

## **Land Magnetic Survey Records, 1905-1945**



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

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# Land Magnetic Survey Records, 1905-1945

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**DTM-2005-09**

**Introduction**

*Abstract:* This collection documents the geomagnetic survey work that defined the initial research program of the Carnegie Institution of Washington's Department of Terrestrial Magnetism (DTM). Field observers' notebooks, maps, charts, and other compilations of geophysical measurements are found in the collection.

*Extent:* 75 linear feet; 34 records center boxes, 10 map folders.

*Acquisition:* The records have been in the possession of DTM since their creation.

*Access Restrictions:* There are no access restrictions.

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*Preferred Citation:* Land Magnetic Survey Records, 1905-1945, Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

*Processing:* This collection was processed by Department of Terrestrial Magnetism archives intern Kevin Stone Fries, librarian Shaun Hardy, and archivist Ann Mulfort.

**Historical Note**

The field observers' notebooks, called here cahiers, of DTM's Land Magnetic Survey and the large related collection of photographic material document a tremendous undertaking consisting of more than two hundred distinct expeditions.

“Between 1904 and World War II a group of researchers ranged the world over in an effort to understand the Earth's magnetism. They called themselves ‘magneticians’ and they worked for the Department of Terrestrial Magnetism at the Carnegie Institution of Washington. Directed by Louis Bauer and John Fleming, these investigators followed carefully selected routes through Africa, Asia, South America, and other remote regions. They carried with them a heavy complement of instruments, camp gear, and evening wear, for those times when they reached outposts of European civilization,” writes West Virginia University history professor Gregory Good in *Geophysical Travelers: the Magneticians of the Carnegie Institution of Washington* (unpublished).

Contained in the cahiers are thousands of observations of magnetic declination, inclination, and intensity, as well as the results of intercomparisons and various data reductions. Data collected on the survey, together with detailed descriptions of instrumentation and narrative accounts of the expeditions, were published in five volumes of the series *Researches of the Department of Terrestrial Magnetism* between 1912 and 1947. In addition, DTM-collected data were used by

government mapping agencies in the preparation of magnetic variation charts for the use of scientists and the public.

### **Scope and Content**

Most of the collection consists of cahiers used to record data about the magnetic field of the earth in specific places and its changes over time. Also included here are maps depicting the routes taken by some of the survey expeditions and magnetic variation charts based on the data in the cahiers.

### **Arrangement**

The Land Magnetic Survey Records are arranged in four series.

- Series 1: Land Magnetic Observations, 1905-1920s
- Series 2: Field Records, 1920s-1944
- Series 3: Summaries by Region, ca. 1905-194[5?]
- Series 4: Maps and Charts, ca. 1905-1945

#### **Series 1: Land Magnetic Observations, 1905-1920s**

The cahiers of this series hold geomagnetic field observations by DTM personnel from 1905 through the late 1920s in Asia, Australia, North and South America, as well as Pacific and Atlantic Island locations. Each cahier records details (including a sketch map) of the particular location, or “station,” where readings were taken; the geomagnetic elements are recorded and reduced on standardized forms. The cahiers are arranged by the name of the observer, and then geographically and chronologically under each.

An appendix to this finding aid includes copies of the original tabs separating groups of cahiers by observer, geographic regions, date, and cahier number. The tabs list an observer’s name, and in some cases include date, region, and cahier numbers information on them. No definitive check was done to verify the degree of accuracy or correspondence between the tabs and the cahiers that followed. While rehousing these records insertion notes were noticed that indicate some cahiers could be found “in Mr. Fleming’s files.” A run of cahiers recording the work of Parkinson was reinserted in this series from Mr. Fleming’s files.

#### **Series 2: Field Records, 1920s-1944**

This series also consists of magnetic observation cahiers, but predominantly of a later time period than the first series, and may represent “repeat observations” (i.e., follow-up measurements made at previously-occupied stations). The cahiers of each observer are tied together in bundles. Many of the bundles have a “Cahier Revision Record” form tied at the front. Since no original order was apparent, it was decided to alphabetize the cahiers according to the observer’s name during processing, in keeping with the arrangement of Series 1. Also included here are a small number of U.S. Coast and Geodetic Survey and U.S. Navy Hydrographic Office records with similar data.

#### **Series 3: Summaries by Region, ca. 1905-194[5?]**

The third series consists of “Summary Sheets” which record the magnetic declination, inclination, and horizontal intensity for each station on a particular date. The summaries appear to be grouped in broad geographical categories and are arranged by “book number” – numbered

slips of paper found clipped to the sheets or their folders. It remains unclear which “book” is being referenced. Nonetheless, in the interest of preserving this original order, folders were inserted at the point where these “book” markers existed. Data on these summary cards span the years 1792 to 1945, but the date of preparation of the cards can only be estimated. Most of the records contain data from DTM’s own survey work, though the results of some other surveys are also represented. These geographic summaries were likely used to prepare the published volumes of survey results.

**Series 4: Maps and Charts, ca. 1905-1945**

The fourth series contains maps showing the routes taken by DTM survey parties and, in some cases, used by them in the field. It also contains magnetic variation charts published by government mapping agencies based, in part, on data furnished by DTM. A visual synthesis of the cahier data, the charts here show the CIW’s collaboration with the U.S. federal government in publishing scientific data for a wider research community. Both published and manuscript maps are included.

## Folder Listing

	<u>Box</u>	<u>Folder</u>
<b>Series 1: Land Magnetic Observations, 1905-1920s</b>		
Ault, J. P.	1	
Bauer, L. A.		
Bauer, W. C.		
Beattie, J. C. [part 1 of 2]		
Beattie, J. C. [part 2 of 2]	2	
Berky, D. W.		
Bowen, E. H.	3	
Brown, F. [part 1 of 3]		
Brown, F. [part 2 of 3]	4	
Brown, F. [part 3 of 3]	5	
Burbank, J. E.		
Coleman, D. G.	6	
Colin, P.		
Cox, F. W.		
Courts, J.		
Craft, C. C.		
Daves, L. C.	7	
Dike, P. H.		
Dodwell, G. F.		
Edmonds, H. M. W.		
Edmunds, C. K. [part 1 of 2]		
Edmunds, C. K. [part 2 of 2]	8	
Fisk, H. W. [part 1 of 2]		
Fisk, H. W. [part 2 of 2]	9	
Fleming, J. A.		
Fuson, C. G.		
Galt, R. H.		
Goddard, J. W.		
Goldsmith, J. B.		
Green, J. W. [part 1 of 2]		

	<u>Box</u>	<u>Folder</u>
Green, J. W. [part 2 of 2] Grumann, H. R. Heimbrod, G. Hosmer, G. L. Howard, J. T. Howell, G. T. Johnston, H. F. [part 1 of 2]	10	
Johnston, H. F. [part 2 of 2] Kampe, A. H. Kennedy, A. L. Kidson, E. [part 1 of 2]	11	
Kidson, E. [part 2 of 2] Latimer, S. E. Lindsay, J. [part 1 of 2]	12	
Lindsay, J. [part 2 of 2] Love, W. A. MacKenzie, D. Morrison, J. T. [part 1 of 2]	13	
Morrison, J. T. [part 2 of 2] Mueller, E. Parkinson, W. C. [part 1 of 2]	14	
Parkinson, W.C. [part 2 of 2] Pearson, J. C. Peters, W. J.	15	
Power, A. D. Sanders, J. E.	16	
Sawyer, H. E. [part 1 of 2]	17	
Sawyer, H. E. [part 2 of 2] Schmitt, H. R. Shearer, J.	18	
Sligh, W. H.	19	
Sowers, D. C. Sterling, A.	20	

	<u>Box</u>	<u>Folder</u>
Stewart, C. C. Swett, P. N. Tanguy, L. L. Wallis, W. F. [part 1 of 2]	21	
Wallis, W. F. [part 2 of 2] Waterford, L. M. Webb, E. N. Wise, D. M.	22	
<b>Series 2: Field Records, 1920s-1944</b>		
Brown, F. (and C. T. Kwei) Bullard, E. C. Dahl, O. Dawson, A. L. (and A. E. Markey). Fisk, H. W. (and J. W. Green, A. H. Kampe) Gebhardt, R. E. Green, R. W. Grindley, E. N. [part 1 of 2]	23	
Grindley, E. N. [part 2 of 2] Hanson, E. Kwei, C. T. Latimer, S. E. Ledig, P. G. Mansfield, R. H. [part 1 of 2]	24	
Mansfield, R. H. [part 2 of 2] Markey, A. E. McNish, A. G. Murrell, J. T. (and O. Wendenburg) Parkinson, W. C. Richardson, L. A.	25	
Richardson, L. A. (and N. G. Chamberlin, W. D. Parkinson) Sanders, J. E. Soule, F. M. Stout, R. F. Walter, A. Woelfel, J. C. U.S. Navy Hydrographic Office – various island stations U.S. Coast & Geodetic Survey – stations in US and West Indies	26	

	<u>Box</u>	<u>Folder</u>
<b>Series 3: Summaries by Region, ca. 1905-1945</b>		
Africa (1-19)	27	
Africa (20-28)	28	
Australasia (29-38)		
Australasia (39-44)	29	
Europe (45-50)		
Islands, Atlantic (51)		
Islands, Atlantic, Indian, Pacific Oceans (52-63)	30	
Asia (64-78)	31	
Asia (79-80)	32	
Arctic Sea (81-85)		
Siberia, Asia (85)		
Maud Expedition (86-87)		
Antarctic Regions (88)		
North America (89-111)		
North America (112)	33	
South America (113-125)		
South America (126-127)	34	
Unnumbered: China		
Unnumbered: North America		
Unnumbered: South America		
	<u>Map Drawer</u>	<u>Folder</u>
<b>Series 4: Maps and Charts, ca. 1900-1945</b>		
Col. Fitzgerald, Schwabner Expedition 1939; Erich Norman Webb, Australasian-Antarctic Expedition, 1911-1914	11	1
Z-vertical intensity polar maps, 1945		2
X,Y,F world maps, 1945		3
Geomagnetic charts, 1945		4
Geomagnetic charts, 1935		5
F isporic charts 1912, 1922, 1932, 1942		6
DTM Isopor Chart for Magnetic Declination in Minutes per Year (H.W. Fisk) 1930	14	3
DTM World Magnetic and Electric Survey Map, 1905-1938		3
DTM magnetic survey maps: The Americas, ca. 1910s-1920s		6
DTM magnetic survey maps: Australasia, ca. 1910s-1920s, 1938		7
DTM magnetic survey maps: Africa, ca. 1900s -1930s		8

## Subject Terms

Topics:           Geomagnetism  
                  Geomagnetism--Observations  
                  Geophysics  
                  Scientific expeditions

Corporate Names:   Carnegie Institution of Washington. Dept. of Terrestrial Magnetism.

Forms:            Notebooks  
                  Logs (records)  
                  Calculations

## Bibliography

*Researches of the Department of Terrestrial Magnetism, Vol. I: Land Magnetic Observations, 1905-1910.* Carnegie Institution of Washington Publication No. 175 (Vol. I). Washington, D.C., 1912.

*Researches of the Department of Terrestrial Magnetism, Vol. II: Land Magnetic Observations, 1911-1913.* Carnegie Institution of Washington Publication No. 175 (Vol. II). Washington, D.C., 1915.

*Researches of the Department of Terrestrial Magnetism, Vol. IV: Land Magnetic Observations, 1914-1920.* Carnegie Institution of Washington Publication No. 175 (Vol. IV). Washington, D.C., 1921.

*Researches of the Department of Terrestrial Magnetism, Vol. VI: Land Magnetic and Electric Observations, 1918-1926.* Carnegie Institution of Washington Publication No. 175 (Vol. VI). Washington, D.C., 1927.

*Researches of the Department of Terrestrial Magnetism, Vol. VIII: Land and Ocean Magnetic Observations, 1927-1944.* Carnegie Institution of Washington Publication No. 175 (Vol. VIII). Washington, D.C., 1947.

Good, Gregory, Vision of a global physics: the Carnegie Institution of Washington and the first World Magnetic Survey, in *The Earth, the Heavens and the Carnegie Institution of Washington*, History of Geophysics Volume 5, pp. 29-36. American Geophysical Union, Washington, D.C., 1994.

Good, Gregory, *Geophysical Travelers: the Magneticians of the Carnegie Institution of Washington*. 2004, in press.

**Related Collections**

Department of Terrestrial Magnetism General Files, 1904-Present. Department of Terrestrial Magnetism, Carnegie Institution of Washington.

Department of Terrestrial Magnetism Photograph Collection [unprocessed]. Department of Terrestrial Magnetism, Carnegie Institution of Washington.

Instrument and Equipment Records, 1892-1970. Department of Terrestrial Magnetism, Carnegie Institution of Washington.

Robert Hubbard Mansfield Papers, 1932-1988. Department of Terrestrial Magnetism, Carnegie Institution of Washington.