

INTRODUCTION

Hiromu SHIMIZU*

The 12th and 13th Japanese Antarctic Research Expeditions, JARE-12 (1971-1972) and JARE-13 (1972-1973), carried out glaciological researches in Syowa Station area, Sôya Coast, Mizuho Plateau, and Mizuho Camp area, which are shown in Figs. A and B (folded maps), during the period of March 1971 - January 1973, according to the Glaciological Research Program in Mizuho Plateau - West Enderby Land.

As was described in the JARE Data Reports, No.17 (Glaciology) (Shimizu, 1972), the Glaciological Research Program in Mizuho Plateau - West Enderby Land was composed of two major projects: (1) Oversnow traverses of glaciological, meteorological, geographical and geophysical researches, by JARE-10 (1969-1970), JARE-11(1970-1971), JARE-14(1973-1974) and JARE-15(1974-1975); (2) A pilot study of deep cores of the inland ice sheet at Mizuho Camp, Mizuho Plateau, by JARE-12 (1971-1972), JARE-13(1972-1973) and JARE-16(1975-1976). The program is supervised by Tamotsu Ishida*, and Hiromu Shimizu in charge of the traverse project and Yosio Suzuki* in charge of the deep core project. From this standpoint, JARE-12 and -13 accomplished the 3rd and 4th year's researches of the Program, and the 1st and 2nd year's work of the deep core project. While the deep core project was the principal project of both JARE-12 and -13, they carried out a number of glaciological observations and researches other than the principal project during their stay in Antarctica. This volume is a compilation of the observational results by JARE-12 and -13: some additional results by JARE-10 and -11 are given in this volume, also. Detailed reports of the individual glaciological observations and the deep core studies will be published separately.

The subject, location and period of observation of glaciological researches carried out by JARE-12 and -13 are outlined as follows:

* The Institute of Low Temperature Science, Hokkaido University, Sapporo.

1. Syowa Station area

Observation		Period	
Subject	Location	(JARE-12)	(JARE-13)
Accumulation and ablation of snow	On the sea ice (200m NE of East Ongul Island)	Mar. 20 - Sep. 14, 1971	Mar. - Dec. 1972
Drifting snow		Aug. 24 - 26, 1971	
Temperature and electrical conductivity of sea ice	East Ongul - Nesöya channel	Apr. 10 - Aug. 7, 1971	
Mass balance of firn	Nesöya		Mar. 8, 1972 Aug. 21, 1972 Feb. 7, 1973

2. Langhovde area

Observation		Period
Subject	Location	
Accumulation and ablation of a glacier surface	Heitô Glacier	Mar. 6 - 12, 1971(JARE-11 and -12) Feb. 9 - 17, 1972(JARE-12 and -13) Feb. 13 - 16, 1973(JARE-13 and -14)
Observations of a glacier terminus		
Movement of glaciers	Heitô Glacier and Langhovde Glacier	
Ice core study	Heitô Glacier	

3. Sôya Coast

Observation		Period	
Subject	Location	(JARE-12)	(JARE-13)
Surface accumulation and ablation of ice sheet	S16 - Mukai Rocks	Aug. 1971 - Jan. 1972	
Surface strain of ice sheet			
Water permeability of glacier ice	In the vicinity of Mukai Rocks	Jan. 28, 1972	
Stratigraphy of snow covers in an ablation zone	S16 - Mukai Rocks	Aug. 1971 - Jan. 1972	
Glacio-geological observations	Skallen Skarvsnes	Sep. 6 - 13, 1971	
Movement of glacier (Setting of markers) Meteorological observation	Cape Hinode		Jan. 1 - 10, 1972

4. Oversnow traverse

JARE-12 and -13 conducted 5 oversnow traverses respectively (Yamada et al., 1973; Narita, 1974), for the purpose of logistic supplying to Mizuho Camp ($70^{\circ}42.1'S$, $44^{\circ}17.5'E$; 2169m above sea level) where deep core drilling was carried out. JARE-12 established a shortcut travel route, route H, connecting S30 directly with S122 to minimize the travel distance between Syowa Station and Mizuho Camp, while route S (from S30 to S122 via S70) was also maintained for a routine work of snow accumulation measurement, as shown in Fig. A (folded map).

Traverses carried out by JARE-12 and -13, and personnel stayed at Mizuho Camp for research-work/logistic-support were itemized in the following table:

Period	Travel	Traverse			Object/Operation	Mizuho Camp personnel
		Personnel	Snow vehicle			
			KC ⁺	KD ⁺⁺		
(1971)						
(1) Apr. 21 - May 3	Syowa ⇄ H90	4	2		Establishing of route H and fuel depot	
(2) May 30 - June 28	Syowa → (H) → Mizuho*	9	2	3	Construction of Mizuho Camp and logistic supply	
July 13 - 26	Mizuho → (H) → Syowa	9	2	3		
(3) { Sep. 20 - 27 Oct. 6 - 9	Syowa → (H) → Mizuho	5 6	2	3		Construction of Mizuho Camp and logistic supply
Oct. 17 - 20	Mizuho → (H) → Syowa	7		3		
(4) Dec. 21 - 24	Mizuho ⇄ (X) ⇄ S169	4	2		Setting of a stake farm at S169	
(1972)						
(5) Jan. 14 - 18	Syowa → (H) → Mizuho	6		3	Logistic supply and take-over of the operation from JARE-12 to JARE-13 Evacuation from Mizuho Camp	
Jan. 20 - 24	Mizuho → (S) → Syowa**	4	2			
Jan. 20 - 23	Mizuho → (H) → Syowa	6		3		
(6) Apr. 16 - 27	Syowa → (H) → Mizuho	8	3	1	Logistic supply	
May 7 - 16	Mizuho → (H) → Syowa	4	3			H. Narita H. Sasaki

Period	Travel	Traverse			Object/Operation	Mizuho Camp personnel
		Personnel	Snow vehicle			
			KC ⁺	KD ⁺⁺		
(7) Aug.24 - 29	Syowa → (H) → Mizuho	6	1	2	Logistic supply, and replacement of personnel	A. Masukawa A. Hayashida
Sep. 5 - 14	Mizuho → (H) → Syowa	6	1	2		↓ H. Narita F. Okuhira K. Umeda
(8) Oct.23 - 28	Syowa → (H) → Mizuho	6	2	1	Logistic supply, and replacement of personnel	↑
Nov. 4 - 8	Mizuho → (H) → Syowa	5	2	1		↓
(1973)						H. Narita F. Okuhira H. Sasaki K. Umeda S. Hayashida
(9) Jan.16 - 18	Syowa → (H) → Mizuho	7	2	1	Logistic supply, and take-over of the operation from JARE-13 to JARE-14	↓
Jan.23 - 27	Mizuho → (H) → Syowa	8		2		↓
Jan.23 - 27	Mizuho → (S) → Syowa	4	2			

* Syowa → (H) → Mizuho: From Syowa Station to Mizuho Camp, via the routes S, H and Z.

** Mizuho → (S) → Syowa: From Mizuho Camp to Syowa Station, via the routes S and Z.

+ KC : Komatsu oversnow vehicle, model KC-20(2.5t/wt. with a gasoline engine).

++KD : Komatsu oversnow vehicle, model KD-607(7.5t/wt. with a diesel engine).

On the ways of the travels, they accomplished the following observations along the routes :

Ovservation		Frequency	
		Apr.1971-Jan.1972	Feb.1972-Jan.1973
Net accumula- tion of snow	• Along the tra- verse routes by stake	4 times	5 times
	• At snow stake farms	2 - 4 times (at 7 farms)	3 times (at 8 farms)
<ul style="list-style-type: none"> • Sampling of snow cores • Snow temperature at 10m below the surface 		7 sites	3 sites
<ul style="list-style-type: none"> • Surface meteorological condition 		6 times a day during a traverse	

5. Mizuho Camp area

Mizuho Camp was established in 1970 (JARE-11) for inland researches with a minimum facility. The camp was widely expanded in 1971 (JARE-12) and 1972 (JARE-13), as shown in Fig. B (folded map) and Fig. C for extensive researches. While the deep core drilling was the principal project for both JARE-12 and -13, they also carried out observations and measurements on the following subjects :

JARE 12 (1971 - 1972)

Personnel at Mizuho Camp	
Name	Assignment
Tsuneyoshi Kimura	Leader, deep core drilling
Tomomi Yamada	Glaciology
Masayoshi Nakawo	Logistics, glaciology, radio communication
Yoshimasa Shimazaki	Mechanic

- (1) Net accumulation of snow, by use of snow stake farms (36-stake and 81-stake farms).
- (2) Variation of the surface micro-relief of a snow cover (sastrugi).
- (3) Stratigraphy of surface snow on pit walls of 2 m deep and snow cores of 1 m long.
- (4) Vertical distribution of snow temperature in a snow cover from the surface down to 65 m in depth.
- (5) Net radiation at the surface of snow cover.
- (6) Vertical profile of snow temperature in the surface snow cover, and its change with the lapse of time.
- (7) Observation of drifting snow.
- (8) Continuous records of air temperature, atmospheric pressure, wind speed and wind direction. Observations of weather, amount of cloud and visibility every 3 hours, from 0600 to 2400 LT (45°E LMT, GMT + 3h) (Yamada, 1974).

JARE-13 (1972 - 1973)

Personnel at Mizuho Camp *	
Name	Assignment
Hideki Narita	Leader, glaciology
Fumio Okuhira	Logistics, glaciology, radio communication
Hiroshi Sasaki	Meteorology
Susumu Hayashida	Logistics, radio communication
Asao Masukawa	Mechanic
Kazunori Umeda	Mechanic

* Four to six people, including the leader, H. Narita, stayed at Mizuho Camp at a time.

- (1) Net accumulation of snow, by use of snow stake farms (36-stake, 81-stake and 200-stake farms).
- (2) Micro-texture of surface snow, by thin section observation under a microscope.
- (3) Stratigraphy of a snow cover, on a vertical snow pit of 20m deep (2 x 1 m).
- (4) Metamorphism of snow, from the level of 3m down to 10m below the surface, with vertical snow cores.

(5) Relation between wind speed and drifting snow.

(6) Continuous records of air temperature, atmospheric pressure, wind speed, wind direction, and net radiation near the surface of snow cover. Observations of weather, cloud and visibility, at 0900 and 1500 LT.

6. New official name of place

The following place-names were given by Headquarters of the Japanese Antarctic Research Expedition, Ministry of Education through the Antarctic Place-Names Committee of Japan, National Institute of Polar Research, on November 22, 1973.

(1) "Kiri Nunatak" (68°42'S, 50°36'E, 1659m above sea level):

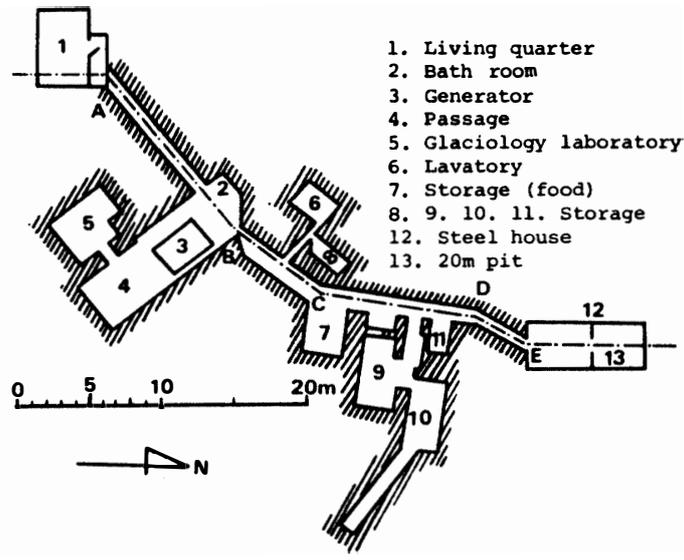
The nunatak which was described as a "new nunatak" or "newly found nunatak" at a location of 68°42'S, 50°36'E in the previous reports was officially named "Kiri Nunatak" (Shimizu and Yoshimura, 1974).

(2) "Heitô Glacier" (69°16'S, 39°48'E, Langhovde area):

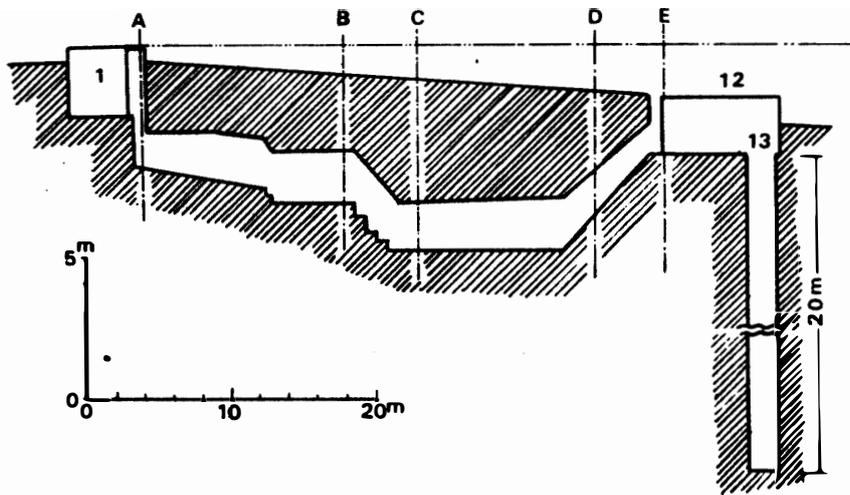
A branch of Langhovde Glacier with a tentative name "A Glacier" was officially named "Heitô Glacier" (Shimizu et al., 1972; Yamada et al., 1973).

References

- Narita, H. and F. Okuhira (1974): Glaciological research work of the 13th Japanese Antarctic Research Expedition, 1972-1973. Antarctic Rec. (in preparation).
- Shimizu, H. (1972): Glaciological research program in Mizuho Plateau - West Enderby Land. JARE Data Rep., 17(Glaciology), 1-2.
- Shimizu, H., O. Watanabe and A. Yoshimura (1972): General report of the glaciological research work of the 11th Japanese Antarctic Research Expedition, 1970-1971. Antarctic Rec., 45, 12-19.
- Shimizu, H. and A. Yoshimura (1974): Discovery of Kiri Nunatak, Enderby Land, East Antarctica, in 1970. Antarctic Rec., 49, 13-16.
- Yamada, T., T. Kimura and M. Nakawo (1973): Glaciological research work of the 12th Japanese Antarctic Research Expedition, 1971-1972. Antarctic Rec., 47, 77-85.
- Yamada, T. (1974): Surface meteorological condition in the region between Syowa Station and Mizuho Camp, Mizuho Plateau, East Antarctica. Antarctic Rec., 50, 1-20 (in Japanese).



(a)



(b)

Fig. C. Facilities of Mizuho Camp in 1972.

(a) Horizontal view

(b) vertical section