—研究論文—
Scientific Papers

The Transition of Social Life of Wintering Parties of Japanese Antarctic Research Expedition

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日本南極越冬隊の集団生活とその変遷

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要旨: 1956年から1976年の間に日本南極観測隊は15の越冬隊を派遣し観測を行っている．これら越冬隊の集団生活について比較検討した．

1) 生活環境としての住居，電力供給，水供給の問題をとりあげて論じた．

2) 越冬隊の集団生活の中で，流行語，食物嗜好性，あだ名，食卓位置，映画上映等を通じ，集団としての特徴がみられる．

3) 越冬隊の運営について検討した．越冬隊が独自できめる隊内規則も年々変化している．会議開催数と越冬隊員数の間には相関がある．越冬隊内で発行された新聞は情報伝達に役立った．

Abstract: During the Japanese Antarctic Research Expedition between 1956 and 1976, 15 wintering parties were sent to Syowa Station. A comparative study on their life was made.

1) The changes of their living environments which included dwelling conditions, supply of electrical power and water supply were investigated.

2) There were some characteristics of a group in the wintering parties. These characteristics were shown by the words in vogue, tastes for food, nicknames, seating position at table, and screening.

3) The management of the wintering parties was studied. The rules for the management of wintering parties have changed gradually. There was a correlation between times of meetings, which were held during each wintering period, and the number of wintering persons. Newspapers which were published by some wintering parties were helpful with the information of them.

1. Introduction

The Japanese Antarctic Research Expedition has been made fifteen times, inclusive of the 17th wintering party which is wintering at present, since its first wintering party of 1956. During this period some reports on the life and psychological changes of winter-

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ing parties were made. KITAMURA (1963) made a report on the social life of the wintering party members of the early period: the author (1964) on the social life of 16 persons of the wintering party; MUTO (1972) on the living conditions of party members and the changes in their life. HACHISUKA (1972) reported on the change of their steps, the problem of their sleeping and their psychological conditions while wintering, in his investigation on human adaptability in the Antarctic. The author also made a report on study and life of a wintering party in 1972. The investigations made on foreign stations in the Antarctic are mainly socio-psychological ones. That is to say, these reports are mainly concerned with the psychological adjustment of party members and their adaptability to the wintering life within an isolated small group on the Antarctic stations. (CROCQ *et al.*, 1973; NATANI *et al.*, 1973; LUGG, 1973; NATANI and SHURLEY, 1974).

The reports investigated an aspect of the nature of the Japanese Antarctic Research Expedition through the comparison of part of the life of fourteen parties from the 1st wintering party to the 15th one. They especially put an emphasis on the nature of wintering parties as a group, and paid no attention to the psychological change of an individual party member.

The materials which the author used were mainly the Wintering Parties' Reports of the Japanese Antarctic Research Expeditions (1960, 1961, 1962, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975). Based on his experiences of joining the 4th summer party, and the 5th, 7th and 11th wintering parties and of setting in contact with the parties which had finished the 3rd, 4th, 8th and 10th winterings he made the following observations with the help of the leader and members of each party. The author would like to express his gratitude to the people concerned. The author is grateful for Dr. J. T. SHURLEY in referring to some part of this paper translated into English by him.

2. Changes of Their Living Environments at Syowa Station

Since they could only construct buildings of about 200 m^2 at Syowa Station in 1957, only 11 party members wintered there. Owing to the first experience of wintering over in the Antarctic, at first, they were not sure, when building a house, whether they should build it on the ice or on the rocks. All these things were experimental and adventurous attempts. At present, however, buildings of 3,000 m^2 were constructed at Syowa Station, which grew into a large base. In order to dwell in and investigate in the Antarctic the transportation of goods to support those activities and the construction of buildings must be completed during the summer. In the cases of wintering parties of the early period the transported good of merely 58 tons could maintain 14 wintering members for a year, but at present the goods of about 500 tons transported by a icebreaker and helicopters support the wintering life of 30 people. Half of it (about 250 tons) is fuel and 35 tons is food. The rest of it includes observation instruments, building

materials, machines, telecommunications apparatus, medicines and other equipments. Considering dwelling condition, consumption of electric power and use of water as basic conditions for the wintering life of party members, the author observed the changes in each year.

2. 1. Dwelling

MATSUDA (1972) reported the increase in the size of building and the changes of places of working and living at Syowa Station. In the case of the wintering parties of the early period, 11 people lived and studied in a building of 200 m^2, but the 9th party had three times more people and five times larger building space than those previous parties. The bedroom of party members used to be in the observation room, which was an unusual dwelling condition. After it became separated from the observation room, mess room, telecommunication room, generator room, that is to say, a place to rest became separated from a place to work. Accordingly the 9th party first built sleeping quarters to live in only. The 10th party built one more sleeping quarters and the 13th party another one. Since then wintering parties have had three sleeping quarters and all the members came to use them as a place to rest and sleep. At present, however, even the observation laboratory and telecommunication huts are equipped with beds for members to have a short rest and sleep.

2. 2. Electrical power

The wintering parties of the early period used to supply electrical power by operating two generators (20 kVA) alternatively. The absolute volume of transport from an icebreaker to the station was small, and there was a limit in the volume of transport of petroleum as fuel for the generators. Untill the 5th party the generators (20 kVA) could manage to supply electrical power for the wintering life. But since there was an increase of the items to be observed, the number of wintering members and buildings, the 7th party brought in new a generator (45 kVA), and its power doubled the former quantity of electricity generated. This, however, was not enough, so the 8th party also operated another generator (20 kVA) and the 9th party operated two more generators (45 kVA and 65 kVA). The number of wintering party members has not changed since the 9th party (about 30 for each party), but the supplementary supply of power has been getting worse because of the increase of buildings. However, the situation of power supply has changed for the better as they now have almost five times more power than in the previous period.

2. 3. Water

Water can be used freely only when the ice on the pond melts, between December and February. However, to use water inside a building, it must be carried into the building by possible means. The wintering party members of the early period used to fill

empty oil can with water and carried them on their backs, using "shoiko" (portable carrier) to a distances of about 200 meters. Since there was no road, they had to walk on the rocks. But since the 7th party made the first road to the pond, the water of about 600 liters has been carried by the truck equipped with a pump to a water reserve tank near the building. This has enabled the members to use water inside the building by the use of pipes. But when winter came, the pond froze, they had no other means to get water than by melting the snow left around the building of the station and the ice of the iceberg confined by sea ice in the reserve tank. They came to know that it would be useful to have a water reserve tank that was large enough to hold plenty of water. This should be near the building in case of blizzard and there was need for much use of water. The 7th party thought out a way to reserve it outside the building. Although a reserve tank was installed outdoors in the cold weather, it made it possible to reserve the water of 6 kilo-liters at one time without freezing the water by using the waste heat of the power generators. All snow and ice to produce water was carried by man power. The 11th party installed a larger water reserve tank which held the water of 130 kilo-liters and they could reserve a large quantity of water from the pond during summer.

When the author investigated the changes in the quantity of water used by party members every day, it was understood that about 20 liters was consumed by a person per day in the early period and that 40–60 liters had been used since the 7th and 8th parties. After the 11th party it became possible to store water enough to be used for about two months by the use of a large reservoir tank and another one to hold the water of 10 kilo-liters. After melting ice into water by putting a heater of 5kW in the pond which iced over, the 11th and 12th parties filled these tank with water throughout the year, because they also succeeded in storing the water of 300 kilo-liters in the pond. So there was no need for them to do collecting work of the snow around the buildings and ice of icebergs. However, as the salinity of the water of the pond became greater, the party members after the 13th party stopped supplying water from the pond during the winter. They stored water in the tank capable of holding 130 kilo-liters for an emergency case and resumed work of putting snow in the tank of kilo-liters every day. It seemed that the situation in which water was always available for the living of party members and was very helpful to create security for their life. Comparing the author's experiences of wintering life when he joined the 5th, 7th and 11th parties, he found that the members of the 11th party had time enough to concentrate on doing their research. Beside the problems concerning the life of wintering parties that have been discussed so far there were still many other problems such as bathing, sewage disposal, etc. They will be discussed in the latter chapters. The wintering parties of the early period had to cope with many kinds of the above problems with their own creative devices.

As to the changes of working hours in their life, after the 11th party, the time spent

on co-operative work (except each one's duty work) decreased to a fourth of what was used by the wintering parties of the early period, according to MATSUDA (1972). It was pointed out that this shortening of time (spent on a co-operative work) enabled the party members to have more time to do their research and also helped to create an atmosphere of cheerfulness among them.

3. Some Characteristics as a Group in Wintering Parties

After the members of wintering parties were transferred to Syowa Station from ice-breaker FUJI in early January, every year their wintering life isolation from the outside world continued for a year. The contacts outside of the base, during the whole wintering year were kept only by radio communication via the Choshi Wireless Station, regular communication with other bases at the Antarctic, reception of Facsimile News of Kyodo News Service, NHK (Japan Broadcasting Cooperation) Overseas Shortwave Broadcasting, Japan Shortwave Broadcasting, etc. Besides this Russian, Belgian and American airplanes landed to visit us at Syowa Station, but they rarely came and even when they visited us stayed only for a short while. Information from the outside, therefore, was extremely little, compared to an ordinary society, so the society at Syowa Station could be considered as an isolated one which existed only for party members.

As the wintering party members lived for a year in a society that had no contact with other communities, it seemed that they created many characteristics peculiar to their own society, so the author would like to report them.

3. 1. Words in vogue and their origins

MATSUDA (1964) reported on the words in vogue and their origins in the 5th wintering party of Japanese Antarctic Research Expedition. In an ordinary society, words peculiar to the times spring up, then disappear. In many cases these words are spread by the mass media such as radio, television, newspapers, magazines, movies and records. On the other hand, small groups such as those in schools and factories often have their own word in vogue. However, these are not closed societies, but intercommunicate with other groups and are influenced by them. In this community of only 16 persons, there was no influence of the mass media which ordinarily come in every day whether one likes or not. Consequently topics of conversation were not ample, and interesting stories were told repeatedly. An interesting expression used by a member unpremeditatedly was picked up and imitated by another. The person who picks it up first and spreads it could be called a vogue leader. Such an expression came into vogue among the members before they were aware. Besides the individual members' favarite expression, lines from movies shown at the base, lyrics to the records, lines from novels and certain words used by the Soviet expedition party came into common use.

Thirty five kind of those words in vogue were recorded during a year. The origins of these words can be classified into the following three groups; (a) the words originating in the favorite expression of individual member are eighteen and most numerous, (b) the words from movies, novels and records are twelve and (c) those which came from the members of the Soviet party and other sources are five. Thus many popular words came from recreational movies and other sources. Still exchange of words, that is, interaction among members, had the greatest influence on the adaptation of vogue words.

With little information from the outside, and with repetitious screening of the available movies, and constant contact with the speeches of certain persons, some words which can not be found in Japan and can be understood only by the members sprang up and were maintained. Not all 16 members used these words in fashion; employment by certain members were noticeable. But all the members shared knowledge of the words, which shows the peculiar atmosphere that this community had.

Words in vogue were found in the 3rd wintering party, too. When the party returned from its wintering, the author met its members on board the SÔYA. After the members of the 3rd party joined over a hundred people on the ship, the use of the vogue words gradually became less frequent. This was also true of the words in vogue among the 5th party members. Although these words had such a fate, they had come into existence because the 16 persons had comprised a closed society.

In each wintering party, as shown in the 5th party, the words in vogue were made, which caused the members to hesitate in the use of their language when joined by new members. Most of the words, however, did not continue to be used by a new party. Its members made their own words in vogue.

3. 2. Psychology of the group regarding taste for food

The author (1964), making use of tea time with the 5th wintering party, conducted an experiment about the phenomenon that one wants to have a bite of what some one else is eating with gusto. All the goods consumed on the Syowa Station were purchase collectively before leaving Japan and brought to the base. On the base the stock was used under the supervision of certain managers and was consumed in accordance with its need. As regards food, those in charge of cooking supervised it though it could be obtained relatively freely. Alcohol (the author would like to mention later) was at first strictly restricted, but was gradually allowed to be drunk freely.

In any case, the party members were thrown into a special social environment in which one did not use money for one year. When one becames accustomed to this circumstance, one's economic tendency to judge things by monetary value lessens. It is not that one forgets the value of money, but one becomes estranged from a socalled keen economic sense. After about 6 months, one rarely thinks that it is a loss not to

eat, but changes to the idea that the food that is there how will be there for him to eat any time. In addition, the members came to understand each other and broke though nearly all reserve with regard to food.

At the time when such economic desire became minimal, the author made an experiment by using foods that were on the base. One wants to have a bite of what someone else is eating with gusto. On the other hand, if someone expresses dissatisfaction with a dish, for some reason, the dish becomes unpalatable to others. In order to study these phenomena, the author made an experiment using chewing gum and several other snack foods.

When some members gathered in the dining room after supper to have tea or play games, one person in a group started chewing a stick of gum that was on the table. Then some others in the group had some, following the lead of the first. At first the author thought it might be only certain persons who chewed gum, but his record showed otherwise. So the author paid his attention to the number of persons in the group who chewed gum.

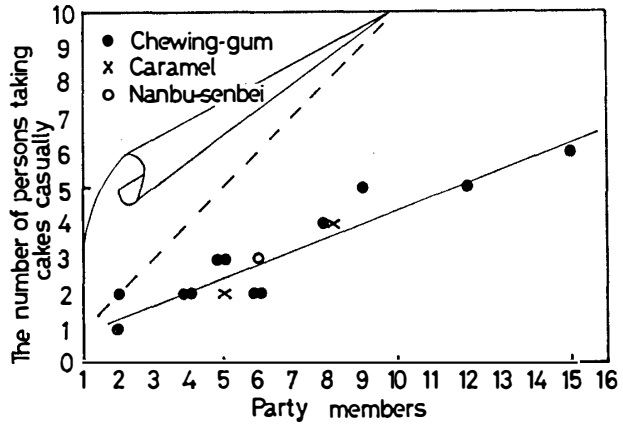

Fig. 1. The psychological experiment by the food test (MATSUDA, 1964).

The result was Fig. 1. If everybody in a group chews, the data dots will be superimposed on the dashed line which indicates the number of people present. If nobody follows the example of the first, the data dots will form a horizontal line at the bottom. In the small groups the author studied, about 45% of the people follow other's snacking leads casually.

Though other examples were few, Fig. 1 also shows the results of experiments using caramel and nanbu-senbei (rice crackers). The results were not different from those with chewing gum. It seemed that the foods used in the experiments were not food that would affect the psychological tendency to eat as others eat. The 16 persons seemed to have a common preference for those foods included in this food test.

Among the 16 persons, there were many with marked individuality. But in Fig. 1,

the author could see a picture of people who were headed by mass psychology when they were in a group, and influenced each other consciously.

3. 3. Nickname and age

The Japanese Antarctic Research Expedition started making preparations four or five months before leaving Japan, which enabled its members to have more opportunities to contact and make friends with one another. When they went on board the Antarctic Expedition Ship, they had to live together regardless of whether they wanted or not. As their friendship grew, the way of calling one another became more familiar.

In the 5th wintering party the author (1964) mentioned the relationship between the nickname and the age of the member. Soon after the members started the wintering at Syowa Station, they decided to give nickname to each other, since it was cumbersome to use family names with "san" (equivalent to Mr. in English). Some already had been given nicknames on the SÔYA, and others were given names at the base. Names were chosen for convenience sake, and did not have any particular meaning. They were always acceptable to both the addressor and the addressee.

However, the author realized after about half a year that some members were being called by their nicknames and some were not. Fig. 2 shows this phenomenon. The author added up the number of those who were called chiefly by nicknames (A), those called by both nicknames and real names (B), those called by real names in most cases (C), and those called by the names of their occupation (D). The number of men called by nicknames was the largest, and the rest were two to three each. When the author calculated the average age of the four groups, an interesting fact was found.

Namely, those called by their occupational names were the oldest, those called by

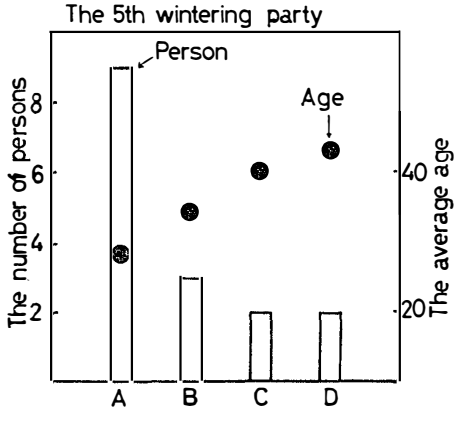

Fig. 2

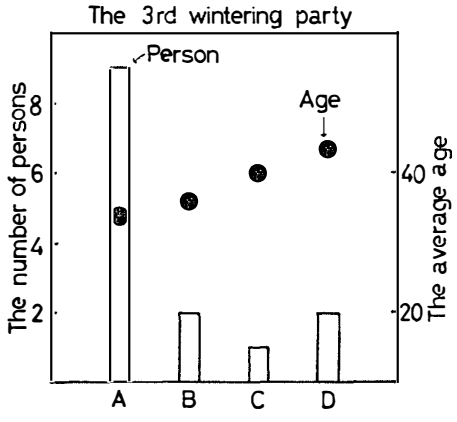

Fig. 3

Figs. 2 and 3. The nickname and the age (MATSUDA, 1964).

A: The person called by his nickname.

B: The person called by his nickname or his real name.

C: The person called by his real name.

D: The person called by name of the occupation.

family names were next the oldest, persons called by both nicknames and real names came next, and those called chiefly by nicknames were the youngest. The men who were called by both nicknames and family names were in the middle age group, and their seniors were apt to call them by nicknames and their juniors by real names. Though there were a few comparatively old persons among those called by nicknames, generally speaking, age was the determining factor.

As a result of a discussion with Leader Masayoshi MURAYAMA concerning this tendency, the author dicided to investigate this tendency in the 3rd wintering party. Fig. 3 is the tabulation obtained from the memory of Leader MURAYAMA, who was the leader of the 3rd party. This shows exactly the same tendency as that of the 5th party shown in Fig. 2.

The Japanese Antarctic Research Expedition Party consisted of people with various occupations who came from universities, research institutes, government field offices, public corporations, private companies, etc., to engage in Antarctic research for a limited length of time. Consequently one's educational background or career did not matter much on the base. For the purpose of maintaining order, age seemed to be the most naturally accepted standard.

3. 4. Seating at table and age

In an ordinary society a seating position for an individual, at a regular conference, is likely to be settled in same way. In the 5th wintering party only the leader occupied a back seat and the rest of the seats were available to other members regardless of their positions. Therfore, at the start of the wintering they did not know where to sit. But after two or three months their seating positions came to be settled gradually. In such situation, after six months had elapsed since the start of the wintering, the author (1964) secretly observed the seating positions for each member for ten days without attracting other members' attention. The author noted the frequency of taking each seat (Fig. 4: from A to P).

At breakfast the members did not eat at the same time. Therefore the author tabulated the results of lunch and supper only. In Fig. 4, A, B, ... , O and P indicate the seats at table. The author used figures instead of names of persons; 1 for the oldest person, 16 for the youngest. Circles around the figures indicate men on day duty; the others were on night duty. Around Leader MURAYAMA, who sat at the seat marked A, the men on day duty sat.

Those who were on day duty and took the seats at the other end were young people; seats near the leader were occupied by elder people. Men on night duty took the seats between the two groups of day workers. The fact that night workers were restricted by time and the fact that they could not come to the dining room at the regular hour may account for this seating arrangement. But it is an interesting phenomenon that their

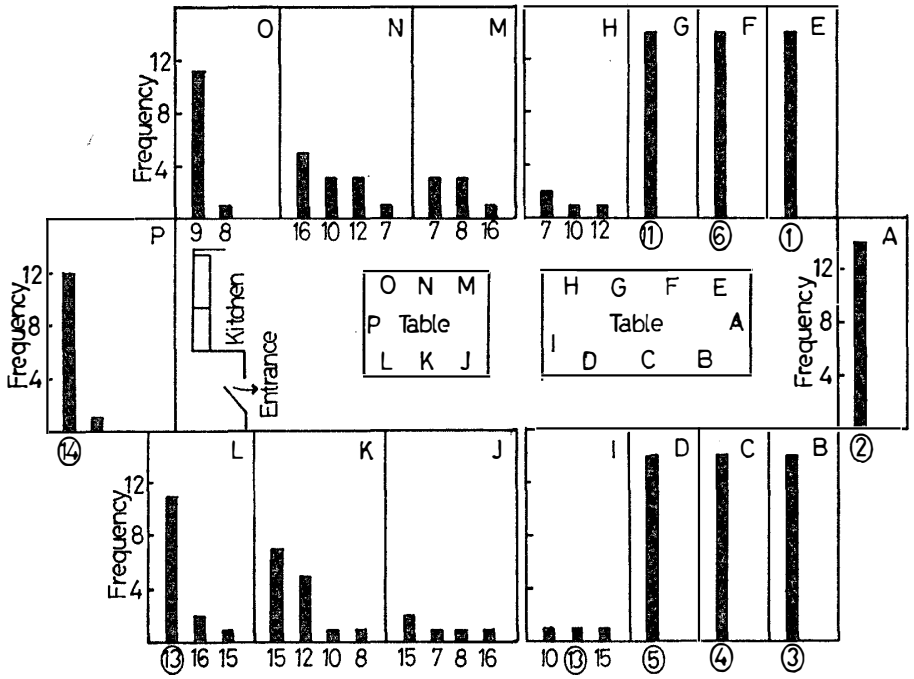

Fig. 4. The sitting position at the table (A, B, . . . , O, P). The person is given the number according to age. The number enclosed with a circle shows the person on day duty the other one shows the person on night duty (MATSUDA, 1964).

usual place was in the middle of the two tables. Judging from Fig. 4, the seating positions of the day workers were nearly fixed.

This condition was not unique to this period, but continued until the end of the wintering. Though the positions were interchangeable, it was not a case of the first to come and take any vacant seat. It is noticeable that certain individuals sat at certain places more frequently. Fig. 4 shows that the tendency to occupy the same seat among N, M, H, K, J and I was stronger when the seat was closer to O and L. This indicated the tendency to sit closer to the younger group rather than the older one. Judging from the above observations, age and working schedule played important roles in deciding the seating positions at the table.

Those seating positions were the ones of the 5th wintering party, but when the number of members increased to 30 afterwards, which increased the number of seats as well, they came to choose their seating positions freely regardless of their ages. It took them, however, two or three months to settle their seating positions. The author also observed a tendency towards age hierarchy to decide the positions was disappearing.

3. 5. The order of bathing and age

There was a Japanese-style bathroom at Syowa Station. Its bath water was warmed by the use of the remaining heat of the diesel engines. In the wintering parties of the

early period the members could only have a bath once a week, but after the 7th party twice a week. This was partly because water was supplied easier, and partly because a water purifier was installed by the 7th party. It is reported that the members of the 12th party took a bath 21 times in a month because they could use as much water as they wanted. Bathing, in base life, was one of the greatest pleasure for the members, so the order of bathing naturally drew their attention. The order that they dicided to take a bath in order of age had long been maintained. To take turns in order of age seems a

Table 1. Change of the order for bathing.

Wintering party	Order for bathing	Note
1st (1957)	In order of age	
3rd (1959)	〃	
4th (1960)	〃	
5th (1961)	〃	
7th (1966)	〃	Establishment of pulifier
8th (1967)	〃	
9th (1968)	〃	
10th (1969)	〃	
11th (1970)	Three-shift system	
12th (1971)	〃	
13th (1972)	Without order of age	
14th (1973)	〃	
15th (1974)	〃	

relatively acceptable system in Japanese life. However, as Table 1 shows, a symptom of disturbance of this order can be seen after the 11th party. Namely, they put all the members in order of age and then classified them into three groups. The rule that these three groups should alternatively have a bath was established and maintained until the 12th party. After the 13th party the rule of bathing in order of age was broken and each member could have a bath by choosing the hour he liked according to the timetable of bathing.

This situation also represents an example of the way to liberalization.

3. 6. The way to appreciate films

There is no record that shows the exact changes of wintering member's recreations. According to some wintering members, at the beginning movies and majong game were popular among them, but in the 13th party Go took their popularity. It is, however, true that movies and majong game were popular in any party. The author (1964) reported that the films screened more than once, among the ones shown by the 5th party, were mostly comical and merry ones for amusement. The wintering parties of the early

period had about 50 films. Though the members did not have many films, they repeatedly screened them to be appreciated for a year, which gave great pleasure to them. As regards the records on their appreciation of films it was only four parties that recorded the dates of screenings in the wintering diary, that was a part of each party's report.

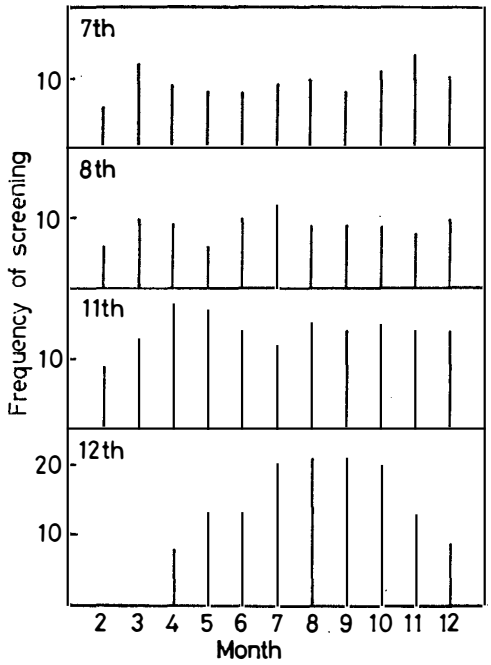

Fig. 5. Monthly frequency of the screenings in the 7th, 8th, 11th and 12th wintering parties.

Fig. 5 shows the monthly frequency of screenings in those four parties. To compare the distribution of the monthly frequency of screenings in each of the four parties, χ^2-test was made, which indicated a different distribution on each party. It seemed that the distribution of the frequency of screenings was different when observing a limited period of screenings in each party. In the 7th and 8th parties the members seldom broke the rule that they could see films twice a week. Although they sometimes broke it, this showed no special form. It was also observed that on the average the number of screenings was increased to a little more than twice a week.

However, in the 11th party the rule that films were screened twice a week was broken almost completely. They were screened on the average of four times a week in a certain month. Compared with this, in the 12th party they were screend most in July, August, September and October. The 12th party started their wintering two months later than usual. Its members, therefore, had a problem that they had to finish their preparations for the wintering in great haste before its actual start. So, the number of screenings was low in April, growing a little in May and June, reaching the maximum height in July, August, September and October with the frequency of screen-

ings of 5 times on the average (the members enjoyed the films most in this period), and then decreased to that of twice a week after a great drop in the summer. The starting time of the wintering was delayed for the months owing to the trouble of the ship "FUJI" which was besetted by sea ice, so the condition that at the beginning of the wintering between April and May they had to concentrate on doing preparatory works for the wintering. This seemed to have resulted in showing a different distribution of the frequency of screenings in comparison with other parties'. By examining the distributions of the frequency of screenings in the above-mentioned four parties, it seemed that the 7th and 8th parties relatively maintained the rule that films were screened twice a week, while the 11th party enjoyed the films as much as they liked since the members paid no attention to the rule. In the 12th party from the midwinter till spring, they screened the films at the pace of two days out of the three and then did relatively less in the summer. A unique way of each party's appreciation of films was observed.

4. The Changes in the Management of Wintering Parties

To get better result in their investigations, the leader, managing staff and each member of the wintering party made much of the management of the party. All the members needed to discuss deliberately and acknowledge how to make and carry out a practical plan to do a research topic and some kind of work that the party was engaged in.

Only in this way, all the members could cooperate together. As an individual member of the party, if each member did not agree to its management, he would have difficulty understanding the actual management of the party, judging whether it was good or not. Moreover it seemed much more difficult for him to compare the management of his party with that of some other parties.

The author thought, however, when considering on any party, that each party was not necessarily managed independently with no contact with other parties. It seemed that at least a basic principle of the management of the party was taken over by another party. The principle was shown in the regulations of wintering parties as a guiding line. The wintering persons could understand the members' way of living since there were descriptions in the wintering report of each party.

In order to know how they lived on the base, the author referred to the wintering diary and the records of their life by retracting the changes in the management of wintering parties.

4. 1. The changes of the rules of wintering parties

The regulations of each wintering party were shown in the reports of wintering parties, but in fact there remained only the reports after the 4th party.

KITAMURA (1963) reported that the 1st party had no law, the 3rd party began to make it and the 4th established a formal one. The 4th party left detailed regulations as to the members' daily living. Most of them were concerned with their partial charge of work, the system to manage the party, daily task, night duty, meeting, bathing, washing, producing water, toilet or sewage disposal, meals, cleaning, use of machinery, recreations, fire prevention, disaster prevention, maintenance of public order, etc.

These regulations were enlarged by the 7th and 8th parties and after that gradually simplified, but among them the ones with respect to the maintenance of public order, fire prevention and disaster prevention were elaborately described and kept faithfully by any party. As a basic guiding principle of managing the Japanese Antarctic wintering party necessary things for the members were described by the Headquarters for the promotion of Antarctic Research of the Ministry of Education, Science and Culture, which involved the regulations of the members and the party, such as how to prevent disaster and fire, the way of protection of nature, operation meetings, the way of communication, etc.

The way of the wintering life at Syowa Station should be based on these regulations, but there was no rule regarding the actual way of their activities shown by the Headquarters, so rules were entirely left to the wintering party.

Table 2. Rule for use of lavatory.

Wintering party	Lavatory	Urinal	Rule: existence (○) no (×)
1st (1957)	Outdoors	Outdoors	○
3rd (1959)	〃	〃	○
4th (1960)	〃	〃	○
5th (1961)	〃	Made urinals	○
7th (1966)	Made a flushtoilet	〃	○
8th (1967)	〃	〃	○
9th (1968)	〃	〃	○
10th (1969)	〃	〃	×
11th (1970)	〃	〃	×
12th (1971)	〃	〃	×
13th (1972)	〃	〃	×
14th (1973)	〃	〃	×
15th (1974)	〃	〃	×

As the time of its arrival each party made its own rules in accordance with the circumstances of the Syowa Station, and then developed its wintering life, but since it often took over some rules of the previous party, most of its rules became similar.

It seemed that as regards the rules of an ordinary life each party gradually simplified them till they were common. However, it must be noted that as to the regulations on the maintenance of public order, disaster prevention and fire prevention they were made elaborately and enforced with great care. On the other hand, if the author takes an example of the rule that was no longer necessary, it was the one on the use of the toilet. Between the 1st party and 5th party there surely was so-called a toilet, but it was allowed to be used only at the time of blizzard, so the members usually used tide-cracks, etc. The members, therefore, established a strict rule concerning feces and urine to prevent them from being scattered. At the time of the 7th party's wintering flush toilet was equipped and also the means of sewage disposal was adopted. As regarding the use of those equipments, ordinary members followed the advice of logistics personnel, so this no longer made necessary the regulation on the use of the toilet. Table 2 shows the installments of urinals and flush toilet and the transition between the existence of the regulation on the use of toilet and its disappearance in the rules of the party.

4. 2. Meetings and the management of wintering parties

As to a fundamental principle on the management of wintering parties, it was shown by the Headquarters for the promotion of Antarctic Research, but in the case of practical items they were left to the judgement of each party's leader. The leader, however, never tried to manage the party at his own judgement, which helped to form a custom to consult all of the members.

But "an operation meeting" was established in order to make an original plan, such as, to make a decision in an emergency case and deal with the matters which would not need to be discussed by all the members. It consisted of those belonging to the class of chief in each section. When making an original plan of a special subject some parties established subcommittees: (*e. g.*) subcommittee on research, subcommittee on logistics, subcommittee on inland research, subcommittee on maintenance of public order and fire prevention, subcommittee on power supply, subcommittee on recreation, etc.

There had been no case of wintering for two consecutive years, so all the members of each party were replaced by new members after finishing thier wintering. Therefore in a new atmosphere every year the members could add the systems and rules of the previous party that seemed appropriate to their own. Therefore, at the beginning of the wintering every year a meeting was held to make rules for it life of a year and the members were busy making preparations for it.

Although it was thought that they could make the rules before leaving Japan, it was not until they see actual circumstances and live on the base several days before they can make good rules.

There remaines the descriptions of meetings and their numbers from the 3rd party to the 15th party in the reports of wintering parties. The frequency of those meetings

were recorded and their results from the beginning of the wintering in February to its end in January of the next year were added up.

Fig. 6 shows the monthly average of meetings. According to this, the frequency of meetings was highest at the start of the wintering, and secondly highest in July or August. This seemed natural because during this period they had to form an field party in spring and summer and accordingly they had to make preparations for this purpose. After sending the field party, the number of meetings gradually became small and reached the lowest point in January.

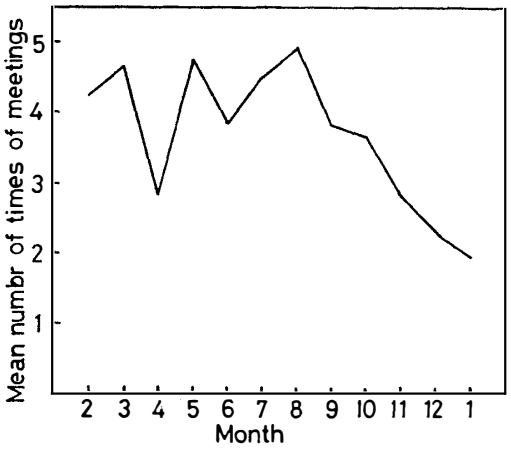

Fig. 6. Seasonal variation of times of meetings in wintering parties.

At the start of the wintering and before sending the expedition the busy time was observed in any party. It was also observed that the change of the number of meetings during the period of wintering was closely coincided with that of the members' psychology. That was to say, at the beginnings of the wintering they became strained with spirits and there was an atmosphere of hurry and flurry. They became tense when making preparations for the wintering and expedition trip. However, by the middle of the wintering life and especially after the expedition left, life on the base was well under way, so the members had enough strength in reserve to carry out the work of the latter part of the wintering in a feeling of relaxation.

Such a change of the members' psychology and that of the number of meetings during the wintering period of one year seemed to be in parallel with each other.

The author could understand the ups and downs of the wintering life by observing how many times the meetings were held during a whole year. When adding up the total number of the meetings held by each wintering party during the wintering of one year, the author could also see a tendency that the number was small at the time of the early wintering parties, but was gradually growing in the latter parties. Only the 10th party, however, showed the unusually large number (111). Since this number seemed out-

standingly large in comparison with other numbers of meetings held by other parties, a critical-test was made, showing a level of significance of 0.05, which was said to suggest the approval of its rejection.

Considering this result, the author thought that the fact that the number of meetings held by the 10th party reached 111, compared to the number of other parties' meetings, meant that there were too many cases of discussions in the name of "meeting" when its members wrote down the contents of their discussions in the wintering report. Therefore, the author considered the number of the meetings held by 11 other parties, exclusive of that of the 10th party. Fig. 7 shows a correlation between the number of wintering persons and times of the meetings held by 11 wintering parties.

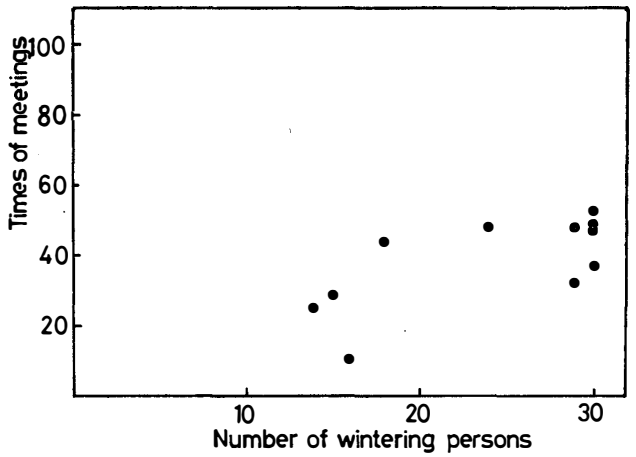

Fig. 7. Relation between numbers of wintering persons and times of meetings in each wintering party.

A correlation coefficient between them was r= +0.70. Its level of significance was 0.02, so it could be significant. But when the number of wintering persons increased more, the correlation might not always be right. At present, however, the correlation can be said to exist, that is, as the number of members increased within the range of 10–30, that of meetings increased accordingly. As a result of this, it seemed natural that when the number of the members was small, they did not necessarily have a meeting to solve a problem, while when the number was growing, which caused them to have difficulty in their mutual communication, they had to cope with this situation (*e. g.*) by increasing the number of meetings to make rules, the exchange of information, etc. Namely, when the number of members grew, at the same time the item of observation and the amount of work increased. It is observed that when the amount of work became larger, which resulted in the increase of opportunity to do a cooperative work, the number of meetings also became higher.

It was interesting to note that the number of the meetings which were held during the wintering was 40–50 in the case of the party members of 30 and about 20 in the case

of half of the members (15).

4. 3. The transition from a ration system of alcohol to its liberalization

It is needless to say that alcohol was important in the life of the wintering members. However, such a party like the Japanese one had difficulty transporting a large quantity of alcohol under bad conditions of transportation. The wintering parties of the early time, therefore, made concentrated whisky and transported it. The concentrated whisky also had a merit of not being frozen, but it seemed that its taste, on the whole, changed for the worse.

Until the 5th wintering party the members drank a little quantity of alcohol, but after the 7th party each member drank more than 180 millilitres (alcohol) a day on the average. As an example, a total quantity of alcohol taken by the 9th party (that consisted of 29 wintering members and succeeded in making the South Pole Traverse) is shown in Table 3. The wintering parties of the present time took almost the same quantity as that of the 9th party.

Table 3. Alcoholic drink carried by the 9th wintering party.

Variety	Quantity	Note
Whisky	900 bottles	Rationing of 1 bottle/man/month In festival and at bar
Beer	2,500 cans	1 can/man after bathing On festival
Wine	150 bottles	At special menu or at bar
Liqueur	100 bottles	At bar
Concentrated whisky	350 *l*	200 *l* for field party, 100 *l* at mess room
Japanese sake	1200 *l*	At mess room and bar

According to the investigation made by Professor Masayoshi MURAYAMA, at National Institute of Polar Research, in the Japanese party a quantity of drinking for a member during the wintering of one year was about 40 liters of pure alcohol and in the French party 53 liters, which seemed a large quantity of drinking. It seemed that although a member was said to have taken the alcohol of 40 liters on the average during the wintering, there were some members who did not drink, which meant that a quantity of alcohol taken by those who were heavy drinkers was much larger than that of the average. The members were not allowed to take alcohol freely, and as to its drinking a ration system had long been used. Table 4 represents the methods to control the drinking of each wintering party.

Until the 5th party alcohol had been under a strict ration control, but it was decided to be liberalized in ten years' time. Table 4 shows an interesting fact which traces the

Table 4. Consumption and rationing system of alcoholic drink.

Wintering party	Concentrated whisky	Common alcoholic drinks	High-class whisky
1st (1957)	For field party	Rationing	Rationing
3rd (1959)	〃	〃	〃
4th (1960)	〃	〃	〃
5th (1961)	〃	〃	〃
7th (1966)	〃	〃	〃
8th (1967)	〃	Free use at mess room	〃
9th (1968)	〃	Free use at mess room and bar	〃
10th (1969)	〃	〃	〃
11th (1970)	〃	〃	〃
12th (1971)	〃	Free use after supper and at bar	
13th (1972)	〃	〃	
14th (1973)	〃	〃	
15th (1974)	〃	〃	

path to its liberalization as to the gradual decrease of its control though it consequently took a long time to be liberalized.

The author understood that the wintering members, step by step, changed the society that strictly restricted them to the one in which they had more freedom. It seemed to show a process towards the life of an ordinary society.

4. 4. Activities of exchange of infomation in the party and their development

As it was considered that when managing the wintering party, communication in the party was important, the author investigated how it was carried on. In the wintering parties of the early time that consisted of a small number of members (about 10) a single table was enough to be shared by all the members at the time of meals, so while eating, information could be made known well to them.

As the author mentioned in 4. 2., they held meetings to discuss and exchange information, which could play a practical role in the management of the party. But the number of members grew, and the amount and quality of work became diversified, which means the opportunity for all the members to eat together decreased, as some of the members became engaged in night duties only or outdoor investigations. The exchange of information among them thus became difficult.

If information were biassed, some of the members would feel isolated from the world. In such a situation they became to need a communication function which would promote the exchange of information since formal meetings could not satisfy them sufficiently. Until the 5th wintering party there seemed no particular need to spread information to all the members except at regular and special meetings.

In the 7th party that re-opened Syowa Station the number of the members grew to 18, and the size of the base became a little bigger. Then spontaneously it was thought to have a place to exchange information that was different from the one in the form of meetings, and it was monthly newspapers that several members started publishing for this purpose. This, however, did not last long after several issues of them.

The 8th party had 24 wintering persons and the 9th party 29, which showed a gradual increase in the number of members. The 10th party had the same number of members, but in this party daily newspapers had been published throughout a whole year. The five editors decided to publish the paper without missing a single day not as a formal duty of the party. It seems to have required their great effort, but the role that it played in the exchange of information in the party must have been a great thing.

In the 11th party the author alone, a couple of times a week, wrote down in the paper the news from the outside and the affairs in the party and displayed it on a wall to spread information by mean of what is called, "a wall newspaper". Though it was not printed, it was true that all the members after read it.

In the case of the 13th wintering party 10 editors also spontaneously carried on issuing newspapers every day throughout the year by asking all of the members to contribute articles to the papers. In the 15th party 5 writers issued weekly magazines throughout the year. In the 16th party 10 editors, while asking all the members of 30 to contribute, issued daily newspapers in print (Table 5).

Table 5. Newspapers issued at Syowa Station.

Wintering party	Name of newspaper	Contributor (Editor)	Size	Printing	Number
10th (1969)	S10-topics	5 (5)	B6	Mimeograph	365
11th (1970)	Eleven News	1 (1)	A4	Autograph	140
13th (1972)	Dairy-13JARE	30 (10)	B6	Mimeograph	366
15th (1974)	Weekly-Bo-15	5 (5)	A4	〃	65
16th (1975)	Dairy Stars	30 (10)	B6	〃	365

All these newspapers have been bound in book form and stored in the library of National Institute of Polar Research.

It was interesting that when the number of members increased to about 30 after the 10th party, they started publishing newspapers. The issue of newspapers was not regulated by the party but started by free will of the members, so there were even some cases that the wintering reports did not formally mention them though those published matters were very fine.

It can be understood that these newspapers were greatly helpful to exchange information and establish harmony in the party though their issue was not recognized as

formal duty of the wintering party. The voluntary issue of newspapers which was made spontaneously was now taken over by new parties as if it was an ordinary duty. It is recognized that in the management of the party newspapers have played a supporting role, not a leading role.

5. Conclusion

1) The Japanese Antarctic Research Expedition that began in 1956 has sent 15 wintering parties so far. On the base there were 4 houses of about 200 m^2 at first, but now the buildings of more than 3,000 m^2. The number of wintering persons grew from 11 to 30. During this time many facilities were equipped, research activities became briskly and the life on the base had been improved.

2) The author pointed out many characteristics as a group in the wintering society. Judging from the words in vogue that were made in a group, they were derived from the mutual interaction of wintering members. The author also made an experiment as to mass psychology; the phenomenon that the members, during rest time of rest, also felt like tasting snacks when seeing others eating them with gusto. Its result clearly showed a fixed ratio in a group. The author clarified that the members' nicknames, seating positions and bathing order were closely connected with their ages and that the order of bathing among them was broken, which showed a tendency of a declining age hierarchy. The author showed their way of seeing films, indicating a unique form in each wintering society.

3) On the management of wintering parties the author compared how it changed. The result of this comparison shows that there was a tendency that the rules of the

Table 6. The number of wintering persons.

Wintering party	Number	Second wintering	Third wintering
1st (1957)	11	0	0
3rd (1959)	14	1	0
4th (1960)	15	1	0
5th (1961)	16	3	0
7th (1966)	18	3	2
8th (1967)	24	6	0
9th (1968)	29	4	1
10th (1969)	29	2	0
11th (1970)	30	3	1
12th (1971)	29	2	1
13th (1972)	30	3	1
14th (1973)	30	8	0
15th (1974)	30	5	1

party except on fire prevention and maintenance of public order were to be gradually simplified. Regarding the number of meetings, it was large in the first half of the wintering period and small in the second half. There was also another tendency that as the number of wintering members grew, that of meetings became large accordingly. The author also mentioned the transition between a ration system of alcohol and its liberalization. Referring to the phenomenon that as one of the means to exchange information in the party the members spontaneously started issuing newspapers, it was shown that their issue helped to establish harmony in the party.

4) From the above-mentioned investigations it can be understood that in a new wintering party that took the place of the previous one, the systems and customs in the previous party did not alter rapidly, and its mode of living gradually changed. This was mainly derived from the reason that a new party had enough time to take the place of the former one by living together for a month at the start (for a new party) and the end (for the former party) of the wintering period. As Table 6 shows, there were always the member who had an wintering experience more than twice in the wintering party and it seemed to have helped a new party to take over the former customs. However, compared to the strict wintering life of the early time, the controls and rules of the party were gradually eased, which led to a fairly free life of the wintering. But this freedom never went too far beyond the control of the party. It seems that the Japanese Antarctic Research Expedition parties have been changing very conservatively and slowly.

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