

Guide to the Philip McCord Morse Papers, 1927-1980

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Finding aid prepared by Mary Jane McCavitt

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Table of Contents

<u>Summary Information</u>	3
<u>Biography</u>	4
<u>Scope and Contents of the Collection</u>	16
<u>Arrangement note</u>	19
<u>Administrative Information</u>	19
<u>Related Materials</u>	20
<u>Controlled Access Headings</u>	20
<u>Bibliography</u>	21
<u>Bibliography</u>	22
<u>Books</u>	22
<u>Contributed Chapters</u>	23
<u>Articles</u>	24
<u>Collection Inventory</u>	30
<u>Series 1. Biographical Materials</u>	30
<u>Series 2. Massachusetts Institute of Technology Records</u>	30
<u>Series 3. Alphabetical Subject Files</u>	35
<u>Series 4. Writings</u>	64

Summary Information

Repository	Massachusetts Institute of Technology. Institute Archives and Special Collections
Creator	Morse, Philip McCord, 1903-1985
Title	Philip McCord Morse papers
Date [inclusive]	1927-1980
Extent	29.0 cubic feet in 29 record cartons
Language	English
Abstract	<p>This collection documents the career of Philip Morse. Morse served on the faculty of the Massachusetts Institute of Technology from 1931 to 1969 and was a leader in the field of operations research. The papers consist of biographical information; correspondence; notes; committee minutes; course material; reports; trip diaries; manuscripts; research data and graphs; and reprints and other printed material. The collection also includes a series of administrative records of the Massachusetts Institute of Technology documenting committee and policy work Morse participated in.</p>

Citation

Philip Morse papers, MC 75, box X. Massachusetts Institute of Technology, Institute Archives and Special Collections, Cambridge, Massachusetts

Biography

Philip McCord Morse was born August 6, 1903, in Shreveport, Louisiana. His parents, Allen Crafts Morse, a telephone engineer, and Edith McCord Morse, soon moved to Cleveland where he grew up. In 1921 Philip Morse started attending Case Institute, but he took the following year off to work in the Radioelectric Shop that he owned with friends. Upon his return to Case he began studying physics with Professor Dayton C. Miller and received his B.S. degree in 1926. That fall Morse went to Princeton University with the help of a scholarship. There, his gas discharge research with Karl Taylor Compton formed the basis for his thesis, "A Theory of the Electric Discharge through Gases." He spent the summer of 1928 at the University of Michigan as a research associate for an industrial research project on electric gas discharge.

In his final year at Princeton Philip Morse received the Porter Ogden Jacobus Fellowship, which is given to the graduate student with the highest standing. During this year he worked with Edward U. Condon to produce the book *Quantum Mechanics*. In April of 1929 he married Annabelle Hopkins and received his Ph.D. in physics two months later. That summer he worked for Bell Laboratories under the guidance of C. J. Davisson.

Philip Morse was an instructor at Princeton for the 1929 academic year, and the following summer he returned to the University of Michigan, this time as a special lecturer in quantum mechanics. He spent the next year on a Rockefeller Fellowship studying with Arnold Sommerfeld in Munich, Germany, and with N. F. Mott and W. S. Massey in Cambridge, England.

At the behest of the new president of the Massachusetts Institute of Technology (MIT), Karl T. Compton, Philip Morse joined the physics department as an associate professor in 1931. His research concentrated on acoustics and on astrophysics. His work on the theory of sound absorption resulted in his 1936 book, *Vibration and Sound*.

Contacts with colleagues at the Harvard Observatory led to the formulation of calculations on the opacities of stellar interiors. Arnold Lowan's WPA work at Columbia on the construction of mathematical tables also interested Morse. He participated in the various mathematical tables projects carried on by the National Bureau of Standards and other federal programs throughout his career. Beginning in 1933, Morse became the graduate registration officer for the physics department, and he continued in this guidance role until 1965 whenever he was at MIT. He was promoted to associate professor in 1934 and professor in 1938.

In response to the growing threat of war, scientists began to change the focus of their research, and Philip Morse was no exception. His association with the Radiation Laboratory housed on the MIT campus started in 1941. There, he identified the similarities of certain ideas used in acoustics to microwaves. At Harvard he served as chairman of a National Research Council project that studied ways to reduce the noise and vibrations made by fighter and bomber planes. During this time he also worked on a National Defense Research Council (NDRC) project for the U.S. Navy, studying methods of countering the new acoustic mines that the Germans were using. In 1942 Morse went to Washington, D.C. to organize and direct a civilian task force to evaluate the United States antisubmarine program. While directly connected

with the Navy, the Anti-Submarine Warfare Operations Research Group (ASWORG) was funded by the NDRC. The group not only evaluated data, but also visited Navy bases to make direct observations. Before disbanding, the group wrote a report about their efforts, *Methods of Operation Research*, which was declassified and widely used after 1950. For his war work Philip Morse received the U.S. Medal of Merit.

In 1945 Morse returned to MIT and helped to establish the Acoustics Laboratory with Richard Bolt and Leo Beranek. Morse's return was shortlived, however. The Associated Universities Inc. wanted to start a civilian nuclear research laboratory in connection with the Atomic Energy Commission. In July 1946 he became the scientific director of the Brookhaven National Laboratory. At this time he was also an active member in the Emergency Committee of Atomic Scientists (the Einstein committee) which sought to educate the public about atomic power.

By 1948 Brookhaven was a firmly established facility and Philip Morse returned briefly to MIT. His assistance was again sought for public service. He went to Washington to organize an operations research team for the Secretary of Defense and the Joint Chiefs of Staff. The result was the Weapons Systems Evaluation Group (WSEG), and he served as deputy director and director of research until 1950. The WSEG's civilian unit became the Institute for Defense Analyses (IDA) in 1956, and he served on their Board of Trustees. A similar group, RAND, was established to advise the Air Force in 1948, and he was on their Board of Trustees until 1962.

Finally, in 1950 Philip Morse returned to MIT for a longer stay, although his public service activities never ceased. His interest in the new discipline of operations research continued at MIT. He was instrumental in promoting wide acceptance of operations research for non-military uses. By 1952 the Institute offered summer courses in operations research and the Operations Research Center became an official interdepartmental facility in 1956. Morse served as director from 1956 until 1969.

Philip Morse initiated another interdisciplinary program at MIT in an effort to introduce students and professors to the uses of computers in research. The Committee on Machine Methods of Computation began in 1952 with him as chairman. This committee supervised research assistantships that were given to graduate students using computers. In 1955 Morse convinced IBM to fund a computer installed in a building that was partially paid for by IBM. Part of the agreement allowed other New England schools to use the facility. This arrangement eventually became the New England Regional Computing Program (NERComp). By 1957, the Computation Center was dedicated at MIT with Philip Morse as director, a position he held until 1967. The Center received funds from NSF and the Rockefeller Foundation to supplement its costs. After several expansions, timesharing was introduced in the 1960s.

Philip Morse remained active outside of MIT as well. He helped to organize the first International Operations Research Conference in 1957. The International Federation of Operations Research Societies originated at this conference. International interest in operations research led to a 1959 NATO conference where the Advisory Panel on Operations Research (APOR) began with Morse as chairman. The panel, in association with the United States Advisory Group for Aeronautical Research and Development, started training programs, organized conferences, and sponsored visiting consultants to NATO countries. Another APOR was started by Morse in 1964 for the Organization for Educational and Cultural Development. This panel emphasized that operations research could be used for many problems that were not military or industrial. Other international operations research projects that Morse was associated with include lecture tours in Japan, India, Israel, and Taiwan sponsored by the Ford Foundation and in

Australia sponsored by the Fulbright Foundation, as well as a fact-finding trip to Nigeria and Tunisia that was associated with the International Relations Committee of the National Academy of Sciences.

Philip Morse's endeavors helped to prove the myriad applications of operations research. His study of the MIT Libraries was one of the first of its kind. Other studies helped him to develop some of his queuing theories.

Philip Morse became an emeritus professor at MIT in 1969. He died in 1985.

Appointments, Positions, Awards, Committees

1923-24	Salesman, Radioelectric Shop, Cleveland
1924-25	Commercial
May 1924	Recipient, Reid Prize in Physics, Case Institute
May 1925	Inducted Tau Beta Pi, Case Chapter
May 1926	Inducted Sigma Xi, Case Chapter
June 1926	Bachelor of Science, Case Institute
1926-28	Class of 1883 Fellow, Princeton University
Jan. 1927	Member, American Physical Society
June 1927	Master of Arts, Princeton University
June-Sept. 1928	Research Assistant, University of Michigan
1928-29	Porter Ogden Jacobus Fellow, Princeton University
June 1929	Doctor of Philosophy, Princeton University
June-Sept. 1929	Research Physicist, Bell Telephone Laboratories
1929-30	Instructor in Physics, Princeton University
June-Sept. 1930	Lecturer at Summer Program, University of Michigan
Oct. 1930 - April 1931	Rockefeller International Fellow, University of Munich
April-Aug. 1931	Rockefeller International Fellow, Cambridge, England
1931-34	Assistant Professor of Physics, M.I.T.
1932-36	Secretary-Treasurer, New England Section, American Physical Society
1933-39	Member, Acoustical Society of America
1933-41	Graduate Registration Officer, Dept. of Physics, M.I.T.

May 1934	Elected Fellow, American Academy of Arts and Sciences
1934-39	Associate Professor of Physics, M.I.T.
April 1936	Elected Fellow, American Physical Society
Feb. 1937	Elected Fellow, Physical Society of London
1939-69	Professor of Physics, M.I.T.
May 1939	Elected Fellow, Acoustical Society of America
1940-42	Member, Board of Editors, American Physical Society
March 1940	Doctor of Science (Hon.), Case Institute
1940-41	Chairman, New England Section, American Physical Society
1940-46	Consultant, Radiation Laboratory, M.I.T.
1940-44	Chairman, NRC Committee on Sound Control
1940-42	Director, Navy-M.I.T. Underwater Sound Project DIC5985
1941-49	Associate Member, New York Academy of Sciences
1942-46	Member, NDRC, Section 6 Board (Undersea Warfare)
1942-46	Director, U.S. Navy Operations Research Group
Feb. 1945	Elected Member, Cosmos Club of Washington
Dec. 1945	Distinguished Service Award, U.S. Navy Bureau of Ordnance
Sept. 1946 - Sept. 1948	Director, Brookhaven National Laboratory
1946-48	Vice President, Acoustical Society of America
1946-48	Member, Naval Research Advisory Committee
1946-48	Member, NRC Undersea Warfare Committee
1946-49	Member, NRC Committee on Program for Nuclear Sciences
1946-50	Technology Review
Dec. 1946	Awarded U.S. Presidential Medal for Merit
1947-50	Member, Council, American Physical Society
Dec. 1947	Josiah Willard Gibbs Lecturer, American Mathematical Society
1948-49	Member, Board of Trustees, RAND Corp.

1948-50	Member, Board of Governors; American Institute of Physics
1948-49	Member, Visiting Committee for Department of Mathematics, Case Institute
Nov. 1948	Lecturer, Armed Forces Staff College, Washington, D.C.
March 1949 - June 1950	Deputy Director and Director of Research, Weapons Systems Evaluation Group
1949-55	Member, Committee on Operations Research, NRC Division of Mathematics and Physical Sciences
1950-65	Graduate Registration Officer, Department of Physics, M.I.T.
1950-52	Consultant, Weapons Systems Evaluation Group
1950-62	Member, Board of Trustees, RAND Corp.
1950-51	President, Acoustical Society of America
1950-51	Consultant, A.D. Little, Inc., on Operations Research
1950-51	Secretary, M.I.T. Chapter, Sigma Xi
1950-52	Committee on Machine Aids to Computation, M.I.T.
1950-53	Lecturer, Naval War College, Newport, R.I.
1951-52	Member, Steering Committee, Acoustics Laboratory, M.I.T.
1951-53	Member, Board of Trustees, Research Society of America (part of Sigma Xi)
1951-58	Member, Ordnance Research Advisory Board (U.S. Army)
1951-52	Member, Founding Committee, Operations Research Society of America
Dec. 1951	Invited Lecturer, AAAS, on O.R. and Physics
March - April 1951	Lecturer, Department of Physics, University of California, Los Angeles
Aug. - Sept. 1951	Consultant, RAND Corp., at Santa Monica
1952-54	Member, Science Library Advisory Committee, M.I.T.
1952-61	Member, Committee on the M.I.T. Centennial
1952-69	Chairman, Operations Research Committee, M.I.T.
1952-55	Member, Libraries Executive Committee, M.I.T.

1952-53	First President, Operations Research Society of America
1952-56	Member, Steering Committee, Operations Evaluation Group (U.S. Navy)
1952-53	Member, Advisory Committee, Ordnance Research Office (U.S. Army)
1952-56	Member, Applied Mathematics Advisory Committee, National Bureau of Standards
1952-53	Member, Reorganization Committee, Operations Research Office (U.S. Army)
Dec. 1952	Lecturer on O.R., Westinghouse Research Laboratories
1953-67	Chairman, Computation Committee, M.I.T.
1953-55	Member, Governing Board, American Institute of Physics
1953-54	Consultant, Corning Glass Co.
1953-54	Member, Bulletin Committee, American Academy of Arts and Sciences
April 1954	Invited Lecturer, Symposium on Applied Mathematics, American Mathematical Society
1954-64	Chairman, NRC Committee on Revision of Mathematical Tables
Dec. 1954	Sigma Xi Lecturer, University of Pennsylvania
1955-63	Member, Advisory Panel on University Computing Facilities of the National Science Foundation (Chairman, 1961-63)
1955-56	Consultant, Philco Corp.
May 1955	Elected Fellow, National Academy of Sciences
1955	Member, ORSA Prize Committee
Feb. 1955	Lecturer, Research Society of America
1956-57	Member, Ad Hoc Committee on NROTC, M.I.T.
1956-69	Chairman, Committee of Institutional Representatives to the M.I.T. Computation Center
1956-62	Member, Long Range Planning Committee, M.I.T.
1956-61	Member, Board of Trustee, Institute for Defense Analyses (IDA)

1956-78	Annals of Physics
1956-60	Member, Physical Science Study Committee, M.I.T.
April 1956	Phi Beta Kappa Lecturer, Duke University (on O.R.)
1956-58	Member, Committee on the Future of the Graduate School (Chairman, 1957-58), M.I.T.
Dec. 1956	Sigma Xi Lecturer, Tufts University (on Computers)
1956-69	Director, Operations Research Center, M.I.T.
Oct. 1956	Alfred P. Sloan Award for Outstanding Performance of M.I.T. Faculty Member
1956-60	Member, Winchester Citizens Advisory Committee to School Commissioner
1957-67	Director, Computation Center, M.I.T.
Sept. 1957	Invited Lecturer, First International Conference on O.R., at Oxford, England
Sept. 1957	Invited Lecturer, First Meeting, French O.R. Society in Paris
1958-60	Chairman of the Faculty, M.I.T.
1958-60	Member, Academic Council (ex-officio), M.I.T.
1958-60	Member, Science Library Committee, M.I.T.
1958-69	Member, Faculty Council, M.I.T.
Feb. 1958	Member, President's Conference on Automobile Traffic (Williamsburg, Virginia)
1958-61	Lecturer, AIP College Visiting Program (St. Olaf College, Carleton College, Hope College Manhattan College)
1959	Member, Goodwin Medal Committee, M.I.T.
1959-68	Journal of Mathematics and Physics
Aug. - Sept. 1959	Lecturer, NATO Symposium on O.R. at TCEA, Brussels; Aachen; Oslo
1960-61	Member, Long Range Computation Study Group, M.I.T.
1960-61	Member, Ad Hoc Committee on Proposed Graduate Center, M.I.T.
1960-68	Member, Board of Directors, Adage, Inc.
1960-64	Chairman, NATO Advisory Panel on Operations Research (APOR)

April 1960	Chairman, Symposium on University Computers, in Chicago (sponsored by National Science Foundation)
1960-64	Science
1961-64	Secretary General, International Federation of O.R. Societies (IFORS)
1961-62	Member, NSF Fellowship Panel for Physics
May 1961	Awarded Silver Certificate, Acoustical Society of America
1961-62	Member, NAS Committee on Natural Resources of U.S. (requested by President Kennedy)
1961-	Member, Board of Trustees, Council on Library Resources
1961-62	Member, Ad Hoc Committee on the Future of the M.I.T. Library
1961	Member, Nominating Committee, American Physical Society
May 1961	Awarded Silver Medal of Acoustical Society of America
Aug. 1961	Director, Visiting Lecture Series on O.R., in Japan (IDA-JUSE sponsored)
Oct. 1961	Visiting Lecturer, Conference on O.R., University of Athens
1962-73	Member, Board of Trustees, Analytic Services Inc. (AnSer)
1962-68	Chairman, OECD Advisory Panel on O.R.
1962-63	Member, Visiting Committee on Mathematics and Physics, Case Institute
March 1962	Distinguished Lecturer, Fulbright Program in Mexico, sponsored by Mexican-American Cultural Society
April 1962	Lecturer, Department of Industrial Engineering and Operations Research, University of California, Berkeley
May 1962	Chairman, Press Conference on Computers and Physics, American Institute of Physics

1962-66	Member, NAS Committee on Computational Needs in Universities
1963-64	Member, Computation Advisory Panel, Honeywell Corp.
July 1963	Organizer, IFORS Conference at Oslo
1964	Member, IDA Review Committee
June 1964	Invited Lecturer, First Meeting, Hellenic O.R. Society, Athens
Aug. 1965	Member, Intrex Planning Conference, M.I.T.
Feb. 1965	Awarded Silver Medal, Operational Research Society (U.K.)
1965-66	Member, Advisory Panel, U.S. Army Development Command
June - July 1965	Director, Visiting O.R. Team to Taiwan, Japan, India (Kanpur-IIT) and Israel
September 1965	Invited Lecturer, NATO Conference on Queuing Theory, Lisbon
October 1965	Chairman, OECD Conference on O.R. in Government, Dublin
1966-69	Member, Faculty Committee on the M.I.T.-Harvard Joint Center for Urban Studies, M.I.T.
1966-	Member, Board of Directors, Control Data Corporation
1966	Consultant, Bolt, Beranek and Newman (BBN) MGH Program
1966-67	Member, Advisory Panel for BBN Program for Advanced Study (PAS)
1966	Member, Panel on Telecommunication Sciences, U.S. Dept. of Commerce
April 1966	Invited Lecturer, Dept. of Industrial Engineering and Operations Research, University of California, Berkeley
September 1966	Chairman, OECD Conference on O.R. in Education, Sandefjord, Norway
December 1966	Chairman, OECD Conference on Urban Planning and Transport, Rome

1967-70	Chairman, Advisory Panel to Technical Analysis Division (TAD), National Bureau of Standards
1967-70) 1967-72	Member, Advisory Committee to the AIP Information Program (Chairman, Subcommittee on System Development of AIP Panel,
1967-70	Member, Scientific Advisory Council, TCU Research Foundation (Texas Christian University)
1967-68	Member, Advisory Panel on Computing to Associated Universities, Inc. (Glennan Panel)
Dec. 1967	Member, OECD Conference on Urban Simulation Models, London
Dec. 4, 1967	U.S. Representative, Royal Society Celebration of 30th Anniversary of O.R., London
1968-70	Consultant, OECD
1968-70	Technical Advisor, Lecturer, BBN Program for Advanced Study
1968-69	Member, Advisory Panel on Regional Medical Programs, U.S. Public Health Service
March 1968	Invited Lecturer, AIAKORSA Conference on Systems Analysis and Social Change
October 1968	Delegate, OECD Conference on Computer Simulation and Urban Planning, Paris
1969-70	Member, NAE Committee on Engineering Education
1969	Chairman, Financial Committee, Union of Concerned Scientists
1969-73	Member, Board of Directors, Teknekron
Aug. 1969	Invited Lecturer, University of Chicago Library School
Oct. 1969	Invited Lecturer, University of North Carolina Library School
November 1969	Awarded Lanchester Prize, ORSA
November 13, 1969	In Honor of Philip M. Morse
1970	Vice-President-Elect, American Physical Society

April - June 1970	Visiting Professor of Operations Research, Dept. of Industrial Engineering and Operations Research, University of California, Berkeley
1970-71	Member, Statistical Data Panel, NAS Physics Survey Committee
1970-71	Member, Committee on Unified Science and Mathematics for Elementary Schools, M.I.T. Education Development Center
1970-74	Chairman, Board of Trustees, New England Regional Computing Network (NERComP)
1971	Vice-President, American Physical Society
1971	Member, Advisory Committee to HUD Subcommittee for Integrated Planning and Management for Community Development
March 1971	Invited Lecturer, University of Hawaii (on O.R. and on physics)
April 1971	Distinguished Visitor to Universities of Adelaide, Melbourne, Canberra, and Sydney, Fulbright Program in Australia, sponsored by the Australian-American Educational Fund
April 1971	Invited Speaker, O.R. Society of South Australia, Adelaide
May 1971	Invited Speaker, Operations Research Society of America Conference, Dallas
May 1971	Invited Lecturer, Lecture Series on Systems Concepts for the Private and Public Sectors, California Institute of Technology
August 1971	Invited Lecturer, University of Chicago Center for Continuing Education (on library O.R.)
1972	President, American Physical Society
1972	Member, Committee on the Future of the APS, American Physical Society
1972	Member, Ad Hoc Committee on Physics and National Domestic Problems, American Institute of Physics
1970-75	Member, Council, American Physical Society

April 1973	Awarded Gold Medal, Acoustical Society of America
1974	Member, Committee on the American Institute of Physics, American Physical Society
1974	Chairman, Lanchester Prize Committee, Operations Research Society of America
February 1974	Invited Speaker, University of Mexico (in honor of Professor M. Vallarta)
March 1974 - Feb. 1977	Member, Governing Board, American Institute of Physics
Feb. 1974	Vice-Chairman, Board of Trustees, New England Regional Computing
1974-76	Network (NERComP)
1974-75	Chairman, Special Study for Strengthening the Capabilities of Less Developed Countries in Systems Analysis, NAS Board on Science and Technology for International Relations
October 1974	Awarded Kimball Prize, Operations Research Society of America
1975-1980	Chairman, Governing Board, American Institute of Physics
1975-76	Chairman, Panel on Public Affairs, American Physical Society
Jan. 1975	Invited Lecturer, Department of Industrial Engineering and Operations Research, University of California, Berkeley
July 1975	Invited Speaker, Plenary Session, International Federation of O.R. Societies Conference on O.R. in the Service of Developing Economies, Kyoto, Japan
July 1975	Director, Visiting O.R. Lecture Team, System Science Institute, Waseda University, Tokyo, Japan
1975-80	Member, Visiting Committee for the School of Library Science, Case Western Reserve University
1977-79	Member, Board of Directors, Perception Technology Corporation

1980-

Chairman, National Academy of Science Committee
on Technical Assistance to the Navaho Nation

Scope and Contents of the Collection

The Philip Morse papers consist of biographical information; correspondence; notes; committee minutes; course material; reports; trip diaries; manuscripts; research data and graphs; and reprints and other printed material.

Philip Morse's association with the Massachusetts Institute of Technology (MIT) spans almost fifty years. After his retirement he remained as a senior lecturer until 1980. He was not only active with research and teaching responsibilities in the physics department, but he was also active in administrative and policy decisions of the Institute. Series 2 reflects the wide range of interests that Philip Morse pursued at MIT. He was a member of both physics department committees and general faculty committees. As his department's graduate registration officer he was involved with a number of graduate policy committees such as Hrones' Committee on the Future of the Graduate School and the Graduate Center Committee. His work with educational policy was not limited to graduate students, however. He was a member of committees that concerned continuing education and education for industrial personnel as well as an ad hoc committee on humanities and an undergraduate policy committee.

Much of the material in Series 2 dates from 1951, when Morse returned to MIT and began developing interdisciplinary programs in operations research and in computation. His files chart the progress of computation at MIT through the minutes, notes, and reports from such early committees as the Hill Committee on Computation, the Committee on Machine Methods of Computation and Numerical Analysis, as well as from the later Committee on Information Processing. There is some material from the Computation Center which Philip Morse directed, including a position paper on the facility. Besides general administrative material there is correspondence, memos, reports, and grant proposals which concern the establishment of a time-sharing arrangement at the Center. His early interest in computers is shown in Series 2 which contains a 1933 memo about Vannevar Bush's differential analyzer.

The collection contains less information about the Operations Research Center, which Philip Morse also directed. The minutes of the Committee on Operations Research and the material from the Operations Research summer course do provide a background for the establishment of the Operations Research Center.

Philip Morse administrative and committee involvements became more numerous after World War II, but he first served on the Library Committee in 1932, and he supported the library's growth whenever he returned to MIT. The Library Committee and the general library files in series 2 contain budget data, collection development material, correspondence, reports, minutes, and statistics. The planning of Project Intrex is documented in this section.

Philip Morse further supported the MIT Libraries through research. His 1956 article, "Attendance and the Use of the Science Library at M.I.T.," concerns one of the first applications of operations research to library circulation records. A sampling of the distributed surveys, circulation cards, and data sheets was kept in series 4 to document the methodology used in this early survey. Another study done in 1962 resulted in the book *Library Effectiveness*. His notes and data sheets for the book are found in series 4.

Philip Morse's writings provide the most complete record of his research work in the collection. These files contain notes, calculations, graphs, and tables as well as correspondence, manuscript drafts, and reprints. In many cases the progress of an article or a book can be traced from raw data to finished product; there are even some book reviews. The files also contain course information and notes and some of this material provided the groundwork for a text. In addition, the collection contains manuscript material that he wrote prior to his arrival at MIT, including early acoustical research work he did at Cambridge with E. C. G. Stueckelberg. While there is little material from the 1940s, when Morse was working primarily for the federal government, there is some operations research data. Series 4 helps to show Morse's many research interests and the gradual progression his interests took; while acoustical studies were dominant in the thirties the emphasis later changed to include computers and operations research. It is interesting to note that his writings and speeches were increasingly geared towards a more general audience in this later period. Both series 2 and series 3 should be checked for further information about his research.

The Alphabetical Subject Files (series 3) form the largest part of the collection and are primarily concerned with Philip Morse's non-MIT activities. His pursuits, however, were often interrelated and there is no clear demarcation between MIT and non-MIT interests. For example, the section on acoustics (Series 2A) concerns his work in that area while at MIT. Series 3 should be checked for special subjects that are not clearly separated between the Institute and outside activities.

Philip Morse belonged to many professional groups and often served on their committees. His memberships and committee activities are well documented in the collection. There is a great deal of material for a number of organizations such as the Acoustical Society of America, the American Institute of Physics, the American Physical Society, and the National Academy of Science/National Research Council. He was instrumental in founding other organizations, including the Operations Research Society of America and the International Federation of Operations Research Societies, and his files trace the beginnings and the development of these societies.

Philip Morse's concerns about science in a modern world and his attempts to educate laymen about science are evidenced in his papers. He was honorary vice chairman of the Emergency Committee of Atomic Scientists, Inc. (the Einstein Committee) and his files contain administrative, policy, and planning information from the committee's inception until it disbanded in 1949 (series 3A). There are also financial reports, minutes, agendas, and publicity material from the committee. *The Bulletin of Atomic Scientists* was a product of the committee and series 3 contains material from his position on its board of sponsors. He was also a member of the Union of Concerned Scientists and the Federation of American Scientists, and his papers contain information from these organizations.

During World War II Philip Morse left academia to work for the government and he continued to serve in public positions after the war. His work with operations research really began with the civilian task force he organized to study the Navy's antisubmarine program. The papers contain little from this war work, but his later consultations with the government and the military about operations research are

well documented. He was on the steering committee of the Navy's Operation Evaluation Group and he served on an Ad Hoc Review Committee for the Army's operations research office as well as the Advisory Committee for the Army's Ordnance Research and Development Division. He served on both the Technical Review Board and the Board of Trustees for the Institute for Defense Analyses, and the correspondence, minutes, and memos in the collection include information on IDA's project with the Weapons System Evaluation Group. There is correspondence and reports in series 3 from the Rand Corporation of which Morse was a trustee. He was also on the Advisory Panel to the Technical Analysis Division of the Institute for Applied Technology, which assists non-military agencies of the government in systems analysis and operations research.

Not all of Philip Morse's government positions were concerned with operations research. He was the first director of the Brookhaven National Laboratory. While most of his files remained at Brookhaven, series 3 does contain correspondence, memos, and press releases from the time prior to and after his term as director, as well as some copies of his replies to correspondents while he was director. Also included is a 1946 planning report about the laboratory.

Throughout his career Philip Morse was interested in the publication and revision of standard mathematical tables. He worked with Arnold N. Lowan of Columbia on the Works Project Administration's Mathematical Tables Project during the 1930s and he continued to serve on Mathematical Table committees for the National Academy of Sciences/National Research Council and for the National Bureau of Standards. In 1954 he organized a conference on mathematical tables. Many of these tables were published by the National Bureau of Standards, and his work on this project is documented throughout series 3.

Philip Morse was also a consultant to non-government organizations. He worked closely with Leo Beranek and Richard Bolt at MIT. When they started Bolt, Beranek and Newman, Inc., Morse became an associate consultant for the firm. His long association with Bolt and Beranek is evidenced in series 3. His consulting work for Romo-Woolridge's fellowship program is documented in his papers. There is also some information that relates to his role as advisor for *Physics Today* and his position on the editorial board of *Science*.

In 1959 the North Atlantic Treaty Organization conducted a study of operations research in NATO countries. The report on the findings led to the establishment of an Advisory Panel on Operations Research (APOR) with Philip Morse serving as chairman. The panel helped to set up conferences, consulting, and other exchange programs in NATO countries. The work of the APOR up to 1965 is well documented in series 3 through correspondence, minutes, trip diaries, reports, and printed material.

A group of operations research experts, with Philip Morse as chairman, met in 1962 with the Organization for Economic Co-operation and Development (OECD). The group sought to place an emphasis on the uses of operations research in the public domain as opposed to already established military and industrial uses of operations research. The meeting led the founding of an Advisory Panel on Operations Research in OECD, and Morse served on this panel. The APOR held symposiums in member countries on issues of national import, with the OECD providing speakers. Material in the collection about the OECD's panel includes reports, correspondence, speeches, support documents, trip diaries, and financial data.

Through a Ford Foundation grant Philip Morse traveled to Japan, India, Israel, and Taiwan where he delivered lectures on operations research. Extensive correspondence about the planning of this trip is in series 3. Also documented is a Fulbright Foundation trip he took as a visiting lecturer on operations

research in Australia. His expertise about international operations research programs was used by the National Academy of Sciences/National Research Council's Commission on International Relations. The Commission set up a Panel to study systems analysis and operations research in less developed countries. Morse served on the panel and went on fact finding missions to Nigeria and Tunisia. The panel's 1975 report and supporting documents can be found in the collection.

Arrangement note

Organized into the following series: 1. Biographical Materials; 2. Massachusetts Institute of Technology Records; 3. Alphabetical Subject Files; 4. Writings.

Administrative Information

Publication Information

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Related Materials

Related Archival Materials note

Computation Center Records, AC 62

Massachusetts Institute of Technology, Institute Archives and Special Collections

Controlled Access Headings

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- Acoustical Society of America
- American Institute of Physics
- American Physical Society
- Bolt, Beranek, and Newman, inc.
- Emergency Committee of Atomic Scientists
- Federation of American Scientists
- International Federation of Operations Research Societies
- Massachusetts Institute of Technology. Committee on Machine Methods of Computation
- Massachusetts Institute of Technology. Computation Center
- Massachusetts Institute of Technology. Faculty
- Massachusetts Institute of Technology. Libraries
- Massachusetts Institute of Technology. Operations Research Center
- National Academy of Sciences (U.S.).
- National Research Council (U.S.).
- Operations Research Society of America.
- Organization for Economic Co-operation and Development.
- Ramo-Woolridge (Firm)
- Rand Corporation.
- Society of Sigma Xi.
- Union of Concerned Scientists.

Personal Name(s)

- Ackoff, Russell Lincoln
- Allis, William P. (William Phelps), 1901-1999
- Beranek, Leo Leroy, 1914-
- Bethe, Hans A. (Hans Albrecht), 1906-2005
- Bolt, Richard H.
- Brillouin, Léon, 1889-1969
- Bush, Vannevar, 1890-1974
- Condon, Edward Uhler , 1902-1974
- Darrow, Karl K. (Karl Kelchner), 1891-
- Kehl, W. B. (William Brunner), 1919-
- Lowan, Arnold Noah, 1898-
- McLucas, John L.
- Menzel, Donald H. (Donald Howard), 1901-1976
- Miller, Dayton Clarence, 1866-1941
- Morse, Philip McCord, 1903-1985
- Oliver. A. L. (Alain Lancelot)
- Oppenheimer, Jane M. (Jane Marion), 1911-
- Roe, Anne, 1904-
- Salzman, Charles.
- Sandoval Vallarta, Manuel, 1899-1977
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Subject(s)

- Government consultants.
- Operations research.
- Physicists--Archives.

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Series 1. Biographical Materials

Collection Inventory

Series 1. Biographical Materials

	Box
Autobiographical material	1
Awards and honors	1
Clearance information	1
MIT career 1930-1980	1
Personal notes on special occasions	1

Series 2. Massachusetts Institute of Technology Records

	Box
General	1
Academic Council	1
Alumni Association	1
Committees:	
	Box
Committees: Admissions	1

Series 2. Massachusetts Institute of Technology Records

Committees: Applied Mathematics Committee	1
Centennial	1
Computation (Hill)	1
Continuing Education (Hollomon)	1
Education for Industrial Personnel	1
General Studies	1
Graduate School Future (Hrones)	1
	Box
Correspondence	1
Charges to account	1
Minutes	1
Report, 1957	1
Graduate Center	1
Graduate College	1
Graduate School Policy	1
Humanities (Course XXI)	2
Information Processing	2
Joint Center for Urban Studies	2

Series 2. Massachusetts Institute of Technology Records

Library	2
	Box
Records, 1931-1955	2
Technical Information Project	2
Metcalf Report, 1951	2
Planning	2
Report to President Killian	2
Science Library	2
Study, 1958-1961	2
Machine Methods of Computation and Numerical Analysis	2
	Box
Minutes, 1950-1956	2
Report	2
Mathematics Typography	2
Operations Evaluation	2
Operations Research	2
Samuelson	2
Staff Administration	2
Undergraduate Policy	2

Series 2. Massachusetts Institute of Technology Records

Urban Studies	2
	Box
Computation, present and future	3
Computation Center	3
Continuing Professional and Lifelong Education	3
Department of Electrical Engineering, honor students	3
Department of Physics	3
	Box
History	3
Correspondence	3
Committee on Graduate Courses	3
Committee on Physics Policy	3
Courses	3
	Box
Atomic and Nuclear Physics (8.052)	3
Electricity (8.03)	3
Fluids and Plasma Physics (8.491)	3
Methods of Theoretical Physics	3
Quantum Mechanics Problems	3

Series 2. Massachusetts Institute of Technology Records

Doctor's examinations	3
Roll Books [restricted]	28
Talk to seniors	3
Visiting Committee, 1963-1965	3
Differential Analyzer	3
Division of Industrial Cooperation	3
Divisions of Sponsored Research	3
Faculty Council	3
Industrial Liaison	4
Library (general)	4
	Box
General setup of Eastman Library	4
Book fund balance	4
Books suggested for purchase	4
German periodical subscriptions	4
Intrex	4
Physics classification	4
Physics undergraduate shelf	4

Series 3. Alphabetical Subject Files

Librarian report	4
Operations Research summer course	4
	Box
Travel voucher	4
Suggested material	4
Post-doctoral nomenclature	4
Research Library of Electronics	4
Student roll cards	4
Technology Press	4

Series 3. Alphabetical Subject Files**A. 1933-1956**

	Box
A - General	4
Academic Press	4
Acoustics	4
	Box
Architectural Record	4

A. 1933-1956

Committee	4
Consulting	4
General	4
Laboratory	4
Problems	4
Reports	4
Seminar	4
Acoustical Society of America	4
	Box
Acoustical Journal	4
Business reports	4
Committee on Architectural Acoustics	4
International Congress	4
Electroacoustics	4
Noise Committee	4
Noise in Industry	4
President, 1950-1951	4
Proposed School for Advanced Training in Sound for Officers of the U.S. Navy	4

A. 1933-1956

Sustaining Membership Committee	4
Albertson, Walter	4
American Academy of Arts and Sciences	4
American Association for the Advancement of Science	5
American Association of Physics Teachers	5
American Association of Scientific Workers	5
American Institute of Physics	5
	Box
Committee on Mathematical Typography	5
General	5
Governing Board	5
Journal of Applied Physics	5
Reviews of Modern Physics	5
Physics Today	5
American Mathematical Society	5
American Physical Society	5
	Box
Council	5
New England Section	5

A. 1933-1956

Armed Forces College	5
Army Advisory Committee for the Ordnance Research and Development	5
Division	5
Army Operations Research Office	5
Association for Computing Machinery	6
	Box
Local Program Committee	6
Nominating Committee	6
Association of Scientists for Atomic Education	6
B - General	6
Bills and Receipts	6
Bolt, R.H.	6
Bolt and Beranek	6
Books, personal	6
	Box
<u>Vibration and Sound</u>	6
Brookhaven National Laboratory	6
Bulletin of the Atomic Scientists	6
C - General	6

A. 1933-1956

Case Club	6
Case Institute of Technology	6
	Box
General	6
Department of Mathematics Visiting Committee	6
Case National Advisory Committee	6
Cattell, J.M.	6
Citizens Committee on Radiation Hazards	6
Committee on Units	6
Condon, Edward U.	6
Conference on Mathematical Tables	6
	Box
General	6
Digest of discussion	6
Errata, corrected report and mailing list	6
Invitations, program and correspondence	6
Points for discussions	6
Program for Mathematics Tables at the NBS	6
Publications of the National Applied Mathematics Laboratories	6

A. 1933-1956

Tables for Desk Computers by H.O. Hartley	6
Cosmos Club	6
D - General	7
Darrow, Karl K.	7
DuPont	7
E - General	7
Emergency Committee of Atomic Scientists	7
	Box
Addresses	7
Correspondence, 1946-1955	7
Financial Reports and Statements	7
Notices, minutes, agendas	7
Organization	7
Publications, pamphlets, booklets	7
Public releases	7
Reports	7
Trustees	7
Ernst, Martin L.	7

A. 1933-1956

F - General	7
Federation of American Scientists	7
Ford Foundation	7
G - General	7
H - General	7
Joseph Henry Fund	7
Humor?	7
I - General	8
Institute for Defense Analyses	8
International Astronomical Union	8
I.B.M.	8
J - General	8
K - General	8
Kennelly Fund	8
L - General	8
Letters of recommendation	8
Arthur D. Little, Inc.	8
London Physical Society	8

A. 1933-1956

Lowan, Arnold N.	8
	Box
Computation Laboratory	8
Mathematical Panel	8
Mc - General	8
Macmillan Company	8
McGraw-Hill Book Company	8
M - General	8
Mathematical Tables Committee	8-9
Mathieu Functions	9
Menzel, D.H.	9
<u>Methods of Operations Research</u> (Morse and Kimball)	9
<u>Methods of Theoretical Physics</u> (Notes by Morse and Feshbach)	9
Miller, D.C.	9
Minneapolis-Honeywell	9
Miscellaneous	9
N - General	9
National Academy of Sciences, Committee on Government Relations	9

A. 1933-1956

National Bureau of Standards Applied Mathematics Advisory Council	9
National Research Council	9
	Box
General	9
Committees	9
	Box
High Speed Computing Machines	9
Operations Research	9
Undersea Warfare	9
National Science Foundation, Advisory Panel for University Computing Facilities	10
National War College	10
Naval Ordnance Test Station - Inyokern	10
Naval Research Advisory Committee	10
Naval Research Office	10
Navy Postwar Contracts	10
New Departure Manufacturing Co.	10
New York Academy of Sciences	10
Nuclear Science and Engineering Laboratory	10
O - General	10

A. 1933-1956

Operations Evaluation Group (OEG)	10
	Box
Applied Science Division	10
Operations Research	10
	Box
Possible Positions	10
Seminar	10
Speeches	10
Committee	10
Operations Research Society of America (ORSA)	10
	Box
Constitution and By-laws Committee	10
Correspondence, 1954-1956	10
Council	10
Education Committee	10
General	10
International Conference on O/R and Management Science	10
Membership Committee	10
Membership Queries	10

A. 1933-1956

President, 1952-1953	10
Nominations Committee	10
O/R Committee regarding affiliation with AAAS	10
Prize Committee	10
Professional Relations Committee	10
Program Committee	10
Publications Committee	11
Publicity Committee	11
Sustaining Membership Committee	11
Meetings, 1953-1956	11
Oppenheimer, Jane	11
Overseas Press Club	11
P - General	11
Panel on Physics and Astronomy	11
Patents	11
Personal	11
Philco Corp.	11
Princeton Theoretical Group	11

A. 1933-1956

Project Squid	11
Pullman Reservations	11
Q - General	11
R - General	11
Ramo-Woolridge Corporation	11
	Box
Fellowships	11
Rand Corporation	11
	Box
Board of Trustees meeting, November, 1958	11
General	11
Project	11
Security	12
Reports	12
Reprint mailing lists	12
Research	12
Research Corporation	12
Research and Development Board	12
Reviews of Modern Physics	12

A. 1933-1956

Richtmyer, F.K. and R.D.	12
S - General	12
Science	12
Science Service	12
Scientific American	12
Scientific Research Society of America - Governing Board	12
Secretary of Defense	12
Sigma Xi	12
	Box
General	12
Membership	12
National	12
Program Committee	12
Space Technology Laboratories	12
Sperry Products, Inc.	12
T - General	12
U - General	12
University of California at Los Angeles	12

B. 1956-1980

United Nations Educational, Scientific, and Cultural Organization	12
Universities of India - Allahabad and Calcutta	12
V - General	12
W - General	12
West Point Academy	12
John Wiley & Sons	12
Works Project Administration, Mathematics Tables Project	12
World War II	13
X - Z - General	13

B. 1956-1980

	Box
Filing	13
A - General	13
Ackoff, Russell L.	13
Adage	13
Addresses	13
Advisory Group for Aeronautical Research and Development Survey of Operational Research	13

B. 1956-1980

Airline Group of the International Federation of Operations Research Societies	13
American Institute of Physics	13
	Box
General	13
ASA Conference, 1972	13
Advisory Committee on Manpower	13
American Physical Society	13
Buildings plans	13
Copyright	13
Executive Committee, Governing Board minutes	13
Information Policy Committee	13
Institute for Electrical Engineering debate	13
	Box
Physics Abstracts	13
Kansas State University, 1961	13
Planning	14
Property Committee	14
Seminar - Physics and Computers, 1962	14
Visiting Scientists Program, 1957-1958	14

B. 1956-1980

American Philosophical Society	14
American Physical Society (APS)	14
	Box
Committee on Committees	14
Council, 1974-1975	14
Panel on Public Affairs (POPA)	14
	Box
Background material, 1975	14
Guidelines	14
Manpower Study	14
Meetings, 1975-1976	14
Recycle study	14
Refusals	14
Analytic Services, Inc. (AnSer)	14
	Box
General, 1962-1973	14
Nominating Committee, 1964-1965, 1969-1973	15
Trustees Information	15
Trustees Notebook	15

B. 1956-1980

Annals of Physics	15
Association of Research Libraries	15
Associated Universities, Inc.	15
	Box
Glennan, T. Keith	15
B - General	15
Benjamin, W.A.	15
Bolt, Beranek & Newman	15
	Box
Computer Course, 1968-1969	15
PASV - Engineering Applications of Modern Mathematics	15
Trip - Dallas, Los Angeles	15
Brookhaven National Laboratory Colloquium, 1972	15
C - General	15
Canadian Operations Research Society Conference, 1961	15
Carleton College	15
Case Western Reserve, School of Library Science	15
Conference on Scientific Information, 1958	15
Conference on Mathematical Tables	15

B. 1956-1980

Committee memberships and visits	15
Council on Library Resources, 1958-1970	16
D - General	16
E - General	16
Education Development Center	16
F - General	16
Florida State University Physics Colloquium, 1972	16
Ford Foundation	16
	Box
Trip to Japan, India, Israel, 1965	16
Fulbright Exchange Trip, Australia and Hawaii	16
G - General	16
H - General	16
I - General	16
Institute for Defense Analyses	16
	Box
Security	16
Technical Review Board	16
Information Systems in Education	16

B. 1956-1980

Ingard, K. Uno	16
IBM	16
International Federation of Operations Research Societies	16
	Box
Meeting, Venice, 1969	16
Meeting, Tokyo, 1975	16
Lectures, 1975	16
J - General	16
Journal of Mathematics & Physics	16
K - General	17
Kehl, William B.	17
L - General	17
M - General	17
McGraw-Hill Book Company	17
Mathematical Reviews	17
Mathematics of Computation	17
Military Operations Research Symposia, 1965	17
Morse, Philip M.	17
	Box

B. 1956-1980

Books	17
	Box
<u>Methods of Theoretical Physics</u>	17
<u>Queues, Inventories and Maintenance</u>	17
<u>Spheroidal Wave Functions</u>	17
<u>Thermal Physics</u>	17
<u>Vibration and Sound</u>	17
Sabbatical plans	17
Sabbatical year -- travel to Australia, Hawaii	17
N - General	17
National Academy of Engineering Conference on Engineering Education, 1969	17
National Academy of Sciences	17
	Box
General	17
Advisory Committee to Office of Documentation	17
National Academy of Sciences/National Research Council	17
	Box
Committee on Revision of Mathematical Tables	17
Committee on Natural Resources	17

B. 1956-1980

Systems Analysis and Operations Research in Less Developed	17
Countries, Panel report	17
Trips	17
	Box
Nigeria, 1974	17
Tunisia, 1976-1977	18
National Association of Educational Broadcasters Advisory Committee	18
National Association of Manufacturers - Prize Committee	18
National Bureau of Standards	18
	Box
Advisory Committee to Applied Math Division, 1956-1961	18
Committee on Revision of Math Tables	18
Institute for Applied Technology, Technical Analysis Division, Advisory Board	18
National Institutes of Health	18
	Box
Marston-Regional Medical Program Review Committee	18
National Science Foundation	18
New England Regional Computing Program, Board of Trustees	18

B. 1956-1980

North Atlantic Treaty Organization (NATO), Advisory Panel on Operations Research (APOR)	18
	Box
Establishment, 1959	18
General, 1962-1965	18
Allis/Aparo	19
Allis/Oliver, 1963-1965	19
McLucas/Oliver	19
Denmark	19
England	19
France	19
Germany	19
Greece	19
Italy	19
Norway	19
Portugal	19
Turkey	19
Advisory Group on Human Factors	19
Apprenticeships, 1962-1963	19

B. 1956-1980

Conferences	19
	Box
General plans and assignments	19
Naples, 1962	19
Lake Como, 1962	19
Trondheim, 1962	19
Venice, 1962	19
Palermo, 1963	19
Lisbon, 1963	19
La Spezia, 1963	19
Varenna, 1963	19
Toulon, 1968	19
Brussels, 1970	19
Consulting	19
	Box
Brussels, 1959	19
Germany, Baumgarten	19
Italy, Stoller	19
Educational Opportunities in Operations Research	19

B. 1956-1980

Institute for Defense Analyses	19
Meeting, 1964	19
Panels, 1960-1962	20
Reference file	20
Seminars	20
	Box
Munich, 1961	20
Venice, 1961	20
Copenhagen, 1962	20
La Spezia, 1962	20
Tenth Anniversary Symposium, 1970	20
Trip diaries	20
	Box
Italy and Japan, 1961	20
Paris, 1964	20
Lisbon, 1965	20
Visiting Consultants	20
	Box
Applicants	20

B. 1956-1980

Memos	20
O - General	20
Operations Evaluation Group	20
	Box
General	20
Vicennial, 1962	20
Last days, 1962	20
Operations Research Seminar	20
"Personal Reminiscences," lecture for Operations Research Center Seminar (transcription) 1975 April 15	20
	Box
"Personal Reminiscences," lecture for Operations Research Center Seminar 1975 April 15	9
	Box
Operations Research Society "Conversazione," 1967	21
	Box
Organization for Economic Cooperation and Development (OECD)	20
	Box
Advisory Panel on Operations Research (APOR)	20
	Box
General, 1962-1968	20

B. 1956-1980

Administrative File, 1965-1969	20
Book publication	20
Meeting, 1963	20
Trip diaries	21
	Box
Paris, 1964	21
Paris, Athens, 1964	21
The Hague, 1964	21
Dublin, 1964	21
Dublin, 1965	21
Rome, Geneva, Paris, Stockholm, Oslo, The Hague, 1966	21
Stockholm symposium, 1966	21
Oslo, 1966	21
Rome, 1966	21
Paris, 1967	21
London, 1967	21
The Hague, Paris, 1968	21
Paris, 1969	21

B. 1956-1980

Paris, Oslo, 1969	21
Committee for Scientific Research	21
Publications lists	21
Publications	21
Operations Research Society of America	21
	Box
General	21
Anti-Ballistic Missile, correspondence and memos	21
Council, 1958	21
Meeting, Dallas, 1971	21
Journal	21
Report, 1971	22
Transportation Science Section	22
	Box
Dissertation contest, 1972	22
Panel, 1962	22
P-Q - General	22
Physics Today	22
Publications	22

B. 1956-1980

R - General	22
Rand Corporation	22
Reader's Digest, Editorial Advisory Committee	22
RESA, Scientific Research Society of America	22
Roe, Anne	22
S - General	22
Salzmann	22
T - General	22
Teknekron	22
Traffic Safety Committee, Williamsburg Conference, 1958	22
Travel	22
	Box
General	22
Accounts	22
Japan, 1975	22
U-V - General	22
Union of Concerned Scientists	22
United Nations Educational, Scientific, and Cultural Organization	22

B. 1956-1980

United States Army Combat Development Command, Scientific Advisory Group	22
United States Army Operations Research Office, Ad Hoc Committee to Review Army Operations Research Office	23
United States Department of Commerce, Telecommunication Science Panel (Holloman Committee), 1965-1968	23
United States Naval Proving Ground Advisory Committee	23
United States Operations Research Group	23
University of California, Berkeley, School of Librarianship	23
University of California, Los Angeles	23
University of Chicago, Graduate Library School	23
University of Michigan, Engineering Summer Conference, 1958	23
University of North Carolina, School of Library Science	23
University of Wisconsin, Mathematics Research Center	23
Vallarta, Manuel Sondoval	23
W - General	23
Walsh, John E.	23
Washington Operations Research Council, 1965	23
Winchester Citizen's Advisory Committee on Secondary Schools	23
X-Y-Z - General	23

Series 4. Writings

Series 4. Writings

	Box
Popular articles undated	23
Potential Distribution for Positive Ions in Gas	29
Scattering Tables	23
Solutions of $(1/\#)\tanh\#$	23
Somerfeld's Article on Electrons in Metals - English Translation	29
Specific Heat of Electrons in Crystal	29
Spectroscopic vs. Deflection Values of e/m	29
Tables of the Markov-Poisson Process	29
Two-Electron Wave Functions	23
"Theory of Normal Cathode Fall in Glow Discharges" 1927 1927	23
General Lectures and Broadcasts 1928-1970	23
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"A Theory of the Electric Discharge Through Gases"	29

Series 4. Writings

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"Diatomic Molecules According to the Wave Mechanics II: Vibrational Levels"	29
<u>Quantum Mechanics</u> by E. U. Condon and PM, drawings	23
"Space Charge Sheaths in Positive Ray Analysis," by R.W. Gurney and Morse	29
"The Passage of Electrons through Metallic Crystals According to the Wave Mechanics" circa 1930	23
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"The Theory of Scattering of Slow Electrons by Atoms," by W.P. Allis and Morse between 1931 and 1933	29
Acoustics Notes and Problems 1932	29
"Quantum Mechanics of Collision Processes"	29
"The Effect of Exchange on the Scattering of Slow Electrons from Atoms" 1933	24
"Preliminary Report on Discharge Pump Cooler"	24
Adjusted Parameter Wave Function for Collision Problems circa 1935	24

Series 4. Writings

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"Velocity Distributions for Elastically Colliding Electrons," by W.P. Allis, E.S. Lamar, and Morse	24
"Collision of Neutron and Proton, " by J.B. Fisk, L.I. Schiff, and Morse 1936	24
<u>Vibration and Sound</u>	24
Notes for Nuclear Theory Course 1937	24
"Collision of Neutron and Proton II," by J.B. Fisk, L.I. Schiff, and Morse	24
Mathieu Functions circa 1938	24
"Some Aspects of the Theory of Room Acoustics" 1939	24
"Acoustic Impedance and Sound Absorption" 1940	24
"Opacity of Gas Mixtures in Stellar Interiors"	24
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O/R General - Early Calculations between 1944 and 1945	25
Search Calculations 1944	25
<u>Vibration and Sound</u> - Revision 1948	25
"The Evaluation of Military Capabilities in the Formulation of Strategy," talk at National War College 1950	25
Library O/R - Notes, Data circa 1950 to 1966	25

Series 4. Writings

Operations Research, Early Articles and Talks circa 1950 to 1962	25
"Summary Report on Vibrating Drill Mechanism" 1951	25
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Turbulence circa 1953	25
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<u>Methods of Theoretical Physics</u> , by H. Feshback and Morse	25
Computer articles 1955-1965	25
O/R Popular Talks and Articles	25
Talks and Articles on Computing Machines 1956-1964	25
"Attendance and the Use of the Science Library at M.I.T." 1956	25
Library Survey	26
"Waves in a Lattice of Spherical Scatterers"	26
Inventory Problems circa 1957	26
"Knowledge Helped by Teamwork" 1957	26
Talks and Speeches: O/R, Computive, Simulation 1958-1972	26
Probability Distribution Functions	26

Series 4. Writings

<u>Queues, Inventories, and Maintenance</u> 1958	26
Linear Analysis of Floor Plans 1960	26
<u>Thermal Physics</u> 1962	27
"Design for a Brain" 1964	27
"Computers and e.d.p."	27
"Probabilistic Models for Library Operations"	27
"Queues and Markov Processes: The Response of Operating Systems to Fluctuating Demand and Supply" in <u>Systems Engineering Handbook</u> 1965	27
"Transmission of Sound through a Circular Membrane in a Plane Wall" 1966	27
"The History and Development of Operations Research," by E.C. Williams and Morse 1968	27
<u>Library Effectiveness: A Systems Approach</u>	27
<u>Theoretical Acoustics</u> , by K. Uno Ingard and Morse	27
"A Probabilistic Mood for Obsolescence," by Caroline Elston and Morse 1969	27
<u>Thermal Physics</u> . second revision	27
Talks and speeches including Hawaii, Australia 1971-1972	27
Operations Research and Physics	27
"Search Theory and Browsing" 1970	27
"A Queuing Model for Car Passing," by H.J. Yaffee and Morse 1971	27

Series 4. Writings

"A Queuing Model for Automobile Passing"	27
"Library Models" 1972	28
"Operations Research" for Encyclopedia of Computer Science	28
"Optimal Linear Ordering of Information Items"	28
"George Elbert Kimball, 1906-1967" 1973	28
"Search Theory" - Chapter 6 of <u>Handbook of Operations Research</u> 1973	28
"Edward Uhler Condon, 1902-1974" 1976	28
"Demand for Library Materials: An Exercise in Probability Analysis"	28
"A Queuing Theory, Baysian Model for the Circulation of Books in a Library" 1979	28
"Karl Taylor Compton" 1980	28
"John Clarke Slater, 1901-1976"	28
