

The Marine Diatoms of the Canadian Arctic Expedition, 1913-18

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The following report is a rather fragmentary contribution to the marine diatom flora of the Arctic seas. The number of gatherings secured was small and the different species they contained turned out to be comparatively few. The list therefore compares poorly with what would have been obtained from the richer floras of other parts of the world. This is not at all a surprising fact, for previous studies of Arctic diatom material have shown that in diversity of species it is uniformly very scanty. As to why this is so no satisfactory explanation has been found. One is disposed to assume that the rigorous temperatures and the long winter nights of these high latitudes must affect the diatoms as they are known to do some other organisms, checking a tendency to elaborateness of structure and consequently to that variability which would after a while give us those differences on which we depend for the separation of species. And in fact we do find that the Arctic diatoms as a class are surprisingly simple in form and much less elaborate in their ornamentation than those of other regions. Especially is there a preponderance of the so-called *Naviculoid* diatoms, rather plain, boat-shaped structures, with simple designs of ornamentation, and destitute of those horns, arms, spines, etc., that often adorn the species growing in warmer waters. So that, if we were to draw deductions from the evident and unusual simplicity of the diatoms of all Arctic gatherings, including those here recorded, we would be pretty sure to infer that cold and darkness had here brought into existence a flora singularly suppressed in its ornamentation.

But a study of the diatoms of the Antarctic seas forbids our putting so much stress on this inhibition of low temperature and dark. Without denying wholly its influence, we find in the Antarctic, where usually frigid waters and long periods of night occur, one of the most varied and elaborately ornamented diatom floras now living. There the cruder and perhaps more primitive *Naviculoid* group is in the decided minority, round, polygonal and other symmetrical shapes being more common, and usually adorned with complex sculpturing and a variety of horns, spines and other ornamental appendages. If therefore frigid temperatures and long winter nights are responsible for the simplicity in structure and poverty of species of the Arctic diatoms our theory only conjures up another equally difficult problem, namely, why these same factors fail to operate in the Antarctic region. Consequently, as above stated, a good explanation of the marked simplicity of Arctic diatoms is not known to the writer.

There is, however, one fact, perhaps too inconsequent to merit serious thought, which it may be worth while to mention: the Antarctic differs greatly from the Arctic in its approaches. The latter region is joined to the vast seas that flow around the world by only two comparatively narrow channels, a condition due to the fact that both the Eastern and the Western hemisphere have their broad areas at the extreme north and taper away to a point southward; so that the shores of North America on the west are close to those of Asia and on the east to those of Europe; and further more, the chief ingress current into the Arctic in through the narrower of these two openings, namely,