

Dearborn Observatory, Records of the, 1863-1967

Series 29/2

Boxes 1-59

History

The Chicago Astronomical Society was founded in 1862 by a group of Chicago business and civic leaders who wanted to establish an observatory in Chicago. Aquaria, natural history museums, and observatories were considered educational and cultural concomitants of growing scientific inquiry and industrial technology, and their numbers grew substantially in the mid-nineteenth century.

By January 1863, sufficient funds had been raised through the sale of memberships in the Society to enable a committee to investigate various lens and purchase a suitable one. What was, at the time, the world's largest refracting lens became available as a result of the Civil War. Just prior to the War, Alvan Clark, America's foremost lensmaker, had ground an 18½ inch refractor for F.A.P. Barnard of the University of Mississippi. However, hostilities made delivery of the lens impossible, and the Chicago group was able to purchase it at a price of \$11,187 including mounting.

The Society contracted with the original University of Chicago in July 1863 to house the observatory. Society member J. Young Scammon bore the cost of constructing the observatory tower and dome with the stipulation that it be named for his late wife, Mary Ann Haven Dearborn. W.W. Boyington designed both the tower and the dome. Construction began at 3400 S. Cottage Grove Avenue in the autumn of 1863 and the dome was completed in October, 1865. The lens arrived in Chicago on March 25, 1866, was mounted by Clark, and became operational on April 11, 1866. In addition to the equatorial, the Society was able to purchase a meridian circle with a \$5000 donation from Walter S. Gurnee, Society member and former mayor of Chicago. Additional small instruments and books were purchased with donations from other Society members.

While the building was being completed, the Astronomical Society perfected its organization. The Society incorporated and elected its first officers during November and December 1865. At the same time a search was begun for a professional astronomer to direct the work of the observatory. On December 28, 1865, Truman H. Safford accepted an appointment as Director of the Observatory and professor of astronomy in the University of Chicago.

In addition to conducting celestial observations, the observatory initiated Chicago's first standard time service. The Chicago fire of October 8-9, 1871, brought research to a halt. The observatory was not damaged by the fire, but many of its most committed patrons, including J. Young Scammon who had been providing the director's salary, suffered severe financial losses as a result of the fire.

When it became clear that he would be receiving no salary for the foreseeable future, Safford requested and received a leave to join the U.S. Coast and Geodetic Survey. At the end of the leave, he accepted a position at Williams College instead of returning to Chicago. The Society's Executive Committee appointed Safford's assistant, Elias Colbert as Acting Director. Colbert was unable to engage in much research between 1872 and 1875, since he spent the majority of

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his time seeking funds to rehabilitate the observatory, the most pressing need being a replacement for the dome, which had proved highly unreliable. In 1875 Colbert reestablished the standard time service, and the \$500 in revenue it generated comprised the bulk of his salary.

In 1876 Colbert announced his intention to resign as Acting Director. A talented amateur astronomer, S.W. Burnham, was appointed non-salaried Acting Director, but when it became clear later that year that Safford would not be returning, Colbert again assumed supervision of the Observatory. Colbert was successful in raising enough money to install a new dome and bring Alvan Clark to Chicago to recondition the lens.

In May 1879, Colbert retired and George Washington Hough was named Director. Hough launched an extensive program of observations, although he did not begin receiving a regular salary until 1881.

In June 1881, the virtually bankrupt University of Chicago's creditors moved to foreclose. There was concern that the Astronomical Society might lose title to the observatory's lens, meridian circle, other instruments, and library, but in 1886 the Cook County Circuit Court ruled that the scientific instruments and books could not be seized as payment for the university's debts. The observatory building, however, was ruled part of the university and liable to sale with other of the university's real estate holdings. In July 1887 the Society was informed that it had to vacate the building by October. Society board member and Northwestern University Trustee Oliver Horton proposed that the Observatory be moved to Northwestern's Evanston campus. An agreement between the Society and Northwestern was signed in August 1887, stipulating that Northwestern would construct a suitable building for the telescope and a house for the Director. The Director was to have the rank of professor in the university and his salary would be paid by the university. Northwestern would hold title to the building, while the Society would retain title to all the scientific instruments. The Astronomical Society would also retain its autonomy.

Hough supervised the removal of all instruments to temporary quarters in Evanston. University Trustee James B. Hobbs provided funds for a new building which was begun in June 1888 and dedicated June 1889. The total cost for a new building, designed by Cobb and Frost was \$25,000. Hough recommenced observations with the 18^{1/2} inch refractor in September 1889.

Hough continued as Director until his death on January 1, 1909. In September, Philip Fox was named Director. Fox instituted many improvements in the observatory equipment, most notably the replacement of mechanical recording devices with photographic techniques. Fox also built the first spectrograph for the 18^{1/2} inch refractor. In 1910, the original mounting and telescope drive were replaced with a modern mounting and electric drive.

Prior to Fox's arrival the research carried out at Dearborn had been reported in scientific journals, including the *Astronomical Journal* and *Popular Astronomy*. Fox initiated the *Annals of Dearborn Observatory* in 1915 as a means of systematically reporting observations, editing the first two volumes of the *Annals* himself.

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Fox resigned in 1929 to become the first Director of the Adler Planetarium. In April 1929 the Chicago Astronomical Society relinquished title to the telescope, meridian circle, and all scientific instruments to Northwestern, thus ending its sixty-six year association with the Dearborn Observatory. Fox was replaced by the assistant astronomer Oliver J. Lee, who served as Director from 1929 until 1947.

The most notable event that occurred during Lee's tenure was the relocation of the observatory building in 1939, necessitated by the construction of the Technological Institute. The twenty-five hundred ton building was jacked up, placed on rails, and pulled 664 feet south-southeast of its original site at the rate of twenty inches per minute. The observatory was out of service from June 18 to November 13, 1939. Aside from the need to recalculate the Observatory's precise longitude and latitude, the move had no adverse effects.

Lee retired in 1947 and was replaced by Kaj Strand. Strand served as Director for eleven years and maintained an active observational program. Upon Strand's resignation in 1958, the Directorship remained vacant for almost a year until J. Allen Hynek accepted the post. Hynek updated the observatory's facilities, pioneering the use of image-orthicon viewing systems, and the use of computers to analyze results. He also used the Dearborn facilities for several NASA projects. Under Hynek, the university opened an observatory in Organ Pass, New Mexico, and in 1967, the university dedicated the Lindheimer Astronomical Research Center. The new facility, with 40 inch and 16 inch reflecting telescopes and a wide range of computerized apparatus supplanted Dearborn as the university's primary astronomical facility. However, Dearborn's 18^{1/2} inch refractor remained an active teaching instrument and provided free public viewings and tours. In 1975 Hynek retired and John Bahng became Director of Astrophysical Studies including responsibility for Dearborn.

From 1866 to 1967 the Dearborn telescope was used for a wide variety of observational projects. Under Safford and Colbert, the Observatory was used primarily in star cataloging projects. Dearborn contributed to the *Astronomische Gesellschaft* catalog until the Chicago fire limited all observations.

Perhaps Dearborn's most significant contribution was in the area of double star research. The existence of pairs of stars located close enough to each other that their gravities had an effect on each other's motion had been theorized by the middle of the nineteenth century, but prior to the grinding of the 18^{1/2} inch refractor, no telescope had provided sufficient resolution to actually see a double star. During the testing of the newly ground lens in 1861, Alvan Clark made the first observation of the companion star of Sirius. After the lens was installed in Chicago, it was used by Burnham and extensively by Hough to study double stars. The first two volumes of the *Annals of the Dearborn Observatory* reported several hundred double stars discovered by Burnham, Hough, and Fox.

Hough carried on extensive observations of the planet Jupiter and was considered the foremost authority on the behavior of Jupiter's bands and spots. Fox carried out extensive research on stellar parallax, or the apparent displacement in direction of position of an object when observed

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from two points. Lee did considerable observation of Eros, an asteroid that periodically orbits closer to Earth than Mars does, and on huge, forming red stars.

Additional information on the Chicago Astronomical Society and its relationship to the Dearborn Observatory may be found in the holdings of the Chicago Historical Society. The Chicago Historical Society holds a manuscript history and minutes of the Society from 1862 - 1903, as well as the Society's *Annual Reports*, 1880 - 1887, and H.C. Rainey's two volume history of the Society.

Description of the Records

The records of the Dearborn Observatory fill fifty-four boxes and thirteen oversize folders. The records span the years 1863-1967, although the bulk dates from 1863-1941. The records consist almost entirely of observational data gathered by astronomers using Dearborn's 18½ inch refracting telescope or its meridian circle, calculations performed on the data, and the results of such investigations. Six folders of clippings, reports, and miscellaneous correspondence precede the observational records and two boxes of visitor's registers and material relating to the observatory's library follow the observational records.

The observational records created during the directorships of Truman Safford, Elias Colbert and George W. Hough were entered in notebooks, two hundred and five of which survive. Initially all observations were entered sequentially in notebooks. Separate records were kept for the equatorial (the 18^{1/2} inch refractor) and the meridian circle. As various observational programs became more extensive, separate notebooks were created to record the results of the respective programs. The early notebooks are arranged as either equatorial or meridian circle observations and chronologically within oversize folders these categories, while later notebooks are grouped according to the subject of the observation.

The records include five and a half boxes, containing fifty-five volumes, of general observations made with the equatorial spanning the years 1863-1908 and the directorships of Safford, Colbert, and Hough. The majority of the observations were made by the three directors, although S.W. Burnham and several assistant astronomers contributed to the observations. The volumes include records of planetary studies, with observations of Jupiter, Uranus, and Neptune being the most numerous; stellar observations concerned primarily with fixing the exact locations and magnitudes of various stars; observations made to establish precise longitudes and latitudes; and observations of other celestial objects and events, such as asteroids, comets, and eclipses. In many cases the recorded data is not clearly identified, thus limiting its usefulness to all but experienced astronomers. For the most part, data recorded in the equatorial notebooks was not derived from systematic research projects and no narratives exist detailing the nature of the observations for the non-scientist.

Five boxes of meridian circle observations spanning the years 1868-1908 follow the general equatorial observations. The meridian circle was an instrument developed in the 18th and 19th centuries to establish the precise positions and proper motions of all bright stars. The planets,

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Moon, and Sun were then studied in relation to the meridian observations. The sixty volumes of meridian circle observations are arranged in categories according to the types of observations recorded as indicated in the titles of the volumes (Zero Stars, Great Catalogue, Working Lists, And general observations) and chronologically within each category.

Several worldwide cataloging projects were begun in the mid-nineteenth century. The Dearborn Observatory participated in a project directed by the Astronomische Gesellschaft in Berlin. Volumes of records document Dearborn's participation from 1868 until 1871 when the Chicago Fire curtailed research. Systematic meridian circle observations began again in 1879.

Notebooks detailing more specialized observations include seventeen volumes of occultation studies concerning the blocking of light from celestial bodies by other bodies, two boxes and one oversize folder of observations of Jupiter (see also the George Washington Hough Papers, Series 29/1), seven volumes concerning the Moon's parallax, and two volumes concerning a project to precisely measure the longitude, latitude and sizes of the Great Lakes. Following the volumes that record clearly identified specialized observations are three and one-half boxes of miscellaneous observations dating from 1863-1908. Some of the volumes have indications of their content, such as planets, zenith distance and Bradley stars. However, the majority oversize folders merely record observations and would require expertise in astronomy to be useful. The miscellaneous observations are arranged chronologically.

In addition to observational records from the period 1863-1908, the records include two boxes and three oversize folders of data pertaining to instruments used in the Observatory. The bulk of this data relates to Dearborn's standard time service, recorded in twenty-three volumes spanning the years 1869-1908. Also included are three oversize folders of meteorological data produced by Dearborn's printing barometer.

Following Hough's death, observational data gathered at Dearborn was no longer recorded in notebooks. With the directorship of Philip Fox, Dearborn's astronomical program was expanded, with the result that much of the actual observational work was done by graduate students. Fox instituted a regular reporting format that resulted in more clearly labeled records. Each sheet of observations records the observer's name, the date and the nature of the observation.

The records include one box of Fox's spectroheliograms that detail the sun's features by photographing it with monochromatic light. The bulk of the observational data from Fox's tenure concerns the stellar parallax measurement project.. Parallax refers to the apparent displacement in direction of an object when seen from two different, points not on a straight line with the object. The differing perspectives of a given star are created by observing it over a period of time as the earth moves in its orbit. Knowing the parallax for a star allows the astronomer to fix its position precisely by correcting for the parallax effect.

The records also include five boxes of parallax measurements taken between 1916 and 1929. Arrangement is chronological according to the date of the first observation made for a given star, even though in many instances a star was re-observed several times over as many as twelve years

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before a true value for its parallax could be calculated. The records indicate the identification of the star under observation by its name or its star catalog number, the name of the observer, the time and date of the observation, the observational data and the calculations resulting in an accurate parallax value.

In addition to the parallax measurements, there are one and one half boxes of reduction calculations which represent the determinations of the true positions of stars when corrected for parallax and proper motion error. (See also the Records of the *Annals of the Dearborn Observatory*, Series 29/3. Volume 3 of the *Annals* published Fox's parallax measurements and other volumes include further information on the stellar parallax project.)

During the directorship of Oliver Lee, several large projects were carried out. The records include one box of miscellaneous observations and five oversize folders of time clock records, 1933 to 1934. Also included are six boxes of records concerning Lee's observations of the asteroid Eros in 1930-1931. Eros' orbit brings it closer to the earth than any other large heavenly body besides the Moon. In 1931, Eros came within 13.8 million miles of the Earth, making it the subject of intense astronomical interest. The gravitational force of a large body passing so closely made it possible to more precisely measure the Mass of the Earth and the Moon, in addition to making close up general observations of the large asteroid itself. The records pertain to the measurements of the effects of the Earth on Eros and the changes caused in observed parallax. General observations of the character of Eros are also included.

The bulk of the observations during Lee's directorship document his Red Star Project from 1931-1941. Fourteen boxes detail Lee's study of huge-forming, red stars. The bulk of the data is arranged numerically according to folder numbers assigned by Lee, with the remainder arranged by photographic plate numbers or star name. The data pertains to the magnitude, or brightness of selected red stars and changes in their magnitude.

The only observational records from Hynek's directorship are two oversize folders of charts recording magnitudes of stars. The charts are not clearly labeled and require a sophisticated knowledge of astronomy to be useful. In addition, two oversize folders of miscellaneous observations and mechanical drawings of scientific instruments follow the main body of the records.

Processor: Thomas J. Dorst, July, 1982

Provenance: The Records of the Dearborn Observatory were transferred to the University Archives prior to June, 1974 as Accession #74-65.

Restrictions: None.

Separations: One-half cubic foot of faculty publications was transferred to the Archives' Biographical Files; one cubic foot of *Bulletins of the Royal Astronomical Observatory* was sent to the Library's Gifts and Exchange Department; three cubic feet of material were separated as

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the George Washington Hough Papers (Series 29/1); one cubic foot was separated as the papers of Truman Safford and Philip Fox; two cubic feet were separated as the records of the *Annals of the Dearborn Observatory*.

ADDITION, 1911-1948

Boxes 55-57, 3 oversize folders, 1 box of glass slides

Description of the Addition

The Addition comprises 3 boxes of observational data from the Dearborn Observatory between 1911 and 1948, during the directorships of Philip Fox (1909-1929) and Oliver J. Lee (1929-1947). The first five volumes in Box 1 record information concerning the photographing of data; the photographs themselves are not present. Volumes 8 and 9 of Box 1, as well as, Volumes 1 through 7 of Box 2, also record data, such as date, time of exposure, and plate number, concerning the photographing of various astronomical phenomena, for which the photographs themselves are lost. Various technical computations are recorded in Box 1, Volume 6, Box 3, Volumes 4, 7, 8, and 9. Standard observational records are found in Box 1, Folder 7, Observations, of the Aurora, and Box 2, Volumes 5, through 7, Eros journal, and Box 3, Volumes 1 through 3, Transit observations, Meridian circle. Photographs with the 18 ½ refractor of the Dearborn Observatory (Box 1, Volumes 1-4) are related to the Equatorial observations of Boxes 1 through 6 of the main series; similarly, Transit observations, Meridian Circle (Box 3, Volumes 1-3) are related to Meridian Circle observations (Boxes 7-11) of the main series. Both, however, date from a later period than found in the main series. The Eros Journal (Box 2, Volumes 5-11) appears to summarize material found in the more extensive Eros observations (Boxes 31-36) of the main series.

Three oversize folders of original drawings of Orion Charts, published in *Annals of the Dearborn Observatory*_Volume 7, part 3, are included in the Addition, as is one box of glass slides, dated 1930, which appear to be spectrograph readings.

Provenance: The Addition was transferred to the University Archives on April 10, 1987, as Accession #87-65. The material was evidently inadvertently left behind when the records constituting the main series were transferred to the University Archives in 1974.

Separations: Four volumes of the *Annals of the Dearborn Observatory* were added to the University Archives duplicates.

Restrictions: None.

Processor: Patricia Cloud, April 14, 1987.

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Addition, Box 59 (half-size)

Description of the Addition

The addition consists of three notebooks of spectrograph records. The first two books contain data for plates no.1-1958, 1920-1930. The third contains duplicate material, in ink rather than pencil for plate nos.1-1260.

Provenance: These records were received from William Buscombe on February 7, 1994, as Accession #94-25.

Restrictions: None.

Separations: None.

Processor: William K. Beatty, March, 1994.

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Container List

<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
1	1	Clippings and Reprints Concerning Dearborn (Transferred to Archives General files)	n.d.
	2	Chicago Astronomical Society Annual Reports, Reports	1874, 1878, 1885-1886, 1890-1891
	3	Report of the Director (Draft)	1903 - 1904
	4	Correspondence - Miscellaneous	1864-1939, 1967
	5	Latitude and Longitude Corrections Subsequent to Moving Dearborn	1939
	6	Publications - S.W. Burnham <u>OBSERVATIONS</u>	n.d.
	Vol. 1	Equatorial	Nov. 28, 1863- May 14, 1866
	V.2	Equatorial	May 16, 1866 - Nov. 12, 1866
	V.3	Equatorial	January, 1868- April, 1868
	V.4	Equatorial	May 2, 1868 - July 2, 1868
	V.5	Equatorial	Sept. 28, 1868- Oct. 1, 1869
2	V.1	Equatorial	Oct. 17, 1879- April 16, 1880
	V.2	Equatorial	Aug. 3, 1880 -Sept. 29, 1880
	V.3	Equatorial	Sept. 30, 1880 -Jan. 27, 1881
	V.4	Equatorial	March 9, 1881 -July 27, 1881
	V.5	Equatorial	July 18, 1881 - Oct. 31, 1881
	V.6	Equatorial	Nov. 1, 1881 - Feb. 16, 1882
	V.7	Equatorial	Feb. 16, 1882 -Aug. 21, 1882
	V.8	Equatorial	Aug. 22, 1882 - Nov. 20, 1882
3	V.1	Equatorial	Nov. 22, 1882 -April 15, 1883
	V.2	Equatorial	April 16, 1883-Nov. 4, 1883
	V.3	Equatorial	Nov. 6, 1883-May 8, 1884
	V.4	Equatorial	May 9, 1884-Nov. 20, 1884
	V.5	Equatorial	Nov. 25, 1884-April 26, 1885
	V.6	Equatorial	April 28, 1885-Sept. 15, 1885
	V.7	Equatorial	Sept. 16, 1885-March 16, 1886
	V.8	Equatorial	March 22, 1886-Oct. 4, 1886
	V.9	Equatorial	Oct. 5, 1886-April 20, 1887
	V.10	Equatorial	April 24, 1887-Sept. 17, 1887
	V.11	Equatorial	Sept. 18, 1887-Sept. 6, 1889
	V.12	Equatorial	July 29, 1889-Sept. 26, 1889
	V.13	Equatorial	Sept. 27, 1889-Dec. 11, 1889
4	V.1	Equatorial	Dec. 14, 1889-July 21, 1890

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4	V.2	Equatorial	July 22, 1890 -July 2, 1891
	V.3	Equatorial	July 3, 1891 -Nov. 2, 1891
	V.4	Equatorial	Nov. 4, 1891 -July 29, 1892
	V.5	Equatorial	July 30, 1892 -Nov. 9, 1892
	V.6	Equatorial	Nov. 10,1892 - Feb. 13, 1893
	V.7	Equatorial	Feb. 20, 1893-June 5, 1893
	V.8	Equatorial	June 7, 1893-Oct. 6, 1893
	V.9	Equatorial	Oct. 7, 1893-April 23, 1894
	V.10	Equatorial	April 24, 1894-Oct. 16, 1894
	V.11	Equatorial	Oct. 17, 1894-Jan. 9, 1895
	5	V.1	Equatorial
V.2		Equatorial	March 17, 1895-Aug. 3, 1895
V.3		Equatorial	Aug. 5, 1895 -Oct. 23, 1895
V.4		Equatorial	Oct. 24, 1895 -March 23, 1896
V.5		Equatorial	March 27, 1896-July 24, 1896
V.6		Equatorial	July 27, 1896-Feb.17, 1896
V.7		Equatorial	March 16, 1897-May 18, 1897
V.8		Equatorial	May 19, 1897 -Oct.25, 1897
V.9		Equatorial	April 16, 1898-July 22, 1898
V.10		Equatorial	July 23, 1898-May 11, 1899
6	V.1	Equatorial	May 12, 1899 -Oct. 29, 1899
	V.2	Equatorial	Oct. 30, 1899-Sept. 3, 1900
	V.3	Equatorial	Sept. 14, 1900-Sept. 20, 1901
	V.4	Equatorial	Sept. 21, 1901-Oct. 18, 1902
	V.5	Equatorial	Oct. 19, 1902 -Sept. 18, 1903
	V.6	Equatorial	Nov. 17, 1904 -Nov. 7, 1905
	V.7	Equatorial	Nov. 8, 1905 -March 3, 1907
	V.8	Equatorial	March 18, 1907-April 21, 1908
7	V.1	Meridian Circle – Preliminary Observations	Oct. 26, 1868 - July 21, 1869
	V.2	Meridian Circle - Preliminary Observations	Oct. 29, 1868 - June 25, 1869
	V.3	Meridian Circle	Nov. 25, 1869 -Oct. 11, 1870
	V.4	Meridian Circle	Oct. 12, 1870 -May 12, 1871
	V.5	Meridian Circle	June 9, 1879-Sept. 16, 1879
	V.6	Meridian Circle	Sept. 16, 1879 –May 18, 1880
	V.7	Meridian Circle	May 21, 1880 –Dec. 8, 1880
	V.8	Meridian Circle	Aug. 26, 1880 –June 24, 1881
	V.9	Meridian Circle	Dec. 8, 1880 –June 15, 1881
	V.10	Meridian Circle	June 16, 1881 –Jan. 19, 1883

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7	V.11	Meridian Circle	July 28, 1881 –Aug. 14, 1889
	V.12	Meridian Circle	Jan. 21, 1883 –Oct. 6, 1885
8	V.1	Meridian Circle	Oct. 7, 1885 –Oct. 7, 1889
	V.2	Meridian Circle	Oct. 16, 1887-April 11, 1888
	V.3	Meridian Circle	Oct. 23, 1889-Nov. 13, 1897
	V.4	Meridian Circle	Sept. 6, 1890 –Dec. 25, 1890
	V.5	Meridian Circle	Oct. 6, 1890 -Nov. 17, 1897
	V.6	Meridian Circle	Jan. 3, 1891 –Feb. 26, 1891
	V.7	Meridian Circle	Feb. 28, 1891 –Oct. 12, 1891
9	V.1	Meridian Circle	Oct. 16, 1891 –April 6, 1894
	V.2	Meridian Circle	April 7, 1894 -Dec. 26, 1900
	V.3	Meridian Circle	Dec. 29, 1900-Feb. 26, 1908
	V.4	Meridian Circle	Jan. 6, 1906 -Dec. 30, 1908
	V.5	Meridian Circle	March. 7, 1908-Dec.31, 1908
	1	Meridian Circle	n.d.
	2	Meridian Circle- Data on Operation	1902
	3	Meridian Circle- Data on Operation	n.d.
	V.6	Meridian Circle Meridian Circle - Zero Stars	Jan. 4, 1869 -Dec. 8, 1869
	V.7	Meridian Circle-Zero Stars	Jan. 4, 1870 -Dec. 31, 1870
	V.8	Meridian Circle - Zero Stars	Jan. 9, 1871 -Dec. 1, 1871
V.9	Meridian Circle- Zero Stars	1875	
V.10	Meridian Circle - Zero Stars Index	n.d.	
V.11	Transit Preparations for 1873	1873	
10	V.1	Meridian Circle – Reduction of Meridian	April 27, 1869- June 1, 1869
	V.2	Meridian Circle – Reduction of Meridian	Jan. 6, 1870 - Feb. 18, 1870
	V.3	Meridian Circle – Reduction of Meridian	Jan. 2, 1871 - March 3, 1871
	V.4	Meridian Circle – Reduction of Meridian - Great Catalogue, 1	n.d.
	V.5	Meridian Circle – Reduction of Meridian - Great Catalogue, 2	n.d.
	V.6	Meridian Circle - Reduction of Meridian - Chicago Zones	1869
	V.7	Meridian Circle - Reduction of Meridian - Chicago Zones	1870
	V.8	Meridian Circle - Reduction of Meridian - Chicago Zones	1870-1905
	V.9	Meridian Circle - Reduction of Meridian - Refraction Co-efficients	n.d.

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10	V.10	Meridian Circle - Working List	n.d.
11	V.1	Meridian Circle - Working List #1	n.d.
	V.2	Meridian Circle - Working List #2	n.d.
	V.3	Meridian Circle - Working List #4	1870
	V.4	Meridian Circle - Working List #5	n.d.
	V.5	Meridian Circle - Working List #8	1872 - 1874
	V.6	Transits of Meridian - Book 3	Dec. 21, 1868 -Jan. 5, 1869
	V.7	Transits of Meridian - Book 4	Jan. 6, 1869 -Jan. 20, 1869
	V.8	Transits of Meridian - Book 5	Jan. 20, 1869 -Feb. 5, 1869
	V.9	Transits of Meridian - Book 6	Feb. 10, 1869 -Feb.27, 1869
	V.10	Transits of Meridian - Book 7	Feb. 27, 1869 -March 8, 1869
	V.11	Transits of Meridian - Book 8	March 12, 1869-March 22, 1869
	V.12	Transits of Meridian - Book 9	March 27, 1869 - April 16, 1869
	V.13	Transits of Meridian - Book 10	April 17, 1869 - May 3, 1869
	V.14	Transits of Meridian - Book 11	May 3, 1860 -May 14, 1869
	V.15	Transits of Meridian - Book 12	May 15, 1869 -June 7, 1869
	V.16	Transits of Meridian - Book 13	June 9, 1869 - Aug. 18, 1869
	V.17	Transits of Meridian - Book 14	July 2, 1869 -July 23, 1869
	V.18	Transits of Meridian - Book 15	Aug. 19, 1869-Sept. 7, 1869
	V.19	Transits of Meridian	n.d.
	1	Anomalous Occultations of Stars by the Moon	n.d.
	V.20	Occultations	Oct. 30, 1897- Dec. 16, 1897
12	V.1	Occultations	Dec. 1, 1897 -Feb. 13, 1898
	1	Occultations	July 1, 1898 -Oct. 23, 1898
	V.2	Occultations	Nov. 2, 1898 -June 10, 1899
	2	Occultations	Aug. 27, 1900- Jan. 18, 1902
	V.3	Occultations	Feb. 10, 1902 -Nov. 30, 1902
	V.4	Occultations	Nov. 11, 1902 -May 7, 1903
	V.5	Occultations	May 9, 1903-Aug.7,1903
13	V.1	Occultations	Sept. 10, 1903- Dec. 1, 1903
	V.2	Occultations	Dec. 1, 1903 -May 1, 1904
	V.3	Occultations	May 18, 1904 -Nov. 16, 1904
	V.4	Occultations	Dec. 8, 1904-April 16, 1905
	V.5	Occultations	April 16, 1905- Oct. 3, 1905
	V.6	Occultations	Oct. 4, 1905 -April 6, 1906
	V.7	Occultations	April 13, 1906 -Nov. 24, 1906
	V.8	Occultations	Jan. 24, 1907 - Jan. 16, 1908
	V.10	Occultations	Sept 11, 1908 - Dec. 31, 1908

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
13	V.11	Jupiter	1870 - 1897
14	V.1	Jupiter	1879 - 1895
	V.2	Jupiter	1879 - 1904
	V.3	Jupiter	1881 - 1904
	1	Jupiter	Feb. 18, 1897 -March 15, 1897
	V.4	Jupiter	Oct. 28, 1897 -April 19, 1898
	2	Jupiter	Nov. 1, 1897 - May 2, 1898
	3	Jupiter	May 3, 1898 - Feb. 13, 1899
	4	Jupiter	Oct. 7, 1899 - Nov. 26, 1899
	V.5	Jupiter	Feb. 22, 1900-Aug. 19, 1903
15	V.1	Jupiter	Sept 19, 1903-June 21, 1904
	V.2	Jupiter	June 22, 1904 -Nov. 16, 1904
	V.3	Jupiter	July 4, 1904 - April 21, 1908
	V.4	Jupiter	Dec. 30 - 31, 1908
	1	Jupiter - Miscellaneous Observations	June 2, 1878 -Dec. 28, 1891
	2	Jupiter - Miscellaneous Observations	Sept 20, 1892 - Nov. 1, 1904
	3	Jupiter - Miscellaneous Observations	n.d.
	4	Jupiter - Miscellaneous Observations- Summaries	1879 - 1905
	5	Jupiter - Computations	1879 - 1881
	6	Jupiter - Satellites in Transit	Aug. 4, 1890- Dec. 27, 1891
	7	Jupiter Manuscripts	n.d.
	8	Jupiter Manuscripts - Fragments	n.d.
	GO1	<u>Gaylord Oversize 1</u> - Jupiter - Charts, Drawings	
16	V.1	Double Stars - #1 - #321	1880 - 1900
	V.2	Double Stars - #322 - #443	1880 - 1900
	V.3	Double Stars - #444 - #502	1802 - 1900
	1	Double Stars	Nov. 4, 1890 - Oct. 28, 1881
	V.4	Double Star List #1	n.d.
	V.5	Index to Double Stars #2	n.d.
	V.6	Double Star Catalogue	n.d.
	V.7	Binary Systems	n.d.
	V.8	Moon Parallax	n.d.
	V.9	Moon Parallax	n.d.
	V.10	Moon Parallax	n.d.
	V.11	Lake Survey	1871
	V.12	Lake Survey	1871

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
17	1	Lake Survey	n.d.
	2	Lake Survey - Division D	n.d.
	3	Lake Survey - Division E	n.d.
	4	Lake Survey - Miscellaneous	1864 - 1870
	V.1	Miscellaneous Observations	1863 - 1866
	V.2	Miscellaneous Observations Planets	1866
	V.3	Miscellaneous Observations	1866 - 1867
	V.4	Miscellaneous Observations	1868
	V.5	Miscellaneous Observations	1869
	V.6	Miscellaneous Observations	1869
	V.7	Miscellaneous Observations	1869
	V.8	Miscellaneous Observations	1869
	V.9	Miscellaneous Observations	1869 - 1870
	V.10	Miscellaneous Observations Polar Stars & Extra Time Stars	1869 - 1870
	V.11	Miscellaneous Observations	1870
	V.12	Miscellaneous Observations	1870
	V.13	Miscellaneous Observations	1874 - 1882
	V.14	Miscellaneous Observations	1878
	V.15	Miscellaneous Observations	1879
	V.16	Miscellaneous Observations	1879
18	V.1	Miscellaneous Observations	1879
	V.2	Miscellaneous Observations - Zenith Distance	1879
	V.3	Miscellaneous Observations	1880 - 1894
	V.4	Miscellaneous Observations	1880
	V.5	Miscellaneous Observations - Latitude Observations	n.d.
	V.6	Miscellaneous Observations	n.d.
	V.7	Miscellaneous Observations	n.d.
	V.8	Miscellaneous Observations - Bradley Stars	n.d.
	1	Miscellaneous Observation Volumes	1880 - 1888
	2	Miscellaneous Observation Volumes	1879 - 1908
	3	Miscellaneous Observation Volumes	1879 - 1908
	4	Miscellaneous Observation Volumes	1879 - 1908
19	1	Miscellaneous Observation Volumes	1879 - 1908
	2	Miscellaneous Observations	Dec. 20, 1862 - June 27, 1864
	3	Miscellaneous Observations	June 27, 1864 - Jan. 6, 1866
	4	Miscellaneous Observations	n.d.

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
19	5	Miscellaneous Observations	n.d.
	6	Miscellaneous Observations	n.d.
	7	Miscellaneous Observations	n.d.
	8	Miscellaneous Observations	n.d.
	9	Miscellaneous Observations	n.d.
	10	Miscellaneous Observations	n.d.
	11	Miscellaneous Observations	n.d.
	12	Miscellaneous Observations	n.d.
	13	Miscellaneous Observations	n.d.
20	1	Miscellaneous Observations	n.d.
	2	Miscellaneous Observations	n.d.
	3	Miscellaneous Observations - Fragments	n.d.
	4	Miscellaneous Observations - Fragments	n.d.
	V.1	Miscellaneous Observations Time	June 8, 1869 - Aug. 21, 1869
	V.2	Miscellaneous Observations Time	Aug. 23, 1869 - Dec. 31, 1869
	V.3	Miscellaneous Observations Time	Jan. 1, 1870 - Dec. 9, 1870
	V.4	Miscellaneous Observations Time	Jan.10, 1871 – July 17, 1871
	V.5	Miscellaneous Observations Time	July 17, 1871-Dec. 17, 1871
	V.6	Miscellaneous Observations Time	April 16, 1872 - Sept. 6, 1872
	V.7	Miscellaneous Observations Time	June 18, 1874 - July 29, 1874
	V.8	Miscellaneous Observations Time	July 1, 1874 - June 29, 1875
	V.9	Miscellaneous Observations Time	July 20, 1874 - Sept. 16, 1874
	V.10	Miscellaneous Observations Time	Sept. 19, 1874 - Feb. 15, 1875
	V.11	Miscellaneous Observations Time	Feb. 16, 1875 - May 14, 1875
	V.12	Miscellaneous Observations Time	May 14, 1875 - Aug. 8, 1875
	V.13	Miscellaneous Observations Time	Aug. 8, 1875 - Nov. 17, 1875
	V.14	Instrument - Time	Nov. 17, 1876 -Dec. 27, 1876
	V.15	Instrument - Time	March 30,1876 - July 4, 1876
21	V.1	Instrument - Clocks #1	May 23, 1879 - May 12, 1880
	V.2	Instrument - Clocks #2	May 12, 1880 - Nov. 20, 1882
	V.3	Instrument - Clocks #3	Nov. 20, 1882-May 23, 1888
	V.4	Instrument - Clocks	May 23, 1888 - May 15, 1894
	V.5	Instrument - Clocks	May 20, 1894 - Jan. 7, 1903
	V.6	Instrument - Clocks	Jan. 9, 1903 - Dec. 30, 1908
	V.7	Instrument - Printing Chronograph	Nov. 18, 1897-May 25, 1902
	V.8	Instrument - Printing Chronograph	March 29, 1902-Dec. 20, 1904
	GO2	Barometer Readings	1892 – 1898
	GO3	Barometer Readings	1899 - 1903

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
21	GO4	Barometer Readings	1904 - 1909
22	V.1	Instrument Printing Chronograph	Dec. 20, 1904 -Dec. 30, 1908
	V.2	Instrument Battery Experiments - Photography	April 19, 1884-May 1, 1887
	V.3	Observations - General	Sept 14, 1933 - Jan 26, 1934
	V.4	Observations - General	Jan. 29, 1934 - Feb. 16, 1934
	V.5	Observations - General	n.d.
	1	Spectroheliograms - #1411-1695	Dec. 13, 1904 – June 24, 1905
	2	Spectroheliograms - #2432 -2520	Aug. 7, 1907 - Dec. 20, 1907
23	1	Comparison of Sun Spot Positions with Greenwich	Aug. 6, 1903 -Nov. 28, 1908
	2	Spectroheliograms - #2682-#3240	Dec. 22, 1908 April 20, 1908
	3	Rumford Spectroheliograms	1903- 1904
	4	Rumford Spectroheliograms	1908
	5	Spectroheliograms	1906
	6	Spectroheliograms–unidentified	n.d.
	7	Method of Measurement and Reduction of Parallax Plates	n.d.
	8	Method of Determining the Value of Comparison Stars on a Parallax Field	n.d.
	9	Computation Notes	n.d.
	10	Approval List for Measurement	n.d.
	11	Plate Measuring Apparatus	n.d.
	12	Plate Readings	Aug. 6, 1903 -Nov. 28, 1908
24	1	Plate Readings	Aug. 6, 1903 -Nov. 28, 1908
	2	Plate Readings and Computations	1919
	3	Parallax Measurements	1916,1920,1922,1928
	4	Parallax Measurements	1916,1921, 1924
	5	Parallax Measurements	1916,1920,1921,1922, 1926
	6	Parallax Measurements	1916, 1917
	7	Parallax Measurements	1916, 1920, 1923
	8	Parallax Measurements	1917, 1926
	9	Parallax Measurements	1917
	10	Parallax Measurements	1917
	11	Parallax Measurements	1917,1920,1924
	12	Parallax Measurements	1917,1921,1922,1926
25	1	Parallax Measurements	1918
	2	Parallax Measurements	1918,1923,1928

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>	
25	3	Parallax Measurements	1918,1924,1927	
	4	Parallax Measurements	1918,1927	
	5	Parallax Measurements	1921,1922,1924,1927	
	6	Parallax Measurements	1920,1921	
	7	Parallax Measurements	1920, 1926	
	8	Parallax Measurements	1920, 1922, 1929	
	9	Parallax Measurements	1920	
	10	Parallax Measurements	1920, 1926	
	11	Parallax Measurements	1920, 1921	
	12	Parallax Measurements	1920,1921,1922,1926	
	13	Parallax Measurements	1920,1921	
	14	Parallax Measurements	1920	
	26	1	Parallax Measurements	1921, 1923
		2	Parallax Measurements	1921
3		Parallax Measurements	1921	
4		Parallax Measurements	1921,1923,1926	
5		Parallax Measurements	1921	
6		Parallax Measurements	1921	
7		Parallax Measurements	1921,1922,1925	
8		Parallax Measurements	1921	
9		Parallax Measurements	1921	
10		Parallax Measurements	1921	
11		Parallax Measurements	1921	
12		Parallax Measurements	1921,1923,1926,1927	
13		Parallax Measurements	1921,1923,1924,1927	
14		Parallax Measurements	1922	
15		Parallax Measurements	1922	
16		Parallax Measurements	1922, 1924, 1927	
27	1	Parallax Measurements	1922,1926,1929	
	2	Parallax Measurements	1922,1927	
	3	Parallax Measurements	1922	
	4	Parallax Measurements	1923	
	5	Parallax Measurements	1923,1928	
	6	Parallax Measurements	1923,1928	
	7	Parallax Measurements	1923	
	8	Parallax Measurements	1923	
	9	Parallax Measurements	1923	
	10	Parallax Measurements	1923	
	11	Parallax Measurements	1923	

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
27	12	Parallax Measurements	1923
	13	Parallax Measurements	1923
	14	Parallax Measurements	1923
	15	Parallax Measurements	1923
	16	Parallax Measurements	1924
	17	Parallax Measurements	1927
	18	Parallax Measurements	1927
	19	Parallax Measurements	1927
	20	Parallax Measurements	1927
	21	Parallax Measurements	1927
	22	Parallax Measurements	n.d.
28		Parallax Determinations Index Card File	
29	1	Parallax - Index Cards - Miscellaneous	
	2	Time Set Reductions	Feb. 16, 1933
	3	Time Set Reductions	Oct. 7-8, 1933
	4	Time Set Reductions	Oct. 8-9, 1933
	5	Time Set Reductions	Oct. 14-15, 1933
	6	Time Set Reductions	Oct. 19-20, 1933
	7	Time Set Reductions	Oct. 22-23, 1933
	8	Time Set Reductions	Oct. 29-30, 1933
	9	Time Set Reductions	Oct. 31, 1933
	10	Time Set Reductions	Nov. 1, 1933
	11	Time Set Reductions	Nov. 16-17, 1933
	12	Time Set Reductions	Nov. 19, 1933
	13	Time Set Reductions	Nov. 20-21, 1933
	14	Time Set Reductions	Nov. 24-26, 1933
	15	Time Set Reductions	Nov. 27-28, 1933
	16	Time Set Reductions	Nov. 29-30, 1933
	17	Time Set Reductions	Dec. 6, 1933
	18	Time Set Reductions	Dec. 18, 1933
	19	Time Set Reductions	Dec. 20, 1933
	20	Time Set Reductions	Dec. 26, 1933
	21	Time Set Reductions	Dec. 27, 1933
	22	Time Set Reductions	Jan. 10, 1934
	23	Time Set Reductions	Jan. 11, 1934
	24	Time Set Reductions	Jan. 15, 1934
	25	Time Set Reductions	Jan. 16, 18, 1934
	26	Time Set Reductions	Jan. 20, 1934
	27	Time Set Reductions	Jan. 23, 1934

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
29	28	Time Set Reductions	Jan. 29, 1934
	29	Time Set Reductions	Feb. 1, 1934
30	1	Time Set Reductions	Feb. 3, 1934
	2	Time Set Reductions	Feb. 9, 1934
	3	Time Set Reductions	Feb. 11, 1934
	4	Time Set Reductions - Miscellaneous	Oct.,1933-Feb.,1934
	5	Time Set Reductions	Nov. 17-18, 1934
	6	Miscellaneous Observations- Reduction of Star Positions to 1950	n.d.
	7	Miscellaneous Observations - First Quadrant - Reduction to 1950	n.d.
	8	Miscellaneous Observations - Second and Third Quadrant- Reduction to 1950	n.d.
	9	Miscellaneous Observations -Fourth Quadrant -Reduction to 1950	n.d.
	10	Miscellaneous Observations Fox Stars	n.d.
	11	Miscellaneous Observations References - Double Stars	n.d.
	12	Miscellaneous Observations Zone +10 to 15 --Flocculi	n.d.
	13	Miscellaneous Observations -19n 5-8m + 30	n.d.
	14	Miscellaneous Observations BD -14 4069 14 50	n.d.
	15	Miscellaneous Observations -Pressure Plates	n.d.
	16	Miscellaneous Observations Last Measurements	n.d.
	17	Miscellaneous Observations Transforming Coordinates to Sidereal Diurnal Motions	n.d.
	18	Miscellaneous Observations Sunspot Measurements	n.d.
	19	Miscellaneous Observations - Reductions – Least Square Solutions of Solar Rotation Data	n.d.
	20	Miscellaneous Observations - Azimuth Constant	n.d.
	21	Miscellaneous Observations - Intervals on Contact Wheel Reduced to Equator	n.d.
	22	Miscellaneous Observations - Inequalities of Pivots	n.d.
	23	Miscellaneous Observations – Determination of Level - Constant	n.d.
	24	Miscellaneous Observations - Sidereal Clock	n.d.

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
		Seconds in mm for Different Minutes	
30	25	Miscellaneous Observations Reduction Forms	n.d.
	26	Miscellaneous Observations Corrections for Latitude Variation	n.d.
	27	Miscellaneous Observations Proper Motions in Selected Areas	n.d.
	28	Miscellaneous Observations	n.d.
	29	Miscellaneous Observations	n.d.
	30	Miscellaneous Observations	n.d.
	GO5	Time Clock Record	Feb. 1933
	GO6	Time Clock Record	Sept. - Oct., 1933
	GO7	Time Clock Record	Oct., Nov. 1933
	GO8	Time Clock Record	Dec. 1933
	GO9	Time Clock Record	Jan. 1934
31	1	Time Clock - Transmission Time	
	2	Time Clock - Lag of Radio Relay	
	3	Eros Observations: 7228-7237	Dec. 9-11, 1930
	4	Eros Observations: 7239-7251	Dec. 17-25, 1930
	5	Eros Observations: 7253-7259	Dec. 28-31, 1930
	6	Eros Observations: 7260-7273	Jan. 1-2, 1931
	7	Eros Observations: Related Study of Plates, 7260-7266,7260-7270, 7268-7271, 7271,7273	Jan. 1-2, 1931
	8	Eros Observations: 7274-7282	Jan. 1-4, 1931
	9	Eros Observations: Related Study of Plates, 7274-7276, 7278-7282	Jan. 3, 1931
	10	Eros Observations: 7285-7289	Jan. 9-10, 1931
	11	Eros Observations: 7290-7297	Jan. 14-15, 1931
	12	Eros Observations: 729777303	Jan. 15-16, 1931
32	1	Eros Observations: 7304-7314	Jan. 16-17, 1931
	2	Eros Observations: 7315-7318	Jan. 17-18, 1931
	3	Eros Observations: 7320-7326	Jan. 19-20, 1931
	4	Eros observations: 7328-7336	Jan. 20-21, 1931
	5	Eros Observations: 7337-7340	Jan. 22-23, 1931
	6	Eros Observations: 7341-7346	Jan. 24, 1931
	7	Eros Observations: 7347-7354	Jan. 25-26, 1931
	8	Eros Observations: 7355-7362	Jan. 26-30, 1931
	9	Eros Observations: 7363-7370	Feb. 1, 1931
33	1	Eros Observations: 7374-7332 - Incomplete	Feb. 1-2, 1931

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
33	2	Eros Observations: 7383-7391 - Incomplete	Feb. 2-3, 1931
	3	Eros Observations: 7393-7402	Feb. 3-4, 1931
	4	Eros Observations: 7404-7410	Feb. 4-5, 1931
	5	Eros Observations: 7412-74-16	Feb. 5-6, 1931
	6	Eros Observations: 7413-7421	Feb. 9, 1931
	7	Eros Observations: 7422-7426	Feb. 9-10, 1931
	8	Eros Observations: 7428-7436 - Incomplete	Feb. 10-11, 1931
	9	Eros Observations: 7438-7439, 7441-7444	Feb. 11, 13, 1931
	10	Eros Observations: 7445-7453	Feb. 14, 1931
	34	1	Eros Observations: 7454-7462, 7463-7464
2		Eros Observations: 7466-7470, 7471-7473	Feb. 23-24, 1931
3		Eros Observations: 7475-7481	Feb. 24-25, 1931
4		Eros Observations: 7483-7486	Feb. 25-26, 1931
5		Eros Observations: 7488-7490	Feb 26-27, 1931
6		Eros Observations: 7491-7494	March 1-2, 1931
7		Eros Observations: 7495-7498, 7505	March 9-10, 1931
8		Eros Observations: 7510-7514	March 22-23, 1931
9		Eros Observations: 7522-7530 - Incomplete	April 4-6, 1931
10		Eros Observations: 7532-7538	April 6-7, 1931
11		Eros Observations: 7539-7541	April 8-9, 1931
12		Eros Observations: 7543-7546	April 10-11, 1931
13		Eros Observations: 7547-7550	April 11-12, 1931
14		Eros Observations: 7551-7553	April 18, 1931
35	1	Eros Observations: 7556-7557	April 29 - May 3, 1931
	2	Eros Observations: 7558-7565	May 3-5, 1931
	3	Eros Plates	n.d.
	4	Star Lists - Eros Comparison Stars	n.d.
	5	Eros: Computation for Table of Zenith Distances	n.d.
	6	Time Sheets for Eros Plates	n.d.
	7	Eros Perturbations	n.d.
	8	List of Eros Plates	n.d.
	9	Serial No. CP. Stars 1-85 for Eros	n.d.
	10	Serial No. CP Stars 86-190 for Eros	n.d.
	11	Serial No. CP Stars 191-270 for Eros	n.d.
	12	Serial No. CP Stars 271-360 for Eros	n.d.
36	1	Serial No. CP Stars 361-469 for Eros	n.d.
	2	Eros Computations	n.d.

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36	3	Eros Reductions I	n.d.
	4	Eros Reductions II	n.d.
	5	Eros: Miscellaneous	n.d.
	6	Eros: Miscellaneous	n.d.
	7	Eros Final Results	n.d.
	8	Redstar Project #71	n.d.
	9	Redstar Project #77	n.d.
	10	Redstar Project C #79	n.d.
	11	Redstar Project #80	n.d.
	12	Redstar Project #81	n.d.
	13	Redstar Project #82	n.d.
	14	Redstar Project C #83	n.d.
	15	Redstar Project #84	n.d.
	16	Redstar Project #85	n.d.
	17	Redstar Project #86	n.d.
	18	Redstar Project C #87	n.d.
	19	Redstar Project #89	n.d.
	20	Redstar Project #91	n.d.
37	1	Redstar Project #94	Nov. 14, 1931
	2	Redstar Project #19-7	Nov. 15, 1931
	3	Redstar Project #98	Nov. 18, 1932
	4	Redstar Project #100	Nov. 29, 1931
	5	Redstar Project #101	n.d.
	6	Redstar Project #107	Nov. 6, 1933
	7	Redstar Project #116	Oct. 26, 1939
	8	Redstar Project #117	Sept. 15, 1939
	9	Redstar Project #127	Nov. 13, 1939
	10	Redstar Project #192	April 14, 1939
	11	Redstar Project #325	June 21, 1937
	12	Redstar Project #328	Sept. 29, 1937
	13	Redstar Project #349	Aug. 9, 1934
	14	Redstar Project #357	Oct. 26, 1939
	15	Redstar Project #359	Oct. 23, 1939
	16	Redstar Project #360	Sept. 22, 1937
	17	Redstar Project #362	Sept. 27, 1939
	18	Redstar Project #367	Oct. 18, 1939
	19	Redstar Project #369	July 21, 1937
	20	Redstar Project #370	Oct. 6, 1937
38	1	Redstar Project #372	Oct. 3, 1939

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	2	Redstar Project #376	July 20, 1937
	3	Redstar Project #377	July 21, 1937
	4	Redstar Project #378	Aug. 3, 1937
	5	Redstar Project #493	July 23, 1935
	6	Redstar Project #508	Nov.9, 1937
	7	Redstar Project #569	Oct. 18, 1937
	8	Redstar Project #598	July 20, 1939
	9	Redstar Project #599	Nov. 11, 1937
	10	Redstar Project #603	Nov. 19, 1939
	11	Redstar Project #626	Dec. 21, 1939
	12	Redstar Project #627	Dec. 6, 1937
	13	Redstar Project #635	July 1, 1938
	14	Redstar Project #636	Oct. 10, 1937
	15	Redstar Project #637	Jan. 8, 1937
	16	Redstar Project #639	Dec. 16, 1937
	17	Redstar Project #641	Nov. 8, 1939
	18	Redstar Project #671	Jan. 13, 1938
	19	Redstar Project #674	Jan. 22, 1938
39	1	Redstar Project #680	Jan. 29, 1938
	2	Redstar Project #681	March 17, 1938
	3	Redstar Project #682	Feb. 7, 1938
	4	Redstar Project #690	March 5, 1938
	5	Redstar Project #728	March 29, 1938
	6	Redstar Project #732	April 19, 1938
	7	Redstar Project #734	April 27, 1938
	8	Redstar Project #747	Oct. 21, 1937
	9	Redstar Project #749	Oct. 28, 1937
	10	Redstar Project #750	Nov. 3, 1937
	11	Redstar Project #753	May 5, 1938
	12	Redstar Project #754	May 13, 1938
	13	Redstar Project #755	Nov. 9, 1938
	14	Redstar Project #756	Oct. 13, 1938
	15	Redstar Project #758	Oct. 29, 1938
	16	Redstar Project #759	Oct. 11, 1938
40	1	Redstar Project #761	Oct. 5, 1938
	2	Redstar Project #764	Oct. 4, 1938
	3	Redstar Project #776	n.d.
	4	Redstar Project #780	n.d.
	5	Redstar Project #782	n.d.

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40	6	Redstar Project #783	n.d.
	7	Redstar Project #806	n.d.
	8	Redstar Project #807	n.d.
	9	Redstar Project #808	n.d.
	10	Redstar Project #809	Sept. 30, 1938
	11	Redstar Project #810	Sept. 27, 1938
	12	Redstar Project #830	Sept. 22, 1938
	13	Redstar Project #831	Sept. 21, 1938
	14	Redstar Project #843	n.d.
	15	Redstar Project #859	n.d.
	16	Redstar Project #861	n.d.
	17	Redstar Project #941	Aug. 8, 1938
	18	Redstar Project #942	Aug. 2, 1938
	19	Redstar Project #943	June 28, 1938
	20	Redstar Project #944	May 25, 1938
	21	Redstar Project #945	June 16, 1938
	22	Redstar Project #960	June 22, 1938
	23	Redstar Project #962	Nov. 16, 1938
	24	Redstar Project #970	July 18, 1938
	25	Redstar Project #971	Oct. 17, 1938
	26	Redstar Project #972	Dec. 8, 1938
	27	Redstar Project #973	Nov. 21, 1938
	28	Redstar Project #974	Nov. 16, 1938
	29	Redstar Project #975	July 7, 1938
	30	Redstar Project #977	Oct. 22, 1938
	31	Redstar Project #978	Jan. 19, 1939
	32	Redstar Project #979	Oct. 29, 1938
41	1	Redstar Project #980	Dec. 21, 1938
	2	Redstar Project #1016	Dec. 13, 1938
	3	Redstar Project #1017	Jan. 13, 1939
	4	Redstar Project #1020	Dec. 19, 1938
	5	Redstar Project #1021	Dec. 27, 1938
	6	Redstar Project #1022	Dec. 23, 1938
	7	Redstar Project #1023	Jan. 27, 1939
	8	Redstar Project #1024	Jan. 16, 1939
	9	Redstar Project #1028	Jan. 9, 1939
	10	Redstar Project #1055	Feb. 24, 1939
	11	Redstar Project #1057	Jan. 20, 1939
	12	Redstar Project #1058	March 14, 1939
	13	Redstar Project #1059	Feb. 14, 1939

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
41	14	Redstar Project #1060	Feb. 18, 1939
	15	Redstar Project #1061	March 16, 1939
	16	Redstar Project #1065	March 7, 1939
	17	Redstar Project #1066	March 31, 1939
	18	Redstar Project #1067	March 24, 1939
	19	Redstar Project #1089	March 28, 1939
	20	Redstar Project #1090	March 30, 1939
	21	Redstar Project #1091	April 7, 1939
	22	Redstar Project #1092	April 14, 1939
	42	1	Redstar Project #1093
2		Redstar Project #1094	April 21, 1939
3		Redstar Project #1095	May 4, 1939
4		Redstar Project #1096	May 9, 1939
5		Redstar Project #1097	May 22, 1939
6		Redstar Project #1098	April 24, 1939
7		Redstar Project #1099	June 8, 1939
8		Redstar Project #1100	June 26, 1939
9		Redstar Project #1101	May 12, 1939
10		Redstar Project #1102	June 27, 1939
11		Redstar Project #1105	June 29, 1939
12		Redstar Project #1106	July 1, 1939
13		Redstar Project #1107	July 5, 1939
14		Redstar Project #1109	July 6, 1939
15		Redstar Project #1109	July 8, 1939
16		Redstar Project #1136	July 10, 1939
17		Redstar Project #1137	July 14, 1939
18		Redstar Project #1138	July 13, 1939
19		Redstar Project #1139	July 25, 1939
20		Redstar Project #1140	July 28, 1939
21		Redstar Project #1141	July 31, 1939
22		Redstar Project #1142	Aug. 2, 1939
23		Redstar Project #1144	Aug. 14, 1939
24		Redstar Project #1145	July 23, 1939
43	1	Redstar Project #1146	Sept. 29, 1939
	2	Redstar Project #1204	Oct. 20, 1939
	3	Redstar Project #1205	Oct. 30, 1939
	4	Redstar Project #1206	Sept. 27, 1939
	5	Redstar Project #1208	Jan. 23, 1940
	6	Redstar Project #1210	Jan. 23, 1940

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
43	7	Redstar Project #1211	Jan. 27, 1940
	8	Redstar Project #1212	Feb. 2, 1940
	9	Redstar Project #1213	Feb. 7, 1940
	10	Redstar Project #1214	Feb. 12, 1940
	11	Redstar Project #1215	Feb. 24, 1940
	12	Redstar Project #1216	Feb. 28, 1940
	13	Redstar Project #1217	March 8, 1940
	14	Redstar Project #1218	March 11, 1940
	15	Redstar Project #1219	March 14, 1940
	16	Redstar Project #1220	March 16, 1940
	17	Redstar Project #1221	March 19, 1940
	18	Redstar Project #1222	March 21, 1940
	19	Redstar Project #1223	March 22, 1940
	20	Redstar Project #1225	March 27, 1940
	21	Redstar Project #1226	March 29, 1940
	22	Redstar Project #1227	April 1, 1940
	23	Redstar Project #1229	April 4, 1940
	24	Redstar Project #1255	April 23, 1940
	25	Redstar Project #1255	April 8, 1940
44	1	Redstar Project #1256	April 18, 1940
	2	Redstar Project #1257	April 19, 1940
	3	Redstar Project #1259	April 30, 1940
	4	Redstar Project #1260	May 6, 1940
	5	Redstar Project #1261	May 14, 1940
	6	Redstar Project #1262	May 17, 1940
	7	Redstar Project #1263	June 3, 1940
	8	Redstar Project #1264	May 22, 1940
	9	Redstar Project #1265	June 6, 1940
	10	Redstar Project #1266	June 19, 1940
	11	Redstar Project #1267	July 2, 1940
	12	Redstar Project #1268	July 15, 1940
	13	Redstar Project #1269	July 23, 1940
	14	Redstar Project #1270	July 21, 1940
	15	Redstar Project #1271	Sept. 21, 1940
	16	Redstar Project #1272	Sept. 26, 1940
	17	Redstar Project #1298	July 31, 1940
	18	Redstar Project #1299	Oct 3, 1940

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
45	1	Redstar Project #1300	Oct. 10, 1940
	2	Redstar Project #1302	Oct. 22, 1940
	3	Redstar Project #1303	Oct. 30, 1940
	4	Redstar Project #1304	Jan. 28, 1941
	5	Redstar Project #1305	Jan. 20, 1941
	6	Redstar Project #1307	n.d.
	7	Redstar Project #1309	Nov. 5, 1940
	8	Redstar Project #1310	Jan. 18, 1941
	9	Redstar Project #1311	Nov. 9, 1940
	10	Redstar Project #1313	Jan. 9, 1941
	11	Redstar Project #1315	n.d.
	12	Redstar Project #1316	n.d.
	13	Redstar Project #1318	Feb. 4, 1941
46	1	Redstar Project #1319	n.d.
	2	Redstar Project #1320	n.d.
	3	Miscellaneous (Redstar)	n.d.
	4	List of M, N, R, and S Stars	n.d.
	5	M Stars - Numbers (Preliminary), Magnitudes, Spectral Classes	n.d.
	6	Absolute Magnitudes	April 20, 1908
	7	Keys to Classifications	n.d.
	8	Widened Spectra and Absolute Magnitudes	n.d.
	9	"N" Stars in the Region of Plate 972	n.d.
	10	Positions - Zones 0 and 9	n.d.
	11	Lee Work	n.d.
	12	Record Sheets	n.d.
	13	Additional N-R Stars	n.d.
	14	Mag Intercomparison of Plates	n.d.
	15	Check Classification	n.d.
	16	S Stars - Measures, etc.	n.d.
	17	Estimates of Magnitudes	n.d.
	18	Intercomparisons (Folder 1)	n.d.
47	1	Intercomparisons (Folder 2)	n.d.
	2	Intercomparisons Continued-Completed Work	n.d.
	3	Red End Estimates	n.d.
	4	Analysis of K Classification	n.d.
	5	Magnitude Charts	n.d.
	6	HD-DO Magnitude Correlations	n.d.

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
47	7	Correlation of HD and DO Types and Magnitudes	n.d.
	8	DO Conformity and Nonconformity	n.d.
	9	Miscellaneous Data	n.d.
	10	Statistics on Field Plates	n.d.
	11	Grouping of 11 Stars	n.d.
	12	K Stars - Statistical Investigation	n.d.
	13	N and S Characteristics	n.d.
	14	Star Counts - Numbers of Each Spectral Type 12½ Magnitude Ranges	n.d.
	15	Parallax Stars: -5 to +90 KO thru K, M, N, R, S	n.d.
	16	Statistical	n.d.
	17	Dynamical Parallaxes: Graphing of M Stars	n.d.
	18	Singles	n.d.
	19	P, 0, Mx, Ms, Mt, for Groups	n.d.
	20	Redetermination of M Stars	n.d.
48	1	D3 Series	n.d.
	2	D3 Preliminary Work - No Magnitudes	n.d.
	3	D5 Calibration	n.d.
	4	D5 Series	n.d.
	5	D11 Series - No Magnitudes	n.d.
	6	D13 Series	n.d.
	7	D14 Series	n.d.
	8	D16 Field Plates 370	n.d.
	9	D17 Series	n.d.
	10	D18-19 (Same Curves)	n.d.
	11	D19 Calibration Measures	n.d.
	12	D20 Calibration	n.d.
	13	D22	n.d.
	14	D23 Calibration	n.d.
	15	D24 Calibration	n.d.
	16	D25 Calibration	June 10, 1939 - Dec. 16, 1939
	17	D26 Calibration	Feb. 27, 1940 - April 20, 1940
	18	Series D29	n.d.
49	1	D30 Calibration	June 10, 1940 - June 13, 1940
	2	D34 Calibration	Sept. 24, 1941 - Dec. 26, 1941
	3	D35 Calibration	n.d.
	4	D37 Calibration	April - March, 1942

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
49	5	D38 Calibration	April, 1942
	6	D41 Calibration	n.d.
	7	D42 Calibration	n.d.
	8	D44 Calibration	n.d.
	9	D45 Calibration	April, 1942
	10	D46 Calibration	n.d.
	11	D47 Calibration	n.d.
	12	D49 Calibration	n.d.
	13	D50 Calibration	n.d.
	14	D51 Calibration	n.d.
	15	D52 Calibration	n.d.
	16	D53 Calibration	n.d.
	17	D54 Calibration	n.d.
	18	D55 Calibration	n.d.
	19	D56 Calibration	n.d.
50	1	Harwood and Lee Observations	March 28, 1931- Feb. 8, 1932
	2	Harwood and Lee Observations	Feb. 15, 1932 -March 31, 1932
	3	Harwood and Lee Observations	April 12, 1932-June 19, 1932
	4	KS 98 (Miscellaneous Observations)	n.d.
	5	Miscellaneous Observations and KS113 Information	n.d.
	6	KS113 (Miscellaneous Observations)	n.d.
	7	KS114 (Group 1, Miscellaneous Observations)	n.d.
	8	KS114 (Group 2, Miscellaneous Observations)	n.d.
51	1	KS114 - Reductions and Results Misc. Observations	n.d.
	2	KS114 - 115 Measures in Y and X	n.d.
	3	KS115 (Miscellaneous Observations)	n.d.
	4	Quality Charts: KS92, 98,107,115	n.d.
	5	K96 to K115 (Miscellaneous Observations)	n.d.
	6	Investigations of the 18 ½ " Objective at Dearborn	n.d.
	7	Longitude Campaign	1933 – 1934
	8	Longitude Campaign	1933 – 1934
	9	Longitude Campaign	1933- 1934
	10	Meteorology	n.d.
	11	Meteorology	n.d.
	12	Miscellaneous Observations	n.d.

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
51	13	Miscellaneous Observations	n.d.
52	1	Miscellaneous Observation	n.d.
	2	Miscellaneous Observations	n.d.
	3	Miscellaneous Observations	n.d.
	4	Miscellaneous Observations	n.d.
	5	Miscellaneous Observations	n.d.
	6	Miscellaneous Observations	n.d.
	7	Miscellaneous Observations	n.d.
	8	Miscellaneous Observations	n.d.
	9	Miscellaneous Observations	n.d.
	10	Miscellaneous Observations	n.d.
	11	Miscellaneous Observations	n.d.
	12	Miscellaneous Observations	n.d.
	13	Miscellaneous Observations	n.d.
	14	Miscellaneous Observations	n.d.
53	1	Miscellaneous Observations	n.d.
	2	Miscellaneous Observations	n.d.
	3	Observatory Library	1885
	4	Observatory Library	1911
	5	Observatory Library	1926
	6	Observatory Library	1928
	7	Observatory Library	1941
	8	Observatory Library - Miscellaneous	n.d.
	9	Observatory Library - Miscellaneous	n.d.
54	1	Observatory Library - Miscellaneous	n.d.
	2	Observatory Equipment - Inventory	n.d.
	V.1	Visitors to the Observatory	1913 – 1928
	V.2	Visitors to the Observatory	1931 – 1948
	V.3	Visitors to the Observatory	1955 - 1956
	GO10	Magnitude Graphs	1962
	GO11	Magnitude Graphs	1962
	GO12	Miscellaneous Observations	n.d.
	GO13	Miscellaneous Observations Mechanical Drawings	n.d.
55	V.1	Photographs with the 181/2 refractor of the Dearborn Observatory (Equatorial) Volume I	1912-28

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<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Dates</u>
55	V.2	“ ”, Volume II	n.d.
	V.3	“ ”, Volume III	n.d.
	V.4	“ ”, Volume IV	n.d.
	V.5	Photographs, plates and movie films of the planets and a few double stars	1928-29
	V.6	Reduction of Measures of Safford Nebulae measured by F. L. Brown with the 18 ½ equatorial of the Dearborn Observatory	1915-16
	V.7	Observations of the Aurora	1930-46
	V.8	Journal of Plates. Selected areas.	n.d.
	V.9	“ ”	“ ”
56	V.1	Key pole plates for magnitudes 1018, 1019. Cover title: Journal of Progress	1939-46
	V.2	“ ”	“ ”
	V.3	Observing journal. Prismatic camera.	1935-37
	V.4	“ ”	“ ”
	V.5	Eros journal. Volume I.	Dec., 10, 1930- Jan.21,1931
	V.6	Eros journal. Volume II.	Jan. 21, 1931-Feb.10,1931
	V.7	Eros journal. Volume III.	Feb. 10, 1931-May 15,1931
57	V.1	Transit observations. Meridian Circle. Vol. 1.	1911-12
	V.2	Transit observations. Meridian Circle. Vol. 1.	1912-16
	V.3	Transit observations. Meridian Circle. Vol. 1.	1916-33
	V.4	Clock record.	1935-38
	V.5	Star trap. Containing factors A, B, C for all the stars of the N.A. star list	1911
	V.6	Star trap. AP B, and C factors, for use in International Longitude campaign	1933
	V.7	Test of periodic error in vertical screw of meridian circle micrometer	1934
	V.8	Gaertrier sensitometer	1928
	V.9	Spectograph tests	1925-26
		Spectrograph Records	
59	1	Plates 1-1870	1920;1926-March 20,1930
	2	Plates 1871-1958	March 31-Nov. 11,1930
	3	Copy Plates 1-1260	1920;1926-1928