Smithsonian Institution Archives

Medical Imaging Videohistory Collection, 1989

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Smithsonian Institution Archives
Washington, D.C.
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Collection Overview

Repository:	Smithsonian Institution Archives, Washington, D.C., *osiaref@si.edu*
Title:	Medical Imaging Videohistory Collection
Identifier:	Record Unit 9544
Date:	1989
Extent:	9 videotapes and 3 audiotapes. 11 digital video .wmv files and .rm files (Reference copies).
Creator::	
Language:	English

Administrative Information

Prefered Citation

Smithsonian Institution Archives, Record Unit 9544, Medical Imaging Videohistory Collection

Use Restriction

Restricted. The permission of Ramunas Kondratas must be obtained for commercial reproduction or broadcast. Contact SIHistory@si.edu for more details.

Historical Note

The ACTA (Automatic Computerized Transverse Axial) scanner was developed in 1973. The introduction of this first full-body CAT (Computer Assisted Tomography) -- or CT (Computerized Tomography) -- scanner lead to advancement in medical imaging and diagnostic medicine, especially for non-invasive viewing of soft tissue inside the body. The machine revolutionized diagnosis in cancer, heart disease, and soft tissue irregularities by transmitting X-ray beams through transverse axial slices of the body, resulting in computerized cross-sectional images of the body part scanned. Robert S. Ledley, of Georgetown University Medical Center, designed the ACTA scanner, and it was first used in clinical operation there in 1973.

Robert Ledley received a D.D.S. degree from New York College of Dentistry in 1948 and a M.A. degree in theoretical physics from Columbia University in 1950. Shortly thereafter he worked for both the National Bureau of Standards (now the National Institute of Standards and Technology) and the Johns Hopkins University as a physicist and research analyst. From 1968 to 1970, he was professor of Electrical Engineering in the School of Engineering and Applied Science at the George Washington University. In 1960 he founded and became president of the National Biomedical Research Foundation (NBRF). He joined the School of Medicine, Georgetown University Medical Center in 1970 as a professor in the Department of Physiology and Biophysics. In 1974 he became a professor in the Medical Center's Department of Radiology and in 1975 was appointed director of the Medical Computing and Biophysics Division.

Homer Twigg graduated from the University of Maryland Medical School in 1951 and entered the United States Public Health Service where he received training in radiology. In 1957, he joined the Radiology Department of the Georgetown University Medical Center and was one of the first radiologists to work with Dr. Ledley in applying the ACTA scanner to clinical situations.

Robert Zeman received his M.D. from Northwestern University in 1976. In 1977 he began his residency at Yale New Haven Hospital, in New Haven, Connecticut, and was appointed assistant professor of Diagnostic Radiology at Yale University in 1981. The following year he joined Georgetown University School of Medicine as an assistant professor of Radiology and held numerous other positions there until his appointment as Clinical Director of the Department of Diagnostic Radiology in 1986.

David Griego, Georgetown University Medical Center CAT scanning supervisor and radiology specialist, and Seong Ki Mun, director of the Division of Imaging Physics were interviewed for their knowledge of current trends in the field of medical imaging.

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.

Descriptive Entry

Ramunas Kondratas, curator at the Smithsonian's National Museum of American History (NMAH), interviewed Ledley, Homer Twigg, Robert Zeman, David Greigo, and Seong Ki Mun about the history of CAT scanning in general, and the development and operation of the ACTA scanner in particular, as well as Ledley's more recent work in biotechnology instrumentation. Kondratas also visually documented CAT scanning equipment, from the earliest model ACTA scanner to most recent CT scanners.

This collection consists of five interview sessions, totalling approximately 8:26 hours of recordings and 154 pages of transcript. Also included is one audio interview, totalling approximately 4:30 hours of audiotape and 96 pages of transcript.

Names and Subject Terms

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

Subjects:

Biology
Interviews
Medicine
Oral history
Science -- History
Technology -- History
Tomography

Types of Materials:

Audiotapes
Motion pictures (visual works)
Transcripts
Videotapes

Names:

Automatic Computerized Transverse Axial Scanner
Computer-Assisted Tomography Scanner
Georgetown University
Griego, David
Ki Mun, Seong
Kondratas, Ramunas A., interviewer
Ledley, Robert Steven
National Biomedical Research Foundation
Twigg, Homer
Zeman, Robert K.

Container Listing

Interviews

Interviews **Session 1: c. 1978**

Interviews Consists of a documentary film, "The ACTA Scanner," explains the operating principles of the ACTA scanner, c. 1978, including: techniques used to convert X-ray information into images; demonstration of scanner operation with attention to gantry rotation and image manipulation. Documentary is not transcribed. The original master, dubbing master, and reference copy information listed below corresponds to the film-to-videotape transfer from original 16mm color film. The original film was deposited in the Division of Medical Sciences, NMAH.

Interviews No Transcript, of videotape recording, 6 minutes.

Interviews Recording of Interview: Total Recording Time: 6 minutes

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

Interviews **Session 2: April 6, 1989**

Interviews In the Medical Imaging exhibit, NMAH, featured Ledley discussing the development of the ACTA scanner, c. 1960-1975, including: research in medical imaging prior to the introduction of X-ray CT imaging; work of other researchers in the X-ray CT field; principles of X-ray CT imaging; activities at NBRF and decision to develop scanner; division of labor within scanner development team; functions of various scanner parts. Visual documentation included: original ACTA scanner with close-ups of its various components; wood prototype of scanner; Ledley's original engineering notes and mechanical drawings.

Interviews Transcript, 1-41 pages, 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 videotape, 2 Windows Media Video and 2 Real Media digital files

Interviews **Session 3: July 5, 1989**

Interviews In the laboratory of the National Biomedical Research Foundation (NBRF), Georgetown University Medical Center, Washington, D.C., featured Ledley describing the facilities and activities of the Foundation, c. 1960-1989, including: creation and history of NBRF; tour of office and development areas; demonstration of the simultaneous Hi-lo power microscope; demonstration of the Metachrome (automated chromosome analysis) machine; tour of the design areas, electronic shop, and computer facilities; demonstration of the V-Scan (automated chromosome analysis) machine; demonstration of the AGA (automated genetic analyzer) machine; tour of the protein database facilities; narration with transparencies covering the commercial production of the ACTA scanner. Visual documentation included: publications of NBRF; V-Scan machine; AGA machine; transparencies/slides of equipment.

Interviews Transcript, 1-52 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: 3 U-Matic videotapes
- Reference Copies: 2 VHS videotapes, 3 Windows Media Video and 3 Real Media digital files

Interviews **Session 4: c. September 1984**

Interviews Consists of a documentary video of the Automated Genetic Analysis (AGA) machine video documentary developed at Georgetown University, Washington, D.C., c. September, 1984, including: demonstration and narration of machine's components in operation from insertion of initial genetic sample to extraction of final data. Documentary is not transcribed. The original master, dubbing master, and reference copy information listed below corresponds to the film-to-videotape transfer. The original video was deposited at the NBRF of the Georgetown University Medical Center.

Interviews Transcript, none, of videotape recording, 1 hour.

Interviews Recording of Interview: Total Recording Time: 1 hour

Note:
- Original Masters: 1 U-Matic videotape
- Preservation Masters: 1 Motion jpeg 2000 and 1 mpeg digital files
- Dubbing Masters: 1 U-Matic videotape

- Reference Copies: 1 VHS videotape, 1 Windows Media Video and 1 Real Media digital files

Interviews **Session 5: October 27, 1989**

Interviews At Georgetown University Medical Center, Washington, D.C., featured Griego, Mun, Twigg and Zeman discussing the development of X-ray CT and other medical imaging techniques and current X-ray CT operations, c. 1970-1989, including: introduction and impact of Ledley's ACTA scanner; capabilities and applications of current X-ray CT scanners; discussion of comparative costs of various imaging modalities; applications of other imaging modalities at the Center's Imaging Physics Division; discussion of ethical issues affecting medical imaging; tour of the Center's X-ray CT facilities and procedures areas; demonstration of the Image Management and Communication System. Visual documentation included: slides of early and contemporary CT scans; a complete CT scanning session with a patient.

Interviews Transcript, 1-61 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: 3 U-Matic videotapes
- Reference Copies: 2 VHS videotapes, 3 Windows Media Video and 3 Real Media digital files

Interviews **Audio interview: June 16, 1989**

Interviews At Ledley's office, NBRF, Georgetown University. Ledley discussed his background and career, including: childhood and family life; interest in physics; dentistry training; work at the National Bureau of Standards; research and publications; founding of the National Biomedical Research Foundation; development of the ACTA scanner.

Interviews Transcript, 1-96 pages, of audiotape recording, 4 hours, 30 minutes.

Interviews Recording of Interview: Total Recording Time: 4 hours, 3 minutes.

Note:
- Original Master: not available
- Dubbing Master: not available
- Reference Copies: 3 audiotapes