Introduction

WHEN the *Evening Telegram* appeared on the streets of St. John's, Newfoundland, on the evening of Thursday, 17 July 1884, the citizens of the Newfoundland capital were stunned to read these headlines:

THE LATEST POLAR TRAGEDY
Terrible Tidings From The Far North

RETURN OF THE GREELY RELIEF EXPEDITION
Rescue of Lieut. Greely and Five of His Companions

SHOCKING DEATH OF THE OTHER NINETEEN
The Records of Observation and Exploration All Saved

The article that followed read:

> The terrible results of another reckless attempt to "add something more to the cause of science" has just been revealed to us by the return of the Greely Relief Expedition. Between 9 and 10 o'clock this morning the flagship of the fleet, the steamer *Thetis*, Captain Seely, followed by the steamers *Bear* and *Loch Garry*, made their appearance in the Narrows and slowly steamed into port. Their unexpected appearance, of course, caused a good deal of speculation, as no one expected to see them back again, or to even hear of their movements, before the 1st of September, at least. It was not long, however, before the result of their mission got whispered abroad, and in a little while the principal facts connected with the melancholy fate of more than two-thirds of Lieutenant Greely's party became the all-absorbing subject of conversation everywhere. As soon as the Lieutenant landed, we visited him at the office of the American consul, T.N. Molloy, Esq., and obtained from him some

information respecting the hardship, suffering and death endured by his brave companions since they started on their disastrous journey south in August last.

They passed the first two years without any loss of life or accident. During that time they took observations in all the departments of scientific work and sent expeditions northeast and southwest. They first observed the highest point yet attained, which they named Cape Robert Lincoln, in 83°35′ or 9′ further north than Nares' highest point. This point was observed from Lockwood Island, the highest point yet reached. The island was named after Lieutenant J. B. Lockwood, 23rd United States Infantry, acting Signal Officer, and the point of observation was called Cape Robert Lincoln, after the son of the late President Lincoln. The second expedition under Lieutenant Greely surveyed the country to the southwest of Grinnell Land; to the westward an open sea or western ocean was discovered in about 81°N latitude, together with a large lake in its vicinity.

The party started south on the 9th of August last fall, with the steam launch and three boats, and upon short supply of provisions. It was hoped that the stores on both sides of Kennedy Channel, Smith's Sound and Smith's Channel, would have been available; but, unfortunately, the upper Channel and Sound were so difficult of navigation, that they had to abandon their boats and take to the ice-foot, over which they made the best of their way south, availing themselves of the rations or stores deposited at Carl Ritter Bay, at Washington Irving Island, and Cape Sabine, still proceeding south until they reached Baird Inlet, on the 29th of September—a distance of over two hundred miles at least from the point of departure. The difficulty to be contended with was the impossibility, either from the excessive weakness of the party, or from the condition of the Channel, about 25 miles across, to reach Littleton Island, where stores were reasonably expected to be at hand, independently of the large supplies of coal and provisions stored at Port Foulke and the various marked points on the eastern shore of the Channel. In the hope of being nearer Littleton Island, and within reach of supposed rescue, the party moved back to Cape Sabine, where they went into winter quarters on the 15th of October. Here they were discovered

> by the *Thetis* and *Bear* on the 22nd of June last—that is to say seven survivors (including the commander, Lieutenant Greely) having lost the remainder of the expedition, 18 officers and men, by scurvy and privation, but chiefly by the latter. The first man died of scurvy on the 5th of April, the others on the 7th, 29th, and then rapidly, with few intervening days between each. Death appeared in all cases to be easy and painless. They spent at Cape Sabine a period of about eight months. From the 14th of May to the 22nd of June, their subsistence consisted entirely of such material as could be picked up—shrimps, seaweed, rock-lichens, and so forth. They were rescued by the *Thetis* and *Bear* in the midst of a severe gale, Lieutenant Greely and four of the survivors being so completely exhausted at the time, as that it was considered extremely doubtful whether they could have existed another twenty-four hours.
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> (*Evening Telegram*, Thursday, 17 July 1884)

There then followed a detailed account of the rescue expedition by Captain Frank Ash, a local man who had been the ice-pilot aboard *Bear*.

This St. John's newspaper article represents the first published account of the tragic outcome of the Greely expedition to Lady Franklin Bay on Ellesmere Island; over the next few days similar accounts were to appear in the pages of practically every major world newspaper, and over the next few months further details would be divulged and accusations of blame laid as an official enquiry ran its course. What is particularly significant is that no mention is made in this first article in the *Evening Telegram*, or in most of the other accounts that would follow, of the fact that the Greely expedition represented part of a much larger whole. It was, in fact, one of two American expeditions (out of a total of 14) mounted as part of the First International Polar Year, 1882–83. Nor is there any mention of the fact that Greely and his companions had faithfully completed a full year of obligatory scientific observations in the areas of meteorology, terrestrial magnetism, and auroral studies, plus a wide range of additional optional observations and, even a further year of observations preceding the official program of the First International Polar Year. Most important of all, despite all their horrifying sufferings, Greely and his men had safely preserved all their scientific records, notes and specimens, and these had been brought safely south for analysis.

There can be no doubt that at the time the dramatic events associated with the southward retreat of Greely's party almost completely eclipsed—certainly in the minds of the general public—the full scope and achievements of the First International Polar Year. And while over the next few years all of the 14 expeditions involved produced exhaustive final reports, the fact that they appeared in a total of five languages meant that they were scarcely readily available even to the scientific community. If one adds the languages in which semi-popular accounts of the various expeditions appeared, the total rises to six or even more. In light of this, it is really not surprising that even now, a century after the event, nobody has attempted to compile a comprehensive account, presenting in reasonable detail not only the full scope of the program of the First International Polar Year but also the achievements, hardships, and everyday life of all the expeditions involved. This monograph is an attempt to rectify that situation.

Background and Organization

The First International Polar Year was the brainchild of Lieutenant Karl Weyprecht of the Austro-Hungarian Navy. As co-leader of the Austro-Hungarian North Pole Expedition of 1872 – 74 (Payer, 1876), Weyprecht had wintered in the ice of the Barents Sea aboard *Tegetthoff* off the southeast coasts of Zemlya Frantsa Iosifa (Franz Josef Land), which this expedition discovered. On the basis of his experiences and of his wide knowledge of previous polar expeditions, Weyprecht reached the conclusion that the time had come for a drastic change of direction in polar research. Although there were still major gaps in the map of the Arctic and especially of the Antarctic, Weyprecht felt that the era of uncoordinated independent expeditions aimed primarily at geographical exploration, but with negligible scientific results, was over. He particularly denigrated the fact that polar expeditions were widely regarded as a sort of international steeplechase, aimed primarily at conferring honour on the various national flags by breaking the record for the highest attained latitude by a few miles (Baker, 1982). "Decisive scientific results can only be attained through a series of synchronous expeditions, whose task it would be to distribute themselves over the Arctic regions and to obtain one year's series of observations made according to the same method" (Weyprecht, 1875:33). An international coordinating body would ensure an optimal distribution of the stations and standardization of measurements. He envisaged the major

effort being directed to meteorology, aurora, and earth magnetism, since these were the areas where the greatest gaps in the knowledge of the polar regions existed (Mittheilungen der Internationalen Polar-Commission, 1882).

The scientific climate was right for a scheme such as Weyprecht's. His particular contribution was that through his drive, ambition, and connections he was able to bring his scheme to fruition. The all-important influence as well as financial backing came from Graf Hans von Wilczek, sponsor of the *Tegetthoff* expedition. Weyprecht first aired his plan at a meeting of the Austro-Hungarian Academy of Sciences in Vienna in 1875 and then at the 48th annual meeting of the Association of German Naturalists and Physicians at Graz in the fall of that year (Heathcote and Armitage, 1959). Encouraged by the sympathetic hearings received from these bodies (and a number of others), Weyprecht and Wilczek compiled an even more detailed proposal for presentation to the International Meteorological Congress scheduled to meet in Rome in September 1877 but in fact postponed because of the war in the Balkans until the spring of 1879.

The proposal was very warmly received by this influential scientific body; it formed an International Meteorological Commission with a mandate to convene an International Polar Conference at Hamburg on 1 October 1879. This first International Polar Conference was attended by nine delegates from Denmark, Germany, France, the Netherlands, Norway, Austro-Hungary, Russia, and Sweden. Apologies were received from Belgium, Great Britain, and Portugal for being unable to send representatives (Baker, 1982). The organizing and coordinating body, the International Polar Commission, was chaired initially by Dr. Georg von Neumayer, head of the German Naval Observatory, and later by Professor H. Wild of St. Petersburg. The commission worked out a detailed program of observations, the major foci to be meteorology, geomagnetism, and auroral studies. The period of observation would be from the fall of 1881 until the fall of 1882, and it was stipulated that commitments to a minimum of eight stations in the Arctic would have to be received before the program could proceed (Mittheilungen der Internationalen Polar-Commission, 1882).

A subsequent meeting of the International Polar Commission was held in Bern in August 1880. Since by this stage definite commitments to participate had been received by only four countries, namely Austro-Hungary, Denmark, Norway, and Russia, it was decided to postpone implementation of the

International Polar Year until 1882 – 83. The third meeting of the International Polar Commission took place in St. Petersburg in August 1881, when the timing and details of the program were specified.

The detailed instructions concerning the program may be found in the Appendix; in summary, the major features of that program were as follows. The main foci were meteorology, earth magnetism, and aurora. Observations at all stations were synchronized by adopting a standard time, namely that of Göttingen in Germany. Only one station, the Norwegian station at Bossekop, had access to a telegraph station; in all the other cases time keeping was based on regular, precise astronomical observations.

In terms of meteorology all the stations carried out an identical range of "obligatory" observations. Atmospheric pressure and temperature, relative humidity, water vapor tension, and wind speed and direction were recorded every hour. Cloud amount and type, direction of cloud movement, and type of precipitation (if any) were observed every four hours. Total hours of sunshine and amount of precipitation were recorded daily. Soil temperatures were also measured every four hours; the number of sensors and their depths were variable. Thus the French at Bahia Orange took measurements at only two depths, 15 and 30 cm; the Austrians on Jan Mayen at seven depths down to 1.56 m.

The types of optional meteorological observations carried out by the various expeditions are well illustrated by those pursued by the French party at Bahia Orange. These included studies of lapse rates (with comparisons with temperatures at an auxiliary station at 430 m), atmospheric electricity, evaporation rates, and solar radiation.

The magnetic program included regular hourly absolute measurements and measurements of magnetic variation. On the "term days," specified as the first and fifteenth of every month, the magnetic program became extremely demanding, especially for the smaller parties. On those days the magnetic variation instruments had to be read every five minutes for 23 hours and every 20 seconds for the final hour of the day.

The instructions concerning the aurora specified that when auroral displays were visible the shapes, colour, motion, and position were to be recorded hourly and their brilliance estimated on a scale of 1 to 4. On term days auroral observations were to be made continuously—which must have aggravated the situation even more for the smaller parties. And finally, particularly intense occurrences of aurora and magnetic disturbances were

to be recorded especially thoroughly, with a view to determining possible links between the two phenomena.

Ultimately 14 major stations were occupied, 12 being arranged in a fairly regularly spaced circumpolar ring in the Northern Hemisphere (Fig. 1) and two being in the Southern Hemisphere. In quite a number of cases sites were chosen where earlier expeditions had already produced some baseline data; examples include the American expedition to Lady Franklin Bay and the Norwegian expedition to Bossekop. The expeditions in the Northern Hemisphere were as follows: the American expedition to Point Barrow, Alaska; the British expedition to Fort Rae, Northwest Territories; the German expedition to Kingua Fjord, Baffin Island; the American expedition to Lady Franklin Bay, Ellesmere Island; the Danish expedition to Godthåb (now Nuuk), Greenland; the Austrian expedition to Jan Mayen; the Swedish expedition to Kapp Thordsen, Svalbard; the Norwegian expedition to Bossekop; the Finnish expedition to Sodankylä; the Russian expedition to Malyye Karmakuly, Novaya Zemlya; and the Russian expedition to Ostrov Sagastyr' in the Lena delta. Finally the Dutch expedition was bound for Dikson at the mouth of the Yenisey, but the expedition ship became beset in the ice of the Kara Sea, and hence the expedition spent the year adrift. In the Southern Hemisphere the Germans occupied a second station at Royal Bay, South Georgia, and the French station was established at Bahia Orange near Cabo de Hornos (Cape Horn).

In addition to the 14 major expeditions, there were several auxiliary expeditions. These include K.R. Koch's one-man operation (aided by the Moravian missionaries) on the Labrador coast, Sophus Tromholt's auroral research station at Kautokeino in northern Norway, and the operation run by the American Lucien Turner at Fort Chimo in Ungava Bay. In the Southern Hemisphere there were two sites that might be classed as supplementary observing stations. One was at Port Stanley in the Falkland Islands, where Captain I.H.M.D. Seemann maintained a second-order weather station with instruments supplied by the German expedition to South Georgia; and the other was at Ushuaia on Tierra del Fuego, where the Reverend Lucas Bridges maintained a similar weather station with instruments supplied by the French expedition.

But even this did not encompass the full scope of the First International Polar Year. In response to an appeal from Professor Wild, as President of the International Polar Commission, dated 20 December 1881 and circulated to as many meteorological-magnetic observatories as possible (Mittheilungen

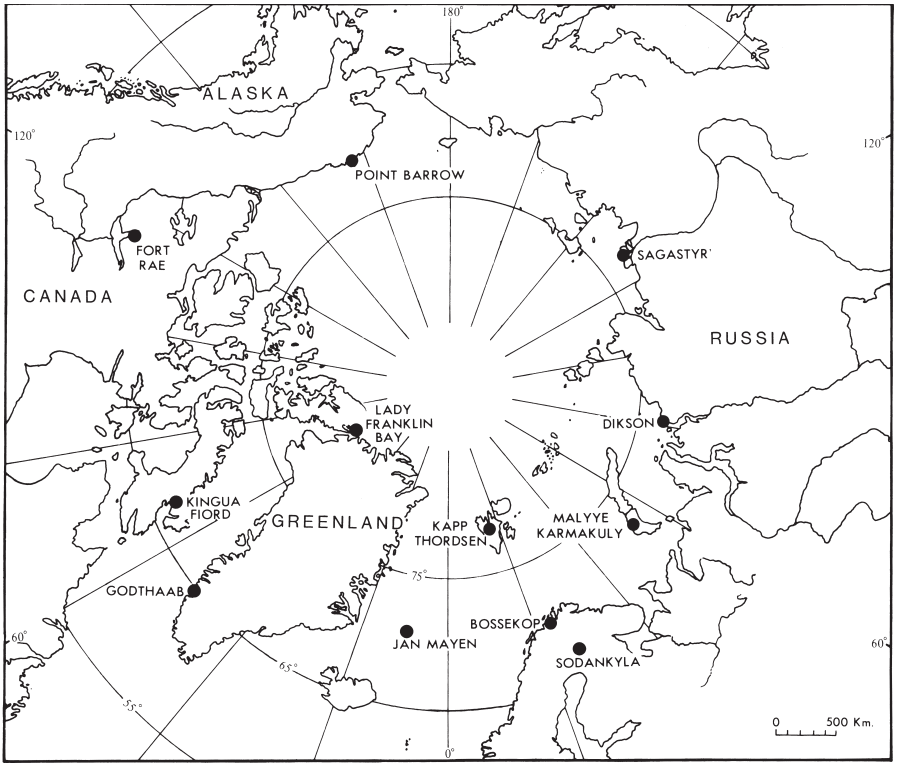

Fig. 1. Distribution of the Arctic stations of the First International Polar Year.

der Internationalen Polar-Commission, 1882), 35 observatories at relatively low latitudes, ranging from Bombay to Havana and from San Diego to Tashkent, participated in the meteorological and magnetic programs of the International Polar Year. Apparently, however, an additional five stations, at Kew, Kuopio, Melbourne, Rio de Janeiro, and Vienna, made observations, and a sixth, Christiania (Oslo) deposited a copy of its observations in the archives of the International Polar Commission (Baker, 1982). Hence the program of observations was truly a global one. In addition the directors of both the Russian and Austro-Hungarian telegraph systems made available certain telegraph lines within their respective systems at specific times for the purpose of earth-current measurements. Finally the Meteorological Council of the Royal Society undertook a synoptic study of the weather of the North Atlantic during the year, based on returns from ships' captains, while the Germans attempted a similar project in the South Atlantic.

Impressive as this global involvement in the program of the International Polar Year undoubtedly is, the scope of the present study is more restricted, both in space and in subject matter. Geographically it will focus only on the 14 major expeditions and the three auxiliary expeditions dispatched to the polar regions specifically for the purposes of the International Polar Year. Furthermore the focus will be on the details of these expeditions as polar expeditions. While some stress will inevitably be laid on the scientific programs, the main purpose is to highlight the achievements, hardships, everyday life, and weaknesses of all the expeditions involved. These pages in the history of polar expeditions have remained blank for far too long.