‘Minor Participants’

in

Antarctica

during the

International Geophysical Year

(1957 – 1958)

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Introduction

The International Geophysical Year (IGY) was an unprecedented international scientific undertaking that ran from July 1957 to December 1958. Political agendas were, on the surface, put aside in the interest of science; areas of study included sunspots, aurora/airglow, cosmic rays, magnetism, glaciology, meteorology, seismology and gravity. (Fraser, 1957)

Observation stations were set up around the world, and Antarctica became a significant location, offering sites at very high southern latitudes (Lewis, 1965). Several countries set up observation stations on the Antarctic continent and surrounding islands.

The major players, in terms of numbers of bases and personnel, in the Antarctic activities of the IGY were the United States, the Soviet Union, Argentina and the United Kingdom (Sullivan, 1961). Given the political pressures between the super-powers during that era of the ‘cold war’, it is even more significant that these countries became partners in the establishment and development of Antarctic science and occupation.

There were also several minor players in Antarctica during the IGY. These countries had neither the numerous bases nor the high numbers of personnel on the ice, but nonetheless contributed in some way to the success of the event. (Sullivan, 1959)

This review will look at the involvement of some of these ‘minor participants’, their motivations for joining in, their short and long term outcomes, the perceived success of their involvement and how all the participants worked together to achieve the ambitious goals of the IGY in Antarctica.
Definition of ‘Minor Participant’

For the purposes of this review, a ‘minor participant’ is defined as a country that had a relatively small number of bases/personnel in Antarctica during the International Geophysical Year. Below is a table showing the relative involvement of the nations participating in the IGY in Antarctica:

<table>
<thead>
<tr>
<th>Country</th>
<th>IGY Stations</th>
<th>IGY Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>8</td>
<td>105</td>
</tr>
<tr>
<td>Australia</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>Belgium</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Britain</td>
<td>14</td>
<td>127</td>
</tr>
<tr>
<td>Chile</td>
<td>4</td>
<td>56</td>
</tr>
<tr>
<td>France</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1*</td>
<td>23</td>
</tr>
<tr>
<td>Norway</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Soviet Union</td>
<td>6</td>
<td>165</td>
</tr>
<tr>
<td>United States</td>
<td>8*</td>
<td>339</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>48</strong></td>
<td><strong>912</strong></td>
</tr>
</tbody>
</table>

*Source: Assault on the Unknown; W. Sullivan; 1961; p 306

*New Zealand and the United States were also involved in a joint base at Cape Hallett

From this, it can be seen that the ‘major’ participants were Argentina, Great Britain, the Soviet Union and the United States. Australia and Chile could be considered ‘medium’ participants, with the remainder being deemed ‘minor’ participants. (Another super-power nation notable by its absence is China, who withdrew from participating in the international IGY program for political reasons, but in subsequent years went on to establish a presence in Antarctica (Sullivan, 1961).)

This review will include some general comments about the motivations behind participating in the IGY, as well as a closer look at the Antarctica IGY programs of two of the minor countries (New Zealand and Japan).
Motivations for Participation in IGY Antarctica

In his 1957 publication Antarctica: Today and Tomorrow, G.C.L. Bertram (William Evans Visiting Professor, University of Otago, 1957) undertakes an excellent examination of the motivations of the participants in the Antarctic component of the IGY. He notes that the five mutually recognising sovereign powers in Antarctica (Australia, France, New Zealand, Norway and the United Kingdom) had varying levels of activity in the decade following World War II. Activity ranged from New Zealand, who ‘did nothing’, to the United Kingdom, who ‘actively continued her development of the already existing Falkland Islands Dependency Survey for primarily political reasons’ (Bertram, 1957, pp 4 – 5). He goes on to identify the opening of a ‘new era in Antarctica’, and that in the mid-1950s Antarctica ‘has applied to it the resources, the techniques and the wealth of experience from no less difficult operations in the Arctic’ (p 5). However, he notes that ‘great resources of men and materials are not deployed even by the very powerful without strong reasons’ (p 5).

So what are the reasons that possessed these eleven nations to pour enormous amounts of resource into operations in Antarctica for the IGY? Bertram lists the chief reasons as:

1. **The Adventurous Motive.** ‘Adventure, curiosity, search for new lands, dissatisfaction with the familiar, excitement, desire to be first, desire to help one’s country’s fame, courage to attempt’ (p 6) are all words that Bertram uses to describe this motive. He notes it is ‘essentially personal, rarely national’ (p 6).

2. **The Economic Motive.** Whale oil and seal skins form a significant part of Antarctica’s history, although Bertram notes that ‘so far no positive signs of economic worth have been sufficient to stimulate enterprise on the southern continent’ (p 6). His use, in 1957, of the words ‘so far’ seems cautiously prophetic.

3. **The Scientific Motive.** This is obviously a key motive behind any country’s participation in the IGY anywhere in the world. Bertram grandly states that ‘the concurrent measurement of geophysical phenomena by many scientists of many nations, with especial emphasis on Antarctica, will produce results of immense ultimate use to mankind’ (p 7). However, he goes on to caution that ‘a reminder is needed perhaps that scientists, unlike the politicians and the national leaders … have responsibilities which are conveniently simple. If particular geophysical research does not mature, regret has in general
no need to merge into fear. The politicians and military leaders have responsibilities of a higher order – though by no means necessarily possessing wisdom of a higher order’ (p 7).

4. The Political Motive. A motive on which Bertram comments that ‘national prestige and national pride are factors in a greater whole; so is the desire not to be backward while others advance’ (p 8). The political situation in Antarctica going into the IGY was tense, with the five mutually recognising sovereign powers, two open usurpers (Argentina and Chile) and two highly active, archenemies superpowers that were major players but had staked no open, formal claims (the United States and the Soviet Union). Bertram comments that political motives in Antarctica at the time were ‘concerned with the maintenance, the new establishment, or the upsetting, of claims to territory’ (p 8), and that there were ‘political people who fully recognise that longer term political ends may be achieved under a scientific cloak, even if, to continue the metaphor, it is a little bit threadbare’ (p 10). In other words, some of the ‘science’ that was being undertaken in Antarctica during the IGY was of a spurious nature; the motives behind the activities were of a more political nature.

5. The Strategic Motive. ‘A recently born motive likely to have a long and lusty life before it’ (p 10), but somewhat difficult to distinguish from the political. The obvious example of Antarctica’s strategic importance lies in the control of the Drake Passage (a major shipping route through the gap between South America’s Cape Horn and the South Shetland Islands), which is in the segment of the continent hotly contested by the claims of the United Kingdom, Argentina and Chile.

Bertram notes that ‘expectedly lacking in Antarctica is religious zeal, that further powerful motive which played so great a part in the development of many other new areas in the world’ (pp 5 – 6).

He also states or implies several times that almost all of these motives are ‘by no means fully separable’ (p 10), meaning that any activity undertaken undoubtedly has its basis in several, if not all, of these motives.

This would certainly be the case of most, if not all, of the five minor participants. Belgium is identified as having solely scientific motives, but the other nations all had motivations that included, but were not solely, scientific (Bertram, 1957). France was experiencing a surge of interest in adventurous activities after the war, as well as a high scientific motivation and the responsibilities of a sovereign claiming nation (formal claim, 1924). Japan was licking its wounds after defeat in World War II, which included the renouncing of any and all claims that Japan had in Antarctica as a result of an expedition in 1911 – 1912; Japanese motivations encompassed scientific, national pride (political) and economic (due to a
marked increase in whaling activities). **New Zealand**'s involvement came from a belated effort to mark its sovereignty over the Ross Dependency (formal claim, 1923; administering on behalf of Great Britain), sound scientific interest and an adventure element in the form of Sir Edmund Hillary's participation in the Commonwealth Trans-Antarctic Expedition. **Norway** held the greatest interest in Antarctic whaling at the time as well as a sovereignty claim (formal claim, 1939), but was proposing to do some strong science as well. (Bertram, 1957)
Japan and IGY Antarctica

Background

The International Geophysical Year fell just twelve years after the end of World War II. As mentioned above, Japan was still licking its wounds as a result of their defeat. One of the conditions of the treaty signed at the end of the war was the renunciation of any and all claims that Japan had to Antarctic territory (Bertram, 1957). This was significant, as Japan had launched an expedition in 1911-12 during the heroic era, led by Lt. Nobu Shirase, to the Bay of Whales, on the eastern side of The Great Ice Barrier (later called the Ross Ice Shelf) (NIPR, 1993). It was expeditions of discovery such as this that formed the basis of claims by several other nations; Japan now had no claim to lay alongside those of other nations.

Establishing a Base

Japan used the IGY as a reason to get back in to Antarctic activity (NIPR, 1993). Although the Japanese were late getting started with their Antarctic preparations (Fraser, 1957), the first Japanese Antarctic Research Expedition (JARE-1) left Japan on a 2400-ton converted lighthouse-tender, the M/S Soya (Sullivan, 1961), on November 8th 1956, and took roughly three months to travel to Antarctica. JARE-1 went to the opposite side of the continent to Lt Shirase's expedition of fifty years earlier, to establish a base on East Ongul Island on the Prince Harold Coast (69 deg 00 min 22 sec S, 39 deg 35 min 24 sec E). The base was named Syowa Station (sometimes called Showa Station, depending on translation) (NIPR, 1993).

Eleven members overwintered in 1957; they undertook the research and observations for the first part of the eighteen-month 'year' of the IGY. These observations focussed mainly on work in meteorology, glaciology and the ionosphere, but also included some work in the fields of geomagnetism, aurora/airglow, cosmic rays, oceanography and geology/geomorphology (JCIGY, 1958).

Dramas of the Second Year

The plan was for M/S Soya to return to Syowa Station in January 1958 to re-supply the base and replace the expedition members (JCIGY, 1958). However, the ship was highly unsuitable for moving through heavy ice (Sullivan, 1961), and was unable to reach the island due to pack ice that was much worse than that of the previous year. After struggling for more than forty days, the ship managed to get within 65
miles of the base. Three days were spent trying to work out a way to get the replacement team in, but in the end the JARE-1 team was evacuated from the base. *Soya* retreated out of the ice, but only with the help of the United States ice breaker, *USS Burton Island*. (Kurahara Productions M/S)

The results of this early departure from Syowa Station were twofold. Firstly, Japan was unable to complete the second half of their observations that they had committed to do towards the IGY effort (JARE SCAR report, 1958). Secondly, and more publicly debated, was the fact that in abandoning the base in a small Beaver airplane with limited cargo capacity (770 lbs), the Japanese had to leave behind fifteen Karafuto dogs (huskies) (Kurahara Productions M/S).

Once it was clear that the *Soya* would not be able to get in, a final attempt was made to fly back one last time to poison the dogs, but the weather had closed in for good. The dogs were left abandoned on the ice with only enough food to last them one month. It was a difficult and sad farewell for the members of JARE-1, who had come to know the dogs very well over the previous year. (Kurahara Productions M/S)

On their return to Japan, the members of JARE-1 were greeted by an enormous public outcry. The Japanese held rallies, signed petitions and even stormed the American embassy demanding help. 'Never had such public outrage been shown by the culturally reserved Japanese' (Kurahara Productions M/S, p 77). Thousands of origami cranes were folded in memory of the dogs, and groups lobbied for legislation to prevent a similar tragedy to working animals occurring in the future.

Syowa Station was reopened in January 1959, and this time, no working dogs were taken down. When the Soya returned to the familiar island and launched the first helicopter to the station, and amazing discovery was made. Two of the dogs, Taro and Jiro, had survived the long, dark winter. The dogs greeted their returning masters with excitement and enthusiasm; they had survived the winter by hunting seals and eating seal excrement. (Kurahara Productions M/S)

Despite the outcry at the abandonment of the dogs, and the joy at discovering that Taro and Jiro had survived the hostile Antarctic winter, the Japanese also suffered from the fact that they had failed to complete their obligations to the IGY scientific community (JARE SCAR Report, 1958). The observations completed in the first year were really a 'warm up' to the second year's work, which included all areas studied in the first year, as well as work on seismology, gravity and biology (JCIGY, 1958). The JARE reports to SCAR (the Special Committee on Antarctic Research, an international committee that organises scientific endeavour in Antarctica) are liberally peppered with the word 'unfortunately' when discussing the abandonment of Syowa Station. This indicates a real feeling of failure and regret on the part of the Japanese, in whose culture honour plays a significant role.
Japan in Antarctica After the IGY

The failures of Japan’s involvement during the IGY did not deter the nation from pursuing its Antarctic research. Japan went on to become a significant player in both science and politics in Antarctica, being one of the original signatories of the Antarctic Treaty (NIPR, 1993). After several years of patchy operation, Syowa Station was expanded to over thirty buildings in 1966 (NIPR, 1993) and is still a going concern. In 1970, Mizuho Station was opened inland of Syowa, and a new ice breaker (M/S Shirase) was commissioned in 1981. In the modern era of multi-national projects, Japan has been an active participant in many significant scientific projects; Japan has been one of the leading nations in the field of Antarctic meteorite recovery, was a part of the ozone ‘hole’ discovery, and has contributed to a wide range of sciences in Antarctica (NIPR, 1993).
New Zealand and IGY Antarctica

As mentioned previously, New Zealand’s involvement in the International Geophysical Year represented a late start in marking sovereignty over the Ross Dependency region of Antarctica. Although a formal claim had been made in 1923, taking over administration of the region from Great Britain (Bertram, 1957), New Zealand had achieved very little in terms of supporting or advancing this claim. By comparison, Australia (who made their formal claim in 1933, ten years after New Zealand) had been busily active in their sector of Antarctica. In declining invitations from Australia to become involved in Australian activities, New Zealand threw away several good opportunities in the 1930s and 1940s to start work in Antarctica (Quartermain, 1971). The IGY presented an excellent opportunity for New Zealand to become actively involved in Antarctica.

New Zealand Takes on ‘A Big Programme’

New Zealand took up several challenges during the IGY in Antarctica. These included the establishment of a base in the McMurdo Sound region, undertaking scientific observations for the IGY (glaciology, meteorology, geomagnetism, aurora, ionospherics and seismology), working with the Commonwealth Trans-Antarctic Expedition (TAE) and co-ordinating with the Americans in the operation of the airbridge between Christchurch and McMurdo Sound (Fraser, 1957). ‘It is a big programme for a small country’ (Fraser, 1957, p 126).

The ‘kiwi connection’ to the IGY really began far across on the other side of Antarctica in December 1949, when Dr (later Sir) Vivian Fuchs was confined to his tent in a three day blizzard. During this lay-up, Fuchs’ idle mind turned to the possibility of launching an expedition into the deep centre of Antarctica; a plan cemented in his mind to cross the continent, and this plan included the need for another party to lay supporting depots from the Ross Sea side of Antarctica (Fuchs & Hillary, 1958). Fuchs’ choice of person to lead this part of the TAE: New Zealand mountaineer Sir Edmund Hillary (Quartermain, 1971). Thus, New Zealand became involved in the IGY in Antarctica ‘with adventure as an initiator and a catalyst’ (Bertram, 1957, p 15).

Support Back Home

The New Zealand IGY endeavours enjoyed strong support back in New Zealand. The government contributed over half of the funds required for the IGY/TAE; the remainder was raised by a combination of public donations and lectures given by Hillary. Schools held fundraisers, and some enterprising
youngsters even sold guinea pigs and tadpoles (Quartermain, 1971). Many companies offered goods and services that proved invaluable to the New Zealand efforts.

Establishing Scott Base

In December 1955, three men (Dr Trevor Hatherton, Lt Cdr W.J.L. Smith DSO RNZN, and Bernard M. Gunn) left New Zealand with the United States expedition Deep Freeze I. Their main task was to locate a site for the New Zealand IGY/TAE base which was to be built in the austral summer of 1956 – 57 in preparation for IGY observations to begin in July 1957 (Quartermain, 1971). The site initially chosen was close to Butterfly Point on the Antarctic mainland at the foot of the Ferrar Glacier. Upon inspection by Hillary in January 1957, Butter Point was deemed to be too inaccessible by water, and a new site for Scott Base was found at Pram Point, just around Cape Armitage from the American base in McMurdo Sound (Hillary & Fuchs, 1958).

The design of Scott Base was undertaken by W. Frank Ponder of the Architectural Branch of the New Zealand Ministry of Works. Ponder's design of six main buildings constructed of insulated aluminium walls on raft-like base frames of Oregon timber (Hatherton, 1961) has since won awards and acclaim for its engineering success. The services of heating, ventilation, water supply, waste, power and fire protection were all well planned in the design (Hatherton, 1961).

Like the Japanese, New Zealand took huskies to the ice with them for transport and companionship (Hatherton, 1961). These dogs came from several varied sources: Auckland Zoo, the Australian Mawson Base and Greenland. Both dogs and men had to be extensively trained before heading south on the HMNZS Endeavour in December 1956. (Quartermain, 1971)

Hallett Station and the Americans

Another operation undertaken by New Zealand was the joint operation with the United States of a station at Cape Hallett, on the northern Victoria Land coast just south of Cape Adare. This co-operative effort was 'outstanding, in fact unique ... [as it represented] the establishment of the only Antarctic IGY station which was essentially a co-operative enterprise' (Quartermain, 1971, p 90). This site had been identified as early as Borchgrevink's 1899 expedition as a possible site for a base, and was established as a dual-purpose IGY station and emergency landing site for the American planes travelling between New Zealand and Antarctica.
ConSTRUCTION of Hallett Station proved to offer many challenges. Although similar in design to Scott Base, significant differences made the accommodation at Hallett Station less than satisfactory. Warping of panels allowed melted snow to seep into the buildings, damaging equipment; ventilation was poor; water supply and sanitation were difficult. Often, the water obtained from melted ice was contaminated with guano from the nearby penguin colony. (Hatherton, 1961)

However, life at Hallett Station was interesting and varied, and relations between the United States and New Zealand personnel were ‘always friendly’ (Hatherton, 1961, p 25).

New Zealand and the TAE

As mentioned above, New Zealander Sir Edmund Hillary was selected as the leader for the Ross Sea section of the Commonwealth Trans-Antarctic Expedition. Scott Base, commanded by Hillary, was set up as a combined IGY observation station and support station for the TAE activities.

The TAE suffered a mis-identity in two ways. Firstly, the expedition was delayed from starting in 1955 as initially proposed due to financial and logistical difficulties. The coinciding with the activities of the IGY meant that the TAE was judged more by the scientific standards of the IGY than by the adventurous motives under which it had been established. Although the TAE did contribute to the scientific knowledge base of the IGY with seismic soundings along the route across the continent, this contribution was not looked upon particularly favourably by some members of the scientific community. This view is exemplified by this quote from Ronald Fraser’s Once Round the Sun:

“...The Commonwealth Expedition ... is quite definitely not a part of the IGY programme, nor can it be expected to contribute greatly to it. It is ... guided by a zeal for geographical exploration, not by any properly oriented scientific compass. It has been fun to watch; it has even been glorious; but it is only very incidentally geophysics.” (Fraser, 1957, p 130)

Had the expedition taken place in 1955 as originally planned, evaluations such as this would never have arisen.

The second mis-identity was initiated by the media coverage of the expedition. It must be remembered that the expedition goal was for Fuchs to cross the continent; Hillary’s role was one of support in this endeavour (Hillary, 1975). The media, however, began to portray the expedition as a ‘race’ to the South Pole, which Hillary ‘won’, much to the bemusement of all involved (Fuchs & Hillary, 1958). Fuchs went on to complete a successful traverse, but the continuing media coverage of the responses to the result of the ‘race’ completely overshadowed this fine achievement.
Summary of New Zealand Operations

In the end, New Zealand had a very successful involvement in the International Geophysical Year. The TAE was completed, many observations were undertaken in contribution to the international IGY efforts and, perhaps most importantly from New Zealand’s point of view, Scott Base provided an excellent, if not slightly overdue, genesis of a long-standing presence in Antarctica.

Another significant beginning was the establishment of a strong relationship with the United States’ involvement in Antarctica. The US continued to run their air services from New Zealand, and the proximity between Scott Base and the fast-growing McMurdo Station offered an ongoing relationship that continues to this day.
Antarctica After the IGY

By the end of the 1957 – 1958 summer season in Antarctica, it seemed that the activity of the IGY was nearly over when it had only just begun. The TAE was back in New Zealand after successfully crossing the continent, the Japanese scientists were back in Japan coping with the furore there and scientists from the other nations were on the verge of finishing their observations. There were only eight months to go before the end of the official IGY period.

The amount of time and effort that had been put in by all nations involved in Antarctica was significant, particularly, it could be said, for the smaller countries that were stretched to commit at the required level. In addition, there was a strong feeling of good will between the nations as a result of the co-operative efforts of the IGY, such that there remained a desire to continue this (Quartermain, 1971). Antarctica proved to be the ideal ‘neutral’ continent for this continuation, and it soon became the international ‘continent for science’ (Lewis, 1965).

The IGY project as a whole had been so successful that it was extended for another year (under the name ‘International Geophysical Co-operation’) (Quartermain, 1971). It seemed that, given the resources that had been poured into Antarctic research, it was only right to allow the activity to continue in order to spread the investments that had been made into a more substantial time frame.

Of all the countries that were involved in IGY Antarctica, only Norway showed any sign of wanting to reduce its involvement in Antarctic research (Quartermain, 1971). All the other nations became committed to continuing a presence.

The years following the IGY saw the introduction of the Antarctic Treaty System, which effectively put all sovereign claims ‘on hold’, and put Antarctica aside as a continent for peace and science (Lewis 1965).
Summary

The International Geophysical Year offered an unprecedented opportunity for many nations to work together in a common project of global importance. Smaller countries were able to contribute in ways that were significant at many levels, from basic scientific to areas of global significance.

In the environment of Antarctica at the time, the IGY gave countries the opportunity to expand into a region that was viewed as the last frontier on the surface of the globe. It was also a chance for nations, both large and small, to enforce or strengthen their sovereignty claims in the Antarctic region. Various motives brought participation to the IGY in Antarctica, from adventure to purely science to political/strategic goals.

The dramatic creation of so many stations during the short period before the IGY led to continued exploration and discovery in Antarctica. Many of the bases established during the IGY are still active today, and many of the 'minor' participating nations have gone on to become significant players in the scientific and political landscape of Antarctica.
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