Department of Terrestrial Magnetism Instrument Photograph Collection, 1909-ca. 1956

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

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June 2009

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DTM-2004-07

Introduction

Abstract: This collection contains photographs of scientific instruments and equipment designed, built, used, or modified by the Department of Terrestrial Magnetism (DTM) at the Carnegie Institution of Washington (CIW), between 1909 and the mid-1950s. The collection includes prints, negatives, and glass plate negatives.

Extent: 24.5 linear feet (24 photograph album boxes, 33 binder boxes, 14 7x7 small glass plate negative boxes, 7 7x10 medium glass plate negative boxes, 6 7x12 large glass plate negative boxes, 4 6.5x11 small negative boxes, 2 8.5x10.5 medium negative boxes, and 1 10x10.5 large negative box).

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.

Preferred Citation: Department of Terrestrial Magnetism Instrument Photograph Collection, 1909-ca. 1956, Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

Processing: This collection was processed through the generous support of the Center for the History of Physics, American Institute of Physics, by Joseph Neumann and Emily Rupp in 2008-2009.

Historical Note

From its inception in 1904, the experimental and observational research undertaken by the Department of Terrestrial Magnetism has involved the use of advanced instruments and pieces of equipment. Much of this path-breaking work, carried out at the leading edge of contemporary technical knowledge, required DTM scientists and craftsmen to design and, frequently, to build their own devices. In some cases they provided a design to an instrument-maker for manufacture, while at other times they were able to adapt or modify instruments originally designed and built by others.

DTM's wide-ranging work on topics in geomagnetism, atmospheric electricity, radio propagation and the ionosphere, cosmic rays, atomic physics, oceanography, seismology, radio and optical astronomy, and isotope geochemistry prior to the mid 1950s is reflected in the variety of instruments and apparatus employed in that work. The DTM Instrument Photographs

Collection documents the technology of a fertile period of experimentation and exploration in 20th century science.

Scope and Content

Beginning in 1909, DTM began to photograph the instruments it designed, used, repaired or modified in the course of its operations. For many years, Carnegie staff photographers photographed the instruments and their components, as well as their construction, modification, and operation. Staff members supplied images of equipment in use in the field or on board research vessels (including the *Carnegie* and the *Galilee*).

As befitting a scientific institution, DTM evolved a systematic approach for organizing the images in the albums; each image was given a unique identification number (beginning with I-1 and running through I-10739), assigned in sequence as the prints were received or developed, and then pasted into a photo album along with an explanatory caption. Spare negatives or prints were stored in envelopes, arranged by number. During World War II, when DTM worked primarily on war-related research, instruments photographs were given the designation "CO" (possibly for "contract"); however, the numbering sequence remains largely consistent despite the change in prefix (that is, there is an image CO-6900 but not an I-6900).

Many of the images depict the various geomagnetic, ionospheric, and atmospheric-electric instruments used by DTM during the four decades in which it conducted a global magnetic survey (1904-1946). Also well-documented is a series of particle accelerators—including Tesla coils, Van de Graaff generators, and a cyclotron—built from the 1920s through the 1940s to probe the structure of the atom. Photographs from the post-WWII era reflect the Department's new areas of investigation in seismology, isotope geology, and astronomy. Complementing these are images of magnetic observatories, physical laboratories, research vessels, and other facilities related to the Department's investigations.

Whether due to changes in instrument use, or in policy, or perhaps as a result of the departure of the person(s) who maintained it, the systematic, sequential numbering of instrument photos ceased in the mid-1950s. Perhaps reflecting a reduced institutional interest in them, the later albums do not feature dates or captions; based on contextual evidence, it seems that the system stopped in about 1956.

The presence of publication figures, always a considerable fraction of the album prints, becomes predominant in the later albums. The last album (A-24) is more than 75 percent publication-ready charts and graphs.

Soon after the end of the sequentially numbered prints, a new system was devised, beginning in about 1957 and running through the mid-1980s. Prints were still pasted into albums, arranged this time by subject. There are 14 subject-organized albums and 12 drawers of negatives. These images were not included in this project, and are not otherwise indexed.

A Note on the Collection

This collection was processed in order to improve access to the instrument photographs, which hitherto had been limited to album browsing. To that end, an online database has been created to capture available metadata about each image, including date, instrument(s) depicted, spare print or negative availability, and any descriptive language from the original album captions. The aforementioned publication figures were not included in the online database, and all loose figure prints and negatives were discarded during processing. The photograph albums, however, still contain all of the publication figures.

An appendix to this finding aid contains a complete list of instrument-types identified during the cataloging of the image records in the online database.

Box List

Box Number	**Image Number Range**
Albums	
A-1, 1909 – 1916	I-1 - I-227
A-2, 1916 – 1922	I-228 - I-540
A-3, 1922 – 1925	I-541 - I-898
A-4, 1925 – 1927	I-899 - I-1306
A-5, 1927 – 1929	I-1307 - I-1593
A-6, 1929 – 1930	I-1594 - I-1898
A-7, 1930 – 1931	I-1899 - I-2203
A-8, 1931 – 1932	I-2204 - I-2528
A-9, 1932 – 1933	I-2529 - I-2782
A-10, 1933	I-2783 - I-3084
A-11, 1933 - 1935	I-3085 - I-3447
A-12, 1935	I-3448 - I-3874
A-13, 1935 - 1937	I-3875 - I-4326
A-14, 1937 - 1938	I-4327 - I-4874
A-15, 1938 - 1939	I-4875 - I-5352
A-16, 1939 - 1941	I-5353 - I-5876
A-17, 1942 - 1944	CO-6120 - CO-6966
A-18, 1944 - 1946	CO-6967 - CO-7968
A-19, 1941 - 1944	I-5877 - I-7007
A-20, 1944 - 1946	I-7008 - I-8060
A-21, 1946 - 1948	I-8061 - I-8702
A-22, 1948 - 1951	I-8703 - I-9377
A-23, 1951 - ca. 1953	I-9378 - I-10064
A-24, ca. 1953 - ca. 1956	I-10065 - I-10739
Prints	
P-1	I-1 - I-259
P-2	I-260 - I-360
P-3	I-362 - I-466
P-4	I-470 - I-699

Box Number	Image Number Range
P-5	I-700 - I-1000
P-6	I-1001 - I-1149
P-7	I-1187 - I-1339
P-8	I-1341 - I-1443
P-9	I-1445 - I-1560
P-10	I-1561 - I-1670
P-11	I-1671 - I-1832
P-12	I-1862 - I-2059
P-13	I-2060 - I-2168
P-14	I-2195 - I-2298
P-15	I-2299 - I-2459
P-16	I-2464 - I-2808
P-17	I-2816 - I-3083
P-18	I-3087 - I-3357
P-19	I-3359 - I-3663
P-20	I-3675 - I-3970
P-21	I-3977 - I-4458
P-22	I-4459 - I-5059
P-23	I-5060 - I-5538
P-24	I-5581 - I-6201
P-25	I-6227 - I-8259
P-26	I-8260 - I-9641
P-CO-1	CO-6332 - CO-6751
P-CO-2	CO-6757 - CO-6935
P-CO-3	CO-6936 - CO-7089
P-CO-4	CO-7101 - CO-7264
P-CO-5	CO-7265 - CO-7408
P-CO-6	CO-7441 - CO-7610
P-CO-7	CO-7615 - CO-7907

Negatives

SN-1	I-145 - I-9207
SN-2	I-9208 - I-10732
MN-1	I-259 - I-10438
LN-1	I-511 - I-9451
SN-CO-1	CO-6338 - CO-7476
MN-CO-1	CO-6329 - CO-7668

Glass Plate Negatives

SGP-1	I-1 - I-20
SGP-2	I-21 - I-40
SGP-3	I-41 - I-72
SGP-4	I-73 - I-92
SGP-5	I-93A - I-122
SGP-6	I-123 - I-141

Box Number	Image Number Range
SGP-7	I-142 - I-170
SGP-8	I-171 - I-192
SGP-9	I-193 - I-215
SGP-10	I-216 - I-340
SGP-11	I-341 - I-503
SGP-12	I-525 - I-763
SGP-13	I-62 - I-2322
SGP-14	I-2423 - I-8934
MGP-1	I-96 - I-256
MGP-2	I-257 - I-308
MGP-3	I-342 - I-429
MGP-4	I-430 - I-459
MGP-5	I-460 - I-496
MGP-6	I-497 - I-583
MGP-7	I-584 - I-666
MGP-8	I-670 - I-749
MGP-9	I-287 - I-5855
LGP-1	I-218 - I-246
LGP-2	I-271 - I-338
LGP-3	I-356 - I-376
LGP-4	I-377 - I-410
LGP-5	I-415 - I-466
LGP-6	I-467 - I-552

Related Collections

Supporting documentation (operating manuals, instructions to users, technical drawings and schematics, tests and standardizations) is held by the archives in *Instrument and Equipment Records, 1892-1970* and in the archival records of specific research programs. Significant collection of additional instrument photographs may be found in:

Ionosphere Section Records, 1927-[1959]
Nuclear Physics Program Records, 1926-1963
Radio Astronomy Program Records, 1950-1976
World War II-Era Records, 1941-1952

Photo albums in the series *DTM Views [in Foreign Lands]* and in the *Ocean Magnetic Survey Records, 1905-1946* contain numerous illustrations of geophysical instruments in field use by DTM personnel.

Subject Terms

Topics:
Astronomical instruments
Electric apparatus and appliances
Geomagnetic observatories
Geophysical instruments
Laboratories
Machine shops
Machinery
Measuring instruments
Meteorological instruments
Oceanographic instruments
Particle accelerators
Physical instruments
Radio--Equipment and supplies
Scientific apparatus and instruments

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

Forms:
Photographs
Photograph albums

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Appendix 1: Instrument Types from the Instrument Photographs Database

The following list of instrument types was generated during the data entry phase of this project, when caption information was added to the image records in the online database. Descriptors for instrument-type were devised using relevant controlled vocabulary lists, e.g., *Library of Congress Subject Headings*, *INSPEC Thesaurus*, *GeoRef Thesaurus,* American Meteorological Society *Glossary of Meteorology,* American Geological Institute *Glossary of Geology.* In some cases the instrument types were identified based solely upon the captions, while in others some research was required to make a tentative identification. Some photographs require in depth research to identify precisely the type of instrument depicted. Such work is beyond the scope of this project. This list was *not* developed by specialists in 20th century scientific instrumentation, and should not be taken as necessarily authoritative. As the database receives more data, this list will be refined.

Ammeters
Apparatus (other)
Atmospheric electric instruments (miscellaneous)
Buildings and facilities
Calculators
Cameras
Chronographs
Chronometers
Clock drives
Clocks
Cloud chambers
Commutators
Compasses
Conductivity apparatus
Control equipment
Cosmic ray detectors
Deflectors
Dip circles
Drawing instruments
Dust counters
Earth inductors
Earth-current apparatus
Electrical equipment
Electrometers
Electroscopes
Engines
Exhibitions
Expeditions

Field equipment
Foundries
Furnaces
Galvanometers
Geiger counters
Generators
Geomagnetic instruments (miscellaneous)
Gravimeters
High voltage apparatus
Instrument shops
Ion counters
Ionization chambers
Ionospheric sounders
Laboratories
Machine tools
Magnetization experiments
Magnetographs
Magnetometers
Magnets
Measuring instruments
Microscopes
Motion recorders
Navigation instruments
Observatories
Oceanographic instruments
Oscillators
Oscillographs
Photoelectric devices
Potential-gradient apparatus
Potentiometers
Pyrometers
Radio equipment
Receivers
Recorders
Research vessels
Seismographs
Sextants
Solarimeters
Spectrohelioscopes
Telescopes
Tesla coils
Theodolites
Thermometers
Transformers
Transmitters
Variometers

Voltmeters
X-ray apparatus