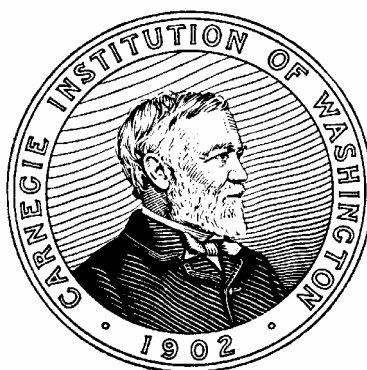


**Department of Terrestrial Magnetism World War II-Era Records,
1941-1952, n.d.**



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

Finding aid written by:
Joseph Neumann
November 2008

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Department of Terrestrial Magnetism World War II-Era Records, 1941-1952
DTM-2008-02

Introduction

Abstract: This collection documents the research activities and administrative organization of the Department of Terrestrial Magnetism during World War II.

Extent: Two records center cartons, two photo album boxes, and one document box.

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

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

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Processing: Processing completed by Joseph Neumann in 2008.

Historical Note

The Roosevelt Administration, building upon lessons learned during World War I, initiated a system of government sponsored and directed war-related research and development when it constituted the National Defense Research Committee (NDRC) in 1940. While the NDRC was soon superseded by a larger, more comprehensive entity, the Office of Scientific Research and Development (OSRD), the NDRC continued to direct some scientific war work, including the activities undertaken at the Department of Terrestrial Magnetism. Dr. Vannevar Bush, president of the Carnegie Institution of Washington, was also director of the OSRD.

In addition to the OSRD and the NDRC, a sprawling scientific bureaucracy arose to direct and fund experimental research in wartime. While most of its work was done under the auspices of the OSRD/NDRC complex, the Department of Terrestrial Magnetism also contracted with the Navy Bureaus of Ordnance, Ships, Supplies and Accounts, and Aeronautics; the Navy Medical Center; the Department of the Navy Office of Research and Invention; the Army Engineer Board; the Army Signal Corps, and a number of other agencies and units of the federal government.

The Department of Terrestrial Magnetism conducted wide-ranging research into subjects including radio wave propagation in the ionosphere, magnetic mines and mine detection,

compass and navigation problems, and the development of the radio proximity fuse.¹ Considerable attention was also given to the development of the odograph, an automatic route-drawing instrument for tanks, ships, and aircraft; and the pedograph, a man-portable version of the odograph to be carried by individual soldiers. In a period when radar was a rudimentary technology not yet in widespread use, determining a tank or a plane's exact location was difficult. The device, accurate in direction of travel and scale, could be used to fix a location by comparing the route traveled to a map.

The odograph, which combined a compass, an integrator, and power-pack inside a two-foot high wooden box, underwent extensive testing by Department staff between 1941 and 1945 on a variety of tanks, halftracks, civilian cars, and boats at locations including Fort Belvoir, Virginia; Fort Knox, Kentucky; Camp Echo, Colorado; and the Aberdeen Proving Ground in Maryland, as well as at the Department's campus in Washington, DC.

Scope and Content

The *Department of Terrestrial Magnetism World War II-Era Records* collection contains laboratory notebooks, correspondence, employee identification cards, photo albums, and reports documenting the activities and administration of the Department in the years during, and immediately before and after, World War II.

Arrangement

This collection is arranged into three series.

- Series 1: Temporary Employee Records, 1941-1952, n.d.
 - Subseries 1: Employee Card Files, 1941-1952, n.d.
 - Subseries 2: Correspondence, 1941-1949
- Series 2: Odograph Research, 1941-1945
 - Subseries 1: Laboratory Notebooks, 1941-1945
 - Subseries 2: Photograph Albums, n.d.
 - Subseries 3: Reports, 1942-1945
- Series 3: Contract Reports, 1942-1946

Series Descriptions

Series 1: Temporary Employee Records, 1941-1952, n.d.

This series consists of records relating to some of the temporary employees hired to participate in or support the Department's war work in the 1940s. The heavy volume of work on government contracts required the employment of dozens of new typists, computers, guards, physicists, engineers, radio operators, and others.

¹ See *Section T "Proximity Fuze" Records, 1940-[1999]*, Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

Subseries One, *Employee Card Files*, consists of two note card files maintained by the Personnel Office. One card file contains identification photographs of each employee, along with a home address, and a work location. The other card file contains position, payroll, and dates of employment information. The card files are arranged alphabetically.

Subseries Two, *Correspondence*, contains correspondence between the Personnel Office and these temporary employees concerning the inception or termination of employment, changes in working hours, pay increases, leave requests and approvals, and other routine personnel matters. In the absence of other detailed information about the administrative structure of the Department during World War II, this body of correspondence has been retained. However, it is somewhat fragmentary, having apparently been preserved unintentionally. The correspondence is arranged alphabetically by employee, but letters A through D are missing.

Series 2: Odograph Research, 1941-1945

This series consists of material documenting the construction, testing, and analysis of the odograph, an automatic route-drawing instrument for vehicles of all types. The Department's staff engaged in a long series of experiments, for OSRD/NDRC as well as the Army Engineer Board, on different configurations, power sources, and functions of the odograph.

Subseries One, *Laboratory Notebooks*, consists of 26 laboratory and field notebooks used by staff scientists and engineers to record data gathered during odograph testing. Six of these notebooks, arranged chronologically, are daily log books that record the locations and activities of DTM staff for the period between May 25, 1942 and August 31, 1945. The remaining 20 notebooks are arranged by title.

Subseries Two, *Photograph Albums*, consists of two albums of black and white photographs taken by Alvin McNish, a DTM staff scientist. These photographs depict the design, installation, testing, repair, and evaluation of odograph prototypes at various sites. The photographs are undated; some however are labeled or captioned with location or activity information.

Subseries Three, *Reports*, consists of printed reports submitted to the contracting authority, OSRD/NDRC, between 1942 and 1945 by Department staff to describe the activities of the Department on odograph-related contracts. The reports are arranged chronologically.

Series 3: Contract Reports, 1942-1946

This series consists of printed reports produced by Department staff to describe the progress or the completion of projects pursued under various contracts with federal entities. These reports concern, in the main, atmospheric research into the magnetic properties of the ionosphere, along with related topics in radio wave propagation and solar effects. The reports, originally marked "Confidential" and "Restricted", summarized work for contracts with the U.S. Navy, the U.S. Army Signal Corps, and the OSRD/NDRC complex. The folders are arranged by contracting agency.

Folder Listing

Folder Title	Box	Folder
Series 1: Temporary Employee Records, 1941-1952, n.d.		
Subseries 1: Employee Card Files, 1941-1952, n.d.		
Employee Photo Identification Cards, n.d.	1	FC-1
Former Personnel, 1941-1952, n.d.		FC-2
Subseries 2: Correspondence, 1941-1949		
Easley-Evans, 1941-1947	1	1
Falcone-Friedman, 1941-1949		2
Gammon-Gunn, 1941-1947		3
Haag-Hutchinson, 1941-1949		4
Ingles-Kuhn, 1941-1949		5
LaBrecque-Lytle, 1941-1947		6
Magoffin-Myers, 1941-1946		7
Nations-Quick, 1941-1947		8
Ramsay-Rozansky, 1941-1949		9
St. Clair-Sullivan, 1941-1947		10
Tatel-Voegeli, 1941-1947		11
Wagner-Zinke, 1941-1946		12
Series 2: Odograph Research, 1941-1945		
Subseries 1: Laboratory Notebooks, 1941-1945		
NDC-M Daily Record No. 1, May 25, 1942-December 9, 1942	2	1
NDC-M Daily Record No. 2, December 10, 1942-June 27, 1943		2
NDC-M Daily Record No. 3, June 28, 1943-January 6, 1944		3
NDC-M Daily Record No. 4, January 7, 1944-July 24, 1944		4
NDC-M Daily Record No. 5, July 25, 1944-February 8, 1945		5
NDC-M Daily Record No. 6, February 9, 1945-August 31, 1945		6
E-1, 1941-1943		7
E-2, 1943-1944		8
“Firing Device”, 1944		9
G-1 (Gradiometer), 1942-1943		10
M-1 (Magnetometer), 1944-1945		11
O-1 (Odograph—Speed Control), 1942		12
O-2 (Odograph), 1942-1943		13
O-3 (Odograph—Pilot Models), 1942		14
O-3a (Odograph), 1942		15
O-4 (Odograph), 1942-1943		16
O-5 (Odograph), 1942		17
O-6 (Odograph), 1943-1944		18
O-7 (Odograph), 1943-1944		19
O-8 (Odograph), 1944		20
O-9 (Odograph), 1944		21
S-1 (Marine Speedometer), 1943		22

Folder Title	Box	Folder
S-2 (Marine Speedometer), 1943	2	23
“Spinner”, 1945		24
Untitled Notebook, 1944		25
V-1 (Visitor’s Log), 1942-1943		26
Subseries 2: Photograph Albums, n.d.		
Album 1, n.d.	3	
Album 2, n.d.	4	
Subseries 3: Reports, 1942-1945		
Odograph Research Reports [Contract NDCrc-187], 1942-1943	5	1
Odograph Research Reports [Contract NDCrc-187], 1944-1945		2
Series 3: Contract Reports, 1942-1946		
OSRD/NRDC Contracts NDCrc-144, OEMsr-200, OEMsr-151, OEMsr-558, OEMsr-594, OEMsr-1151, 1942-1946	5	3
<ul style="list-style-type: none"> • <i>Report on College (Alaska) Observatory, March 1941 Through June 1942</i> [NDCrc-144 and OEMsr-200] • <i>Correlation of Solar and Geomagnetic Observations with Conditions of the Ionosphere</i> [OEMsr-594] • <i>Correlation of Direction-Finder Errors with Ionospheric Conditions, College, Alaska, April 16, 1943 to June 30, 1944</i> [OEMsr-1151] • <i>Portable Iron Detector</i> [OEMsr-151] • <i>Magnetic Firing-Device</i> [OEMsr-151] • <i>Magnetic Fields of Tanks and Other Vehicles</i> [OEMsr-151] • <i>Report on Magnetometers and Magnetic Gradiometers</i> [OEMsr-151] • <i>Final Report on Contract OEMsr-151 and Supplements</i> [OEMsr-151] 		
U.S. Army Signal Corps Contract W-1049-sc-805, 1946		4
<ul style="list-style-type: none"> • <i>Final Report</i> • <i>Development of Panoramic Ionospheric Recorder (appendix to final report)</i> 		

Folder Title	Box	Folder
U.S. Navy Contracts NOs-99705 and NOrd-392, 1942-1944	5	5
<ul style="list-style-type: none"> • <i>Survey of Short-Period Magnetic Fluctuations by Department of Terrestrial Magnetism, July 31, 1942</i> [NOs-99705 and NOrd-392] • <i>Survey of Short-Period Magnetic Fluctuations by Department of Terrestrial Magnetism, February 10, 1943</i> [NOs-99705 and NOrd-392] • <i>Study of Response of Variometers to Magnetic Fluctuations by Department of Terrestrial Magnetism</i> [NOrd-392] • <i>Survey of Daily, Monthly, and Yearly Ranges in Magnetic Fluctuations</i> [NOs-99705 and NOrd-392] • <i>Tentative Survey of Geographical Distribution of Short-Period Magnetic Fluctuations</i> [NOrd-392] • <i>Survey of Short-Period Magnetic Fluctuations, Cheltenham (Maryland) and College (Alaska)</i> [NOs-99705 and NOrd-392] • <i>Preliminary Study of Electromagnetic Induction-Effects in Sea-Water</i> [NOrd-392] • <i>The Magnetic Effects of Lightning-Discharges</i> [NOrd-392] 		
U.S. Navy Contracts NXs-11605, NXsr-33809, 1942-1946		6
<ul style="list-style-type: none"> • <i>Polar Radio Disturbances During Magnetic Bays</i> [NXs-11605] • <i>Measurement of Oblique-Incidence Propagation, Kensington Ionospheric Laboratory, January 1944</i> [NXsr-33809] • <i>Effects on the Ionosphere at Huancayo, Peru, of the Solar Eclipse, January 25, 1944</i> [NXSr-33809] • <i>The Application of Solar and Geomagnetic Data to Short-Term Forecasts of Ionospheric Conditions</i> [NXSr-33809] • <i>The Correlation of Magnetic Disturbances with Intense Emission-Regions of the Solar Corona</i> [NXSr-33809] • <i>Sporadic E-Region Ionization at Watheroo Magnetic Observatory, 1938-1944</i> [NXSr-33809] • <i>Observations of the Green (λ 5303) Coronal Line Made at the Fremont Pass Station of the Harvard College Observatory at Climax, Colorado, August 1942-July 1945</i> [NXSr-33809] • <i>Final Report on US Navy Contracts NXs-11605 and NXsr-33809</i> 		
Reports Lacking Contract Numbers, 1942-1945		7
<ul style="list-style-type: none"> • <i>Predictions of Maximum Usable Frequencies and Skip-Distances for Radio Wave-Propagation in Southern Hemisphere</i> • <i>Memorandum Report on Anti-Tank and Anti-Personnel Mines and Their Detection</i> • <i>Description of DTM Visually Recording Magnetograph and Directions for Operation</i> • <i>Instructions for Installation and Operation of Manual Multifrequency Ionospheric Recorder, DTM CIW Model 3</i> 		

Subject Terms

- Topics:* World War, 1939-1945
Magnetic instruments
Distance measuring instruments, Electronic
Odographs
Pedographs
Geomagnetism
Ionosphere
Radio wave propagation
- Personal Names:* McNish, Alvin
- Corporate Names:* Carnegie Institution of Washington. Department of Terrestrial Magnetism
- Forms:* Laboratory notebooks
Laboratory notes
Photographs
Correspondence

Bibliography

Fleming, J.A. "Review of War Applications, 1940-1946", *Carnegie Institution of Washington Year Book No. 45. July 1, 1945-June 30, 1946. With Administrative Reports through December 13, 1946.* (Washington, DC: Carnegie Institution of Washington, 1946) 44-48.

Related Collections

Ionosphere Section Records, 1929-[1959], Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

Section T "Proximity Fuze" Records 1940-[1999], Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

Department of Terrestrial Magnetism General Files, Series 2: Archives Files, folder "War Activities, 1939-1945", Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.