

Some Remarks on the Cultivation of Microalgae Collected in the Ongul Islands and Adjacent Areas

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オングル島付近から分離した微細藻類

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第3次南極観測隊の持ち帰った標品（無菌的に取扱われた）を基として、改変 Detmer 及び改変 Bristol 培養液を用い、低温下（5°C）、人工光（蛍光灯光）のもとで培養を試みた結果、主として緑藻及び藍藻の生育を見た。

これらの中、主な同定種は *Nostoc borneti* L. Gain, *Phormidium foveolarum* (Mont) Gom, *Phormidium tenue* (Menegh.) Gom. 及び *Chlamydomonas antarctic* Wille などであった。

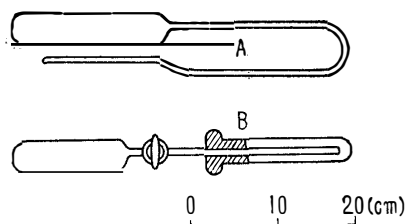


Fig. 1. Apparatuses for collecting microalgae.
Vessels evacuated before sterilization.

As a part of the program on research concerning the microflora in the Antarctic region, mainly in the Ongul Islands and adjacent areas, an attempt to isolate and cultivate microalgae in these regions has been carried out in our laboratory. We succeeded in cultivating several species of green and blue-green algae under artificial conditions. In the present preliminary report, an outline of our research will be described.

The samples were aseptically collected by one of the present authors (FUKUSHIMA), a member of the third Japanese Antarctic Research Expedition (1958-59), with the aid of a sterilized spoon and vinyl bag (5×40cm) or the apparatuses presented in Fig. 1. Their preservation was carried out at low temperature and in the dark until use. Modified Bristol's medium and Detmer's medium (Table 1) were used

Table 1. Composition of culture media

Compounds	Modified Bristol's Medium	Modified Detmer's Medium
	(g per liter)	
KNO ₃	0.25	1.00
CaCl ₂	0.01	0.10
MgSO ₄ 7H ₂ O	0.075	0.25
K ₂ HPO ₄	0.075	0.25
KH ₂ PO ₄	0.175	—
NaCl	0.0004	0.0004
Arnon's A ₅ microelement solution	1.0 ml	1.0 ml
	pH 6.0	pH 8.0

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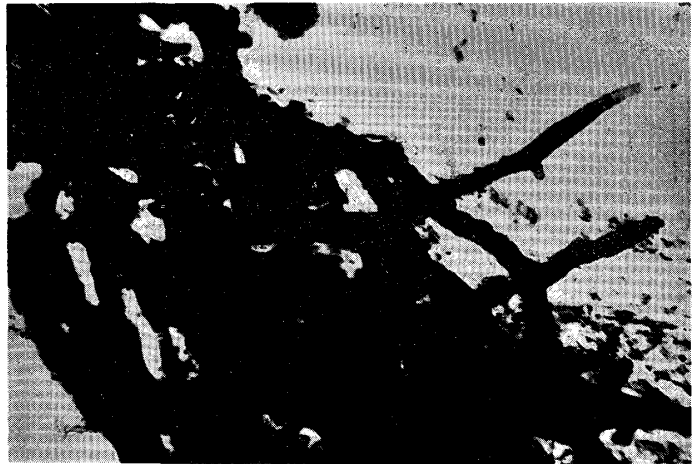
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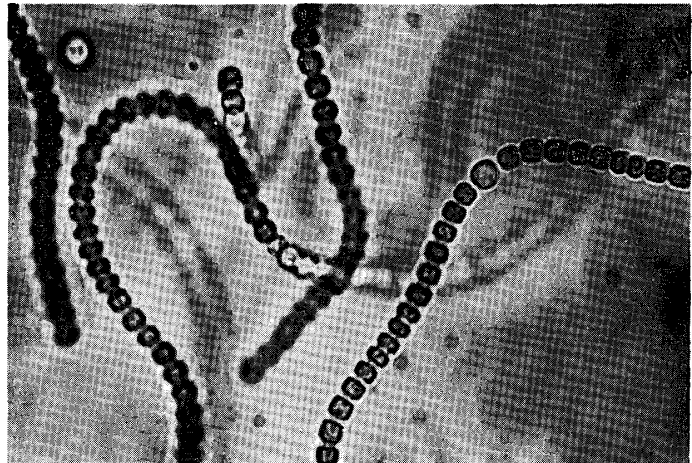
Photo. 1.

Photographs of Algae.

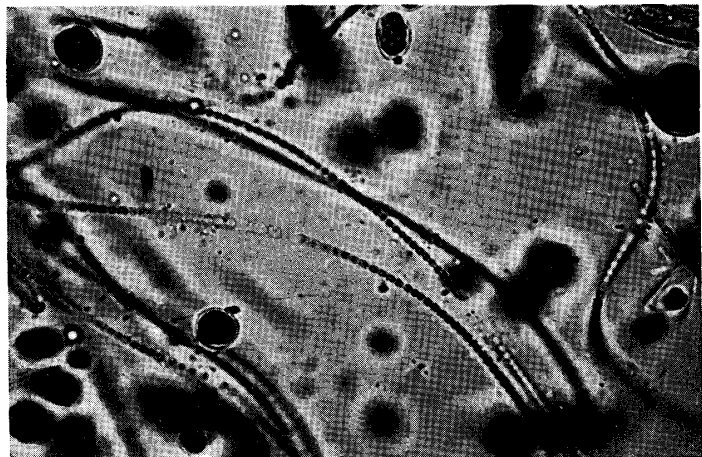
A. *Stigonema* sp. ($\times 1200$)



B. *Nostoc Borneti* L. Gain
($\times 1200$)



C. *Phormidium foveolarum*
(Mont.) Gom. ($\times 1200$)



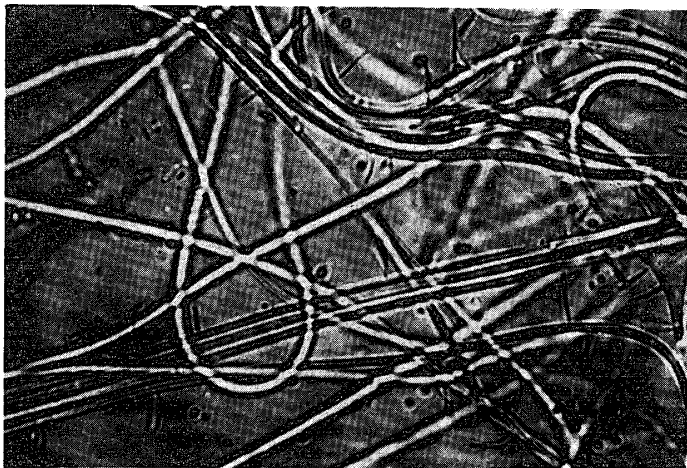
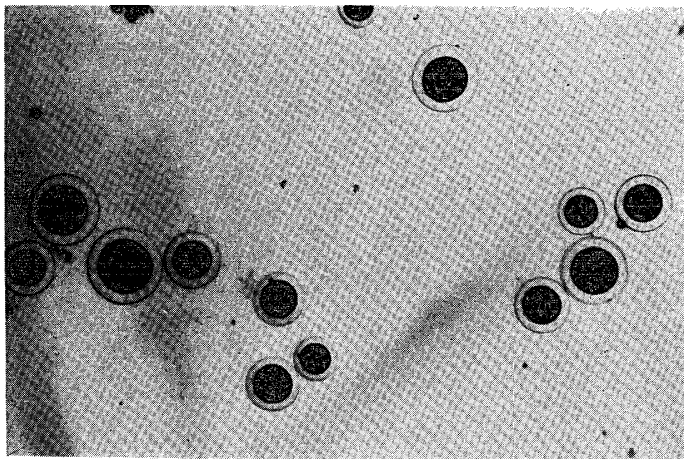


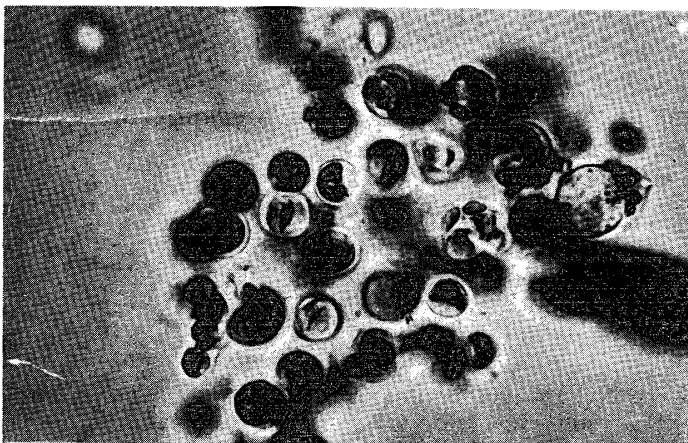
Photo. 1.

Photographs of Algae.

D. *Phormidium tenue*
(Menegh) Gom. ($\times 1200$)



E. *Chlamydomonas*
antarcticus Wille
(cyst, $\times 1200$)



E'. *Chlamydomonas*
antarcticus Wille
(palmelloid form, $\times 1200$)

for cultivation, since these media are generally applicable for cultivation of green and blue-green algae. For obtaining as many algal species as possible, media which were diluted in a half and a quarter were also used. A loopful of samples was acceptically inoculated into each medium (5 ml) which had been placed in a test tube. In a stagnant state, cultures were incubated for 5 or 7 months at 5°C, fluorescent lamp light (800 lux) being supplied. After the algae grew enough to be detected by the naked eye, a loopful of suspensions was transferred to a new medium.

Almost all algae appearing in the cultures were found to belong to Chlorophyceae and Cyanophyceae, although a few species of Bacillariophyceae were observed.

The representative species obtained are as follows:

1. *Stigonema* sp. (Photo. 1A): although the existence of this group in the Antarctic region has not yet been reported, we found it in several ponds of the Ongul Islands.

2. *Nostoc Borneti* L. Gain (Photo 1B): the species was found by L. GAIN in Graham Land in 1912 (1).

3. *Phormidium foveolarum* (Mont.) Gom. (Photo. 1C): the existence of the species in the Antarctic region has not yet been reported.

4. *Phormidium tenue* (Menegh.) Gom. (Photo. 1D): the species was found in Victoria Land (2) and Kaiser-Wilhelm II Land (3), and also in a pond of East Ongul Island by M. HIRANO, a member of the second J.A.R.E. (4).

5. *Chlamydomonas antarcticus* Wille (Photo. 1E): the species was found by L. GAIN in Graham Land in 1912 (1). The algal cells obtained by the present culture were red in color, being probably due to high content of carotenoid pigments. Oil drops were also often observed in the cells.

Except a few species, these algae have not yet been obtained in unialgal state. Further purifications of these algae are now in progress.

References

- 1) Gain, L. (1912): La Flore Algologique des Regions Antarctiques et Subantarctique (Doctor Thesis).
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- 3) Reinsch, P.F. (1883): Die Deutsche Expedition und ihre Ergebnisse II.
- 4) Hirano, M. (1959): Biological Results of the Japanese Antarctic Research Expedition, No. 3.