient if I only call attention to the chief points by which the other species differ from *S. ensis* without going into the anatomy of the latter.

The chief differences in *S. siliqua* are :—It is larger, and quite straight along the dorsal surface. The oesophagus is straighter, and the divisions of the stomach are more pronounced. The cardiac portion does not project so far anteriorly, nor does the posterior end of the pyloric portion rise so much dorsally, and the muscular papilla is more central.

In *S. marginatus* the following are the chief points of difference :—It is straight along the dorsal surface. There is no fourth aperture, and there are no labial grooves. The inner parts of the bases of the gills are joined together. The free portion of the siphon is longer. The pallial and pedal muscles are more developed. The free portion of the retractor pedis anterior muscle is shorter, the bifurcations lie close together, and the fibres of it cross the foot in a posterior direction, passing underneath instead of over the longitudinal muscles. The lips project anteriorly, the oesophagus is longer and proceeds posteriorly to the stomach, the latter lying in a more posterior position over the distal end of the foot. The muscular wall dividing the oesophagael from the cardiac portion is more developed, and projects a considerable distance into the stomach, thus separating the anterior part of these divisions from each other. The caecum of the crystalline style is of considerable length, leaves the pyloric portion on its ventral surface, curves, and passes in an anterior direction. The intestine passes along the caecum, round the distal end, and returns along the other side, and is connected with it for the greater portion of the distance. The liver does not project anteriorly over the anterior adductor muscle. Anteriorly each cerebro-pleural ganglion gives rise to only one nerve—the anterior pallial nerve — which has one branch. There is only one circumpallial nerve.

Solen pellucidus possesses some features of resemblance to *S. ensis*, some to *S. marginatus*, and others not common to either of these species.

¹ Read at a meeting of the Midland Malacological Society.

It will, therefore, be assumed that the points not hereafter mentioned are the same as in *S. ensis*. It resembles *S. marginatus* in the following points:—In the strong development of the pedal muscles. The inner parts of the bases of the gills are joined together. The fibres of the retractor pedis anterior muscles cross the foot under, instead of over, the longitudinal ones. The long oesophagus and position of the stomach. The shape of the anterior part of the stomach. The length and direction of the caecum of the crystalline style. In possessing only one circumpallial nerve.

The features by which it differs both from *S. ensis* and *S. marginatus* are:—The hinge of the shell is situated some distance from the anterior end, and the anterior part of the anterior adductor muscle, together with the dorsal integument, terminate there. What represents the fourth aperture is present at the postero-ventral part of the pedal aperture. The presence of a supra-pedal chamber at the antero-dorsal end. The large pyloric portion of the stomach, and of the proximal part of the caecum of the crystalline style, and the absence of folds in the intestine shortly after leaving the stomach. The numbers of branches of the anterior pallial nerve, which are more than in *S. marginatus*, but fewer than in *S. ensis*.

It is admitted that the type of the genus *Solen* is *S. vagina*, Linné⁽¹⁾, and it is evident that the anatomical differences between *S. vagina* and *S. ensis* and *siliqua* prevent the two latter being placed in the same genus. In the recent classification⁽²⁾ these two species have been placed in the genus *Ensis*, Schumacher, and I do not see any reason why this should be altered. That there are distinctive, and what I have found to be constant, characters, I think I have shown, thus justifying them being treated as separate species, and not varieties. There now remains *S. pellucidus*. This animal I have endeavoured to demonstrate possesses some characters common to *S. ensis*, some common to *S. vagina*, and others possessed by neither of them. It, therefore, follows that *S. pellucidus* cannot be placed in the genus *Solen* or *Ensis*. In the before-mentioned classification it has been placed in the genus *Cultellus*, Schum., and as I have not been able to see the type animal of Schumacher's genus (*C. magnus*), I cannot at present say if anatomically this is correct or not.

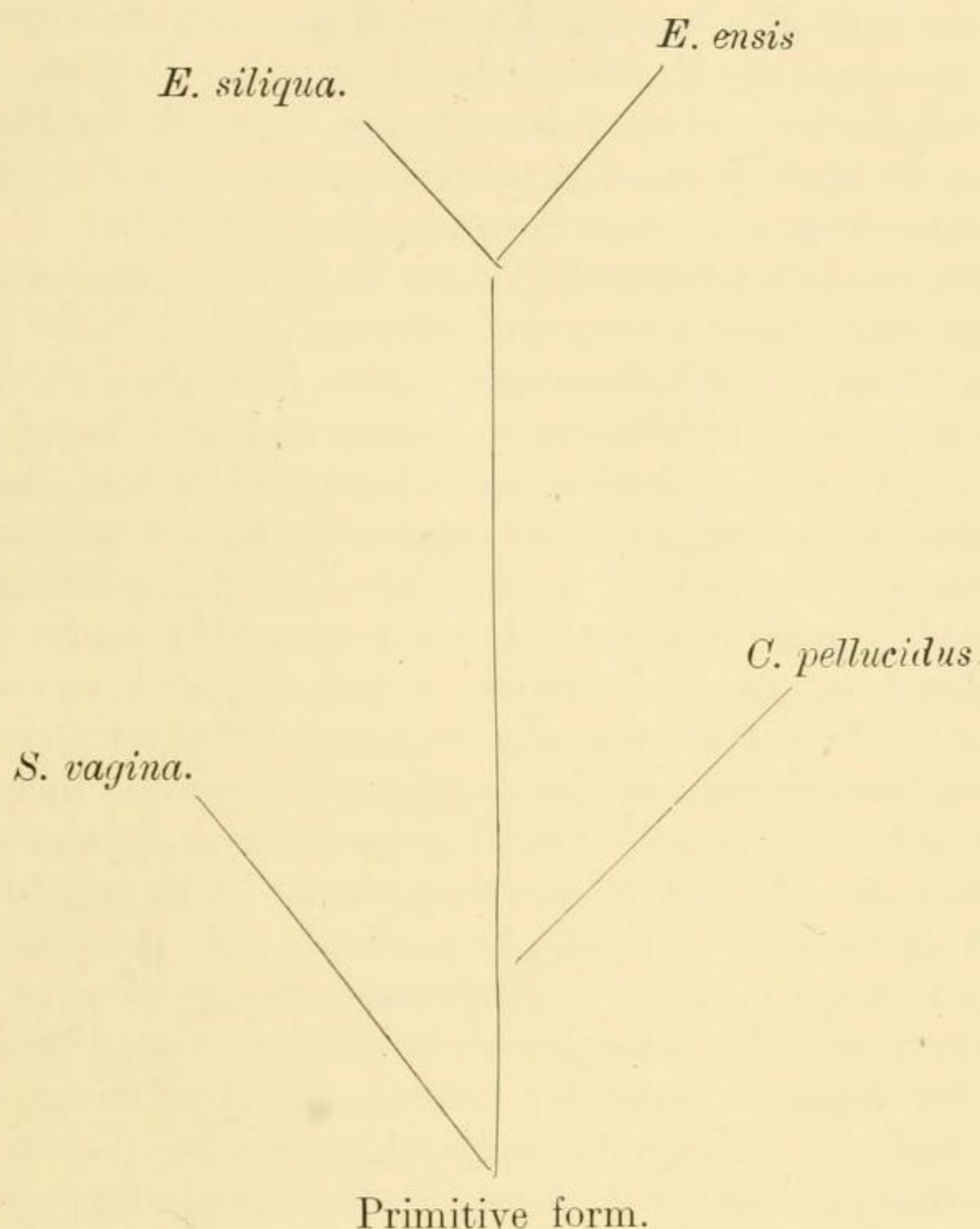
I look upon *Solen vagina* as a more primitive form, and upon *Ensis ensis* and *E. siliqua*, as more specialised forms—perhaps *E. ensis* slightly more so than the *E. siliqua*; and *Cultellus pellucidus*, coming somewhere between *S. vagina* and *E. siliqua*. I do not, however, suggest that any one species has directly originated from the other. Perhaps the following tree will better illustrate what I wish to convey:—

¹ British Conchology, Jeffreys.

¹ A History of British Mollusca and their shells. Forbes and Hanley.

¹ Synopsis of the *Solenidae* of North America and the Antilles. Dall.

² List of British Marine Mollusca prepared by a Committee of the Conchological Society of Great Britain and Ireland.



Since the publication of Dr. Ridewood's valuable work on the structure of the gills of the Lamellibranchia no review of their classification would be complete without a reference to it ; but as I propose referring to the work in more detail at a later date when dealing with the classification of other genera of the *Solenidae*, I will only now say that I do not see anything in it disagreeing with the above conclusions.

ON THE ORIGIN AND FUNCTION OF THE FOURTH APERTURE IN SOME PELECYPODA.

BY H. H. BLOOMER.

It has been suggested that the origin of the fourth aperture corresponds with a rudimentary fissure for the byssus. While this may explain the cause of the orifice in certain of the Pelecypoda, I have from observations come to the conclusion that in others the origin is totally dissimilar ; and, further, in those to which this theory may apply it has in certain cases since been utilised for an altogether different function. It is noticeable