

Notes on *Centrina Salviani*.

By

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With Plate XIII.

Two specimens of this Elasmobranch have recently been landed at Plymouth, the one on the 21st of June, and the other on the 8th of July. They were both captured by steam trawlers working off Vigo Bay on the north-west coast of Spain. The specimens cannot, therefore, be claimed as English; but since only one example appears to have been previously landed in this country, having been taken off the coast of Cornwall in 1877; and since the fish is, therefore, not at all well known, a few notes on the two specimens brought to the Laboratory may be of interest.

In looking up the literature on this fish I do not find a drawing which gives a satisfactory idea of its appearance. I have, therefore, attempted to represent one of the specimens in question by an accompanying figure.

The following measurements will also help to give a comprehensive idea of the proportions :

Extreme length	31 inches.
Extreme breadth of flat ventral surface	5½ "
Breadth of mouth	1⅛ "
Breadth between grooves on each side of mouth	2 "
Length from centre of spiracle to end of snout	3 "
Longitudinal measurement of eye	1⅛ "
" " spiracle	¾ inch.
" " gill-slits	⅝ "
Length of abdominal cavity	17 inches.
Breadth " 	4½ "

The other specimen measured 35 inches in length.

Günther's description of the genus, of which *Salviani* forms the only species, is as follows :

"Two dorsal fins, each with a strong spine ; no anal fin. Trunk rather elevated, trihedral, with a fold of the skin running along each side of the belly. Mouth narrow, with a deep groove on each side. Teeth of the lower jaw erect, triangular, firmly serrated ; those of the upper slender, conical, forming a group in front of the jaw. No membrana nictitans. Spiracles wide, behind the eye. Gill-openings narrow.

"Mediterranean and neighbouring parts of the Atlantic."

The ventral aspect is perfectly flat, suggesting the idea that the habit of the fish is to frequent the bottom, and to lie in one position for long periods. The mouth also is extremely oblique in its opening, and provided with deep grooves resembling the appearance found in the skate. The eye, in proportion to the size of the head, is large, and the heavy lids can easily be drawn so as to cover the eyeball completely. The pupil has a somewhat singular appearance. It is elliptical in outline, the long axis being vertical.

The skin is a remarkable feature, its extreme roughness being at once apparent to the eye and rasping to the touch.

Each scale or dermoid denticle is irregularly pyramidal, presenting a sharp apex. The scales are so arranged as to form a close covering of a diamond pattern, so hard as to be almost impenetrable to steel. I have not seen any Elasmobranch which, in proportion to its size, is so completely enveloped in "kosmin." A large *Læmargus* will show the placoid scales of equal height, but not with the same sharpness of point or closeness of base.

One specimen when received had already had the abdominal viscera removed. The other was a female. The ovaries were filled with eggs, and extended the entire length of the abdominal cavity. The eggs were in some cases of great size, the largest being two inches in diameter. The oviducts had enlarged uterine dilatations, the inner surfaces of which were covered with a dense mass of vascular villi, the muscular layer being thrown into longitudinal folds. A shell gland of a somewhat rudimentary character was present on the anterior portion of each oviduct. Two large abdominal pores were present in the posterior part of the cloaca. Both oviducts opened internally by a single wide aperture situated at the anterior end of the abdominal cavity.

The intestine had no convolution, but was divisible into an extremely short small intestine and the usual spiral colon.

The liver was composed of two large lateral lobes, reaching to the posterior end of the abdominal cavity, and a small middle lobe.

Stomach empty. Spleen in two portions, one in front of the stomach and one in the mesentery of the large intestine. Pancreas and rectal gland present.

As in other Elasmobranchs destitute of a nictitating membrane, the cartilaginous skeleton shows a more or less primitive arrangement. The notochord is not continuous through the centra of the vertebral column, but the column itself is entirely cartilaginous, the centra corresponding with the neural arches. The interneural pieces exactly resemble the neurapophyses inverted, and are interposed between them like wedges, the apices reaching the centre as in *Acanthias*. No pleurapophyses are present.

The conspicuous spines which support each dorsal fin also mark a certain resemblance to *Acanthias*. There is, however, a distinct difference in that the spines of the spur-dog pass off from the neural arch of the vertebral column in exactly the same direction as, and are parallel to, the anterior margins of their dorsal fins; whereas in *Centrina* the spines run in opposite directions, the anterior one pointing forwards, the posterior one backwards.

In both cases they correspond, in position and arrangement, to modified neural spines, but in the fleshy fin of *Centrina* there is no arrangement of supporting cartilaginous plates as seen in the fin of *Acanthias*.

The position of each spine is suggested in the figure.

