

fragment of a large *Pyrosoma* came up in the trawl, which had been down to a depth of 1900 fathoms. The specimen may have been captured at any point during the ascent of the trawl.

At Station 69 in the North Atlantic, a large *Pyrosoma*, which is recorded in Mr. Murray's note-book as having measured, when living, 4 feet 2 inches in length and 9 inches in breadth, was captured by means of the trawl let down to 2200 fathoms. This magnificent specimen was not preserved entire. A few small pieces were put in absolute alcohol and in picric acid, and that is the material I have examined.

Professor Moseley<sup>1</sup> writes of this specimen as follows: "A giant *Pyrosoma* was caught by us in the deep-sea trawl. It was like a great sac, with its walls of jelly about an inch in thickness. It was 4 feet in length and 10 inches in diameter. When a *Pyrosoma* is stimulated by having its surface touched, the phosphorescent light breaks out at first at the spot stimulated, and then spreads over the surface of the colony as the stimulus is transmitted to the surrounding animals. I wrote my name with my finger on the surface of the giant *Pyrosoma* as it lay on deck in a tub at night, and my name came out in a few seconds in letters of fire."

These various fragments (from Stations 69 and 133) appear to belong to the same species.

The exact shape of the colony and the condition of the common cloacal aperture are unknown, but the appearance of the outside of the colony is very characteristic. There are, at least in the fragments preserved, no large processes from the outer surface of the test, such as are known in the other species of *Pyrosoma*; on the other hand, a large number of closely-placed, small, sharp-pointed spines are found all over the outer surface of the colony (Pl. II. fig. 9). These have their points all directed one way, towards the dorsal edge of the Ascidi-zooids, and so they give the surface of the test a scaly appearance, quite unlike that of the other species of *Pyrosoma*. As none of the fragments contain either the closed end of the colony or the common cloacal aperture, it is impossible to say which way the Ascidi-zooids are arranged in the colony; but if they are placed with their ventral surfaces towards the closed end of the colony, then, as in moving through the water the closed end goes first, the spines placed on the ventral edges of the Ascidi-zooids with their points directed dorsally will no doubt be of service as a protection to the branchial apertures which they overhang (Pl. II. fig. 10). Besides these spines, which are distinctly related to the Ascidi-zooids, there are also smaller ones scattered over the surface of the test between the Ascidi-zooids.

The test is very soft and gelatinous, although thick; it is perfectly transparent, and the yellowish tint of the colony as a whole is due to the Ascidi-zooids, which are more opaque than the test. The Ascidi-zooids in surface view occupy rounded areas

<sup>1</sup> Notes by a Naturalist on the Challenger. Macmillan & Co., London, 1879, p. 574.