

ON THE SOUNDINGS FROM THE SEA BOTTOM AT THE OFFING OF
CAPE COOK, PRINCE HARALD COAST, ANTARCTIC CONTINENT*

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クック岬沖の底質について*

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In February 1957, the training ship Umitakamaru of the Tokyo University of Fisheries made her training voyage to Antarctic region. The bottom configuration, bottom character and oceanographic condition were studied at the offing of Cape Cook, Prins Harald Coast, Antarctic Continent.

Table 1. Sampling station.

Date	Station No.	Latitude (S.)	Longitude (E.)	Depth	Bottom samples
1957.1.17.	St. 1.	67-44.0	33-34.0	975	Angular gravel organism
1.22.	2.	67-08.0	32-51.0	1140	Angular gravel, fine sand
2. 3.	3.	67-49.5	33-02.0	730	Angular gravel, coarse sand, fine sand, organism
1957.2. 7.	4.	67-48.5	33-41.0	790	Angular gravel, coarse sand, fine sand, organism
1957.2.27.	5.	68-12.0	35-52.0	870	Angular gravel, coarse sand, organism
*1957.2. 7.	6.	67-51.5	33-13.5	630-680	Angular gravel organism
*1957.2.12.	7.	78-07.0	32-00.0	530-670	Angular gravel organism
		68-05.0	32-00.0		

* By trawl.

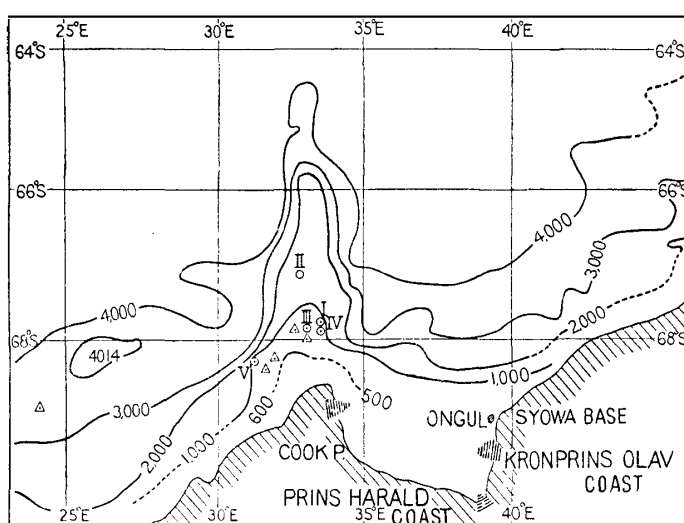


Fig. 1.

- Dredge station
- △ Beam trawl station

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1. **The bottom configuration and oceanographic condition.** The submarine slope along the coast seems not so steep except the west coast where a shallow ridge extend from Cape Cook to 66 south latitude. The temperature of sea water keeps below zero centigrade from surface to 300 m in depth but gradually warmer than zero centigrade below 300 m. The chlorinity of sea water change following to the temperature of sea water along the depth Table 2.

Table 2. Distribution of temperature and chlorinity at S. 67°.44, E. 33°.34.

Depth (m)	Temperature (°C)	Chlorinity (%)
0.	-0.71	18.67
10.	-1.59	18.83
25.	-1.71	18.89
50.	-1.73	18.90
75.	-1.84	18.93
100.	-1.77	18.96
150.	-1.75	19.02
200.	-1.55	19.03
300.	-0.75	19.13
400.	0.30	19.16
500.	0.35	19.17
600.	0.30	19.19
800.	0.25	19.21
879.	0.22	19.21

2. **The bottom character.** The bottom samples were collected by NIINO's dredge at five stations and at two stations by beam trawl. The collected materials were gravel, coarse sand, fine sand, mud, organisms and organic remains. Table 3.

A. **GRAVEL** The shape of the gravels were

all angular without relation to their size. The surface of the gravels were irregular, no striae, not well water-worned. Many sedental organisms attached on the exposed side of the large gravel. The rock character of gravels consist of two kinds, i.e., hard gravels of biotite-hornblende granite, biotite gneiss and soft gravels of shale, sandys shale, sandstone.

The sandstone gravel dredged from station 3 contains coaly matter and sandys shale gravel from station 4 contains fossil diatom, sponge spicule and foraminifera (*Lagena apiopleura* Loeblich et Tappan., *Angelogerina angulosa* WILLIAMSON., *Globigerina pachyderma* (EHRENBERG)). The geological distribution of those species were Neogene Tertiary to Recent.

Judging from rock character and fossil, the mother rock of those soft sedimentary rock gravel closely resemble that of Neogene Tertiary rocks. Granite and gneiss were distributed along the coastal region of the surveyed area. Soft sedimentary rocks containing marine micro-organisms were ever known in this region. The dredged gravels seems originated to glacial debris, therefore, it shall be find soft sedimentary rocks under the continental glacier in feature.

B. **SAND AND MUD.** Sand and mud seems originated to granitic rock and do not well sorted. Many foraminifera and sponge spicules were containing in sand and mud but very rare diatom remains.

3. **Organism.** Many species of macro organisms were obtained from stations 4, 5, 6 and 7. The specific names were as follows:

Table 3. The size of the largest gravel at each station.

Station	Length	Width	Thickness	Rock character of the gravel
St. 1.	3.8cm	2.7cm	2.6cm	Gneiss
2.	2.6	1.2	1.2	Gneiss
3.	9.2	9.0	5.8	Gneiss
*3.	1.7	1.6	1.2	Soft sandstone
4.	12.8	7.9	6.7	Gneiss
*4.	5.2	3.4	1.5	Sandy shale
5.	8.7	8.6	7.8	Gneiss

* Sedimentary soft rock.

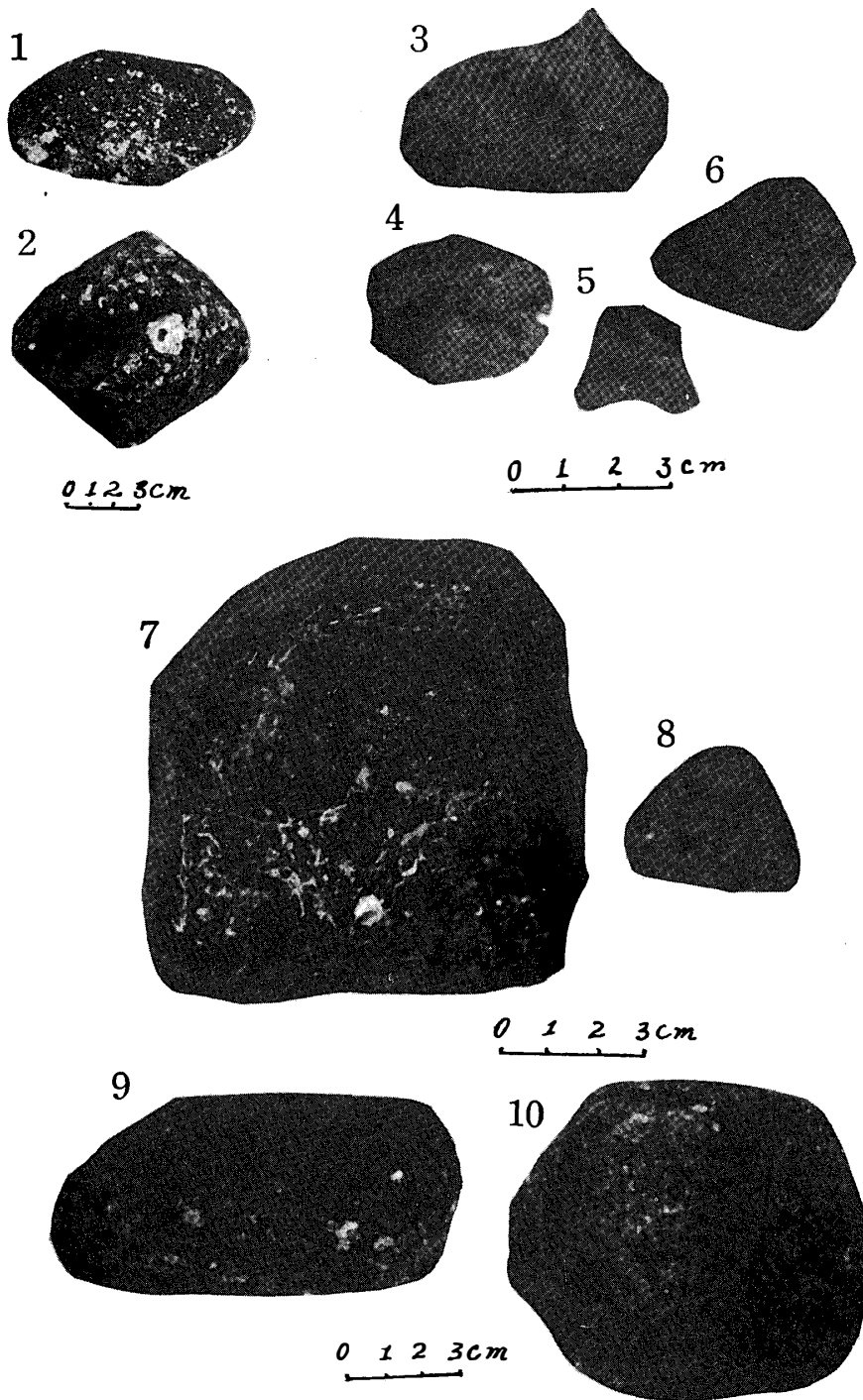


Fig. 2. Gravels dredged from the sea bottom off Cape Cook, Prince Harald Coast, Antarctic Continent.

- 1, 2. Gravels dredged from Station 5. $68^{\circ}12'0S$, $35^{\circ}52'0E$, 870 m deep. Rock character is Biotite Hornblende Granite. Organisms are attached on the surface.
- 3, 4, 5, 6. Soft gravels dredged from Station 4. $67^{\circ}48'5S$, $33^{\circ}41'0E$, 790 m deep. Rock characters are soft Shale (Fig. 3, 4), Sandy shale (Fig. 5) and Sandstone (Fig. 6). Organisms bored the surface of gravels.
- 7, 8. Gravel dredged from Station 3. $67^{\circ}49'5S$, $33^{\circ}02'0E$, 370 m deep. Rock characters are Gneiss. Organisms are attached on the surface.
- 9, 10. Gravels dredged from Station 4. $67^{\circ}48'5S$, $33^{\circ}41'0E$, 790 m Rock characters are Biotite Hornblende Granite and Gneiss. Organisms are attached on the surface.

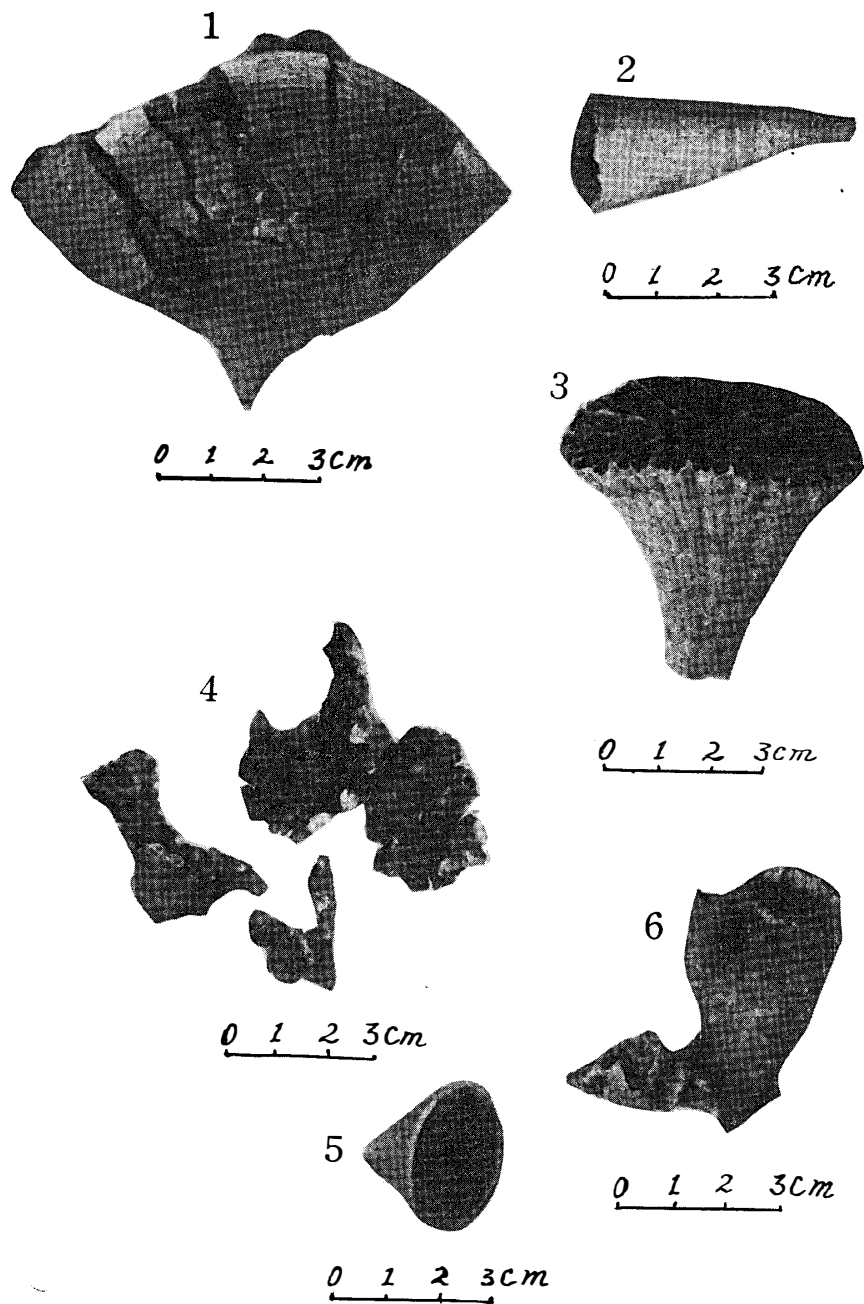


Fig. 3. Organisms dredged from the sea bottom off Cape Cook, Prince Harald Coast.

1. *Fravellum marmoreri* Gardiner (Living specimen). Obtained from Station 6. 67°51'5S, 33°13'E, 630-380 m deep.
2. *Frabellum luvatum* Moseley (Living specimen). Obtained from Station 7. 68°07'S, 32°00'E-68°05'S, 32°01'E, 530-570 m deep.
3. *Desmophyllum delicatum* Yabe et Eguchi (Dead specimen). Obtained from Station 6. 67°-51.5°S, 33°-13.5°E, 630-680 m deep.
4. *Errina (Luesrina) antarctica* (GRAY) (Dead specimen). Obtained from Station 5. 6°12.0S, 35°52.0E, 870 m deep.
5. *Ceratorochus (Convtorochus) parphis* Yabe et Eguchi (Living specimen) dredged from Station 6.
6. Fragment of coral dredged from Station 6.

Station 4. Fravellum sp.	Dead specimen
Station 5. Errina antarctica (gray)	Dead specimen
Station 6. Desmophyllum delicatum Yabe et Eguchi	Dead specimen
Fravellum marmeri Gardiner	Living specimen
Ceratorochus parphis Yabe et Eguchi	Living specimen
Coral sp.	Fragment
Station 7. Fravellum lurvatum Moseley	Living specimen

Those species of corals distribute in the deep sea bottom and the temperature of their living water are not so cold below zero centigrade. According to above mentioned fact and abundance of foraminifera test, the temperature of the bottom water at dredged stations seems not so cold below zero centigrade through the year.

Reference

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ON THE BOTTOM SEDIMENT DREDGED BY THE SECOND JAPANESE ANTARCTIC EXPLORATION. ESPECIALLY ON THE GRAIN SIZE ANALYSIS*

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リュッツォウ・ホルム湾の底質について*

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During January and February, 1958, the Japanese Antarctic Expedition ship "SOYA" sounded and dredged marine sediment off Lützow-Holm Bay area.

Eleven samples of bottom sediments were sampled on the shelf near Gunnerus Bank, continental slope of the bank and the upper

part of the slope at the mouth of the bay. Among the eleven samples, nine are analyzed for the grain size distributions. Sandy parts are analyzed by Emery's tube method and muddy parts by pipet method. Seven samples contain gravel; seven, sand; five, mud; three, Foraminiferal tests. Sandy fractions of sediments are mainly composed of rounded quartz and feldspar grains and a small quantity of sub-rounded heavy mineral grains. Gravels are pebblesized and are metamorphic rocks such as gneiss. Cumulative frequency curves of almost of all

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