

pelagic and littoral floras, in the former I have never detected frustules of *Achnanthes*, *Rhabdonema*, *Grammatophora*, or of *Cocconeis* and other genera which resemble these in being stipitate, adnate, or attached to each other in some other manner.

“Another observation, made during the examination of these surface gatherings, is that when the net yielded an abundance of different forms of microscopic animals, Diatoms were extremely rare; for this I have been unable to suggest any explanation other than that the Diatoms serve as food to the animals, so that where the latter are abundant the former are few in number.

“The dredgings in the Antarctic Ocean, and especially that south of Heard Island, were very anomalous, showing frustules of freshwater Diatoms, such as *Asterionella formosa* and *Ceratoneis arcus*, along with forms which are entirely marine. This anomaly is, I believe, to be explained by regarding these terrestrial Diatoms, and especially *Ceratoneis* (which grows only at upwards of 300 feet above sea level), as the remnants of icebergs, which slowly melted and deposited their delicate load of Diatoms which grew upon them whilst they formed part of the virgin ice.

“Although I have been obliged to make large additions to the number of genera and species, my observations of the surface gatherings have, at the same time, led me to recognise the variability of certain genera such as *Goniothecium*, *Di cladia*, and by analogy *Syndendrium*. This is also the case with the sporangial forms of different species of *Chatoceros*, and also *Euodia* and *Coscinodiscus*, in which I have observed two different valves of the same frustule, one being provided with a ‘pseudo-nodulated’ margin, the other without. In the same way I have noticed marked differences in the two valves of the same *Coscinodiscus*, which, if they had been found apart, would certainly have been referred to two different species.

“In these collections I have had the pleasure of recognising certain new types, which I discovered some years ago in the Adriatic, but of which I have hitherto deferred the publication. One of these is *Rhizosolenia* (?) *flaccida*, which, however, I hesitate to refer to that genus, not having been able to observe the terminal calyptra; the other is the type upon which Grunow founded the genus *Thalassiothrix*, a name which I retain out of respect to the author, although I must somewhat alter the account of it, having observed it several times alive and in different conditions.

“In conclusion, we are indebted to the Naturalists on board the Challenger for the knowledge of several new discoidal forms remarkable for their size (sometimes as much as several millimetres in diameter), for the extreme tenuity of their walls and the delicacy of their sculpturing. The size of the frustules and the tenuity of the walls interfere with the possibility of recognizing such organisms even though they be of frequent occurrence; and in fact in many of the soundings entrusted to me, as well as in many marine deposits from America, I have recognised large fragments of finely granulated silica, which I now believe to have belonged to large discoidal Diatoms.