Fred Lawrence Whipple Interviews, 1976

by Smithsonian Institution Archives
Table of Contents

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

Repository: Smithsonian Institution Archives, Washington, D.C., osiaref@si.edu

Creator: Whipple, Fred Lawrence,

Title: Fred Lawrence Whipple Interviews

Dates: 1976

Quantity: 4 audiotapes (reference copies).

Administrative Information

Preferred Citation

Smithsonian Institution Archives, Record Unit 9520, Whipple, Fred Lawrence, , Fred Lawrence Whipple Interviews

Historical Note

Fred Lawrence Whipple (1906-2004), received the B.A. in mathematics with a minor in physics and astronomy from the University of California at Los Angeles in 1927 and the Ph.D. in astronomy from the University of California at Berkeley in 1931. His early training focused on comet orbits. After teaching for a year at Stanford University, he joined the staff of the Harvard College Observatory in 1931 and remained in Cambridge throughout his career. During the 1930s his work focused on double station meteor research. From 1943 to 1945, he developed radar countermeasures for the U. S. Army Radiation Laboratory of the Office of Scientific Research and Development. After World War II he worked on development of the Super-Schmidt cameras to photograph meteors and continued research on the influx of material from comets into the interplanetary medium. His comet research culminated in publication of the Icy Comet Model in 1950. During the forties he also conducted studies of meteor hazards to spacecraft, inventing the meteor bumper, and served on the Rocket and Satellite Research Panel. In the early fifties, with Wernher von Braun and Cornelius J. Ryan, he coauthored a series of popular articles on the conquest of the space frontier.

His teaching career at Harvard University progressed from Instructor, 1932-1938; Lecturer, 1938-1945; Associate Professor, 1945-1950; Professor, 1950-1970; Chairman of the Department of Astronomy, 1949-1956; to Phillips Professor of Astronomy, 1970-1977. Thus when Whipple was appointed Director of the Smithsonian Astrophysical Observatory (SAO) in July 1955, he moved its headquarters to the Cambridge campus and continued as Professor and member of the Harvard College Observatory staff. He reorganized the Smithsonian’s observatory and reoriented its research program. Under his directorship, the staff grew from a handful to more than five hundred, including over sixty scientists.

At the request of the National Science Foundation and the National Academy of Sciences, Whipple began development of Baker-Nunn cameras to track artificial satellites during the International Geophysical Year (1957-1958). With the help of Armand N. Spitz, he also developed the Moonwatch optical tracking program, which utilized teams of volunteers observing satellites with hand-held telescopes. When Sputnik was launched in October of 1957, the Moonwatch teams were the only U. S. mechanism available to track
Fred Lawrence Whipple Interviews
Record Unit 9520

the Russian satellite. The SAO subsequently received large contracts from the National Aeronautics and
Space Administration to operate the Satellite Tracking Program (STP), an optical tracking system with
Baker-Nunn camera stations located all over the globe. Whipple's satellite tracking work earned him the
1963 Distinguished Civilian Service Award from President John F. Kennedy.

The Prairie Network, an optical tracking system designed to photograph meteorites and fireballs in order
to calculate their orbits, created by Whipple and Richard E. McCrosky, began observations in 1964.
Coordination of STP camera observations with Jodrell Bank Observatory radio data on flare stars led to
the first identification of radio noise from any star besides the sun.

SAO relied on early computers such as the Mark IV, IBM 7090, and CDC 6400 for rapid processing
of massive quantities of data. Baker-Nunn and Super-Schmidt camera data were directly processed
by automated means, which made possible the 1966 SAO Star Catalog, coordinated by Katherine L.
Haramundanis. Whipple required direct publication from computer tapes, a first for the U. S. Government
Printing Office. Observations from the STP were progressively refined during the sixties through new
laser tracking techniques and advances in automated data processing, to provide improved geodetic and
geophysical data. In the early sixties, stellar atmosphere models were developed with the aid of an IBM
7090 and after 1966 a CDC 6400, in anticipation of far ultraviolet light data from orbiting observatories.
Based on this experience in upper atmosphere research, Whipple was appointed project director for the
orbiting astronomical observatories from 1958 to 1972.

The telegraph service of the International Astronomical Union came to the SAO in 1965 under
the coordination of Owen J. Gingerich and later Brian G. Marsden. It utilized SAO's sophisticated
communications network and led eventually to the creation of the Center for Short-Lived Phenomena by
Robert A. Citron.

Development of an observatory site at Mt. Hopkins, Arizona, began in 1966. Chosen by Whipple for its
altitude and seeing conditions, the site was dedicated in 1981 as the Fred Lawrence Whipple Observatory.
On this site, in conjunction with the U. S. Air Force and University of Arizona, he developed the technically
innovative Multiple Mirror Telescope (MMT), which commenced observations in May of 1979.

In addition to his own research program on comets, meteors, and interplanetary materials, Whipple
coordinated the SAO research programs in celestial mechanics, geodesy, meteoritics, radio astronomy,
neutrino searches, stellar atmosphere models, and the atomic clock project to test the theory of relativity.
He encouraged NASA's lunar program and development of the space telescope.

Whipple was distinguished both for his theoretical work in astrophysics and his technical innovations
in such areas as tracking cameras, multiple mirror telescopes, and meteor bumpers. A member of the
National Academy of Sciences, Whipple received the Academy's J. Lawrence Smith Medal in 1949 for his
meteor research. He was awarded the Kepler Medal by the American Association for the Advancement
of Science in 1971 and the Joseph Henry Medal of the Smithsonian Institution in 1973. Through his
work on numerous federal and private boards, panels, and commissions, Whipple was influential in
the development of national programs for research in astrophysics and creation of a space exploration
program.

Whipple retired from administration of SAO in 1973 but continued active research as a Senior Scientist
from 1973 to 1977. Upon his retirement in 1977, he was appointed Emeritus Phillips Professor of
Astronomy at Harvard.

Introduction

The Smithsonian Institution Archives began its Oral History Program in 1973. The purpose of the program
is to supplement the written documentation of the Archives' record and manuscript collections with an Oral
History Collection, focusing on the history of the Institution, research by its scholars, and contributions of its staff. Program staff conducts interviews with current and retired Smithsonian staff and others who have made significant contributions to the Institution. There are also interviews conducted by researchers or students on topics related to the history of the Smithsonian or the holdings of the Smithsonian Institution Archives.

Whipple was interviewed for the Oral History Collection because of his central role in the modernization of the SAO and his outstanding contributions to science. For additional information, see the following related collections in Smithsonian Archives: the records of the Smithsonian Astrophysical Observatory; the Fred Lawrence Whipple Papers; and Record Unit 9542, Multiple Mirror Telescope videohistory interviews.

Descriptive Entry

Whipple was interviewed on 24 and 25 June 1976 by Pamela M. Henson. The interviews cover his education; radar countermeasure work during World War II; role in the development of national programs for astrophysics and space exploration; research program on comets, meteors, and interplanetary material; administration of SAO; development of Mt. Hopkins, MMT, and optical tracking programs; and reminiscences of colleagues such as Imre G. Izsak, Craig M. Merrihue, and Carlton W. Tillinghast.

Names and Subject Terms

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

Subjects:
Astronomy
Astrophysics.
Meteorites.
World War, 1939-1945

Types of Materials:
Audiotapes
Interviews
Oral history

Names:
Fred Lawrence Whipple Observatory.
Harvard College Observatory
Henson, Pamela M. interviewer.
Mt. Hopkins Observatory.
Multiple Mirror Telescope Observatory
Project Celescope (SAO). Smithsonian Astrophysical Observatory
Satellite Tracking Program (SAO). Smithsonian Astrophysical Observatory
Smithsonian Astrophysical Observatory. Harvard College Observatory
Stanford University
Whipple, Fred Lawrence, 1906-
Container Listing

Box 1

Transcripts of Interviews
Interview 1: 24 June 1976
Interview 2: 25 June 1976

Audiotapes of Interviews
Interview 1: 24 June 1976
Interview 2: 25 June 1976