

I think, there can be little doubt but that Risso's species has been confused with *A. sowerbyi* in this country, and that on more careful examination it will be found to be fairly well distributed. I hope at a later date to give coloured figures of the British examples, and also figures of the internal anatomy.

In the meantime, I shall still be pleased to receive further examples from any parts of the British Isles.

Distribution in British Isles.

**Devon.**—Barnstaple (F. J. Partridge).

**Warwick.**—Near Birmingham (Bromley Peebles).

**Dublin**—Kingstown. Dr. Scharff<sup>(3)</sup> does not distinguish between *A. carinata*, Risso, and *A. sowerbyi*, Fér., in his list.

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## THE ANATOMY OF THE BRITISH SPECIES OF THE GENUS SOLEN.

Part IV. \*

BY H. H. BLOOMER.

Plate x.

*Solen pellucidus*, Penn.

### EXTERNAL CHARACTERS.

When compared with *S. ensis*, L., this species presents the following points of difference: The measurement from the dorsal to the ventral surface is proportionately greater. 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 (Pl. x, fig. 1, H.). What represents the fourth aperture is present at the postero-ventral part of the pedal aperture. As in *S. ensis* it carries a tentacular fringe. From specimens examined, I have not been able to find any trace of concrescence of the mantle lobes between the two apertures, but as this portion of the animal is easily ruptured, the question still remains a matter of uncertainty. The pedal aperture is larger, extending more posteriorly both dorsally and ventrally. The dorsal and anterior edges of the mantle lobes bordering it, carry a closely and finely crenulated fringe, while in the dorsal portion, the mantle lobes are joined together a little below their margins, thus forming a chamber, which apparently does not communicate with the pallial chamber. The foot (Pl. x, fig 1, F.)

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3. Irish Naturalist, 1892. vol. 1, p. 89.

\* See ante p. 18.

is large, particularly as it approaches its distal end, where it is axe-shaped and of considerable depth. The bases of the inner gills are connected with each other as in *S. marginatus*, Pult. and Don.

#### MUSCULATURE.

The musculature of *S. pellucidus* differs from that of *S. ensis* in the following particulars.

*i. The Pallial Muscles.*—The muscles along the edges of the mantle lobes are deeper than in *S. ensis*, and anteriorly describe a semi circular curve to the anterior end of the anterior adductor muscle (Pl. x, fig. 1, *H.*), while posteriorly, where forming the proximal portion of the siphon, they are much more developed (Pl. x, fig. 1, E.S.C. and I.S.C.).

The posterior portion of the anterior adductor is deeper but the depth gradually diminishes towards the anterior end, which curves dorsally to the teeth of the shell (Pl. x, fig. 1, *A.A.*).

The posterior adductor is correspondingly smaller (Pl. x, fig. 1, *P.A.*).  
*ii. The Pedal Muscles*—The foot increases in size towards its distal end. In this part the muscles are frayed out, and form a large fibrous network. The retractor pedis posterior muscles are longer, their terminal parts being situated more posteriorly than in *S. ensis* (Pl. x, fig. 1, *P.R.A.*)

In the retractor pedis anterior muscles, the posterior bifurcation (Fig. 1, *P.R.A.*) is short and thick, while the anterior one (Fig. 1, *P.R.A.*) is long and narrow extending over the greater portion of the anterior adductor muscle. The fibres of the muscle cross the foot, as in *S. marginatus*, and pass underneath instead of over the longitudinal muscles, eventually becoming buried in the muscular integument.

#### THE ALIMENTARY CANAL.

The oesophagus (Pl. x, figs. 2 and 3. *Oe.*) is long and narrow, passing in a posterior direction to the stomach, in consequence of which, the latter is situated more posteriorly than in *S. ensis*. The divisions of the stomach are very pronounced. The cardiac portion (Fig. 2, *C. St.*) is a narrow, deep, pocket-shaped sac. The pyloric portion (Fig. 2, *P. St.*) and the proximal portion of the caecum of the crystalline style (*C.C.*) are very large, while the latter is of considerable length and extends along the greater portion of the pedal cavity. The intestine (*In.*) proceeds from the pyloric portion, close to the caecum of the crystalline style, to within a short distance of its distal end, where it bends and returns along the opposite side, traverses round the posterior dorsal end of the stomach and folding upon itself, passes into the rectum (*R.*). If contrasted with the description of *S. ensis* and *S. marginatus*, it will

be seen that in many respects the alimentary canal more closely resembles that of the latter than that of the former, the more important differences being the relatively larger size of the pyloric portion of the stomach and of the distal part of the caecum of the crystalline style, and the absence of folds in the intestine shortly after leaving the stomach.

The position of the liver (Fig. 1, *L.*) is similar to that of *S. ensis*.

#### NERVOUS SYSTEM.

The nervous system of *S. pellucidus* resembles that of *S. ensis*, differing from it, however, in the number and distribution of the pallial nerves.

The anterior pallial nerve only gives rise to two branches. The first branch leaves the nerve after it has passed a little distance under the ventral surface of the anterior adductor muscle, and the second a short distance before reaching the anterior edge of the muscle; both branches cross the mantle lobe and join the circumpallial nerve. The posterior pallial nerve does not give rise to any branch which crosses the mantle lobe as in *S. ensis*.

There is only one circumpallial nerve, which anteriorly passes along the dorsal portion of the muscular part of the mantle lobe, and gradually attains a ventral position as it proceeds posteriorly. It is to be observed that the two anterior pallial nerves fuse together close to where the teeth of the shell are connected with the dorsal integument, forming a small ganglionic mass, and then separating, pass along the mantle lobes.

#### CIRCULATORY SYSTEM.

The general features resemble those of *S. ensis*, but owing to the smallness of the specimens examined it has not been possible to follow it out in all its detail.

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From the foregoing morphological account of the different species, and from further work shortly to be published, I purpose at no distant date to review the present classification of the genus *Solen*.

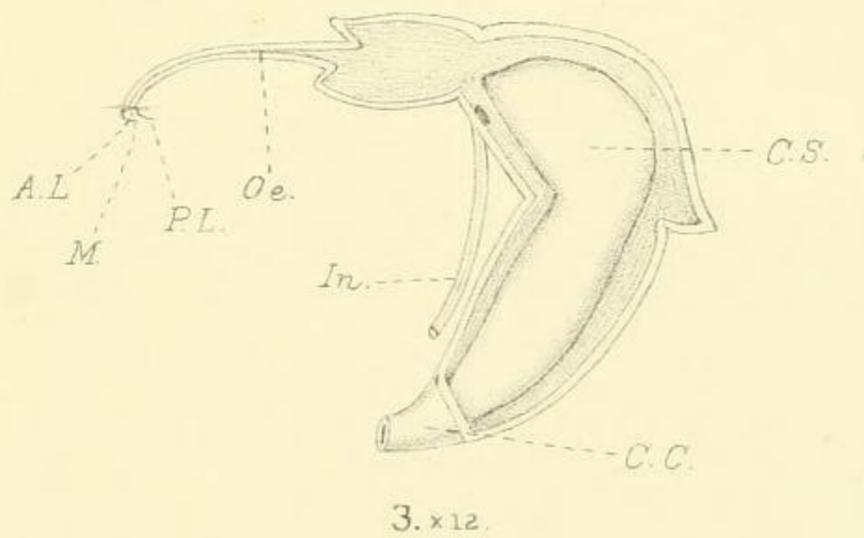
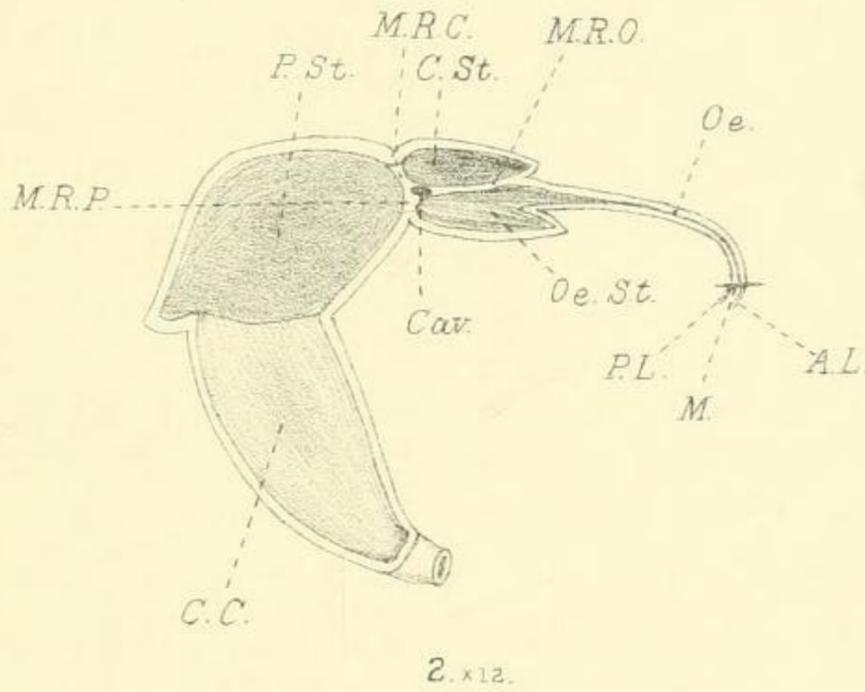
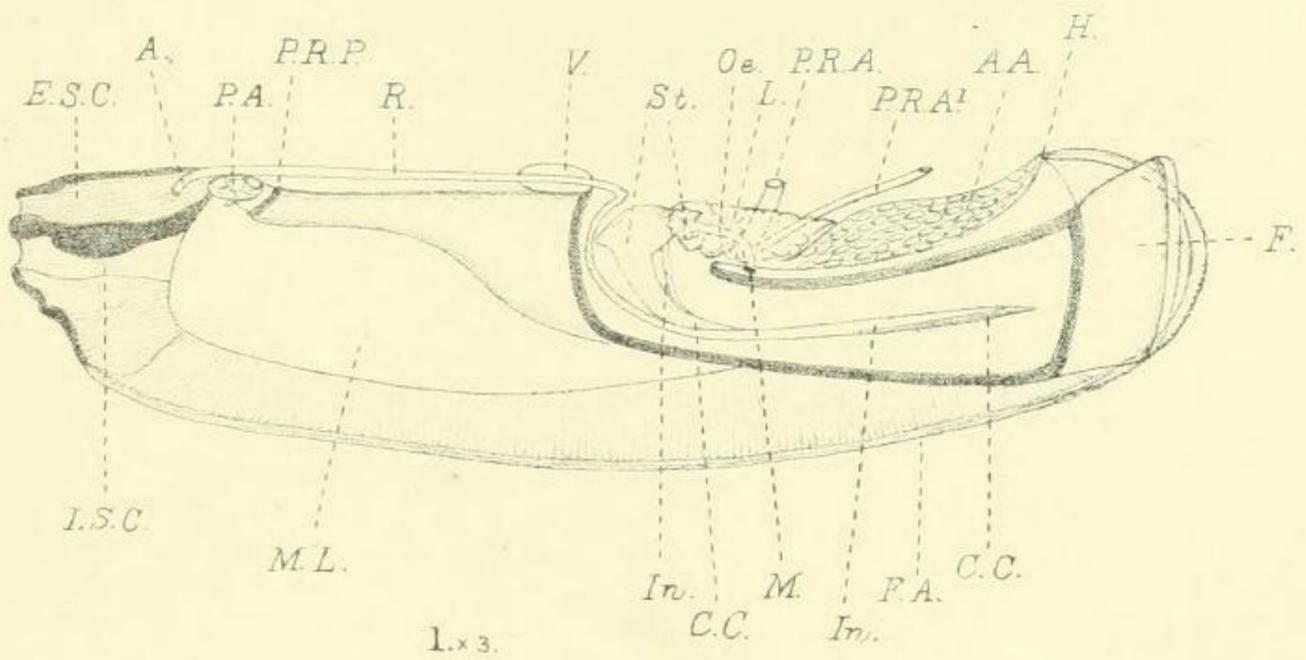
## EXPLANATION OF PLATE X.

*Solen pellucidus*, Penn.

- Fig. 1. View from the right side, alimentary canal, &c.  $\times 3$ .  
 Fig. 2. Longitudinal section of the stomach, showing the internal structure of the left side.  $\times 12$ .  
 Fig. 3. Longitudinal section of the stomach, showing the internal structure of the right side.  $\times 12$ .

## REFERENCE LETTERS.

|               |  |                        |  |
|---------------|--|------------------------|--|
| <i>A.</i>     | Anus.  | <i>M.R.O.</i>          | Muscular ridge separating the oesophagael from the cardiac portion of the stomach.         |
| <i>A.A.</i>   | Anterior adductor muscle.  | <i>M.R.P.</i>          | Muscular ridge separating the small cavity receiving small bile duct from pyloric portion. |
| <i>A.L.</i>   | Anterior lip.  | <i>Oe.</i>             | Oesophagus.  |
| <i>Cav.</i>   | Small cavity receiving the small bile duct.                                    | <i>Oe. St.</i>         | Oesophagael portion of stomach.  |
| <i>C.C.</i>   | Caecum of crystalline style.   | <i>P.A.</i>            | Posterior adductor muscle.   |
| <i>C.S.</i>   | Crystalline style.   | <i>P.L.</i>            | Posterior lip.   |
| <i>C. St.</i> | Cardiac portion of stomach.  | <i>P.R.A., P.R.A.'</i> | Bifurcated parts of retractor pedis anterior.  |
| <i>E.S.C.</i> | Exhalent siphonal chamber.   | <i>P.R.P.</i>          | Bifurcation of retractor pedis posterior.  |
| <i>F.</i>     | Foot.  | <i>P. St.</i>          | Pyloric portion of stomach.  |
| <i>F.A.</i>   | Fourth aperture.   | <i>R.</i>              | Rectum.  |
| <i>H.</i>     | Point where the dorsal integument is connected with the teeth of the shell.    | <i>St.</i>             | Stomach.   |
| <i>In.</i>    | Intestine.   | <i>V.</i>              | Ventricle.   |
| <i>I.S.C.</i> | Inhalent siphonal chamber.   |                        |  |
| <i>L.</i>     | Liver.   |                        |  |
| <i>M.</i>     | Mouth.   |                        |  |
| <i>M.L.</i>   | Mantle lobe.   |                        |  |
| <i>M.R.C.</i> | Muscular ridge separating the cardiac from the pyloric portion of the stomach. |                        |  |



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ANATOMY OF SOLEN.

