

Second International Polar Year Records, 1931-1936



**Carnegie Institution of Washington
Department of Terrestrial Magnetism Archives
Washington, DC**

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International Polar Year Records, 1931-1936

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Second International Polar Year Records, 1931-1936
DTM-2009-01

Introduction

Abstract: This collection documents the activities of Department of Terrestrial Magnetism scientists and staff related to the scientific expeditions mounted in support of the Second International Polar Year of 1932-1933.

Extent: 7.5 linear feet (4 document cases, 2 2-foot banker's boxes, 2 flat storage boxes, and 1 oversize map folder).

Acquisition: The records have been in the possession of the Department of Terrestrial Magnetism (DTM) since their creation.

Access Restrictions: There are no access restrictions to this collection.

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Processing: Joseph Neumann processed this collection in 2008 and 2009.

Historical Note

The high costs, technical difficulties, and environmental challenges of mounting expeditions to the polar regions led to an early instance of international scientific cooperation and collaboration in the International Polar Year (IPY) of 1882-1883. In the late 1920s, a second, larger, and more ambitious Polar Year was planned to coincide with the 50th anniversary of the IPY. In addition to sharing expeditionary costs, equipment, and knowledge, the collaborative nature of the IPY allowed for a uniform approach to information collection: standardized data were measured on standardized instruments and recorded on standardized forms. This kind of standardization allowed for the collation of planet-wide data, a difficult task in the pre-satellite era.

Between 1931 and 1936 the Department of Terrestrial Magnetism participated actively in the planning, execution, and data analysis phases of the American IPY effort. During the IPY DTM operated two data collection stations in Alaska, at College-Fairbanks, under the auspices of the United States Coast and Geodetic Survey, and at Point Barrow, in collaboration with the United States Department of Agriculture's Weather Bureau.

The College-Fairbanks station executed a "comprehensive" recording program during the IPY, "including magnetic-variation and absolute measurements, earth-current records, detailed visual and photographic auroral observations, measurements of variations in magnetic vertical-intensity

by the Mitchell loop-method, atmospheric potential-gradient, air-conductivity, ionic content, Aitken nuclei-counts, and radio measurements on the height of the ionized regions of the upper atmosphere.”¹ In cooperation with the United States Weather Bureau, the Naval Research Laboratory, and the United States Army Signal Corps, the College-Fairbanks station also carried out an expanded program of meteorological observations during the IPY.

The second polar station operated by DTM was at Point Barrow, on the northern coast of Alaska. Due to its remote location and the harsh weather conditions, department staff undertook a more limited range of observations, gathering magnetic, auroral, and meteorological data. The Point Barrow station was run by DTM along with the Weather Bureau and the IPY Commission.

Scope and Content

The Second International Polar Year Records contains cahiers (log books) and binders of magnetic, auroral, and meteorological data collected by DTM staff members in Alaska; magnetograph “traces” (continuous recordings of data, printed on photographic bromide paper), also recorded in Alaska; notes, correspondence, and memoranda related to IPY activities and administration; and copies, on paper and/or on microfilm, of auroral observations from the United States Weather Bureau, as well as magnetic and earth-current data gathered during the IPY from stations across the globe. The global magnetic and earth current IPY data were deposited with DTM at the direction of the International Polar Year Commission in 1933. The originals were placed in the IPY Central Bureau’s archives in Copenhagen, Denmark.² In addition, magnetic data collected by the American Telephone and Telegraph Company at sites in Wyanet, Illinois; Houlton, Maine, and New York City are included.

The materials in this collection were created or collected before, during, and after the Second International Polar Year (1932-1933), between 1931 and 1936.

Arrangement

This collection is arranged into 3 series.

- Series 1: College-Fairbanks IPY Station Records and Data, 1932-1934
 - Subseries A: Atmospheric Electricity Records and Data, 1932-1933
 - Subseries B: Earth-Current Records and Data, 1932-1934
 - Subseries C: Auroral and Meteorological Records and Data, 1932-1933
 - Subseries D: Instrument Testing Records, 1932
 - Subseries E: Magnetic Records and Data, 1932-1933
 - Subseries F: Maps, Blueprints, and Diagrams, 1932
- Series 2: Point Barrow IPY Station Records and Data, 1932-1936

¹ Fleming, John, “Department of Terrestrial Magnetism”, *Carnegie Institution of Washington Year Book No. 32* (Washington, D.C.: Carnegie Institution of Washington, 1933) 237-238.

² Laursen, V, “Geomagnetic Observations During the Second International Polar Year 1932-1933”, *Annals of the International Geophysical Year*, vol. 1 (London: Pergamon Press, 1959) 275.

Subseries A: Magnetic Records and Data, 1932-1933
Subseries B: Correspondence, Notes, and Reductions, 1932-1936
Series 3: Global IPY Data, 1932-1936
Subseries A: Weather Bureau Auroral and Meteorological Data, 1932-1933
Subseries B: Global Magnetic and Earth Current Registries, 1932-1936
Subseries C: AT&T Earth Potential Values, 1932-1935

Series Descriptions

Series 1: College-Fairbanks IPY Station Records and Data, 1932-1934

This series consists of data collected by DTM staff members at the main station in College, Alaska, and at satellite stations during the IPY, as well as other records related to the operation of the station. It is divided into 6 subseries.

Subseries A, “Atmospheric Electricity Records and Data”, contains recorded measurements of positive and negative conductivity, potential gradient, ion content, and air potentials. These data are recorded in cahiers (log books bound with cloth ribbon), binders, and on instrument traces (continuous recordings of data printed on photographic bromide paper).

Subseries B, “Earth-Current Records and Data”, contains recorded earth-current data (measurements of electromagnetic transmission through the ground). These data are recorded in cahiers (log books bound with cloth ribbon), binders, and on instrument traces (continuous recordings of data printed on photographic bromide paper).

Subseries C, “Auroral and Meteorological Records and Data”, contains auroral observations and meteorological data about weather conditions, cloud formation, temperature and relative humidity at the College-Fairbanks station. These data are recorded in cahiers and binders.

Subseries D, “Instrument Testing Records”, contains data collected in Washington DC, prior to the IPY, during testing of the instruments to be used in the College-Fairbanks Station. The test-run data collected at Washington DC in Subseries D are instrument traces recording positive and negative conductivity.

Subseries E, “Magnetic Records and Data”, contains atmospheric magnetic data. These data are recorded in cahiers and on two rolls of rapid-run magnetogram paper.

Subseries F, “Maps, Blueprints, and Diagrams”, contains maps, construction blueprints, and wiring diagrams for the structures erected for the IPY in College, and for instruments used.

Series 2: Point Barrow IPY Station Records and Data, 1932-1936

The Point Barrow station, due to its remote location on the Arctic Ocean, pursued a less ambitious program of data collection. Magnetic data were collected and meteorological and auroral observations were recorded. Series 2 is divided into 2 subseries. The location of the original copies of the meteorological and auroral data records is unknown; however, summaries of the data collected at Point Barrow may be found in Series 3, Subseries A.

Subseries A, “Magnetic Records and Data”, contains magnetic data cahiers, binders, and magnetogram instrument traces.

Subseries B, “Correspondence, Notes, and Reductions”, contains a small quantity of correspondence and other material created by C. J. McGregor, who ran the station for DTM during the expeditionary period. Included in this subseries are reductions and summary data tables created by Mr. McGregor after the conclusion of the IPY.

Series 3: Global IPY Data, 1932-1936

This series contains data collected by other nations and organizations at stations around the globe. It is divided into 3 subseries.

Subseries A, “Weather Bureau Auroral and Meteorological Data” contains Photostats of auroral and meteorological data obtained by the U.S. Department of Agriculture’s Weather Bureau from stations across the United States. These Weather Bureau Stations include Point Barrow, Nome, and Juneau, Alaska; Spokane, Washington; Pembina and Ellendale, North Dakota; Cleveland and Columbus, Ohio; Richmond, Virginia; Havre, Montana; Albany, New York; Burlington, Vermont; Sault Ste. Marie, Michigan; and Sheridan, Wyoming. A separate set of auroral observations made at Houlton, Maine by AT&T engineer Emerson T. Willes and submitted to the Weather Bureau is also included in this subseries.

Subseries B, “Global Magnetic and Earth Current Registries”, contains magnetic and earth-current registrations from the 90 global stations which collected data during the IPY. These magnetic and earth-current data are on several hundred rolls of microfilm; photographic copies of some of the data are also present. The microfilm rolls are in 8 drawers in the DTM Archives; the photographic copies are in folders. Both sets are arranged alphabetically by station name.

Subseries C, “AT&T Earth Potential Values, 1932-1935” contains a single binder of hourly mean earth potential values collected by AT&T engineers at sites in Wyanet, Illinois; Houlton, Maine; and New York City, as part of that company’s participation in the IPY program.³

Folder Listing

Folder Title	Box	Folder
Series 1: College-Fairbanks IPY Station Records and Data, 1932-1934		
Subseries A: Atmospheric Electricity Records and Data, 1932-1933		
Air Conductivity Cahier, November 1932-March 1933	1	1
Air Conductivity Cahier, April 1933-July 1933		2
Air Potentials by Benndorf Recorder Cahier, October 1932-September 1933		3
Atmospheric Electricity Tabulations and Graphs Binder, October 1932 September 1933	3a	1

³ See Fleming, John, “Department of Terrestrial Magnetism”, *Carnegie Institution of Washington Year Book No. 31* (Washington, D.C.: Carnegie Institution of Washington, 1932) 234, for a discussion of AT&T’s collaboration with DTM during the IPY.

Folder Title	Box	Folder
Atmospheric Electricity Studies Binder, 1932-1933		2
Ionic-Content Cahier, November 1932-September 1933	1	4
Negative Conductivity Calibration Observation Sheets and Daily Journals, September 1932-October 1932		5
Negative Conductivity Cahier, September 1932-September 1933		6
Negative Conductivity Traces, September 1932-February 1933	4	1
Negative Conductivity Traces, March 1933-June 1933		2
Negative Conductivity Traces, July 1933-September 1933	4	3
Positive Conductivity Calibration Observation Sheets and Daily Journals, September 1932-October 1932	1	7
Positive Conductivity Cahier, September 1932-September 1933	1	8
Positive Conductivity Traces, September 1932-February 1933	4	4
Positive Conductivity Traces, March 1933-September 1933		5
Potential Gradient—Benndorf Recorder Cahier, September 1932-September 1933	2	1
Potential Gradient—Benndorf Recorder Cahier, August 1933		2
Potential Gradient—Gunther and Tegetmeyer Recorder no. 6055 (Simpson Stretched Wire Method) Cahier, September 1932-November 1932		3
Potential Gradient—Gunther and Tegetmeyer Recorder no. 6055 Traces, March 1933-September 1933	3b	1
Potential Gradient Hourly Scalings and Reduction Cahier, April 1933-September 1933	2	4
Potential Gradient Records from Standardizing Station Cahier, September 1932-September 1933		5
Potential Gradient Summary Sheet Cahier, October 1932-March 1933		6
Potential Gradient Traces, September 1932-December 1932	5	1
Potential Gradient Traces, January 1933-April 1933	5	2
Potential Gradient Traces, April 1933-June 1933		3
Potential Gradient Traces, June 1933-September 1933		4
Potential Gradient Traces (Field Station), September 1932-December 1932		5
Potential Gradient Traces (Field Station), January 1933-March 1933		6
Subseries B: Earth-Current Records and Data, 1932-1934		
Earth-Current Cahier No. 1, September 1932-March 1934	2	9
Earth-Current Binder, October 1932-March 1934	3b	2
Earth-Current Traces, September 1932-December 1932	5	7
Earth-Current Traces, January 1933-March 1933		8
Earth-Current Traces, April 1933-June 1933		9
Earth-Current Traces, July 1933-September 1933		10
Earth-Current Traces, October 1933-December 1933		11
Earth-Current Traces, January 1934-April 1934		12
Subseries C: Auroral and Meteorological Records and Data, 1932-1933		
Aurora Binder, October 1932-September 1933	3a	3
Dust Count Observations, March 1933-August 1933	2	10

Folder Title	Box	Folder
Meteorological Observations Journal, November 1932-May 1933		11
Meteorological Observations: Recorder Corrections, October 1932-September 1933	2	12
Meteorological Observations: Recorder Corrections (Green Bros. Thermometer No. 28434/Thermograph No. 2189), October 1932-August 1933		13
Meteorological Observations: Thermograph No. 2189 Weekly Recorder Cahier, October 1932-September 1933		14
Meteorological Observations: Hygrothermograph Weekly Recorder Cahier, October 1932-September 1933		15
Subseries D: Instrument Testing Records, 1932		
Negative Conductivity Traces, CA #9, College Experiment Hut, Washington, DC, March 23-April 26, 1932	6	1
Negative Conductivity Traces, CA #10, College Experiment Hut, Washington, DC, April 26-May 31, 1932		2
Negative Conductivity Traces, CA #10, College Experiment Hut, Washington, DC, June 1-June 30, 1932		3
Positive Conductivity Traces, CA #10, College Experiment Hut, Washington, DC, March 25-April 26, 1932		4
Positive Conductivity Traces, CA #9, College Experiment Hut, Washington, DC, April 26, 1932-May 31, 1932		5
Positive Conductivity Traces, CA #9, College Experiment Hut, Washington, DC, June 1-June 30, 1932		6
Subseries E: Magnetic Records and Data, 1932-1933		
Air Magnetic Vertical Intensity by Mitchell Loop Method Cahier, October 1932-July 1933	1	9
Air Magnetic Vertical Intensity Inductometer Cahier, October 1932-September 1933		10
Rapid-Run Magnetic Records, April 1933	2	7
Rapid-Run Magnetic Records, May 1933		8
Letters—Magnetic, 1933		9
Subseries F: Maps, Blueprints, and Diagrams, 1932		
College, Alaska IPY Station Maps, Blueprints, and Diagrams, 1932		MD4
Series 2: Point Barrow IPY Station Records and Data, 1932-1936		
Subseries A: Magnetic Records and Data, 1932-1933		
Diurnal Variation, Point Barrow Binder, 1932-1933	7	1
Magnetic Data Binder no. 1, 1932-1933		2
Magnetic Data Binder, no. 2, 1932-1933		3
Magnetogram Traces, October 1932		4
Magnetogram Traces, November 1932		5
Magnetogram Traces, December 1932		6

Folder Title	Box	Folder
Magnetogram Traces, January 1933		7
Magnetogram Traces, February 1933		8
Magnetogram Traces, March 1933	7	9
Magnetogram Traces, April 1933		10
Magnetogram Traces, May 1933		11
Magnetogram Traces, June 1933		12
Magnetogram Traces, July 1933		13
Magnetogram Traces, August 1933		14
Observer's Cahier no. 1, Azimuth and Time, 1932-1933	8	1
Observer's Cahier no. 2, Declination Absolutes, 1932-1933		2
Observer's Cahier no. 3, Inclination Absolutes, 1932-1933		3
Observer's Cahier no. 4, Total Intensity Absolutes, 1932-1933		4
Observer's Cahier no. 5, F, H, and Z Computations, 1932-1933		5
Observer's Cahier no. 6, Magnetograph Record, 1932-1933		6
Observer's Cahier no. 7, D Scale Value, 1932-1933		7
Observer's Cahier no. 8, H Scale Value, 1932-1933		8
Observer's Cahier no. 9, Z Scale Value, 1932-1933		9
Observer's Cahier no. 10, Scale Value Computations and Discussions, 1932-1933		10
Observer's Cahier no. 11, Inclination Corrections and Discussion, 1932-1933		11
Observer's Cahier no. 12, Magnetic Activity, 1932-1933		12
Subseries B: Correspondence, Notes, and Reductions, 1932-1936		
Observer's Cahier no. 13, Correspondence, 1932-1933	8	13
Correspondence, Notes, and Reductions, 1932-1936		14
Series 3: Global IPY Data, 1932-1936		
Subseries A: Weather Bureau Auroral and Meteorological Data, 1932-1933		
Auroral and Meteorological Data, 1932-1933, copy 1 [1 of 3]	8	15
Auroral and Meteorological Data, 1932-1933, copy 1 [2 of 3]		16
Auroral and Meteorological Data, 1932-1933, copy 1 [3 of 3]		17
Auroral and Meteorological Data, 1932-1933, copy 2 [1 of 3]		18
Auroral and Meteorological Data, 1932-1933, copy 2 [2 of 3]		19
Auroral and Meteorological Data, 1932-1933, copy 2 [3 of 3]		20
Subseries B: Global Magnetic and Earth Current Registries, 1932-1936		
Abinger, UK, 1932-1933 (prints and microfilm)	8	21
Agincourt, France, 1932-1933 (prints and microfilm)		22
Angmagssalik, Greenland, 1932-1934 (microfilm only)		
Antipolo, Philippines, 1932-1933 (prints and microfilm)		23
Apia, Samoa, 1932-1933 (prints and microfilm)		24
Bear Island (Bjørnøya), Norway, 1932-1933 (prints and microfilm)		25
Cape Town, South Africa, 1932-1934 (prints and microfilm)		26
College-Fairbanks, USA, 1932-1934 (prints and microfilm)		27
Dickson Island, USSR, 1932-1933 (prints and microfilm)		28

Folder Title	Box	Folder
Dombass, Norway, 1932-1933 (prints and microfilm)		29
Ebro-Tortosa, Spain, 1932-1933 (prints and microfilm)		30
Elisabethville (Lubumbashi), Belgian Congo, 1932-1933 (prints and microfilm)	8	31
Eskdalemuir, UK, 1932-1933 (prints and microfilm)		32
Fernando Po (Bioko), Spanish Guinea, 1932-1933 (prints and microfilm)		33
Fort Rae, Canada, 1932-1933 (prints and microfilm)		34
Godhavn (Qegertarsuag), Greenland, 1932-1934 (prints and microfilm)		35
Helwan, Egypt, 1932-1933 (microfilm only)		
Jakoutsk (Yakutsk), USSR, 1933 (microfilm only)		
Jan Mayen, Norway, 1932-1933 (prints and microfilm)		36
Julianeab (Qaqortoq), Greenland, 1932-1934 (prints and microfilm)		37
Kajaani, Finland, 1932-1935 (microfilm only)		
Kandalaksha, USSR, 1932-1933 (prints and microfilm)		38
Lerwick, UK, 1932-1933 (prints and microfilm)		39
Lövö, Sweden, 1932-1933 (prints and microfilm)		40
Lycksele, Sweden, 1932-1934 (microfilm only)		
Matochkin Shar, USSR, 1932-1933 (prints and microfilm)		41
Meanook, Canada, 1932-1933 (prints and microfilm)		42
Mogadiscio (Mogadishu), Italian Somaliland, 1932-1933 (prints and microfilm)		43
Nantes, France, 1932-1933 (microfilm only)		
Orcades du Sud (South Orkney Islands), 1932-1933 (microfilm only)		
Pays François Joseph (Franz Josef Land), USSR, 1932-1933 (prints and microfilm)		44
Petsamö, Finland (now Pechengsky, Russia), 1932-1933 (prints and microfilm)		45
Reykjavik, Iceland, 1932-1933 (microfilm only)		
Rude Skov (Copenhagen), Denmark, 1932-1934 (prints and microfilm)		46
San Miguel (Azores), Portugal, 1932-1933 (prints and microfilm)		47
Scoresbysund (Ittoqqortoormiit), Greenland, 1932-1933 (prints and microfilm)		48
Sitka, USA, 1932-1933 (prints and microfilm)		49
Slutsk, USSR, 1932-1936 (prints and microfilm)		50
Sodankylä, Finland, 1932-1936 (prints and microfilm)		51
Sveagruvan (Svalbard), Norway, 1932-1933 (prints and microfilm)		52
Tananarive (Antananarivo) Madagascar, 1932-1934 (microfilm only)		
Teoloyucan, Mexico, 1932-1933 (microfilm only)		
Thule, Greenland, 1932-1933 (prints and microfilm)		53
Toolangi, Australia, 1932-1933 (prints and microfilm)		54
Tromsö, Norway, 1932-1933 (prints and microfilm)		55
Unidentified Location, 1932-1933 (prints and microfilm)		56
Val-Joyeux, France, 1932-1933 (prints and microfilm)		57
Vuotso, Finland, 1935-1936 (microfilm only)		

Folder Title**Box Folder****Subseries C: AT&T Earth Potential Values, 1932-1935**
Hourly Mean Values of Earth Potential binder, 1932-1935

7 15

Subject Terms*Topics:*

Arctic regions--Research
Atmospheric electricity
Auroras
Earth currents
Geomagnetism--Observations
Geophysics
Magnetic instruments
Meteorology--Alaska--Observations
Scientific expeditions

Corporate Names:

American Telephone and Telegraph Company
Carnegie Institution of Washington. Dept. of Terrestrial Magnetism
College Observatory (U.S.)
International Polar Year, 2nd, 1932-1933
U.S. Coast and Geodetic Survey
United States. Weather Bureau

Forms:

Calculations
Correspondence
Logs (records)
Photographs
Plans (drawings)
Instrument traces

Bibliography

Fleming, John, "Department of Terrestrial Magnetism", *Carnegie Institution of Washington Year Book No. 31* (Washington, D.C.: Carnegie Institution of Washington, 1932) 234

— "Department of Terrestrial Magnetism", *Carnegie Institution of Washington Year Book No. 32* (Washington, D.C.: Carnegie Institution of Washington, 1933) 237-238.

The History of the International Polar Years and the Development of the International Geophysical Year, Annals of the International Geophysical Year, Vol. 1 (London: Pergamon, 1959)

Related Collections

Department of Terrestrial Magnetism General Files, Series 1, Subseries 1: folder “Polar Year, 1931-1932”. Department of Terrestrial Magnetism, Carnegie Institution of Washington.

Department of Terrestrial Magnetism Photograph Collection [partially processed]. Department of Terrestrial Magnetism, Carnegie Institution of Washington. (Photographs documenting DTM’s activities during the Second IPY are contained in “Views” and “Instruments” albums for 1932-1933.)

Earth-Current Records [unprocessed]. Department of Terrestrial Magnetism, Carnegie Institution of Washington. (Contains earth-current cahiers and traces and earth-resistivity cahiers for Huancayo, Watheroo, and Tucson observatories, 1932-1933.)

Instrument and Equipment Records. Department of Terrestrial Magnetism, Carnegie Institution of Washington. (See folder headings containing “Polar Year” or “I.P.Y.”)

Ionosphere Section Records. Department of Terrestrial Magnetism, Carnegie Institution of Washington. (Contains ionospheric and auroral data for College, Alaska 1932-1933 and later.)