Name	Samples (Number)	Date of Collection
Aleurisma carnis	Soil of west Ongul Isl. (1)	3rd Exp.
Chrysosporium sp.	〃 〃 (1)	〃
〃 〃	〃 〃 (1)	4th Exp.
Cladosporium sp.	Soil of east Ongul Isl. (1)	〃
Fusarium sp.	Soil of water-pool, Base (1)	3rd Exp.
Rhacodium sp. (A)*	Soil of the Base (1)	〃
〃 〃	Soil of east & west Ongul Isl. and of the continent (11)	4th Exp.
Rhacodium sp. (B)*	Soil near the Base (1)	3rd Exp.
〃 〃	Soil of the continent (1)	4th Exp.
Cryptococcus albus	Soil of east Ongul Isl. (1)	〃
Crypt. laurentii var. *flavescens**	Soil of water-pool (1)	3rd Exp.
〃 〃	Soil of east & west Ongul Isl. and of the continent (5)	4th Exp.
Rhodotorula mucilaginosa	〃 〃	〃
Torulopsis famata	Soil of the Base (1)	3rd Exp.
Trichosporon cutaneum	〃 〃	〃

* These fungus are considered as those of the Antarctic.

THE ALGAE OF SYOWA BASE AND LANGHOVDE AREA*

Minoru HIRANO**

オングル島及びラングホブデ付近の淡水藻*

平 野 実**

The source of the present contribution is based on material collected by the Japanese Antarctic Research Expedition, while staying at Syowa Base ; a detailed report of this material was already published in 1959 in the Special Publication of the Seto Marine Biological Laboratory, Kyoto University, No. 3. The aim and endeavor of this report is to arouse an interest in Arctic Botany, and also to explain the terrestrial and inland life of the Arctic plants, especially those of the micro-organisms. The present material is divided chiefly into two parts on the regional standpoint, namely East Ongul Island and the Langhovde area. The material concerning the Ongul Islands was brought back by Dr. Noriyuki NAKANO from a freshwater pond on the island, and contains various kind of algae and lower animals. Among these algae, the *Nostoc* colony is dominant and conspicuous, and this suggests that inland water is fairly rich in nutrient substances, and also it indicates that the life of arctic algae is not so severe, at least in warm seasons, as we suppose. The main algae from the pond of East Ongul Island are

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as follows:

Chroococcus minutus (Kütz.) Nag.
Synechocystis sallensis Skuja.
Nostoc sphaericum Vauch.
Oscillatoria simplicissima Gomont
O. irrigua Kütz.
Phormidium laminosum Gomont
Ph. tenue (Menegh.) Gomont.
Nodularia Harveyana Thuret.
Binuclearia tatrana Wittrock.
Asterocystis ornata (Ag.) Hamel.

Most of these species are widely distributed throughout the world and are also known to exist in Antarctic regions. Some specimens were collected in the Langhovde area by Dr. Tatsuo TATSUMI. The specimens collected from the Dokkene were imbedded in marine ice, and were fragments of marine algae. The writer found many forms of marine diatoms attached to the specimens. The dominant form among diatoms is *Cocconeis costata* Gregory var. *pacifica* Grunow, and the subsequent species is *Triceratium arcticum* Brightw. Both species are widely distributed from the Antarctic up to the north of the Atlantic Ocean, and to the coast of Chile respectively. The following species found at the Langhovde area are probably commonly distributed in the sea around Syowa Base:

Melosira sol (Ehrenb.) Kütz.
Triceratium arcticum Brightw.
Biddulphia aurita (Lyngb.) Bréb. & Godey.
Coscinodiscus planus Karsten
Cocconeis costata Gregory var. *pacifica* Grun.
Navicula longa (Gregory) Ralfs
N. cancellata Donk. var. *Gregorii* (Ralfs) Grun.
Trachyneis aspera (Ehrenb.) Cleve

However, the writer observed some forms of freshwater diatoms in the same sample collected from the marine algae. These forms probably exiss widely on the wet ground of the Antarctic land, especially in pools or in melting waters, due to the permanent ice or snow. The species are as follows:

Diatom vulgare Bory var. *linearis* Grun.
Synedra ulna (Nitzsch) Ehrenb. var. *splendens* (Kütz.) Brun.
Pinnularia lanceolata (Heiden & Kolbe) var. *interrupta* (A. Cleve) Hirano.
Gomphonema exiguum Kütz.
Amphora ovalis Kütz.
Hantzschia linearis (O. Müll.) A. Cleve

The most interesting alga from the surroundings of the Japanese Antarctic Base is *Chlorosphaera Antarctica* Fritsch, which was found previously at South Orkney on yellow snow by F.E. FRITSCH; later, E. KOL reported that this alga exists in the glaciers of Alaska. She called this alga glacialis-cryobiont. The original place of *Chlorosphaera* was in the snow, and this alga was grown in a mixed state with other algae, as shown by FRITSCH's photomicrograph. The snow and ice algae generally grow in a mixed state with other algae, and the dry specimens collected from the Skallen area were imbedded in pond ice. The species seem to me to be a mass of plants grown on the snow or ice under favourable conditions. The specimens are somewhat thick and are a compact tissue-like mass, like scales, and may be stripped off the specimens into separate thin sheets. The cells of the *Chlorosphaera Antarctica* are scattered irregularly and are imbedded among sheets; sometimes they form a cluster. The specimens show a decayed yellow-brown colour, but some of them still retain a green colour. All the cells are enveloped with hyaline gelatinous and fibre-like thick mantles. In a thin layer of the specimens an entangled fibre-like structure is visible, and the cells of *Chlorosphaera* attached to the sheet are sometimes visible Gloeocapsa colony. In these states all the plant mass will not probably belong to the *Chlorosphaera*, and the existence of the *Gloeocapsa* colony shows that the specimens are a mixed colony of various kind of species of algae

or fungi. According to the Dr. Hiroshi FUKUSHIMA's observation, the *Gloeocapsa* colony is widely distributed in the ground of Syowa Base, so that *Chlorosphaera* has probably grown with the *Gloeocapsa* and others. The cells, probably mature cells, are somewhat solitary and are enveloped by a curious mantle, and sometimes have a curious projection, like an envelope, at one side. The cell content is sometimes half pushed out from the envelope, and the outer margin appears globular and smooth, but never shows a broken, irregular form. If the cells content is pushed out mechanically by the pressure of a finger through cover-glass, or if it is broken out of the envelope by a micro-pin, the content is irregularly scattered and does not show any smooth outline of the content. The cell content is rich in reserve substances, and show starch reaction by iodine. At the same time, reserve substances are globular and fatty-like and show a bright golden yellow colour among the green content. Mature cells reach 70μ in diameter without the envelope. In small, young cells the diameter is 12-13μ, and cells are always enveloped by a hyaline gelatinous mantle and are grouped in a cluster like formation. There must certainly be some relation between the mature large cells and the size of the clusters of the small cell group. Both are almost equal in size. In mature cells the cell content sometimes shows a cleavage appearance, but it is not certain whether this appearance developes into a zoospore-formation or an autospore formation. The cluster of the small cells grouped together seems to be a developement from the autospores. The writer's observations are merely fragments of the whole life cycle of the *Chlorosphaera*. Further studies are needed to clear up questions on the curious envelope of the present specimens, to determine whether the nature of the envelope is really characteristic of the species of this alga.

PRELIMINARY REPORTS OF THE BIOLOGICAL STUDIES ON COLOURED OCEAN ICE

Hiroshi FUKUSHIMA*

南極の氷雪藻類

福島博*

In the pack ice area of the Antarctic Ocean, a great deal of brown ice can be seen throughout 30 cm up and below the surface of water. Biological study on the cause of the ice coloration seem not to have been done. The concentration of chlorine ion of the ice was 0.2 mg-5 mg/1, being equal from 1/100 to about 1/4 of sea water. On the brown ice, most of phytoplankton were a great number of diatoms, some chrysophyta, too.

Diatoms found on the brown ice were the following.

Chaetoceras dichaetae Ehr.
Coscinodiscus australis Karst.
Corethron valdiviae Castr.
Eucampia antarctica (Castr.) Mangin.
Fragilaria cylindrus Grun.
Fragilariopsis antarctica (Castr.) Hust.
Rhyzosolenia truncata Karst.

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