



Smithsonian Institution Archives

Classical Observation Techniques  
Videohistory Collection, 1988, 1991

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Smithsonian Institution Archives  
Washington, D.C.  
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# Table of Contents

Collection Overview .....	1
Administrative Information .....	1
Historical Note.....	1
Introduction.....	2
Descriptive Entry.....	2
Names and Subjects .....	3
Container Listing .....	4

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## Collection Overview

<b>Repository:</b>	Smithsonian Institution Archives, Washington, D.C., <a href="mailto:osiaref@si.edu">osiaref@si.edu</a>
<b>Title:</b>	Classical Observation Techniques Videohistory Collection
<b>Identifier:</b>	Record Unit 9534
<b>Date:</b>	1988, 1991
<b>Extent:</b>	5 videotapes (Reference copies). 21 digital .wmv files and .rm files (Reference copies).
<b>Creator::</b>	
<b>Language:</b>	English

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## Administrative Information

### Preferred Citation

Smithsonian Institution Archives, Record Unit 9534, Classical Observation Techniques Videohistory Collection

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## Historical Note

A primary objective of the United States Naval Observatory (USNO), one of the oldest American observatories in continual existence, was to determine time and star position using state-of-the-art astronomical techniques. In order to fulfill its objective, the USNO engaged in meridian astronomy and astrometric studies, which provided a fundamental frame of reference whereby the many motions of the earth in space and its position in time could be determined against a celestial reference frame. Traditionally, these observations of stellar position and motion were carried out by visual observations which were gradually replaced by photographic techniques. Electronics and computer automation resulted in further technological advances for astronomical research.

Thomas E. Corbin completed his B.A. in astronomy from Harvard University in 1962 and joined the scientific staff of the USNO in 1964. Under the USNO Professional Development Program he completed his M.A. in astronomy at Georgetown University in 1969 and his Ph. D. at the University of Virginia in 1977. From 1969 to 1971 Corbin served first as an assistant and later as astronomer-in-charge of the USNO El Leoncito observing station in Argentina. From 1971 to 1981 he was a member of the Southern Transit Circle Division of the Transit Circle Division and Astrometry Department. Since 1984, Corbin served as head of the Meridian Division.

After receiving his B.S. in 1964 and M.S. in 1967 in astronomy from Case Institute of Technology, Geoffrey Douglass accepted the position of astronomer at USNO in 1967. His USNO work was devoted to using the 26-inch telescope for making double-star observations.

F. Stephen Gauss received his B.A. from Cornell University in 1963. That same year, he joined the USNO staff as an astronomer in the Six-Inch Transit Circle Division. While working at the Observatory, Gauss

completed his M.A. in astronomy at Georgetown University in 1968. He was later appointed chief of instrumentation for the Astrometry Department.

Dennis Dean McCarthy was awarded his B.S. in astronomy from Case Institute of Technology in 1964 and his M.A. and Ph.D. from the University of Virginia in 1970 and 1972, respectively. He was appointed astronomer to the USNO in 1965. In 1982, he was appointed chief of the Earth Orientation Parameters Division. His research interests include astronomical research on the rotational speed of the earth and variation of astronomical latitude.

Charles Worley began his training in astronomy at Swarthmore College under Peter Van de Kamp. He completed his B.A. at San Jose State University in 1959 and became the senior assistant astronomer at Lick Observatory on Mount Hamilton, California, that same year. He served as the research astronomer there from 1960 to 1961. Worley assumed the position of astronomer to the United States Naval Observatory in 1961 and since 1966 has been the administrative assistant director of the Astrometry and Astrophysics Division.

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## Introduction

The Smithsonian Videohistory Program, funded by the Alfred P. Sloan Foundation from 1986 until 1992, used video in historical research. Additional collections have been added since the grant project ended. Videohistory uses the video camera as a historical research tool to record moving visual information. Video works best in historical research when recording people at work in environments, explaining artifacts, demonstrating process, or in group discussion. The experimental program recorded projects that reflected the Institution's concern with the conduct of contemporary science and technology.

Smithsonian historians participated in the program to document visual aspects of their on-going historical research. Projects covered topics in the physical and biological sciences as well as in technological design and manufacture. To capture site, process, and interaction most effectively, projects were taped in offices, factories, quarries, laboratories, observatories, and museums. Resulting footage was duplicated, transcribed, and deposited in the Smithsonian Institution Archives for scholarship, education, and exhibition. The collection is open to qualified researchers.

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## Descriptive Entry

David DeVorkin, curator at the Smithsonian's National Air and Space Museum, interviewed five USNO astronomers about their observing techniques on various telescopes used at the Observatory. DeVorkin was interested in the growth of the application of automation to astronomy. The sessions documented classical visual techniques for star observation, as well as computer controlled telescopes and electronic detection techniques that have virtually replaced the human eye in modern astronomical research. Interviews took place on March 28 and 31, 1988, and May 8, 1991 in various telescope domes on the USNO grounds, Washington, D.C.

Sessions One and Two took place on March 28 and March 31, 1988, respectively in Building Two, the 26-inch telescope building, and in the library of the USNO, Washington, D.C. Charles Worley demonstrated the procedures for making double-star observations and discussed preparation and research necessary for an observing session, as well as the importance of astronomical record keeping.

Session Three, recorded on May 8, 1991 in the 6-inch Transit Circle Telescope Building, at the Photographic Zenith Tube (PZT) telescope, and in the 26-inch telescope building documented Corbin, Gauss, McCarthy, Worley and Douglass demonstrating their observing techniques on the various

telescopes and discussing the effects of electronic automation on their astronomical research. Of particular interest, Worley demonstrated the use of a speckle photometer attached to the 26-inch telescope which was not in use in the earlier sessions.

This collection consists of three interview sessions, totaling approximately 7:00 hours of recordings and 172 pages of transcript.

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## Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

- Astronomy
- Astrophysics
- Interviews
- Observatories
- Oral history
- Science -- History
- Technology -- History
- Telescopes

Types of Materials:

- Transcripts
- Videotapes

Names:

- Corbin, Thomas E.
- DeVorkin, David H., 1944- , interviewer
- Douglas, Geoffrey
- Gauss, F. Stephen
- McCarthy, Douglas Dean
- Naval Research Laboratory (U.S.)
- United States Naval Observatory
- Worley, Charles E.

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## Container Listing

### Interviews

Interviews                      **Session 1: March 28, 1988**

Interviews                      At Building Two, the 26-inch telescope dome of the USNO, Washington, D.C., featured Charles Worley demonstrating the step-by-step procedures for the preparation and execution of double-star observation, and discussing the history of the telescope, c. 1870-1988, including: operation of the 26-inch telescope and observing dome; operation of the telescope's automatic micrometer; description of the electronic data collection system; comparison of the newer micrometer with the older Clark II micrometer; history of modifications to the 26-inch telescope; history of double-star observations; improvements in accuracy as a result of modifications; comparison of equipment and procedures at other observatories; logbook keeping. Visual documentation included: re-enactment of a double-star observing session; close-ups of movement of telescope, opening of the observing dome, and attaching the micrometer to the tailpiece; programming electronic equipment for data collection; Clark II micrometer; 1965 filar micrometer; photo of original tailpiece for the 26-inch telescope; logbook entries.

Interviews                      Transcript, 45 minutes, of videotape recording, 2 hours.

Interviews                      Recording of Interview: Total Recording Time: 2 hours

- Note:
- Original Masters: 6 Beta videotapes
  - Preservation Masters: 6 Motion jpeg 2000 and 6 mpeg digital files
  - Dubbing Masters: 2 U-Matic videotapes
  - Reference Copies: 1 VHS videotapes, 6 Windows Media Video and 6 Real Media digital files

Interviews                      **Session 2: March 31, 1988**

Interviews                      In an office in USNO Building 52, the USNO Library, and at the 12-inch Saegmuller telescope, featured Worley discussing the necessary preparations for a double-star observing session, c. 1950-1988, including: archival storage of double-star observations; compilation of star catalogs and data files; improvements in recordkeeping systems; transition from card files to computerized databases for storage of observation records; research necessary to prepare for an observing session; retrieval of historical data on specific observations; data retrieval potential of the USNO system; distribution of USNO star catalogs and observation data; history of star catalogs; Worley's use of star catalogs for double-star observations; history and use of the Clark II micrometer; Worley's use of the USNO Library for double-star data research; Naval interest in maintaining a long-term double-star observation program; current and future developments for double-star observing; Worley's reasons for using visual observing methods versus

speckle interferometric techniques; operation and history of the 12-inch Saegmuller telescope. Visual documentation included: Worley's office and workroom; archival storage tapes; computer data retrieval; various star catalogs and observation lists; Worley's card file of double-star observations; Clark II micrometer; USNO library; operation of the 12-Inch Saegmuller Telescope exterior views of the main USNO building.

Interviews Transcript, 1-77 pages, of videotape recording, 2 hours, 20 minutes.

Interviews Recording of Interview: Total Recording Time: 2 hours, 20 minutes

- Note:
- Original Masters: 7 Beta videotapes
  - Preservation Masters: 7 Motion jpeg 2000 and 7 mpeg digital files
  - Dubbing Masters: 3 U-Matic videotapes
  - Reference Copies: 2 VHS videotapes, 7 Windows Media Video and 7 Real Media digital files

Interviews **Session 3: May 8, 1991**

Interviews At the USNO 6-Inch Transit Circle Telescope Building, the PZT telescope, and the 26-inch telescope building, documented astronomers Corbin, Gauss, McCarthy, Worley, and Douglass demonstrating their observing techniques and discussing the effects of automation on astronomical research, c. 1960-1991, including: operations of the Six-Inch Transit Circle telescope; computer retrieval of observing data; reasons for Naval support of a celestial coordinate system; history of automation modifications to the Six-Inch telescope; history of installation of data acquisition system computers to telescopes; operations and history of the PZT telescope; addition of a speckle interferometer to the 26-inch telescope; demonstration of double-star observing session with the speckle interferometer; changes in observing techniques and data collection and storage; improvements in double-star observations resulting from new technology. Visual documentation included: re-enactment of a Six-Inch Transit Circle telescope observing session; close-ups of various parts of the Six-Inch Transit Circle telescope; re-enactment of the unloading and loading of photographic plates for the PZT telescope; close-up of interior of speckle interferometer attached to the 26-inch telescope; re-enactment of a double-star observing session using the speckle interferometer; re-enactment of data recording techniques performed during a double-star observation; close-ups of double-star observation data on computer and television monitors.

Interviews Transcript, 1-50 pages, of videotape recording, 3 hours.

Interviews Recording of Interview: Total Recording Time: 3 hours

- Note:
- Original Masters: 8 Beta videotapes
  - Preservation Masters: 8 Motion jpeg 2000 and 8 mpeg digital files
  - Dubbing Masters: 7 U-Matic videotapes

- Reference Copies: 2 VHS videotapes, 8 Windows Media Video and 8 Real Media digital files