

Berggren, S. Algae from the inland ice of Greenland:

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On the large inland ice cover of Greenland, where the temperature even during the short summer, falls below freezing some time during the daily 24 hours, it is still possible to find organic life. The author and Prof. Nordenskjold found several species of algae on their "walk" in the latter part of July, 1870. Of these species one occurred to such an extent that it gave large areas a peculiar colour. Two of these species appeared to be solely connected with fine sand, found either as a thin cover on top of the ice or a thicker layer in the bottom of pipe-shaped holes in the ice. The first mentioned, very common species, did not need such a substrate, but was found mostly on the sides of the icebergs, where the water slowly trickles down from the melting surface.

The common species has a short, not branching thread form, consisting of cells in a simple row. The number of cells in each thread is 2, 4, 8, and at most 16. 4 and 8 cells are most common. It often consists of a single cell. The cells usually do not form a straight line, and with 16 cells in the thread, a half circle is often formed. When the cell walls become older the connection between the cells in the thread becomes looser. A thread or filament with 16 cells will soon break up between the 8th and the 9th cell. The diameter of the cells is 0.008 - 0.012 mm and the length 0.016 - 0.04 mm. A few cells become 0.065 mm in length and 0.015 mm in width, but a great many single cells are much smaller, from a sphere of only 0.006 mm in diameter to the usual size. Where the cells meet in the filaments the corners are rounded, showing as an indentation on the sides, which becomes more conspicuous as the connection between the cells becomes less rigid. The membrane is thin and hyalin and its outermost part is slimy, keeping the cells together for some time. The cell content is masked to some degree by a dark purple brown pigment. In the middle of the cell there is a rather irregular oblong or cylindrical chlorophyll body, at the tip of which are found two nuclear shaped bodies, generally not seen till the colouring material has been removed by reagents. Occasionally there are 4 bodies in a cell, or only one.

It seems most likely from the above description that these belong to the Conjugatae, but as I have had no luck in finding the fruiting bodies, it is difficult to determine the family. The filament rows of the cells agree with the Zygnemaceae, but the very characteristic 2-division, and the way the filaments break up in two's, agrees very closely with the Desmidiaceae, especially Cylindrocystis and related genera. The very common small solitary cells mentioned above, with a much smaller diameter than that of the filament cells, may have some other origin, as my study of the cells has not been

sufficient to decide this. If these had been daughter cells, arisen through the division of a spore, and the above proposed systematic placement is right, spores in some stage of development should have been found. A couple of rarely found, peculiarly shaped cells, should perhaps be pointed out. I have occasionally found the outermost cell in a filament to be conspicuously more swollen than the rest, more elliptic and with a thicker membrane and coarser cell content. I have once found one of the middle cells of a filament like that, as well as a couple of single cells. I have once come across a very peculiar cells usual form, but unusually large with a drawn' out chloroplast, and the many small bodies grouped at the ends of the cell. There were about 20 round bodies. 4 of these were grouped at each end, dark brown in colour; similar to small cells of Protococcus nivalis.

Protococcus nivalis was found in similar localities and often in with the above species. In the fine sand on the ice small patches of small green cells either solitary or joined in small cell groups were found and appeared to belong to Protococcus vulgaris. Scytonema gracile was found in abundance. The filaments were either solitary or joined in small bunches, tight at the bottom looser, bending backwards at the top; rather stiff, S formed or more bent, yellow brown in colour. Length varies, the width usually 0.009 mm.

- Fig. 1 - 5 (320/1 magnification) Filaments with varying number of cells.
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| 6 | " | " | Small, free cells. |
| 7 | " | " | The outermost cell in a filament, more swollen and with a thicker membrane than the usual cells Separated. |
| 8,9 | " | " | Cells of the above. |
| 10 | (450/1 magnification) | | Solitary cells with 4 nuclear-like bodies in the chloroplast and a nucleus in the middle. |
| 11. | (630/1 magnification) | | Solitary cell containing 8 brown and 12 colourless bodies. |

Notice

Please note that these translations were produced to assist the scientific staff of the FBA (Freshwater Biological Association) in their research. These translations were done by scientific staff with relevant language skills and not by professional translators.