

William Ralph Bennett Papers

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Prepared by Joseph K. Brooks with the assistance of Jewel McPherson

Collection Summary

Title: William Ralph Bennett Papers

Span Dates: 1922-circa 1998

Bulk Dates: (bulk 1958-1996)

ID No.: MSS85461

Creator: Bennett, William Ralph, 1930-2008

Extent: 43,400 items ; 124 containers plus 21 oversize ; 49.6 linear feet

Language: Collection material in English, with Russian

Location: Manuscript Division, Library of Congress, Washington, D.C.

Summary: Physicist, inventor, educator, and author. Topical files, notebooks, records of scientific experiments, research material, correspondence, scientific papers, lecture files, drafts of books with related background and research material, printed matter, and miscellaneous material documenting Bennett's development of the gas laser and other inventions, his academic and professional career, and his authorship of scientific papers and books.

Selected Search Terms

The following terms have been used to index the description of this collection in the Library's online catalog. They are grouped by name of person or organization, by subject or location, and by occupation and listed alphabetically therein.

People

Bennett, William R. (William Ralph), 1904- William R. Bennett papers.

Bennett, William Ralph, 1930-2008.

Bennett, William Ralph, 1930-2008. Introduction to computer applications for non-science students (BASIC). 1976.

Bennett, William Ralph, 1930-2008. Scientific and engineering problem-solving with the computer. 1976.

Chebotaev, V. P. (Veniamin Pavlovich), 1938-

Gould, Gordon, 1920-2005.

Kahn, Leonard R.

Mussorgsky, Modest Petrovich, 1839-1881.

Steinberger, J.

Organizations

Bell Telephone Laboratories.

Columbia University.

Yale University.

Subjects

Cryptography.

Electromagnetic fields--Health aspects.

Force and energy.

Gas lasers.

Hearing aids.

Helium-neon lasers.

Information theory.

Music--Russia.

Phonocardiography.

Physics.

Science--Russia.

World War, 1939-1945--Communications.

Places

Russia--Civilization.

Occupations

Authors.

Educators.

Inventors.
Physicists.

Administrative Information

Provenance

The papers of William Ralph Bennett, physicist, inventor, educator, and author, were given to the Library of Congress by his wife, Frances C. Bennett, in 2009.

Transfers

Some reel-to-reel audiotapes, audiocassettes, a phonograph record, and VCR tapes have been transferred to the Motion Picture, Broadcasting, and Recorded Sound Division where they are identified as part of the William Ralph Bennett Papers.

Copyright Status

The status of copyright in the unpublished writings of William Ralph Bennett is governed by the Copyright Law of the United States (Title 17, U.S.C.).

Access and Restrictions

The papers of William Ralph Bennett are open to research. Researchers are advised to contact the Manuscript Reading Room prior to visiting. Many collections are stored off-site and advance notice is needed to retrieve them for research use.

Preferred Citation

Researchers wishing to cite this collection should include the following information: Container number, William Ralph Bennett Papers, Manuscript Division, Library of Congress, Washington, D. C.

Biographical Note

<i>Date</i>	<i>Event</i>
1930, Jan. 30	Born, Jersey City, N.J.
1951	Graduated, Princeton University, Princeton, N.J.
1952	Married Frances Commins
1957	Ph.D. in physics, Columbia University, New York, N.Y.
1959-1962	Member, technical staff, Bell Telephone Laboratories, Murray Hill, N.J.
1960	Invented with Ali Jarvan the first gas (helium-neon) laser
1962-1964	Associate professor of physics and applied science, Yale University, New Haven, Conn.
1964-1972	Professor of physics and applied science, Yale University, New Haven, Conn.
1965	Received the Morris N. Liebman Award of the Institute of Electrical and Electronics Engineers
1976	Published <i>Introduction to Computer Applications for Non-Science Students and Scientific and Engineering Problem-Solving with the Computer</i> . Englewood Cliffs, N.J.: Prentice-Hall
1977	Published <i>Physics of Gas Lasers</i> . New York: Gordon and Breach

1979	Published <i>Atomic Gas Laser Transition Data: A Critical Evaluation</i> . New York: Plenum
1981-1987	Master, Silliman College, Yale University, New Haven, Conn.
2000	Awarded Devane Medal for distinguished scholarship and teaching at Yale University, New Haven, Conn.; retired from the university
2008, June 29	Died, Haverford, Pa.

Scope and Content Note

The papers of William Ralph Bennett (1930-2008) span 1922-circa 1998, with the bulk of the material dating from 1958 to 1996. Bennett was on the technical staff of Bell Telephone Laboratories from 1959 to 1962 where with Ali Jarvan he developed and built the first gas (helium-neon) laser, an invention that made applications and devices such as laser surgery, supermarket scanners, and compact disk players practicable. The collection is in English with some material in Russian, a reflection of Bennett's interest in scientific developments in Russia and in the culture, especially the music, of that country. The papers are described to the file level and organized into four series: [Academic File](#), [Subject File](#), [Speeches and Writings](#), and [Oversize](#).

Bennett's invention of the gas laser was a direct outgrowth of his doctoral work. The experimental and theoretical work at Columbia University that led to the development of the gas laser is documented in the [Academic File](#). Also represented in the Academic File is Bennett's nearly half-century career as a professor of physics and applied science at Yale University. Most of the Yale material is lecture notes and graphical classroom aids such as slides.

Bennett's efforts during his academic career relating to his continued work with gas lasers, his other inventions, and his wide-ranging interests are documented as part of the [Subject File](#). Besides material relating to various types of gas lasers, the Subject File series includes files on Bennett's efforts to elucidate the health effects of electromagnetic fields emanating from sources as varied as electric power transmission wires and consumer electronics such as cell phones; on his efforts to prove experimentally at a canal lock in Washington State the existence of a fifth force of nature; and on his development of dynamic spectral phonocardiograph and hearing aid technology.

The [Subject File](#) also includes material on Bennett's time at Bell Telephone Laboratories when he was working on the helium-neon laser, and on his tracking developments in information theory and cryptography, interests he shared with his father, William R. Bennett (1904-1983), a communications scientist who also worked at Bell Telephone Laboratories. There is a large grouping of documents on the senior Bennett in the Subject File, including his participation in the development of SIGSALY, the scrambler telephone system that Franklin Roosevelt and Winston Churchill used to communicate securely during World War II.

Also part of the [Subject File](#) are files of correspondence and other material relating to Russian scientists, especially laser pioneer V. P. Chebotayev; and on Gordon Gould and J. Steinberger. There is a large file on Bennett efforts to help Leonard R. Kahn get his AM stereo technology accepted as a radio broadcast industry standard.

The [Speeches and Writings](#) series features Bennett's articles and scientific papers and a large file of scientific papers by other scientists mainly relating to lasers. Also part of the Speeches and Writings are drafts and research files relating to Bennett's books, including the influential textbooks *Introduction to Computer Applications for Non-Science Students* and *Scientific and Engineering Problem-Solving with the Computer*, both published in 1976. Bennett was an accomplished amateur musician and avocational musicologist, and the Speeches and Writings contain a file on his unpublished book-length study on a suite by the Russian composer Modest Petrovich Mussorgsky, *Pictures at an Exhibition: An Historical Interpretation of the Mussorgsky Work*.

Arrangement of the Papers

The collection is arranged in four series:

- Academic File, circa 1954-circa 1998
- Subject File, 1922-1996
- Speeches and Writings, circa 1954-1984
- Oversize, 1960-1989

Description of Series

<i>Container</i>	<i>Series</i>
BOX 1-13	<p><u>Academic File, circa 1954-circa 1998</u></p> <p>Student papers, lecture notes, notebooks, research files, correspondence, printed matter, topical files, and miscellaneous material.</p> <p>Arranged largely as received by name of academic institution and thereunder by topic or type of material.</p>
BOX 13-58	<p><u>Subject File, 1922-1996</u></p> <p>Research files, scientific papers, records of scientific experiments, correspondence, patents, copyrights, notes, topical files, printed matter, and miscellaneous material.</p> <p>Arranged alphabetically by main topic or type of material largely as received. Files within main categories are unsorted.</p>
BOX 59-124	<p><u>Speeches and Writings, circa 1954-1984</u></p> <p>Scientific papers, drafts of books, articles, research files, correspondence, photographs, illustrations, topical files, printed matter, and miscellaneous material.</p> <p>Arranged into writings by Bennett and by others and therein by type of writing and topic or subject.</p>
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BOX 2	Nos. 2-6 (7 folders)
BOX 3	Miscellaneous, nos. 1-9 (9 folders)
BOX 4	Quantum mechanics, nos. 1-3 (3 folders) Optical Spectra Excited in the Noble Gases at High Pressures by Polonium Alpha Particles, Bennett's thesis, 1959 (3 folders) Quantum mechanics course (2 folders)
BOX 5	Statistical mechanics course Topics Charge exchange articles Collision processes Dirac theory Double crossing, helium-helium, helium-neon Fermi: hyperfine structure Electronic collisions Feynman's theory Hydrogenic atom Ions and electrons Metastable life-times Nitrogen Noble gas molecular states and vacuum ultraviolet spectrum

Academic File, circa 1954-circa 1998

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	Research files, scientific papers, records of scientific experiments, correspondence, patents, copyrights, notes, topical files, printed matter, and miscellaneous material.

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BOX 109	Levenson, M. D.-Malone, D. F. (26 folders)
BOX 110	Mandel, L.-McCumber, D. E. (19 folders)
BOX 111	McDowell, M. R. C.-Odintsov, A. I. (26 folders)
BOX 112	Offenberger, A. A.-Pollack, M. A. (25 folders)
BOX 113	Porto, S. P. S.-Sargent, M. (28 folders)
BOX 114	Sauermann, H.-Serber, R. (21 folders)
BOX 115	Shank, C. V.-Stanley, R. W. (16 folders)
BOX 116	Stark, H.-Tang, C. L. (18 folders)
BOX 117	Targ, R.-Tukey, J. W. (17 folders)
BOX 118	Tuteur, F. B.-Wittke, J. P. (31 folders)
BOX 119	Wolf, E.-Zory, P. (10 folders)

Speeches and Writings, circa 1954-1984

Container

Contents

	Part II
	A-C
	(5 folders)
BOX 120	D-H
	(4 folders)
BOX 121	I-M
	(5 folders)
BOX 122	N-W
	(6 folders)
BOX 123	V-Z
	George J. Schulz Lectures, Yale University, New Haven, Conn.
	Garwin, Richard L.
	Sagan, Carl, 1984
	Segré, Emilio
	Serber, Robert
	Miscellany
	(2 folders)
BOX 124	(1 folder)
BOX OV 1-OV 21	Oversize, 1960-1989
	Slides, physics and mathematical notes, photographs, maps, drawings, and musical scores. Arranged and described according to the series, container, and file from which the matter was removed.
BOX OV 1-OV 4	Academic File
	Yale University, New Haven, Conn.
	Lecture slides
	Applied Physics 207 (Container 9)
BOX OV 5-OV 14	Miscellaneous (Container 9)
BOX OV 15	Computer course for non-scientists
	Photographs (Container 12)
BOX OV 16	Miscellany
	EAS 40 course and notes for unidentified courses (Container 13)
BOX OV 17	Subject File
	Fifth force
	Schematics, drawings, charts, photographs, maps (Container 38)
BOX OV 18	Positronium experiment
	Drawings and graphs, 1960 (Container 56)
BOX OV 19	Speeches and Writings
	Books
	Pictures at an Exhibition: An Historical Interpretation of the Mussorgsky Work, 1980
	Musical scores (Container 79)
BOX OV 20	<i>Scientific and Engineering Problem-Solving with the Computer</i> (1976)
	Rosetta Stone
	Photographs and drawings (Container 83)
BOX OV 21	Voynich manuscript, photographic copy (Container 84)