

cuneate hoops, which are seen in some species, and the spiral line, which is still more frequent, result simply from the form of the distinct parts, which by their union constitute the tube of the Diatom. That these frustules are composed of several parts that are more or less liable to be detached from one another—a phenomenon which may also be witnessed in the case of the numerous hoops of *Rhabdonema*, *Striatella*, and such like forms—can hardly be doubted. The parts that form the tubular walls, instead of being like those of the hoops, are generally somewhat rhomboidal or lozenge-shaped, and in some species, *e.g.*, *Rhizosolenia robusta*, Norman, these, having two sides of the parallelogram extremely long and united by means of two shorter sides, form a belt which is terminated by two transverse lines. In other species every constituent part is exactly rhomboidal and equilateral, while they are bent round and united together in such a manner that they form a tube upon which the lines of suture appear to be arranged in a spiral manner. Very frequently the sides of each rhombus are somewhat curvilinear, and the obtuse angles truncated, yet they fit together in such a manner as to constitute a tube.

Among the *Rhizosoleniæ*, which were found frequently to abound in many surface gatherings made by the Challenger, frustules were often observed in a broken condition on account of their size and the relative tenuity of their walls, and in such cases the rhomboidal parts of which they were composed were frequently isolated from one another, while at the same time the sutural lines could be distinguished. It must also be recorded that in some species the rhomboidal plates were found to be very small, so that the perimeter of the tube was formed of several plates, and in such cases (see Plate XXX. figs. 11 and 14) the surface of the Diatom resembled the skin of a fish or of a serpent.

The genus *Rhizosolenia* was always regarded as marine until Professor Hamilton Laurence Smith discovered his very singular *Rhizosolenia eriensis*¹ and subsequently *Rhizosolenia gracilis*, which more rarely accompanied the former, in a surface gathering made on Lake Erie in North America.

In marine gatherings the genus, in addition to its occurrence as a surface form, has also been recognised amongst the contents of the stomach and alimentary canal of Mollusca and other marine animals. In soundings, and still more in deposits, the *Rhizosoleniæ* can only be recognised by means of their mucrones, which, like a solid or massive substance, can resist the trituration and pressure that invariably reduce their thin walls to very minute and unrecognisable débris.

Another feature of great importance, and one which has not hitherto been recognised, is well seen in some of the species that have now to be recorded, namely, the existence of a minute cavity towards the extremity of each frustule. This cavity—if it is not to be regarded as a consequence of the union—no doubt serves for the more perfect adhesion of the frustules, which are disposed in rows or series, as each corresponds in position to the extremity of the terminal region of an adjoining frustule.

¹ See figure in van Heurck's *Synopsis des Diatomées de Belgique*, pl. lxxix. fig. 9.