



Smithsonian

*National Museum of American History Kenneth E. Behring Center*

## Guide to the James A.E. Halkett and Sigmund A. Wesolowski (Adam Wesolow), M.D. Papers

NMAH.AC.0220

Barbara Kemp and Sally Johnson

1986; revised 2023

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## Table of Contents

Collection Overview .....	
Administrative Information .....	1
Biographical Note .....	2
Scope and Contents .....	2
Arrangement .....	3
Names and Subjects .....	
Container Listing .....	
Series 1: James A.E. Halkett Papers, 1922-2010 .....	5
Series 2: H.J. Sugarman Papers, 1950-1951 .....	33
Series 3: Sigmund A. Wesolowski (Adam Wesolow) Papers, 1951 .....	34

## Collection Overview

<b>Repository:</b>	Archives Center, National Museum of American History
<b>Title:</b>	James A. E. Halkett Papers and Sigmund A. Wesolowski, M.D. Papers
<b>Date:</b>	1922-2010
<b>Identifier:</b>	NMAH.AC.0220
<b>Creator:</b>	Halkett, James A. E. (physicist) Wesolowski, Sigmund A.
<b>Source:</b>	National Museum of American History (U.S.). Division of Medical Sciences
<b>Extent:</b>	11 Cubic feet (29 boxes, 1 map folder)
<b>Language:</b>	English .

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## Administrative Information

### Acquisition Information

Collection donated by James A. E. Halkett and Adam Wesolow (Sigmund A. Wesolowski), May 6, 1985.

### Provenance

Collection transferred to the Archives Center from the Division of Medical Sciences (now Division of Medicine and Science), January 23, 1986.

### Related Materials

Objects related to this collection (See accession 1985.0101.01–1985.0101.67) are located in the Division of Medicine and Science at the National Museum of American History. The objects relate to Halkett and Wesolow's early mechanical heart, and include valves, valve holders, valve chambers, pumps, pump parts, tubing, stroke chamber stoppers, reservoirs, cannulae, and cam systems.

### Processing Information

Collection processed by Barbara Kemp, 1986. Addendum processed by Sally Johnson, intern; supervised by Alison Oswald, archivist, 2023.

### Preferred Citation

James A. E. Halkett and Sigmund A. Wesolowski, M.D. Papers, Archives Center, National Museum of American History.

### Restrictions

Collection is open for research.

### Conditions Governing Use

Collection items available for reproduction, but the Archives Center makes no guarantees concerning copyright restrictions. Other intellectual property rights may apply. Archives Center cost-recovery and use fees may apply when requesting reproductions.

## Accruals

An additional 9 cubic feet of archival material documenting the life and work of James A.E. Halkett was donated by Muffie Austin, Kim Gillett, Scott Halkett, and Jan Truitt, children of James A.E. Halkett in 2018.

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## Biographical Note

James Alexander Elder Halkett was born in 1920 in Scotland to inventor James Nicol Halkett, and Edith Victoria Elder. At age three, Halkett immigrated to the United States with his family. He attended Wooster College from 1938-1942 and graduated as the first student at the university to triple major in math, chemistry, and physics. Upon graduating from Wooster College, Halkett worked for the companies A.S. Campbell and General Electric before becoming a U.S. citizen in 1944 and immediately joining the U.S. Navy. During his time in the Navy, Halkett completed the intensive Electronics Training Program and attended the Pre-Radio School, Bliss Electrical School, and the Radio Materiel School. Halkett was stationed in Panama and served as a radio technician until 1946.

After discharge from the Navy in 1946, Halkett attended Massachusetts Institute of Technology (MIT) from 1946-1948 and earned his master's degree with his thesis titled "An Artificial Heart." At MIT he began to develop the early extracorporeal mechanical heart alongside his colleague Bill Sewell, which in 1948 became the first mechanical heart to successfully bypass the left side of a cat's heart. This work was continued at Tufts University from 1949-1950 alongside Dr. Sigmund A. Wesolowski, M.D. (now named Adam Wesolow), with the pair further modifying the cardiac pump which resulted in the long-term survival of animals after bypass surgery. Neither Halkett nor Wesolowski went on to develop this technology for trials with human subjects.

Halkett completed a predoctoral fellowship at Johns Hopkins University from 1950-1952, where he expanded his interest in tissue culture and biophysics. Following his time at Johns Hopkins, he served as a Senior Biologist in the field of Radioisotopes at the Boston Veterans Administration Hospital until 1974. At the hospital, he conducted research on radiology, leukemia, and nuclear medicine. He also served as the hospital's Chief of Research in Animal Medicine, Science, and Technology (RILAMSAT) from 1968 to 1972. While working at the Boston Veterans Administration Hospital, Halkett earned his Doctor of Philosophy from Boston University in 1964, where he was also a lecturer. Halkett died in 2015 at the age of 94.

Sigmund Adam Wesolowski (1921-1993) was born in Massachusetts and attended Harvard University before serving as a midshipman in the Naval Reserve during World War II and later as a captain during the Korean War in the Army Medical Corps. He received a medical degree from Tufts College of Medicine, Boston, Massachusetts and spent one year at Guy's Hospital in London under Lord Russell-Brock where he specialized in thoracic surgery. Wesolowski was Professor of Surgery at the State University of New York Downstate Medical Center in Brooklyn. In the 1980s' he was chief thoracic surgeon at the Veterans Administration Medical Center in Togus, Maine. Wesolowski helped devise a heart pump in the early days of open-heart surgery at Tufts University from 1949-1950 alongside Dr. James A.E. Halkett. The pair further modified the cardiac pump which resulted in the long-term survival of animals after bypass surgery.

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## Scope and Contents

Halkett and Wesolow(ski) materials show the process of technological innovation through laboratory protocols. They also demonstrate the various alternatives explored in the search for effective artificial circulation by using materials which would not damage or clot blood and that could be sterilized. The evolution of the pumping mechanism and power source, the design and materials of the pump itself, and a series of catheters (cannulae) or varying shapes and materials are described as a workable solution is found. Secondly, diversity of techniques developed to solve the problems of artificial circulation and their contributions to that work are documented.

The 2018 addenda documents the life and career of physicist James A.E. Halkett. It includes papers relating to his education, his U.S. Navy service, his work with various employers, and his research in various fields including radio,

metallurgy, ordnance, and radioactivity. Some of the papers relate to his work with General Electric in developing the proximity fuse. The papers include correspondence and notes, including lab notes, graphs and charts; reports; drawings; photographs; training and operational manuals; bibliographic card files; journals, conference materials and other publications; and miscellany.

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## Arrangement

The collection is organized into three series with subseries.

### **Series 1: James A. E. Halkett Papers, 1922-2010**

#### **Subseries 1.1: Personal, 1938-1966**

Subseries 1.1.1: Wooster College, 1938-1942

Subseries 1.1.2: Henry Ford Trade School, 1941

Subseries 1.1.3: Non-Degree Granting Courses, 1943-1944

Subseries 1.1.4: Massachusetts Institute of Technology, 1940-1966

Subseries 1.1.5: Tufts University, 1948-1949

Subseries 1.1.6: Johns Hopkins University, 1949-1954

Subseries 1.1.7: Boston University (PhD Candidate), 1960-1964

#### **Subseries 1.2: Career, 1922-2010**

Subseries 1.2.1: A.S. Campbell, 1942

Subseries 1.2.2: General Electric, 1944

Subseries 1.2.3: U.S. Navy, 1940-1946

Subseries 1.2.4: Boston Veterans Administration Hospital, 1940-1973

Subseries 1.2.5: Boston University (Lecturer), 1957-1961

Subseries 1.2.6: Professional Associations, 1950-1974

Subseries 1.2.7: Reprints and Reprint Requests, 1922-2010

#### **Subseries 1.3: Index Cards, circa 1930s-1950s**

#### **Subseries 1.4: Lantern Slides, circa 1940s-1960s**

Subseries 1.4.1: Mechanical Cardiac Pump, 1949-1950

Subseries 1.4.2: Leukemia in Mice, circa 1960s

Subseries 1.4.3: Experiments, circa 1950s

Subseries 1.4.4: Civil Defense and Medical and Health Services, circa 1950s

Subseries 1.4.5: Effects of the Atomic Bomb, circa 1945

### **Series 2: H.J. Sugarman Papers, 1950-1951**

### **Series 3: Sigmund A. Wesolowski (Adam Wesolow) Papers, 1951**

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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:

- Atomic bomb
- Biophysics
- Cancer
- Civil defense
- Experiments
- Heart -- Surgery
- Heart pump
- Heart, Artificial
- Leukemia in animals
- Medical Equipment
- Medical radiology
- Medical sciences
- Patents
- Radiation
- Radioactivity
- Radiology
- United States. Navy

Types of Materials:

- Diaries -- 20th century
- Laboratory notebooks
- Lecture notes
- Manuscripts
- Masters theses
- Reprints
- Theses

Names:

- Massachusetts Institute of Technology
- National Museum of American History (U.S.). Division of Medical Sciences

Occupations:

- Surgeons

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## Container Listing

### Series 1: James A.E. Halkett Papers, 1922-2010

#### Subseries 1.1: Personal, 1938-1966

Scope and Contents: The personal series contains materials related to Halkett's personal and academic pursuits at Wooster College, Massachusetts Institute of Technology, Johns Hopkins University, and Boston University, among other institutions. The materials consist of manuscripts, correspondence, memoranda, photographs, notebooks, notes, sketches, diagrams, graphs, data, and photo negatives.

#### Subseries 1.1.1: Wooster College, 1938-1942

Box 1, Folder 1            Wooster College, 1938-1942

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#### Subseries 1.1.2: Henry Ford Trade School, 1941

Box 1, Folder 2            Henry Ford Trade School, 1941-1942

Box 1, Folder 3            "Shop Theory," Henry Ford Trade School, 1941

Box 1, Folder 4            "Hydraulics as Applied to Machines," Henry Ford Trade School, 1941

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#### Subseries 1.1.3: Non-Degree Granting Courses, 1943-1944

Box 1, Folder 5            Night School Courses, 1943-1944

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#### Subseries 1.1.4: Massachusetts Institute of Technology, 1940-1966

Box 1, Folder 6            Application to Massachusetts Institute of Technology, 1946

Box 1, Folder 7            Massachusetts Institute of Technology, Graduate Work, 1946-1948

Box 1, Folder 8            Massachusetts Institute of Technology, Computation Notebook for General Physiology Course, circa 1946-1948

Box 1, Folder 9            Massachusetts Institute of Technology, Embryology Course Lab Notes, circa 1946-1948

Box 1, Folder 10           Massachusetts Institute of Technology, John Loofbourow Publications and Correspondence, 1940-1948

Box 1, Folder 11	Massachusetts Institute of Technology, Atom Smashing, 1941
Box 1, Folder 12	Correspondence on Graduate Study, 1942-1948 Notes: This file contains a photocopied portrait of James A.E. Halkett, as well as a summary of his life and academic work through 1948-1949.
Box 2, Folder 1	Massachusetts Institute of Technology, Notes on the Heart, circa 1946-1948
Box 2, Folder 2	Massachusetts Institute of Technology, X-Ray and Irradiation Notes, 1948
Box 2, Folder 3	Massachusetts Institute of Technology, Notebook with Heart Notes, circa 1948
Box 2, Folder 4	"An Artificial Heart," Massachusetts Institute of Technology, Thesis, 1948 Notes: This file contains James A.E. Halkett's thesis "An Artificial Heart," written in 1948.
Box 2, Folder 5	Beckman Flame Photometer, 1948
Box 2, Folder 6	Cardiac Pump Experiments Documentation, 1949
Box 2, Folder 7	<a href="#">Cardiac Pump Photo Slides, circa 1949</a> Notes: This file contains photographic slides of the cardiac pump experiments that took place in 1949. These images, some of which are graphic and sensitive, include the cardiac pump, live dogs, heart surgeries, and canine organs.
Box 2, Folder 8	"Biography of An Idea," Manuscript, 1962
Box 2, Folder 9	Halkett-Henderson, Hamarneh, Finn Correspondence and letters from People Who Worked On The Heart, 1948-1966
Box 2, Folder 10	Correspondence and Reprints on Mechanical Hearts, circa 1966
Box 3, Folder 1	Notebook Sketches and Personal Correspondence, 1949

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### Subseries 1.1.5: Tufts University, 1948-1949

Box 3, Folder 2	Tufts, Notes on the Heart, circa 1948-1949
Box 3, Folder 3	Tufts, Research Notebook, 1948-1949
Box 3, Folder 4	Tufts Medical School Reprints, 1936-1948
Box 3, Folder 5	Tufts Medical School , 1949
Box 3, Folder 6	Reprints of Raynaud, Frilley, Wolff, 1949

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**Subseries 1.1.6: Johns Hopkins University, 1949-1954**

Box 3, Folder 7	Correspondence on Johns Hopkins School of Hygiene, 1949
Box 3, Folder 8	Johns Hopkins, Water Monochromator Thesis Notes, circa 1950
Box 4, Folder 1	Johns Hopkins, Water Monochromator Thesis Notes, circa 1950
Box 4, Folder 2	Water Monochromator Brochure, circa 1954
Box 4, Folder 3	Johns Hopkins, Acceptance and Financial Records, 1950-1952
Box 4, Folder 4	Johns Hopkins, Fellowships and Correspondence, 1949-1952
Box 4, Folder 5	Correspondence on Johns Hopkins Pay and Tuition, 1950
Box 4, Folder 6	Johns Hopkins, Schedule of Lectures, 1950-1951
Box 4, Folder 7	Johns Hopkins, National Institutes of Health Fellowship, 1950-1951
Box 4, Folder 8	Johns Hopkins, Microscopic Anatomy, 1949
Box 4, Folder 9	Photomicrography of Photometric Apparatus, 1950 Notes: This file contains black and white photo negatives.
Box 4, Folder 10	Johns Hopkins, Sketches, circa 1950s
Box 4, Folder 11	Notes on Johns Hopkins Course with Dr. Strong, circa 1950s
Box 4, Folder 12	Johns Hopkins, Notes on Tissue Culture, 1951
Box 4, Folder 13	Johns Hopkins, Histology Course Notes and Materials, circa 1950
Box 4, Folder 14	Johns Hopkins, Notes and Experiments, circa 1950
Box 4, Folder 15	Johns Hopkins, Dr. George Gey Publications, circa 1950
Box 5, Folder 1	Journal of the American Medical Association, December 1952
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1.1.7: Boston University (PhD Candidate), 1960-1964	
Box 5, Folder 2	Boston University, PhD Materials, 1961-1964
Box 5, Folder 3	Boston University, Endocrinology Lecture Schedule, 1960-1961
Box 5, Folder 4	Boston University, Dissertation Administrative Materials, 1962

Box 5, Folder 5	Boston University, Published Dissertation, 1964 Notes: This file contains a leatherbound copy of James A.E. Halkett's doctoral dissertation.
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### Subseries 1.2: Career, 1922-2010

Scope and Contents: This series contains materials related to Halkett's work-related and public-facing pursuits at private companies, the United States Navy, and the Boston Veterans Administration Hospital. The materials consist of manuscripts, correspondence, memoranda, photographs, notebooks, notes, sketches, diagrams, graphs, data, photo negatives, and reprints.

#### Subseries 1.2.1: A.S. Campbell, 1942

Box 5, Folder 6	A.S. Campbell, Reports, circa 1940s
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Box 5, Folder 7	A.S. Campbell, American Electroplaters Society, 1942
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#### Subseries 1.2.2: General Electric, 1944

Box 5, Folder 8	General Electric, Employee Information, circa 1940s Notes: This file contains booklets produced by General Electric which detail employee benefits, the United States codes, company policies, and insurance plans.
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Box 5, Folder 9	General Electric, 1944
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Box 5, Folder 10	Notebook for General Electric Experiments, 1944
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Box 6, Folder 1	General Electric, Experiments, 1944
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#### Subseries 1.2.3: U.S. Navy, 1940-1946

Box 6, Folder 2	Written Interview on Navy Experience, undated
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Box 6, Folder 3	<a href="#">Navy Portrait, circa 1944-1946</a> Notes: This file contains a portrait of James A.E. Halkett during his time in the U.S. Navy.
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Box 6, Folder 4	Great Lakes Boot Camp, 1944
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Box 6, Folder 5	Correspondence with C.W. Hewett, 1944
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Box 6, Folder 6	Pre-Radio Training Course Materials, 1944
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Box 6, Folder 7	Pre-Radio Training Course Materials, 1944
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Box 6, Folder 8	Pre-Radio Training Course Materials, 1944
Box 6, Folder 9	Bliss Electrical School, Coursework, circa 1945
Box 6, Folder 10	Bliss Electrical School, Coursework, circa 1945
Box 7, Folder 1	Bliss Electrical School, Graduation, 1945
Box 7, Folder 2	Radio Materiel School, Schedules, 1945
Box 7, Folder 3	Radio Materiel School, Notes, 1945
Box 7, Folder 4	Radio Materiel School, Notes, 1945
Box 7, Folder 5	Radio Materiel School, Coursework and Lab Work, 1945
Box 7, Folder 6	Radio Materiel School, Coursework and Lab Work, 1945
Box 7, Folder 7	"Advanced Electronic Fundamentals," Radio Materiel School, circa 1940s
Box 7, Folder 8	Capitol Radio Engineering Institute Correspondence Study Booklets, circa 1940s
Box 7, Folder 9	Capitol Radio Engineering Institute Correspondence Study Booklets, circa 1940s
Box 8, Folder 1	Capitol Radio Engineering Institute Correspondence Study Booklets, circa 1940s
Box 8, Folder 2	Capitol Radio Engineering Institute Correspondence Study Booklets, circa 1940s
Box 8, Folder 3	U.S. Armed Forces Institute Catalog, 1944 Notes: This file contains a booklet from the U.S. Armed Forces Institute that details educational opportunities for members of the U.S. military during World War II.
Box 8, Folder 4	U.S. Navy Correspondence, 1945
Box 8, Folder 5	Correspondence with James N. Halkett, 1946 Notes: This file contains personal correspondence with James A.E. Halkett's father, James N. Halkett.
Box 8, Folder 6	Development of a Post-War Lab Correspondence, 1945
Box 8, Folder 7	Naval Training School Correspondence Photocopies, 1944
Box 8, Folder 8	Post-War Scientific Goals in the U.S., 1945
Box 8, Folder 9	Veteran Benefits, 1946

Notes: This file contains correspondence and memoranda on veteran benefits for those who served in World War II.

Box 8, Folder 10	"The Polyphase Slide Rule," William E. Breckenridge, 1938
Box 8, Folder 11	"The Log Log Duplex Decitrig Slide Rule," Kells, Kern, and Bland, 1939
Box 8, Folder 12	"Allied's Radio Data Handbook," Allied Radio Corporation, 1943
Box 8, Folder 13	Electronometer Instructions, 1940
Box 8, Folder 14	"Receiving Tube Manual," Radio Corporation of America, 1940
Box 9, Folder 1	Navy Training Materials, circa 1944
Box 9, Folder 2	Air-Cooled Transmitting Tubes Technical Manual, 1938
Box 9, Folder 3	Navy Technology Instruction Manuals, circa 1940s
Box 9, Folder 4	Navy Technology Instruction Manuals, circa 1940s
Box 9, Folder 5	"Instructions for Enlisted Men Engaged in the Operation and Upkeep of Gyroscopic Compasses," Bureau of Navigation, 1941
Box 9, Folder 6	"Electrons (+ and -), Protons, Photons, Neutrons, and Cosmic Rays," Robert Andrews Millikan, 1941
Box 10, Folder 1	"Basic Radio: The Essentials of Electron Tubes and Their Circuits," J. Barton Hoag, 1942
Box 10, Folder 2	"Notes on Servicing Radio and Sound Equipment," U.S. Navy, 1942
Box 10, Folder 3	"Principles and Practice of Radio Servicing," U.S. Armed Forces Institute, 1943
Box 10, Folder 4	"Atomic Energy for Military Purposes," Henry DeWolf Smyth, 1945 Notes: This file contains the 1945 book "Atomic Energy for Military Purposes" by Henry DeWolf Smyth, which serves as "The Official Report on the Development of the Atomic Bomb under the Auspices of the United States Government, 1940-1945."
Box 10, Folder 5	"TM 9-1575 War Department Technical Manual, Wrist Watches, Pocket Watches, Stop Watches, and Clocks," U.S. Navy, 1945
Map-folder 1	Photograph, Company 1738, United States Naval Training Center, Great Lakes, Illinois, 1944
Map-folder 1	Photograph, Class 21-45, Radio Materiel School, Naval Research Laboratory, Washington D.C., 1945

Map-folder 1	Class 19-45, United States Naval Training School, Bliss Electrical School, Takoma park, Maryland, 1945-01-11 1 Photograph (10 in x 36 in )
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#### Subseries 1.2.4: Boston Veterans Administration Hospital, 1940-1973

Box 10, Folder 6	Curriculum Vitae, undated Notes: This file contains a copy of James A.E. Halkett's curriculum vitae, which details his career and participation in professional associations through his time at the Boston Veterans Administration Hospital.
Box 10, Folder 7	Index to Lantern Slides on the Effects of the Atomic Bomb in Hiroshima and Nagasaki, Japan , 1950 Notes: This file contains an index to forty-seven lantern slides in Box 28. These lantern slides document the "Effects of the Atomic Bomb" in Nagasaki, Japan in 1945 and are sensitive and graphic depictions of victims.
Box 10, Folder 8	Training Book on Radar, Unknown Author, circa 1940s
Box 10, Folder 9	Booklets on Radiation, undated
Box 11, Folder 1	UV Sanitation, circa 1940s
Box 11, Folder 2	Radioactivity Center, circa 1940s-1950s
Box 11, Folder 3	Radioisotope Lab Inventory, 1954
Box 11, Folder 4	Radiological Health Handbook, 1954
Box 11, Folder 5	The Nucleus, April 1954
Box 11, Folder 6	"Nucleonics", 1954
Box 11, Folder 7	Atomic Energy Commission, 1954
Box 11, Folder 8	Boston Veterans Administration Laboratory Radiation, 1955
Box 11, Folder 9	Civil Defense Plans for Boston, 1956 Notes: This file contains a Cold War-era booklet on Boston's civil defense plan in the case of a nuclear strike. See also Box 26, which houses lantern slides with additional civil defense plans.
Box 11, Folder 10	Tracerlog, 1954-1957 Notes: This file contains issues of <i>Tracerlog</i> , which served as a catalog for Tracerlabs, a company that specialized in tools for radioactive studies.

Box 11, Folder 11	Tracerlog, 1958-1959 Notes: This file contains issues of <i>Tracerlog</i> , which served as a catalog for Tracerlabs, a company that specialized in tools for radioactive studies.
Box 11, Folder 12	Radioisotope Training Manual, 1960
Box 11, Folder 13	Nuclepore - General Electric Atomic Products Division, circa 1960s
Box 11, Folder 14	Radioactive Isotope Experiments on Kidneys, 1966
Box 11, Folder 15	Leukemia Abstracts, 1953-1954
Box 11, Folder 16	Leukemia Experiment Notes, circa 1950s-1960s
Box 11, Folder 17	Leukemia Studies with Negatives, circa 1955 Notes: This file includes black and white photo negatives in relation to James A.E. Halkett's research on leukemia.
Box 12, Folder 1	Leukemia Data and Graphs, circa 1960s
Box 12, Folder 2	Leukemia Data and Graphs, 1962
Box 12, Folder 3	Correspondence on Leukemia Mice Experiments, circa 1950s–1970s
Box 12, Folder 4	Leukemia Experiments, Notes, and Data, 1950s–1970s
Box 12, Folder 5	Leukemia Experiments, Notes, and Data, 1950s–1970s
Box 12, Folder 6	Leukemia Experiments, Notes, and Data, 1950s–1970s
Box 12, Folder 7	Leukemia Experiments with Mice, circa 1950s–1960s
Box 12, Folder 8	Leukemia Experiments with Mice, circa 1950s–1960s
Box 12, Folder 9	Jackson Laboratory Correspondence, 1956
Box 12, Folder 10	Leukemia Research Notebook, circa 1950s
Box 13, Folder 1	Leukemia Research Notebook with Negatives, circa 1950s
Box 13, Folder 2	Pages from Research Notebook, 1954
Box 13, Folder 3	Pages from Research Notebook, 1955
Box 13, Folder 4	Pages from Research Notebook, 1954-1955

Box 13, Folder 5	Pages from Research Notebook, 1954-1956
Box 13, Folder 6	Pages from Research Notebook, 1959-1960
Box 13, Folder 7	Manuscript Drafts on Leukemia Mice Experiments, circa 1950s
Box 13, Folder 8	Leukemia in Mice, circa 1950s
Box 14, Folder 1	X-Ray Resistance of Swiss Mice, circa 1957
Box 14, Folder 2	Data on Eggs, Chicken, and Poultry, circa 1950s
Box 14, Folder 3	"Studies on the Deposition and Nature of Egg Yolk Iron," James A.E. Halkett, 1958
Box 14, Folder 4	"Studies on the Deposition and Nature of Egg Yolk Iron," Correspondence and Notes, 1958
Box 14, Folder 5	Antibodies Graphs, circa 1960s
Box 14, Folder 6	"Cooperative Study of the Renogram in Renovascular Hypertension," Written Manuscript, circa 1960s
Box 14, Folder 7	Early Draft of "Allograft Survival in Nonsusceptible Hosts," James A.E. Halkett, circa 1960s
Box 14, Folder 8	Manuscript Drafts on Leukemia Mice Experiments, circa 1950s-1960s
Box 14, Folder 9	Splenic Threshold Concentration, Changes, and Relationships, circa 1960s
Box 14, Folder 10	"The Effect of Cortisone on the Primary and Secondary Host Responses to Different Antigens," James A.E. Halkett, circa 1960s
Box 14, Folder 11	"Effect of Dose Dilution on Survival of AK Leukemia in Recipient Swiss Mice", 1963
Box 14, Folder 12	"Effect of Dose Dilution on Survival of AK Leukemia in Recipient Swiss Mice," Manuscript and Correspondence, 1963
Box 14, Folder 13	"The Role of the Cheek Pouch in Effecting Transplantation Immunity in the Hamster," Manuscript, 1963
Box 14, Folder 14	"Temporal Relationship Between Total Body X-Irradiation and the Immune Response," Manuscript and Notes, 1963
Box 14, Folder 15	"The Effect of Cold Stress and Pseudomonas Aeruginosa Gavage on the Survival of Three-Week-Old Swiss Mice," Manuscript and Correspondence, 1968
Box 14, Folder 16	Correspondence on Leukemia Mice Experiments, 1970

Box 14, Folder 17	Burroughs Welcome—Imuran, 1966
Box 14, Folder 18	Mice Spleen Photos, circa 1960s
Box 15, Folder 1	Growth Promoting Experiments, circa 1960s
Box 15, Folder 2	Wilson Laboratories Correspondence, 1965
Box 15, Folder 3	Leukemia in Mice Percent Dead of Rejected AK Mice, circa 1965
Box 15, Folder 4	"Allograft Survival in Nonsusceptible C57BL/6J Mice Hosts", 1970
Box 15, Folder 5	Correspondence Related to "Allograft Survival in Nonsusceptible C57BL/6J Mice", 1970
Box 15, Folder 6	Neohydrin Research Notebook, circa 1962
Box 15, Folder 7	Neohydrin Research Notebook, circa 1964
Box 15, Folder 8	Millipore Work, circa 1964
Box 15, Folder 9	Sketches, Notes, Experiment Data, circa 1970s
Box 15, Folder 10	RILAMSAT (Research in Laboratory Animal Medicine, Science, and Technology) Positions, 1965-1968 Notes: This file contains forms from the Boston Veterans Administration Hospital related to job positions at the hospital in the area of animal care.
Box 15, Folder 11	RILAMSAT (Research in Laboratory Animal Medicine, Science, and Technology) Positions, 1968-1971 Notes: This file contains forms from the Boston Veterans Administration Hospital related to job positions at the hospital in the area of animal care.
Box 16, Folder 1	"Principal Duties and Responsibilities," Handwritten Manuscript, circa 1966
Box 16, Folder 2	"Duties and Responsibilities," Notes and Data, circa 1967
Box 16, Folder 3	Lecture on Animal Care, 1960s
Box 16, Folder 4	Lab Animal Care Checklist, 1960s
Box 16, Folder 5	Fetal Research Newsletter, 1967-1968
Box 16, Folder 6	Jamaica Plain High School Letter of Agreement, 1969



Box 16, Folder 7	Wedco Roller Tube Apparatus, 1953
Box 16, Folder 8	Laboratory Budget, Fiscal Year 1953-1954, 1953-1954
Box 16, Folder 9	Boston Veterans Administration Hospital Credit Union, 1955
Box 16, Folder 10	Boston Veterans Administration Hospital Research Paperwork, circa 1960s
Box 16, Folder 11	"How Does Your Pay Compare?" The Plainsman, Boston Veterans Administration, 1967
Box 16, Folder 12	Veterans Administration Reports of Research Projects, 1964
Box 16, Folder 13	Veterans Administration Hospital Kidney Report, circa 1966
Box 16, Folder 14	Boston Veterans Administration Hospital Report, 1967
Box 16, Folder 15	Boston Veterans Administration Hospital Research Annual Report, 1971
Box 17, Folder 1	Summary of Work, 1971-1972
Box 17, Folder 2	Request for Funding, 1972
Box 17, Folder 3	Boston Veterans Administration Hospital Research Annual Report, 1973
Box 17, Folder 4	Boston Veterans Administration Hospital Administrative Papers, circa 1970s

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#### Subseries 1.2.5: Boston University (Lecturer), 1957-1961

Box 17, Folder 5	Advances in Experimental Biology, Course Materials, 1957
Box 17, Folder 6	Boston University, Lecture Notes, 1960
Box 17, Folder 7	Written Test, circa 1950s-1960s
Box 17, Folder 8	Exercises in Experimental Biology at Boston University, 1961

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#### Subseries 1.2.6: Professional Associations, 1950-1974

Box 17, Folder 9	International Society for Cell Biology VII International Congress, 1950
Box 17, Folder 10	Meeting of Hospital Physicists in Boston Area, 1953
Box 17, Folder 11	Conference on Leukocytic Functions, 1954

Box 17, Folder 12	New England Veterans Administration Clinical Research Society, 1954-1961
Box 18, Folder 1	Research Society Conferences, 1956, 1966
Box 18, Folder 2	Veterans Administration Clinical Research Society Abstract of Papers, Eleventh Annual Meeting, 1959
Box 18, Folder 3	Symposium on Normal and Abnormal Differentiation and Development, National Cancer Institute, 1960
Box 18, Folder 4	Radiation Protection of the Radioisotope Unit Personnel, circa 1960s
Box 18, Folder 5	Radiation Research Society Conference Notes and Programs, 1960-1965
Box 18, Folder 6	American Heart Association, 1965
Box 18, Folder 7	Professional Association Meetings, 1967-1974
Box 18, Folder 8	Tufts Biology Career Conference, 1968
Box 18, Folder 9	American Association for Laboratory Animal Science, 1970
Box 18, Folder 10	Canadian Federation of Biological Societies Conference, 1970
Box 18, Folder 11	Proceedings of the Canadian Federation of Biological Societies, 1970
Box 18, Folder 12	International Congress of Radiation Research Conference, 1970
Box 18, Folder 13	International Congress of Radiation Research Conference, 1970
Box 19, Folder 1	John Ott Time-Lapse Photography, 1964
Box 19, Folder 2	New England Branch of Animal Care Panel, Board of Directors, 1965-1967
Box 19, Folder 3	16th Annual Animal Care Panel Data and Photos, 1965 Notes: This file contains information on James A.E. Halkett's research on leukemia in mice and includes sensitive photos of mice with leukemia, dissections, and internal organs.
Box 19, Folder 4	Animal Care Panel, 1966
Box 19, Folder 5	Committee to Study the Computer and Nuclear Medicine in Regionalization, 1971-1974 Notes: This file contains government correspondence and memoranda regarding radiology and nuclear medicine.
Box 19, Folder 6	Committee to Study the Computer and Nuclear Medicine in Regionalization, 1971-1974

Notes: This file contains government correspondence and memoranda regarding radiology and nuclear medicine.

Box 19, Folder 7

Committee to Study the Computer and Nuclear Medicine in Regionalization, 1973-1974

Notes: This file contains government correspondence and memoranda regarding radiology and nuclear medicine.

Box 20, Folder 1

Committee to Study the Computer and Nuclear Medicine in Regionalization Notes, 1973-1974

Notes: This file contains government correspondence and memoranda regarding radiology and nuclear medicine.

Box 20, Folder 2

Committee to Study the Computer and Nuclear Medicine in Regionalization, 1974

Notes: This file contains government correspondence and memoranda regarding radiology and nuclear medicine.

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### Subseries 1.2.7: Reprints and Reprint Requests, 1922-2010

Box 20, Folder 3

"The Effects of Roentgen Rays and Radioactive Substances on Living Cells and Tissues," Leo Loeb, with Slide, 1922

Box 20, Folder 4

Reprints on Tissue Culture, 1938-1948

Box 20, Folder 5

Reprints on Experimental Surgeries, 1930s–1950s

Box 20, Folder 6

"The Delivery of Iron to the Immature Red Cell: A Critical Review," Jay H. Katz, circa 1940s

Box 20, Folder 7

Reprints on Experimental Transplant Surgeries, circa 1940s–1950s

Box 20, Folder 8

Reprints on Poliomyelitis, 1947-1949

Box 20, Folder 9

Reprints on Endocrinology and Radium, 1940s–1960s

Box 21, Folder 1

"The Absorption of Radiophosphorus in Irradiated and Non-Irradiated Mice," L.D. Marinelli and J.M. Kenney, 1941

Box 21, Folder 2

Reprints on Tissue Culture, 1947-1948

Box 21, Folder 3

Reprints of Surgical Articles, 1950s–1970s

Box 21, Folder 4

"The Intravascular Lifespan of Transfused Leukocytes Tagged with Atabrine," Laurens P. White, 1954

Box 21, Folder 5

"Changes Occurring in Normal and Tumor Blood Cells under Varying Conditions," Matthew F. Sak, circa 1960s

Box 21, Folder 6	"Use of Artificial Materials in Surgery," Sigmund A. Wesolowski, 1966
Box 21, Folder 7	Reprints on Leukemia, 1960s–1970s
Box 21, Folder 8	Articles on Left-Ventricular Assist Device, circa 1968–2010
Box 21, Folder 9	Reprints on Leukotrienes and Tumors, circa 1970s–1980s
Box 21, Folder 10	"The Interaction of Blood Hemostatic Elements with Artificial Surfaces," R.G. Mason, 1971
Box 21, Folder 11	New England Nuclear, 1981-1983 Notes: This file contains an article on James A.E. Halkett's extracorporeal heart pump and features a photograph of him sitting next to the pump.
Box 21, Folder 12	The Bulletin, Journal of the Monroe County Medical Society, 2008
Box 21, Folder 13	Reprint Requests, 1958
Box 21, Folder 14	Reprint Requests, 1958
Box 21, Folder 15	Reprint Requests, 1963
Box 21, Folder 16	Reprint Requests, 1963
Box 21, Folder 17	Reprint Requests, 1968
Box 21, Folder 18	Reprint Requests, 1970
Box 22, Folder 1	Reprint Requests, 1970
Box 22, Folder 2	Patent Lawyer Papers, circa 1970s Notes: This file contains information on James A.E. Halkett's patents and includes notes, sketches, and diagrams.
Box 22, Folder 3	Patent Lawyer Papers, circa 1974 Notes: This file contains information on James A.E. Halkett's patents and includes reports and handwritten notes.

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### Subseries 2.1: Index Cards, circa 1930s-1950s

Box 23	Plants & Bibliography, circa 1940s-1950s
Box 24	Bibliography, circa 1930s-1950s

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**Subseries 1.3: Lantern Slides, circa 1940s–1960s**

Scope and Contents: This series contains lantern slides related to the extracorporeal cardiac pump, Halkett's research on leukemia in mice, Halkett's experiment data, Boston's civil defense and medical and health services in the case of a nuclear attack, and effects of the atomic bombing of Nagasaki in 1945. These slides contain graphic and sensitive images.

**Subseries 1.3.1: Mechanical Cardiac Pump, 1949-1950**

Box 25, Item 1	Diagram, circa 1949-1950
Box 25, Item 2	Reservoir Diagram, circa 1949-1950
Box 25, Item 3	Left External Jugular Vein Cannulation, circa 1949-1950
Box 25, Item 4	Experimental Replacement of Left Heart by Mechanical Pump, circa 1949-1950
Box 25, Item 5	Cardiac Cannulae, circa 1949-1950
Box 25, Item 6	Valve Construction, circa 1949-1950
Box 25, Item 7	Left Atrial Cannulation, circa 1949-1950
Box 25, Item 8	Replacement Time, circa 1949-1950
Box 25, Item 9	Electromanometric Pressure Tracings, circa 1949-1950
Box 25, Item 10	Simultaneous Artificial Maintenance of the Systemic and Pulmonary Circulations, circa 1949-1950
Box 25, Item 11	Replacement Time, circa 1949-1950
Box 25, Item 12	Left Brachial Artery Cannulation, circa 1949-1950
Box 25, Item 13	Functional Replacement of the Heart, circa 1949-1950
Box 25, Item 14	Mechanical Heart Pumps at Operation and Lung Oxygen, circa 1949-1950
Box 25, Item 15	Electrocardiographic Tracings, circa 1949-1950
Box 25, Item 16	Pump Used in Surgery, circa 1949-1950
Box 25, Item 17	Pump-Donor Lung Replacement, circa 1949-1950
Box 25, Item 18	Pump Control Studies, circa 1949-1950
Box 25, Item 19	Electromanometric Tracings, circa 1949-1950

Box 25, Item 20	Depulsator, circa 1949-1950
Box 25, Item 21	Pulmonic Valve Resection #1, circa 1949-1950
Box 25, Item 22	Pulmonic Valve Resection #2, circa 1949-1950
Box 25, Item 23	Pulmonic Valve Resection #3, circa 1949-1950
Box 25, Item 24	Pulmonic Valve Resection #4, circa 1949-1950
Box 25, Item 25	Two Cusp Pulmonic Valve Resection, circa 1949-1950
Box 25, Item 26	Left Pulmonary Artery Cannulation, circa 1949-1950
Box 25, Item 27	Circuit for Coronary Occlusion during Heart-Lung By-Pass, circa 1949-1950
Box 25, Item 28	Circuit for Heart-Lung By-Pass Using Homologous Lungs, circa 1949-1950
Box 25, Item 29	Ligation Main Pulmonary Artery, circa 1949-1950
Box 25, Item 30	Pump Setup with Organs (Color Photo), circa 1949-1950
Box 25, Item 31	Pump Setup on Table, circa 1949-1950
Box 25, Item 32	Heart-Lung By-Pass Using Pumps and Homologous Lungs, circa 1949-1950
Box 25, Item 33	Vein Auto-graft Survival Rate - No Anticoagulants, circa 1949-1950
Box 25, Item 34	Heart-Lung By-Pass Using Pumps and Homologous Lungs, circa 1949-1950
Box 25, Item 35	Heart-Lung By-Pass Using Pumps and Homologous Lungs, circa 1949-1950
Box 25, Item 36	Heart-Lung By-Pass Using Pumps and Homologous Lungs, circa 1949-1950
Box 25, Item 37	Heart-Lung Replacement With Complete Coronary Occlusion, circa 1949-1950
Box 25, Item 38	Heart-Lung By-Pass Using Pumps and Homologous Lungs, circa 1949-1950
Box 25, Item 39	Non-Pulsatile Perfusion of Intact Pulmonary Circulation, circa 1949-1950
Box 25, Item 40	Circuit for Non-Pulsatile Perfusion of Pulmonic Circuit, circa 1949-1950
Box 25, Item 41	2 Cusp Pulmonic Valve Resections, circa 1949-1950
Box 25, Item 42	2 Cusp Pulmonic Valve Resections, circa 1949-1950
Box 25, Item 43	Reservoir Pressure Regulator, circa 1949-1950

Box 25, Item 44	3 Hour Perfusions, circa 1949-1950
Box 25, Item 45	Cardiac Pump Diagram, circa 1949-1950
Box 25, Item 46	Animal Studies Results of 21 Recovery Experiments, circa 1949-1950
Box 25, Item 47	Arterial Whole Blood, circa 1949-1950
Box 25, Item 48	Biopsy of Lung After 3 Hours of Non-Pulsatile Perfusion of Pulmonary Circuit, circa 1949-1950
Box 25, Item 49	4-Day Canine Heart Homograft Myocardial Necrosis, undated
Box 25, Item 50	4-Day Canine Heart Homograft Endocardium, undated
Box 25, Item 51	4-Day Canine Heart Homograft, undated
Box 25, Item 52	4-Day Canine Heart Homograft Epicardium, undated
Box 25, Item 53	Homotransplantation of Canine Heart, undated
Box 25, Item 54	Homotransplantation of Canine Heart, undated
Box 25, Item 55	Technique of Puppy Heart Homograft, undated

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### Subseries 1.3.2: Leukemia in Mice, circa 1960s

Box 26, Item 1	Leukemia in Mice, undated
Box 26, Item 2	Hyperimmune, undated
Box 26, Item 3	Leukemia in Mice, undated
Box 26, Item 4	Leukemia in Mice, undated
Box 26, Item 5	Leukemia in Mice, undated
Box 26, Item 6	Leukemia in Mice, undated
Box 26, Item 7	Normal Swiss [DHD?], undated
Box 26, Item 8	Indicating Mice Life Span, undated
Box 26, Item 9	Transfer of Resistance Between Swiss Mice, undated
Box 26, Item 10	X-Rayed Swiss [DHD?], undated

Box 26, Item 11	Number and Average Death of Animals Surviving Beyond 39 Days for Each Group, undated
Box 26, Item 12	Death of [AK?] Mice After Injection of Different Dilutions of [AK?] Leukemia, undated
Box 26, Item 13	Potency of 11 to 15 Days, undated
Box 26, Item 14	Transfer of Resistance Between Swiss Mice, undated
Box 26, Item 15	Percent Dead of Reinjecting [AK?] Mice, undated
Box 26, Item 16	Normal Swiss [DHD?], undated
Box 26, Item 17	X-Rayed Swiss [DHD?], undated
Box 26, Item 18	[AK?] Mouse and [AK?] Tumor, undated
Box 26, Item 19	Percent Survival [AKT?] in Irradiated Swiss Mice by [DID?] Technique, undated
Box 26, Item 20	Death of [AKT?] Injected Swiss Mice Within 20 Days, undated
Box 26, Item 21	Leukemia in Mice, undated
Box 26, Item 22	X-Rayed Swiss, undated
Box 26, Item 23	Average Survival in Days of Mice Injected First with Tissue Cultured Cells Followed by Fresh Tumor Cells, undated
Box 26, Item 24	Effect of X-Ray, undated
Box 26, Item 25	Death [AK?] Mice, undated
Box 26, Item 26	Kidney Homogenates, undated
Box 26, Item 27	Average Day of Death, undated
Box 26, Item 28	Leukemia in Mice, undated
Box 26, Item 29	[DHD?], undated
Box 26, Item 30	Radioisotopes, 1963
Box 26, Item 31	[DHD?], undated
Box 26, Item 32	Experimental Groups, undated
Box 26, Item 33	Percent Total Cells Versus Days for Normal and Leukemic Mice, undated



Box 26, Item 34	Percent Total Cells Versus Days for Normal and Leukemic Mice, undated
Box 26, Item 35	Dissected Mouse, undated
Box 26, Item 36	Two Mice, undated
Box 26, Item 37	Two Mice, undated
Box 26, Item 38	Two Mice, undated
Box 26, Item 39	Two Mice, undated
Box 26, Item 40	Two Mice, undated
Box 26, Item 41	Two Mice, undated
Box 26, Item 42	[AK?] Mice, undated
Box 26, Item 43	[AK?] Leukemia to [AK?] Mouse, undated
Box 26, Item 44	[AK?] Leukemia to Swiss Mouse, undated
Box 26, Item 45	Day of Death Swiss Mice, undated
Box 26, Item 46	Day of Death Swiss Mice, undated
Box 26, Item 47	Persistence of [AK?] Leukemia in 400 [R?] Whole Body X-Irradiated Swiss Mice, undated
Box 26, Item 48	[AK?] Mice Dead in 20 Days, circa 1961
Box 26, Item 49	Leukemia in Mice, circa 1960
Box 26, Item 50	Leukemia in Mice, circa 1960s
Box 26, Item 51	Persistence of [AK?] Leukemia in Preinjected Non-Irradiated Swiss Mice, circa 1960s
Box 26, Item 52	Death of Swiss Mice Following Treatment with [AK?] Leukemia and 400 [R?] X-Irradiation, circa 1960s
Box 26, Item 53	Persistence of [AK?] Leukemia in Pretreated Swiss Mice, circa 1960s
Box 26, Item 54	Persistence of [AK?] Leukemia in Treated Swiss Mice, circa 1960s
Box 26, Item 55	Donor-Host-Donor Technique, circa 1960s

Box 26, Item 56	Persistence of [AK?] Leukemia in Preinjected Non-Irradiated Swiss Mice, circa 1960s
Box 26, Item 57	Persistence of [AK?] Leukemia in Pretreated Swiss Mice, circa 1960s
Box 26, Item 58	Persistence of [AK?] Leukemia in Swiss Mice, circa 1960s
Box 26, Item 59	Persistence of [AK?] Leukemia Following 400 [R?] X-Ray, circa 1960s
Box 26, Item 60	Persistence of [AK?] Leukemia in [AK?] Mice, circa 1960s
Box 27, Item 1	Probable Leukemia, undated
Box 27, Item 2	Dissected Mouse with Enlarged Organs, undated
Box 27, Item 3	Probable Leukemia, undated
Box 27, Item 4	Two Live Mice, 1965
Box 27, Item 5	Hand Holding Mouse with Colon Cancer, 1965
Box 27, Item 6	A Comparison of the Average Weights of Various Cages of 10 Mice, 1965
Box 27, Item 7	A Comparison of the Average Organ Weights of Controls and Sick Groups of Mice, 1965
Box 27, Item 8	Per Cent Dead of 3 Week Old Female Mice Following Various Treatments with Pseudomonas and Stress at -20 Degrees for 2.5 Hours, 1965
Box 27, Item 9	Per Cent of Mice Dead Following 1 Gavage of Pseudomonas and Exposure to Cold Stress, 1965
Box 27, Item 10	Ratio of <i>S. faecalis</i> to <i>E. coli</i> Found in Fecal Homogenates, 1965
Box 27, Item 11	Per Cent of Mice Dead Following 5 or Less Gavages of Pseudomonas and Exposure to Cold Stress, 1965
Box 27, Item 12	Potency of 11 to 20 Days, undated

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### Subseries 1.3.3: Experiments, circa 1950s

Box 27, Item 13	Iron-59 in Red Cells, Plasma, and Eggs of the Hen After Intravenous Injection, undated
Box 27, Item 14	Chicken Egg, undated

Box 27, Item 15	Location of Iron-59 in Egg Yolks Laid 1-11 Days After Intravenous Injection, undated
Box 27, Item 16	Iron-59 in Red Cells, Plasma, and Eggs of the Hen After Intravenous Injection, undated
Box 27, Item 17	Plasma Iron Removal, undated
Box 27, Item 18	Iron-59 in Red Cells, Plasma, and Eggs of the Hen After Intravenous Injection, undated
Box 27, Item 19	Plasma Iron Removal, undated
Box 27, Item 20	Net Incorporation of Iron-59 in Erythrocytes, undated
Box 27, Item 21	Body Distribution of Injected Iron-59, undated
Box 27, Item 22	Net Incorporation of Iron-59 in Erythrocytes, undated
Box 27, Item 23	Experiments, undated
Box 27, Item 24	Experiments, undated
Box 27, Item 25	Experiments, undated
Box 27, Item 26	Experiments, undated
Box 27, Item 27	Experiments, undated
Box 27, Item 28	Iron Layers in Egg Yolks, undated
Box 27, Item 29	Iron-Bathophenanthroline Standard Curve, undated
Box 27, Item 30	Location of Iron-59 in Egg Yolks Laid 1-11 Days After Intravenous Injection, undated
Box 27, Item 31	Iron Layers in Egg Yolks, undated
Box 27, Item 32	Chicken Egg, undated
Box 27, Item 33	Electrophoresis of Egg Yolk, undated
Box 27, Item 34	Anthracene, 1954
Box 27, Item 35	Egg Activity Versus Day Laid, undated
Box 27, Item 36	Experiments, Egg Activity Versus Day Laid, undated
Box 27, Item 37	Iron Metabolism of the Hen, undated

Box 27, Item 38	Dialysis of Iron, undated
Box 27, Item 39	Dialysis of Egg Yolk Iron, undated
Box 27, Item 40	Iron-59 in Red Cells, Plasma, and Eggs of the Hen After Intravenous Injection, undated
Box 27, Item 41	Assembly of Large Cobalt-60 Well-Counter, undated
Box 27, Item 42	Cobalt-60 Well-Counter, undated
Box 27, Item 43	Short-Lived Isotopes of Medical Interest, undated
Box 27, Item 44	Advantages of Short-Lived Isotopes, undated
Box 27, Item 45	Absorption and Turnover, undated
Box 27, Item 46	Crystal in 5-Inch Steel Shield, undated
Box 27, Item 47	Schematic Representation of a Typical Ionization Chamber, undated
Box 27, Item 48	Atomic Experiments, undated
Box 27, Item 49	Ionization-Voltage Relations, undated
Box 27, Item 50	Effect of Position of Absorber on Counting Rate of Uncollimated Radiation, undated
Box 27, Item 51	Wavelength and Energy, undated
Box 27, Item 52	Chart of the Electromagnetic Spectrum, undated
Box 27, Item 53	Elementary Processes Resulting From Interaction of Incident Radiations, undated
Box 27, Item 54	Site of Petechial Formation, undated
Box 27, Item 55	Diagram, undated
Box 27, Item 56	Diagram, undated
Box 27, Item 57	Body Counter, undated
Box 27, Item 58	Geiger-Muller Tube Counting Characteristic Curve, undated
Box 27, Item 59	Effect of Position of Absorber on Counting Rate of Collimated Radiation, undated
Box 27, Item 60	Absorption Spectra of Some Proteins and Protein-Containing Preparations, undated

Box 27, Item 61	The Electromagnetic Spectrum, undated
Box 27, Item 62	Compton Electrons Graph, undated
Box 27, Item 63	Original Apparatus for the Transmutation of Nitrogen into Oxygen, undated
Box 27, Item 64	Absorption and Scattering of Electromagnetic Radiation in Different Frequency Ranges, undated
Box 27, Item 65	Plastic Well, undated
Box 27, Item 66	Diagram, undated
Box 29, Item 21	Bar Graphs, undated
Box 29, Item 22	Bar Graphs, undated
Box 29, Item 23	Bar Graphs, undated
Box 29, Item 24	Bar Graphs, undated
Box 29, Item 25	Bar Graphs, undated

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#### Subseries 1.3.4: Civil Defense and Medical and Health Services, circa 1950s

Box 28, Item 1	Blank Slide, undated
Box 28, Item 2	Blank Slide, undated
Box 28, Item 3	General Information Programs, undated
Box 28, Item 4	Medical Advisory Relationships, undated
Box 28, Item 5	Chain of Command Diagram, undated
Box 28, Item 6	Plan for Large Scale Fire Operations, undated
Box 28, Item 7	Deposition of Elements in Growing Bone of Rodents, undated
Box 28, Item 8	Types of Power, undated
Box 28, Item 9	Chain of Command Diagram, undated
Box 28, Item 10	Relationships Suggested in Local Civil Defense, undated
Box 28, Item 11	Assuming 120,000 Casualties for Purposes of Medical Planning, undated

Box 28, Item 12	Medical Planning, undated
Box 28, Item 13	Medical Planning, undated
Box 28, Item 14	Medical Planning Assuming 120,000 Casualties, undated
Box 28, Item 15	Chain of Command Diagram, undated
Box 28, Item 16	Distances from Explosion At Which Various Effects Are Produced As Function of Bomb Energy, undated
Box 28, Item 17	Radiation Dosage Rate on Ground One Hour After Explosion, undated
Box 28, Item 18	Probable Early Effects of Acute Radiation Doses Over Whole Body, undated
Box 28, Item 19	Summary of Clinical Symptoms of Radiation Sickness, undated
Box 28, Item 20	Percentage Mortality as Function of Distance from Ground Zero, undated
Box 28, Item 21	Guides for Estimating Casualties in Hiroshima Type of Attack, undated
Box 28, Item 22	Estimating Whole Blood Requirements, undated
Box 28, Item 23	Percentage Survival as Function of Acute Radiation Dosage, undated
Box 28, Item 24	Chain of Command Diagram, undated
Box 28, Item 25	Functional Relationships Suggested for Medical and Health Services in State Civil Defense Scheme, undated
Box 28, Item 26	Basic Considerations in Planning Organized Civil Defense, undated
Box 28, Item 27	Civil Protection, undated
Box 28, Item 28	Chain of Command Diagram, undated
Box 28, Item 29	Chain of Command Diagram, undated
Box 28, Item 30	Figures Taken from Report of United States Strategic Bombing Survey, undated
Box 28, Item 31	Advanced And/Or Special Training, undated
Box 28, Item 32	Orientation and Basic Instruction Courses, undated
Box 28, Item 33	Total Accumulated Dosage from 1 Minute After the Explosion as a Function of Time, undated

Box 28, Item 34	Dosage Rate as Function of Time, undated
Box 28, Item 35	Hypothetical City Showing Approximate Limits of Damage Due to Air Blast from an Underwater Burst, undated
Box 28, Item 36	Hypothetical City Showing Approximate Limits of Effects of Thermal Radiation from Air Burst, undated
Box 28, Item 37	Hypothetical City Showing Approximate Limits of Initial Nuclear Radiation Dosages Due to Air Burst, undated
Box 28, Item 38	Hypothetical City Showing Approximate Limits of Residual Radiation Dosages from Underwater Burst, undated
Box 28, Item 39	Radiation Dosage Rate Contours, undated
Box 28, Item 40	Contours for Various Integrated Radiation Dosages, undated
Box 28, Item 41	Relationships Suggested in Local Civil Defense, undated
Box 28, Item 42	Radiological Defense Staff Organization Chart, undated
Box 28, Item 43	Scheme Suggested for Phasing Early Planning Activities of Civil Defense Councils, undated
Box 28, Item 44	Personnel Film-Badge Meter, undated
Box 28, Item 45	Estimating Whole Blood Requirements, undated
Box 28, Item 46	Organization of Radiological Defense Forces, undated
Box 28, Item 47	Proposed Organization for Radiological Defense Division Office of Civil Defense, undated
Box 28, Item 48	Hypothetical City, undated
Box 28, Item 49	Classification - Radiation Hazard, undated
Box 28, Item 50	Determination of Total Radiation Dosage Received in a Contaminated Area, undated
Box 28, Item 51	Contours for Various Integrated Radiation Dosages, undated
Box 28, Item 52	Contours for Total Dosage, undated
Box 28, Item 53	Blank Slide, undated

Box 28, Item 54	Radiological Defense, undated
Box 28, Item 55	Scaling Laws, undated
Box 28, Item 56	Atom Size, undated
Box 28, Item 57	Typical Atom, undated
Box 28, Item 58	Time Constant of Ratemeter, undated
Box 28, Item 59	Atom Parts, undated

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### Subseries 1.3.5: Effects of the Atomic Bomb, circa 1945

Box 28, Item 60	Nature's Heaviest Atom, undated
Box 28, Item 61	Fissions of Uranium-235 and Resulting Hazards, undated
Box 28, Item 62	Burst - Air, undated
Box 28, Item 63	Typical Atomic Bomb Bursts, undated
Box 28, Item 64	Effects of Atomic Weapons, undated
Box 28, Item 65	Catastrophe - Type of Burst - Air, undated
Box 28, Item 66	Radiation, undated
Box 28, Item 67	Radiation Sickness, undated
Box 28, Item 68	Immediate Effects, undated
Box 28, Item 69	Continuing Effects, undated
Box 28, Item 70	Shock from Air Burst, undated
Box 28, Item 71	Effects of Atomic Weapons, undated
Box 28, Item 72	Types of Injury Caused by Atomic Explosion, undated
Box 28, Item 73	Effects of Atomic Weapons, undated
Box 28, Item 74	Komiya Street Before Bombing, 1945
Box 28, Item 75	Komiya Street After Bombing, 1945



Box 28, Item 76	Blast Effect on Roof, 1945
Box 28, Item 77	Bontai Bridge - Rail Shadows, 1945
Box 28, Item 78	Dark Striped Cloth, 1945
Box 28, Item 79	White Rice Paper with Black Charred Thru, 1945
Box 28, Item 80	Shiroyata National School, South Wing, Crushing Blast Effect, 1945
Box 28, Item 81	Street Scene Shortly After Bombing, 1945
Box 29, Item 1	Ray Burns, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 2	Hand Keloid and Ulcer, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 3	Keloids - Shoulder and Neck, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 4	Ray Burns - Face, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 5	Ray Burns - Legs, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 6	Ray Burn of Back Reproducing Pattern of Clothes, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 7	Gums Healing Gingivitis, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 8	Hemorrhages and Stomatitis, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 9	Flash Burn, 1945 Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.
Box 29, Item 10	Slight Keratitis of Both Eyes, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 11

Epilation on Right Side of Head, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 12

Heart - Radiation Effect, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 13

Radiation Effect - Aplastic Anemia, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 14

Normal Bone Marrow and Chronic Ulcerative Colitis, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 15

Testis, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 16

Bone Marrow, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 17

Lymphnode, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 18

Scalp Atrophy, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 19

Hyperplasia of Bone Marrow, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

Box 29, Item 20

Lymphnode Normal - Neck, 1945

Notes: This is a graphic image depicting effects of the atomic bomb on the human body after the bombing of Nagasaki in 1945.

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[Return to Table of Contents](#)

## Series 2: H.J. Sugarman Papers, 1950-1951

Scope and Contents: The Sugarman series contains materials related to the development of and experimentation with the extracorporeal cardiac pump designed in 1948.

Box 22, Folder 4            Miscellaneous—Creation of Cardiac Disease, 1950-1951

Box 22, Folder 5            Lung Oxygenator, H.J. Sugarman, M.D., 1950-1951

[Return to Table of Contents](#)

## Series 3: Sigmund A. Wesolowski (Adam Wesolow) Papers, 1951

Scope and Contents: The Wesolowski series contains Wesolowski's thesis on the extracorporeal mechanical cardiac pump and two boxes of handwritten cards that serve as an index to his bibliography.

Box 22, Folder 6          Sigmund A. Wesolowski, 1951

[Return to Table of Contents](#)