

The International Geophysical Year and Science in Antarctica

The Heroic Age ended in Antarctica after Shackleton's death in 1922

After that, there were a few other excursions south

Richard Byrd, an American naval flight instructor, had been the first person to fly over the North Pole in 1926

Amundsen also was trying to be the first to do this, and flew over the north pole in an airship after Byrd's flight



Byrd, wanting more 'firsts' now wanted to head south and be the first to fly over the South pole

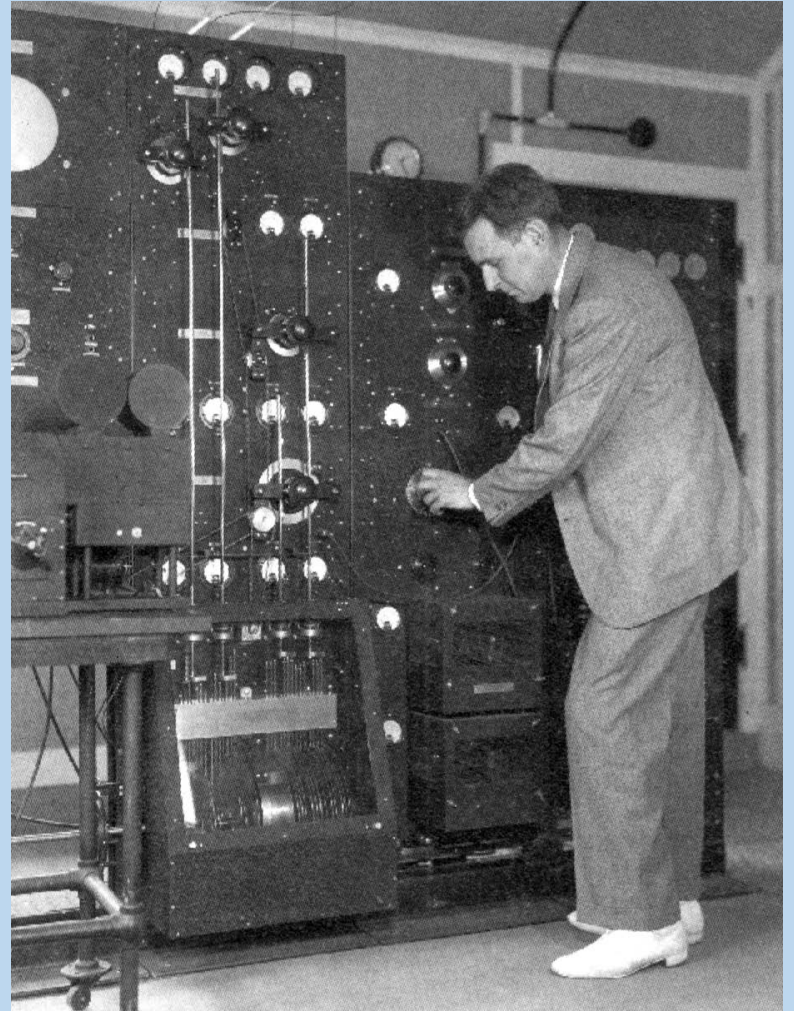
He obtained funds, planes, and left for Antarctica in 1928 to set up a base near Amundsen's old base on the Ross Ice Shelf

His base was named 'Little America' where he and his men spent the winter of 1929





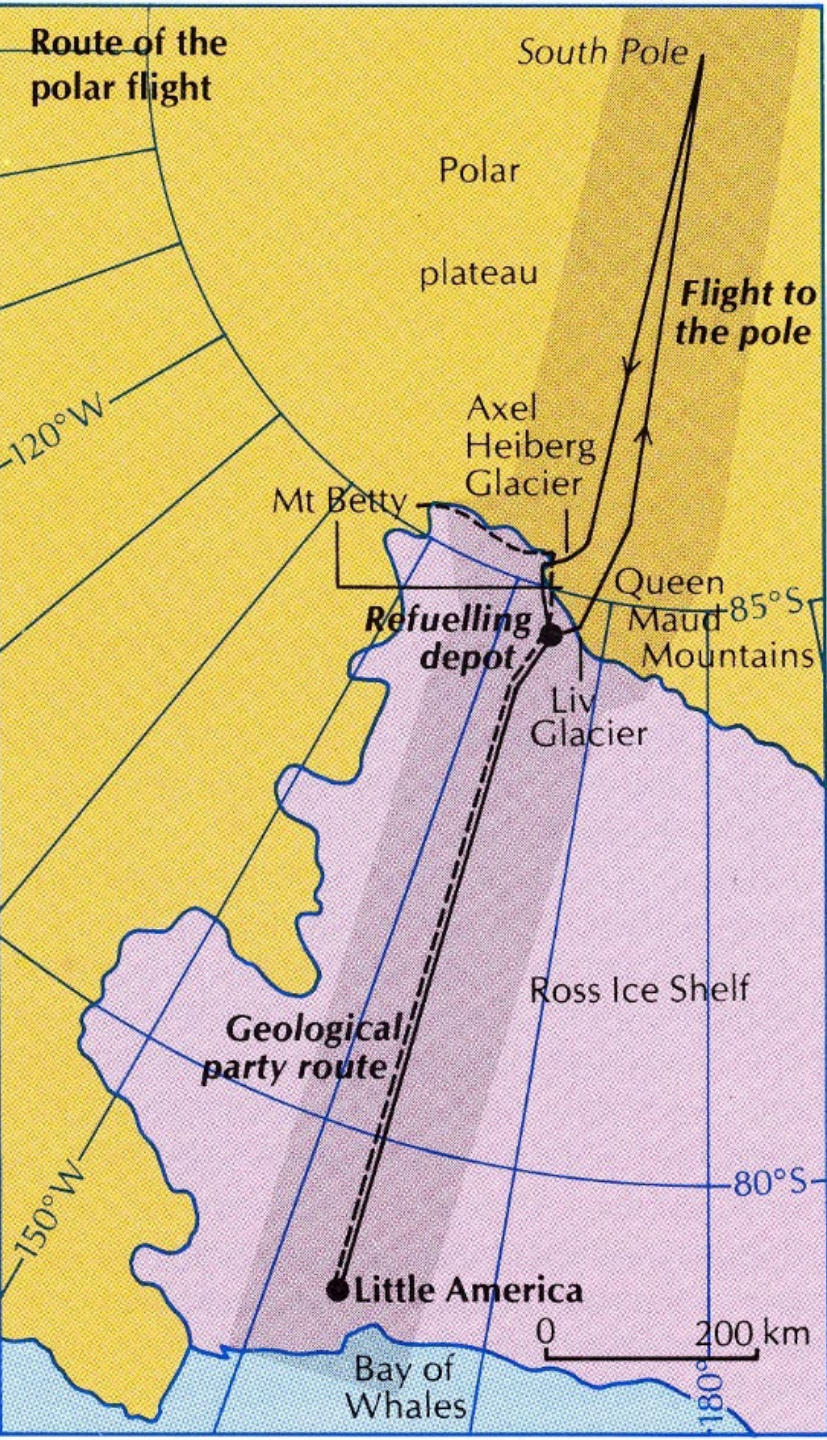
Laurence M. Gould, geologist



Lloyd Berkner, radio engineer



Paul Siple, Eagle Scout selected for the expedition



The following summer Byrd completed a successful flight to the pole on 28 Nov. 1929

Barely made it over the rim of the polar plateau and had to throw out supplies to make it.

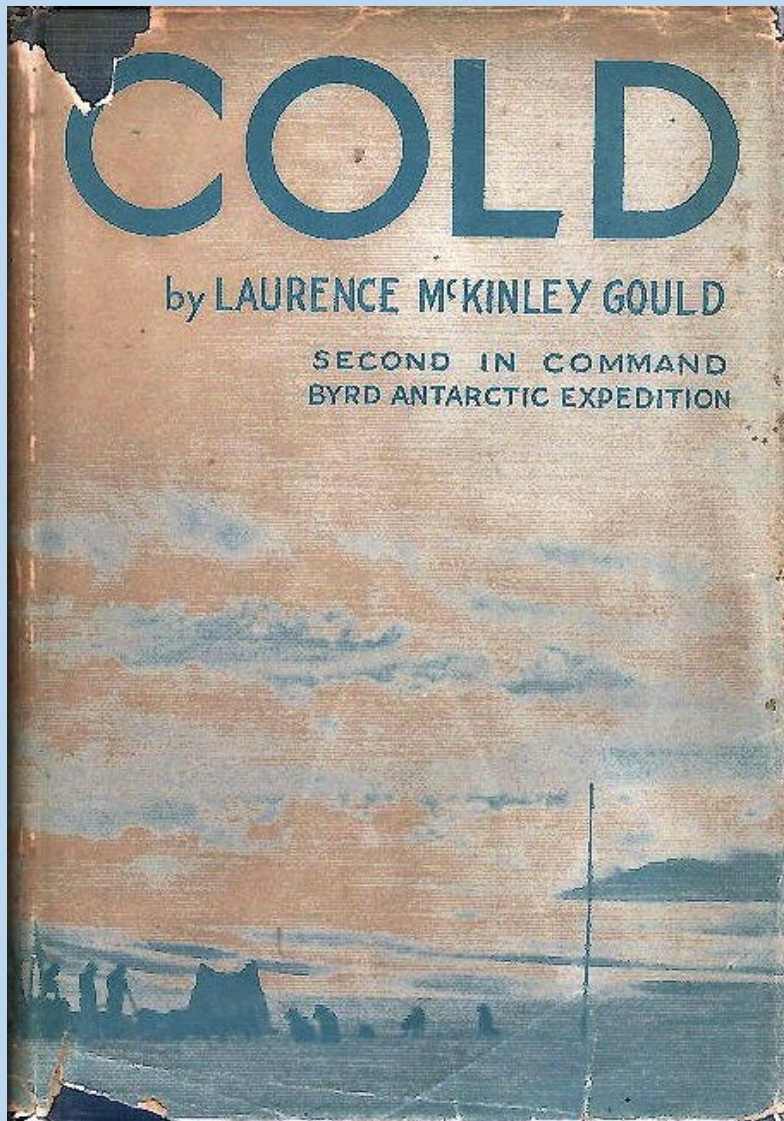
The flight took 15 hrs 51 min and did not land at the pole

Meanwhile, the geological party led by Gould discovered new mountains and sedimentary rock proving not all the geology was volcanic

Also found a cairn left by Amundsen in 1912 with his notes still inside

The plane is now at the Henry Ford Museum, Dearborn, MI





Laurence Gould published this book in 1931 about the sledge journey during the Byrd Expedition.

Upon return to the states, he joined the faculty at Carleton College, MN, where he eventually became President of the college

He received 26 honorary degrees in his lifetime

In 1998, NSF named their new science ship the R/V *Laurence M. Gould*



**Roald Amundsen
1872-1928**

That same year, Roald Amundsen disappeared on a rescue flight to find a missing aviator in the arctic

He and four others left in a fog to look for a missing airship

Pieces of his plane washed up on the Norway coast, but the plane and their bodies were never found

Oslo History Museum

Ordener og medaljer

Status og ære har til alle tider blitt markert gjennom å dele ut symbolske gjenstander. Ordensvesenet stammer fra middelalderens ridderordener og ble senere viktige statussymboler for de europeiske nasjonalstatene. Nasjonale ordener har fremdeles betydning. I Norge er St. Olavs Orden den mest kjente.

Belønningsmedaljer har blitt utdelt i over 2000 år. Medaljer i gull, sølv og bronse er premier i nesten all idrett. Mange andre bragder blir også markert ved medaljer. Mest kjent er Nobels fredsprismedalje.

I. Fridtjof Nansen St. Olavs Orden, storkors 1896, med kjede 1925

Nansen ble utnevnt i 1847 og er en uttømming for utmerkede tjenester for Norge og verdensrikdom. St. Olavs Orden har to størrelser: St. Olavs storkors og St. Olavs med kjede.

Med kjede ble utdelt som en spesiell utmerkelse for utmerkede tjenester. Nansen ble utnevnt i 1896 og kjede i 1925. Med kjede ble utdelt utmerket en særskilt høyere grad.

III. Roald Amundsen Sjøløysmedaljen 1911 Av Ivar Thronsdalen

Sjøløysmedaljen ble utdelt av kong Haakon i 1912 som en utmerkelse for utmerkede tjenester for Norge og verdensrikdom. Sjøløysmedaljen er utdelt til utmerkede sjøfolk som har gjort utmerkede tjenester for Norge og verdensrikdom. Sjøløysmedaljen er utdelt til utmerkede sjøfolk som har gjort utmerkede tjenester for Norge og verdensrikdom.

II. Fridtjof Nansen Nobels fredsprismedalje 1922 Av Gustav Vigeland

Fridtjof Nansen ble utnevnt i 1922 for sin humanitære innsats for flyktninger etter første verdenskrig. Fredsprismedaljen er den eneste fredsprismedaljen som utdeles i Norge.

Den ble utdelt som en spesiell utmerkelse for utmerkede tjenester for Norge og verdensrikdom. Nansen ble utnevnt i 1922 for sin humanitære innsats for flyktninger etter første verdenskrig. Fredsprismedaljen er den eneste fredsprismedaljen som utdeles i Norge. I dag fremdeles Vigeland's fredsprismedalje som humanitære utmerkelse av utmerkede medaljer.

Medaljen laget ved Det Norske Myntverket på Kampfang.

Orders and medals

Status and honour are marked by presenting individuals with symbolic objects. Orders have their origins in medieval chivalry and later became important status symbols for the European national states. National orders are still relevant today. The order of St. Olav is the best known of these in Norway.

Medals have been presented as awards for more than 2,000 years. Gold, silver and bronze medals are prizes in almost all sports. Many other achievements are also acknowledged with medals. Most famous is the Nobel Peace Prize medal.

I. Fridtjof Nansen Order of St. Olav, Grand Cross 1896, with chain 1925

This order was founded in 1847 and is conferred as "a reward for distinguished services rendered to Norway and mankind". The Order of St. Olav has two highest classes and two commendator classes.

The highest grade is the Grand Cross which can be awarded with a collar chain. Nansen was awarded the Grand Cross in 1896 and the collar in 1925.

This is the highest order that can be awarded to a Norwegian citizen.

III. Roald Amundsen The South Pole Medal 1911 By Ivar Thronsdalen

The South Pole Medal was established by King Haakon in 1912 and is a unique decoration awarded only to explorers who discovered the South Pole. All the members of Amundsen's South Pole expedition received the gold version of this medal.

The reverse is similar to that of the King's Medal of Merit, while the reverse depicts the Southern Cross and the southern hemisphere. The name of the recipient and year and can be inscribed.

II. Fridtjof Nansen The Nobel Peace Prize Medal 1922 By Gustav Vigeland

Fridtjof Nansen was awarded this medal in 1922 for his humanitarian efforts for refugees after the 1st World War. The Peace Prize Medal is the only Nobel medal which is awarded in Norway.

When this Norwegian medal was being created the Nobel Committee invited Gustav Vigeland to submit a sketch. The Swedish Royal Institute was sceptical about the idea of a peace prize and that it would be awarded in Norway. Vigeland's Peace Prize Medal is regarded as being a nationally superior to the Swedish medals. The medal is cast by the Mint of Norway in Kampfang.



Byrd was celebrated in the U.S. for his achievement and was promoted to Rear-Admiral

He returned to Antarctica and 'Little America' in 1934, this time more specifically for scientific research, Little America II

They spent a year gathering data on Antarctic climate, atmosphere, and made a long tractor journey to explore inland, and more flights



Also, Byrd spent part of the winter in a weather station farther south on the ice shelf, by himself.

A leaky stove was giving him carbon monoxide poisoning, weakening him daily



This expedition also included the first mail to be cancelled and sent from Antarctica

First radio broadcasts to the public in the U.S.

Discovered there was not a strait between the Ross and Weddell Seas, confirming Antarctica as a single large continent

They also discovered new mountain ranges, more life than expected, and that more meteorites bombard earth than was previously known

Byrd had set the foundation for modern scientific studies in Antarctica



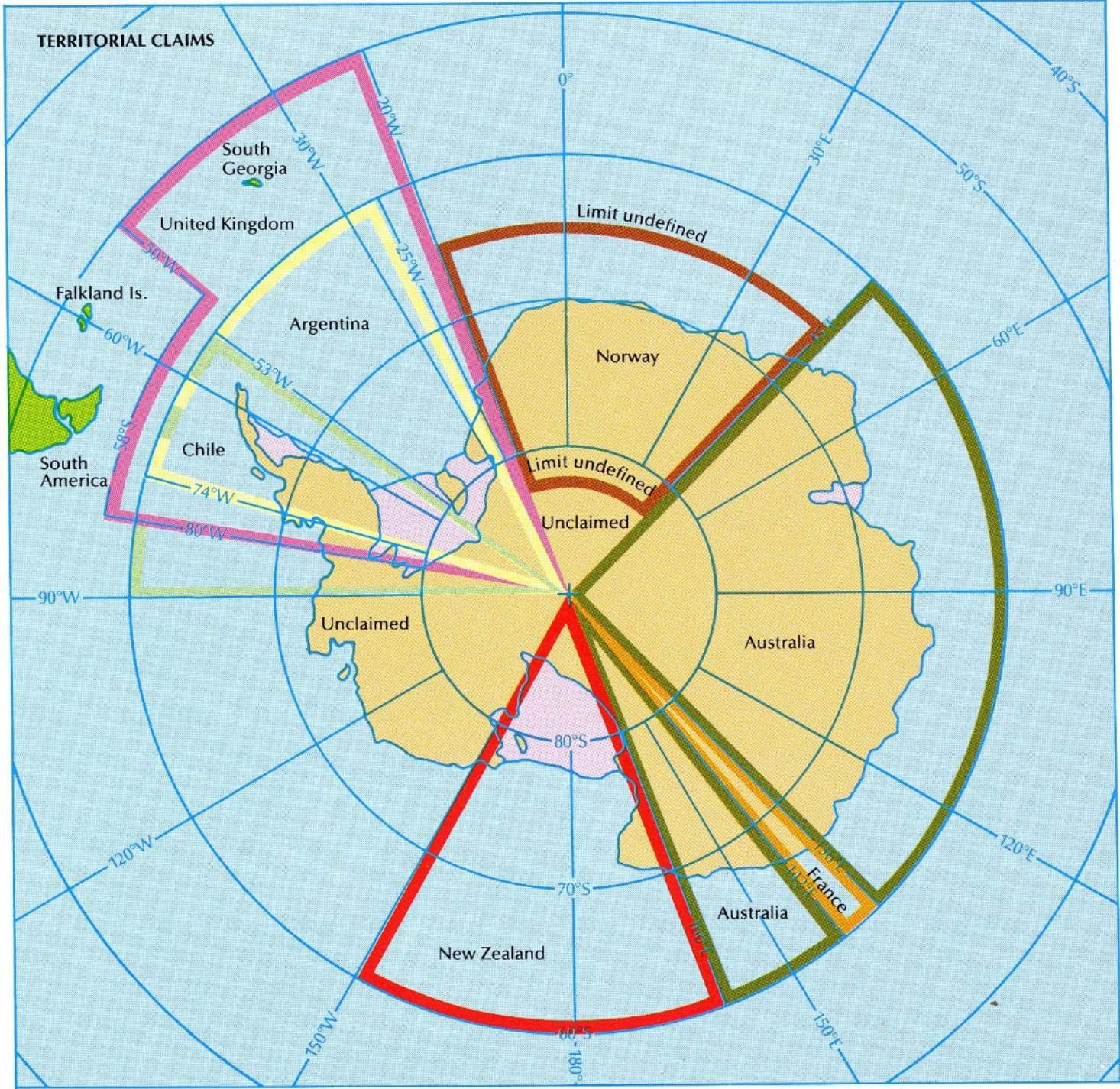
In the 1920 and 1930s, the same time that Richard Byrd was advancing research in Antarctica, many countries were starting to lay claim to Antarctic territories

Britain established the Ross Dependency in 1923 and claimed territory between 150 and 160° longitude for New Zealand, following the Falkland Islands Dependencies between 20 to 80° longitude

France claimed Adélie Land, irritating Australia in the process and they sent Douglas Mawson to make claims

Norway also was involved, as well as Germany. Hitler disregarded all other claims and sent aircraft to drop markers

Some of these countries also were after taxes on the whaling industry, but WWII ended much of this, especially for Germany



Also during the 1930s, a wealthy American, Lincoln Ellsworth, wanted not just to support Antarctic exploration, but participate in it as well.

He and his father had already supported Roald Amundsen's flight over the north pole in 1926. Now he wanted to complete a transantarctic flight



Left for Bay of Whales in Ross Sea and set up camp there in January 1934, but plane was damaged and had to abort mission

Returned in 1935, this time at Snow Hill Island in the Weddell Sea and weather caused another abort to the mission. Found Nordenskjold's hut, first to see it since 1904.

Finally, the following summer (Nov. 1935) went to Dundee Island and left from there in their plane on 21 Nov.

Made four stops on the way to Little America, taking 22 days to make the flight



Ellsworth discovered the Ellsworth Mountains (the ones on a microplate), completed aerial surveys, and claimed new lands for the United States

First to see many parts of western Antarctica

His plane is now in the Air & Space Museum in Washington D.C.



In 1939, the U.S. Congress established the U.S. Antarctic Service and sent Richard Byrd back that year for more research at Little America III, 6 miles north of Little America I and II

First expedition with government funding

Returned in 1941 with new data and the first color photographs of Antarctica



Antarctic Snow Cruiser

Operation Highjump

After WWII, the U.S. Navy sent an expedition to Antarctica in 1946 to establish a U.S. presence there, again with Admiral Byrd in charge

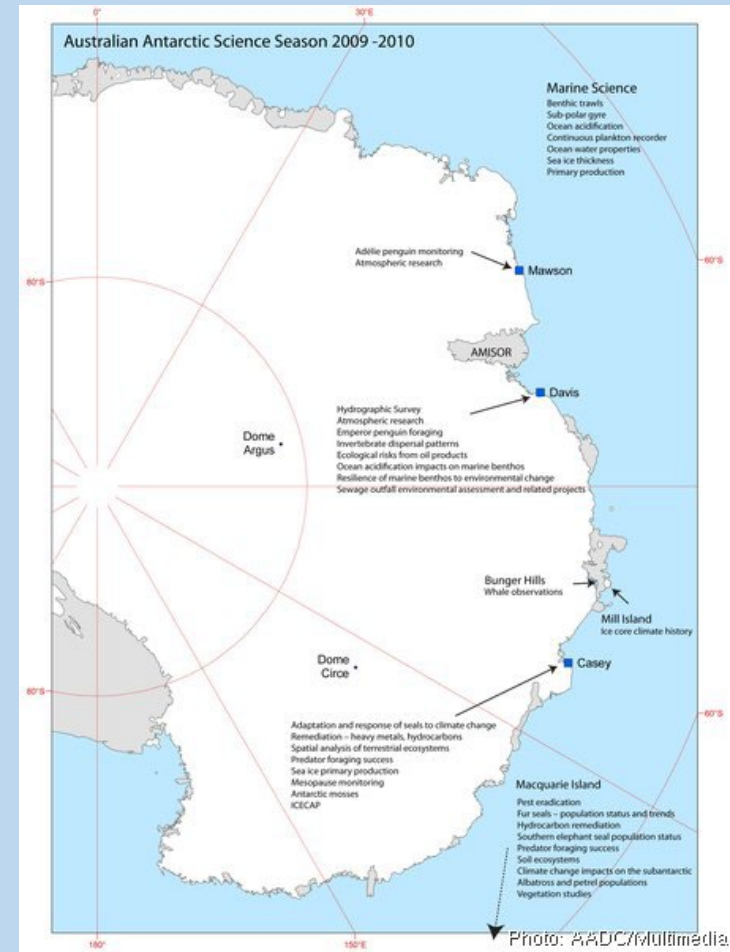
Set a new camp, Little America IV near the former Little America III, and completed numerous aerial surveys inland, discovering more new mountain ranges



First use of icebreakers and helicopters in the Antarctic

A separate fleet (western group) discovered a large ice-free 'oasis' at **Bunger Hills** in East Antarctica

A film produced by the U. S. Navy, *The Secret Land*, won an Academy Award for best documentary in 1948



The
SECRET
LAND

Presented by The National Geographic Society

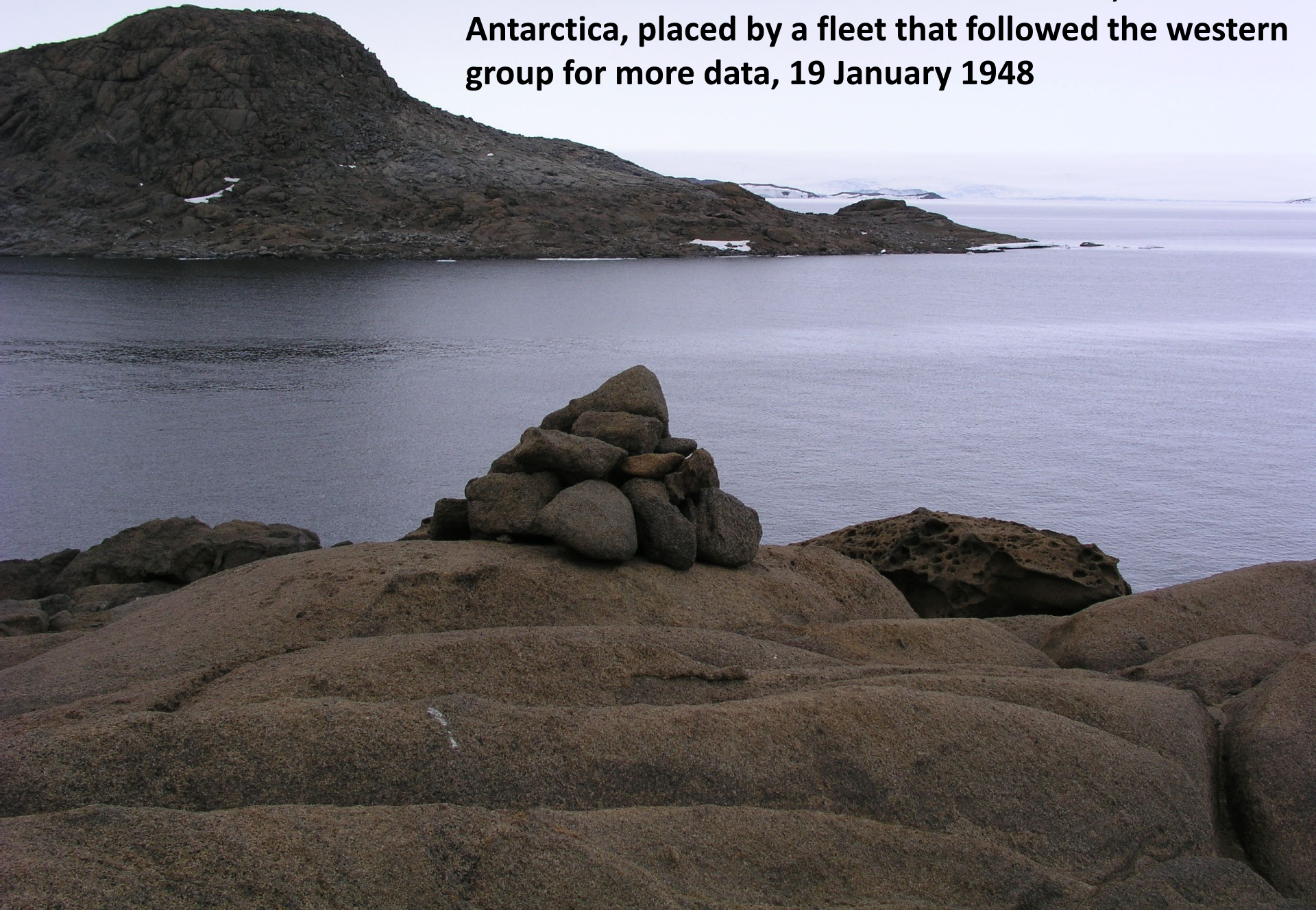
THE NATIONAL GEOGRAPHIC SOCIETY
PRESENTS



THE
SECRET
LAND



U.S. Proclamation Cairn on Peterson Island, East Antarctica, placed by a fleet that followed the western group for more data, 19 January 1948



A document and a flag were left in a canister under the cairn



Genesis of the IGY

There already had been two previous International Polar Years: 1882-1883 and 1932-1933, mostly dealing with Arctic research



After WWI, problems in radio communications provided impetus to have a second IPY in 1932-1933 to better understand earth's magnetic field and electrical geophysics

More work in Arctic as well as Antarctic, considerable data on weather and meteorology collected, though much was lost during WWII



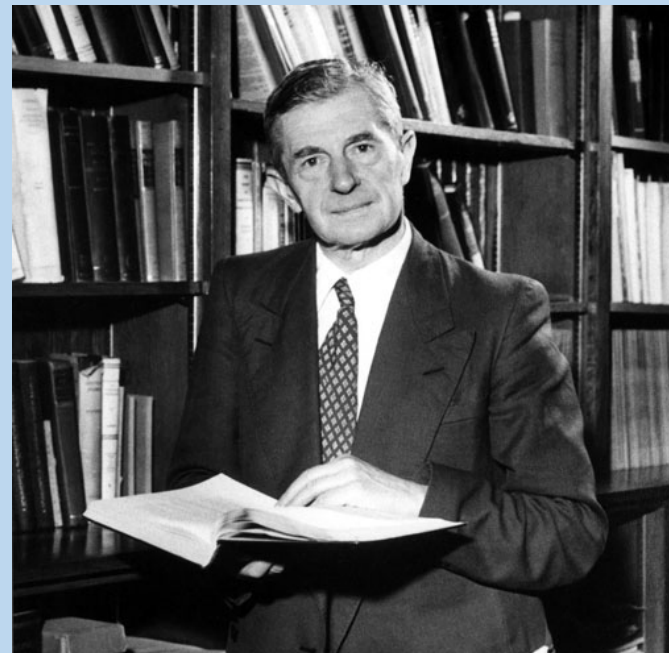
By 1950s, advances in rocket science, seismology, computing led a physicist, Dr. Lloyd Berkner, to propose that it was time to have another international year, but to make it geophysical instead of polar

IGY to use modern techniques to study the earth's surface and atmosphere.

Berkner had been a member of Byrd's 1928 expedition. His colleague, Dr. Sydney Chapman, suggested 1957-1958 for the IGY



Lloyd Berkner

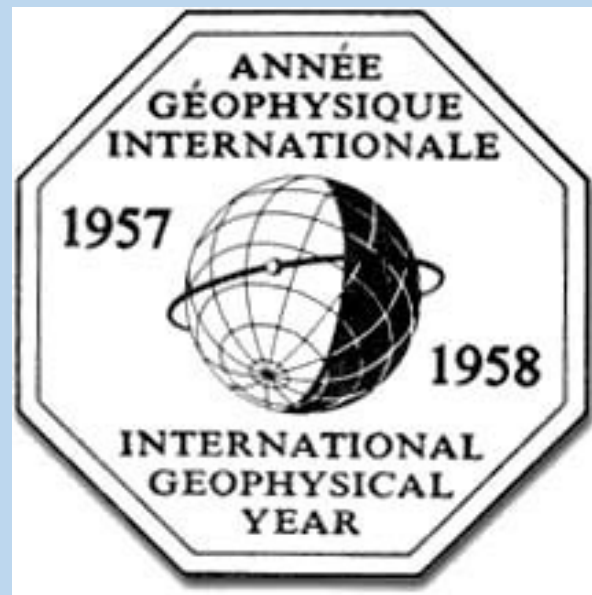


Sidney Chapman

1957-1958 suggested for the IGY as sun spot activity would be high then and could be contrasted with data gathered in 1932-1933 when sun spot activity was low

Meetings were held and it was agreed that Antarctica and outer space would receive the most attention during the IGY

Involved 12 countries: Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, South Africa, the U.S., and Russia (then the U.S.S.R.).



The proposal for the IGY was approved by the International Council of Scientific Unions (ICSU) which represented 67 nations

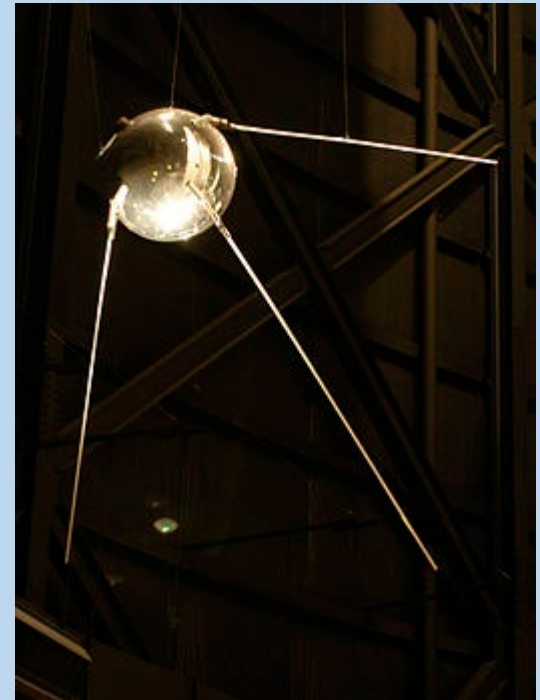
It was actually set at 18 months long, from June 1957 to December 1958

While the focus of IGY was global, the ICSU selected Antarctica and outer space as the primary focus

Then, on 4 Oct. 1957, the U.S.S.R. surprised the world with the first launch of an artificial satellite, *Sputnik I*

This launch immediately worried the U.S. and started the Space Race during the Cold War between the U.S. and U.S.S.R.

However, the U.S. probably could have launched a satellite the year before and chose not to, perhaps to keep open the concept of 'Freedom of Space' and no weaponized space



Operation Deepfreeze

As a prelude to the IGY, the U.S. sent Admiral Byrd to Antarctica one more time in 1955-1956, setup a base where Little America V was established 30 miles east of Little America IV

The U.S. also was concerned that the Soviet Union would begin placing military bases in Antarctica, so wanted to increase its presence there

The mission was to establish seven research stations for the IGY:





**Richard Evelyn Byrd, Jr.
1888-1957**

Byrd only spent one week in Antarctica on this expedition and returned to Washington, D.C. in 1956

He died of a heart condition the following year and is buried at Arlington National Cemetery



**Monument to Admiral Richard Byrd, Jr.
at Arlington National Cemetery, VA**

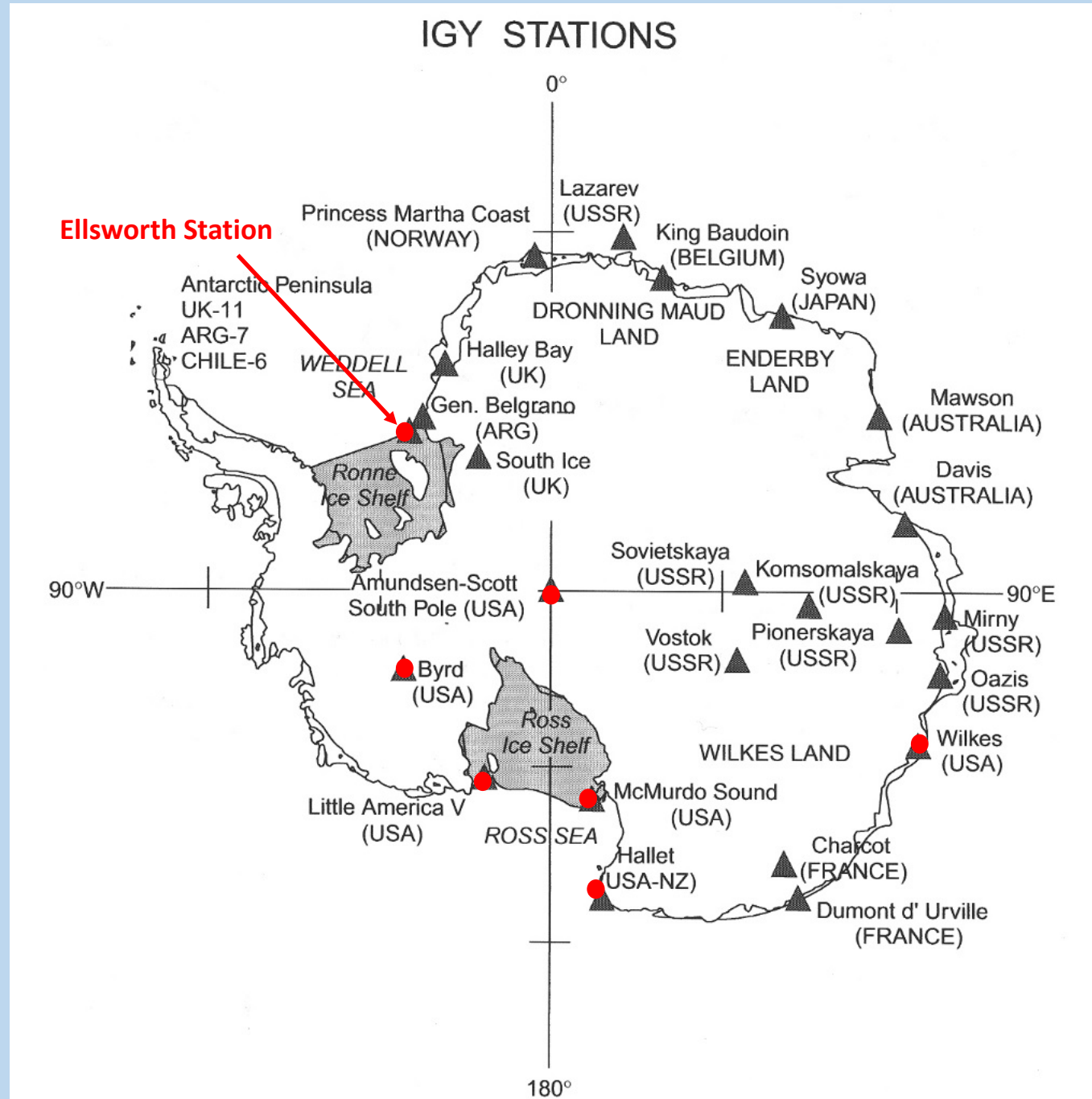


Navy food depot on Dunlop Island, 1950s



In the IGY, 12 countries established 40 stations in Antarctica with an additional 20 on islands

Seven established by the U.S., but Byrd and Little America were eventually abandoned, Wilkes was turned over to Australia in 1959, and Ellsworth to Argentina in 1959



Construction of Amundsen-Scott South Pole Station



This participation led the U.S., U.S.S.R., Belgium, and Argentina to propose a 12-month extension to the IGY

It was clear by then that the U.S. and other countries intended to keep their presence in Antarctica so the extension was granted

The ICSU also formed the Scientific Committee for Antarctic Research (SCAR) in 1958 that included delegates from all countries involved in research there

SCAR is still one of the most effective international committees ever formed



On a global scale, the IGY was highly successful and considerable scientific advancement was achieved:

Beginning of space programs and the first satellites

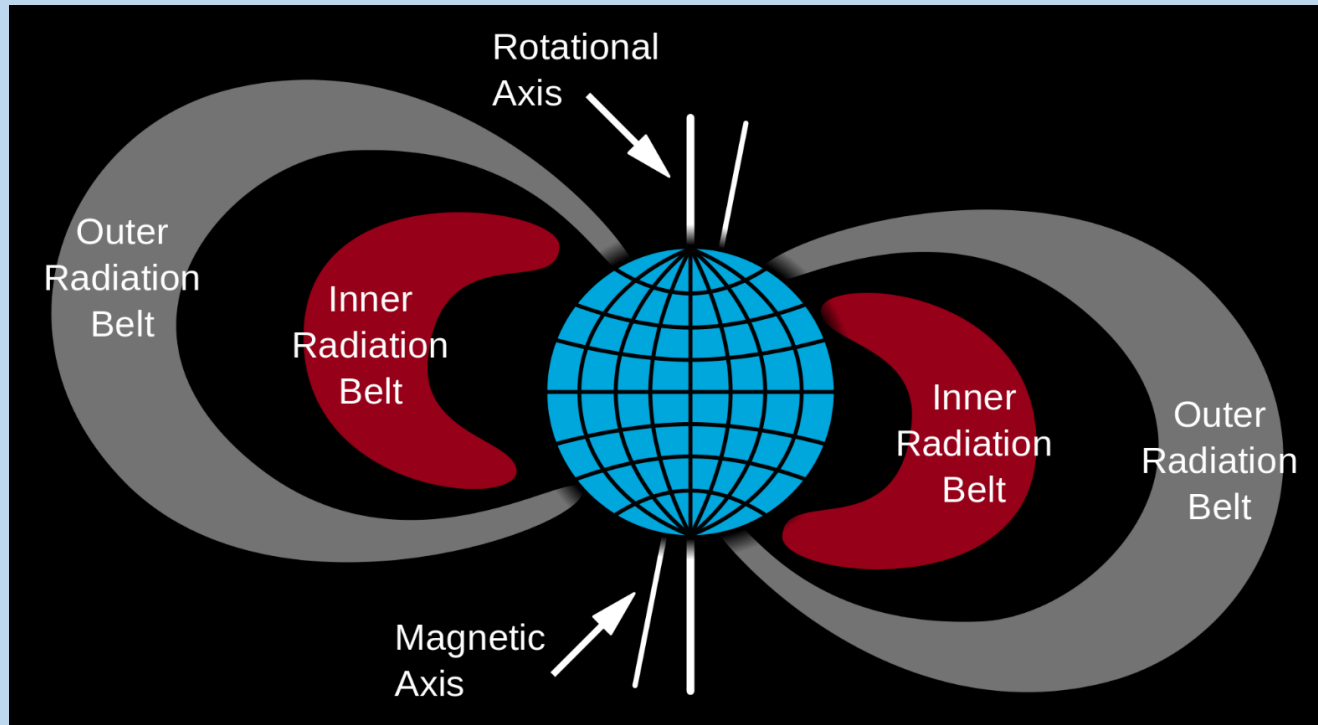
Discovery of the Van Allen belts in space

Initiation of atmospheric studies on carbon and ozone

New information on glacial dynamics

It was the genesis for the Antarctic Treaty

See reading on IGY on class website



Quiz

1. What were some of the early achievements by Richard Byrd in advancing the sciences in Antarctica?
2. What were Operations Highjump and Deepfreeze and their major accomplishments?
3. What was the purpose of the International Geophysical Year and why was 1957-1958 chosen for this effort?
4. Who were Lawrence Gould, Paul Siple, Lincoln Ellsworth, Lloyd Berkner and Sydney Chapman?
5. What is SCAR and why is it so successful? What were some of the scientific achievements during the IGY?