

# Guide to the Henry Margenau Papers

MS 129



compiled by Emily Epstein

June 1996

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## Collection Overview

**REPOSITORY:** Manuscripts and Archives  
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**CALL NUMBER:** MS 129

**CREATOR:** Margenau, Henry, 1901-1997

**TITLE:** Henry Margenau papers

**DATES:** 1927-1990

**PHYSICAL DESCRIPTION:** 3.5 linear feet (8 boxes)

**LANGUAGE:** English

**SUMMARY:** The papers document Henry Margenau's professional career as a physicist and philosopher of science. They chiefly consist of correspondence and published and unpublished writings.

**ONLINE FINDING AID:** To cite or bookmark this finding aid, please use the following link: <http://hdl.handle.net/10079/fa/mssa.ms.0129>

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## Requesting Instructions

To request items from this collection for use in the Manuscripts and Archives reading room, please use the request links in the HTML version of this finding aid, available at <http://hdl.handle.net/10079/fa/mssa.ms.0129>.

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Key to the container abbreviations used in the PDF finding aid:

b. box  
f. folder

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## Administrative Information

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### Immediate Source of Acquisition

Gift of Henry Margenau, 1977 and 1994, and transferred from the Kline Science Library, 1977.

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### Conditions Governing Access

The materials are open for research.

## Conditions Governing Use

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## Preferred Citation

Henry Margenau Papers (MS 129). Manuscripts and Archives, Yale University Library.

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## Biographical / Historical

Henry Margenau was born on April 30, 1901 in Bielefeld, Germany. Largely self-taught and ambitious, Margenau was trained to be an elementary school teacher. In 1922, however, he emigrated from Germany, settled in Nebraska with a distant relative, and worked as a farm hand. He attended Midland Lutheran College from 1923 to 1924, majored in Latin, and completed his degree in one year. He came to physics quite by accident, when he accepted an assistantship to Dr. Moore, a research physicist at the University of Nebraska, in the summer of 1924. In addition to assisting Dr. Moore, Margenau took courses in physics and mathematics, and in the fall of 1925, began taking graduate level courses. By the spring of 1926, he had a master of science degree in physics. His benefactor and mentor died, but Margenau was retained by the university to continue doing research and to work as an instructor.

Margenau's master's thesis on the Zeeman Effect was published, and he was offered a fellowship from the Yale University physics department in 1927. After two years at Yale, Margenau had completed his Ph.D. in physics. He then went to study quantum theory in Europe on a Sterling Fellowship and returned to Yale in the fall of 1931, with the promise of an assistant professorship after an additional year as an instructor. He was assistant professor of physics from 1931 to 1939, at which time he was made an associate professor.

During World War II, Margenau stayed at Yale and continued to teach. With the arrival, in 1941, of Ernst Cassirer, a prominent philosopher and physicist, Margenau's interests shifted to philosophy. Cassirer and Margenau co-taught a graduate course on Kant and Neo-Kantianism, and in 1944 collaborated on an English edition of *Determinismus and Indeterminismus in Der Modern Physik*. Unfortunately, Cassirer died before the completion of the project, and Margenau did not continue the work in his absence. Rather than augment and amplify the text as had been planned, Margenau left it as it was, and added a preface over his name as well as a new bibliography. The book was eventually published in 1956.

In 1945 Margenau was promoted to full professor and, in 1950, he received the first joint appointment in physics and philosophy to be offered by Yale, the Eugene Higgins Professorship of Physics and Natural Philosophy. Margenau retired Emeritus from Yale in 1969, but continued to research and write about physical phenomena as well as philosophy and ethics. In the 1960s he developed a considerable interest in the problems of parapsychology, psychical research, and the physical reality of consciousness. *Einstein's Space and Van Gogh's Sky* (1982), for example, a book Margenau wrote with psychologist Lawrence LeShan, is an exploration of psychic phenomena and perception.

Though Margenau was affiliated with Yale from the 1920s onward, his reputation and professional activities took him all over the world and to many institutions. In 1939 he received a fellowship from the Institute of Advanced Study at Princeton, where he worked with Eugene Wigner and Archibald Wheeler. He was visiting professor at the University of California in 1947, and at the University of Heidelberg in 1953 and 1971. He was at Carleton College in 1953-1954, and at the University of Tokyo under the auspices of a Fulbright Lectureship in 1960. He taught at Whitman College in 1971-1972, and was a Hadley Fellow at Bennington College in 1975. He was a Joseph Henry Lecturer in 1954, and a National Phi Beta Kappa lecturer in 1965. Margenau's professional memberships included the American Physics Society, the

American Academy of Arts and Sciences, the American Association for the Advancement of Science, and the Académie Internationale de Philosophie des Sciences in Brussels. He was president of the Philosophy of Science Association and the New England section of the American Physics Society. Margenau served as vice president of the Connecticut Academy of Science and was a member of Phi Beta Kappa and Sigma Xi.

Henry Margenau has been referred to as the most important philosopher of physics of his generation and one of the most eminent philosophers of science in the twentieth century. He was the recipient of a number of honors and awards, including the San Marcos University Medal in 1951, the Century Award from Michigan State University in 1955, and the Devane Medal in 1969. He was in great demand as a consultant and worked in that capacity for MIT's Radiation Laboratory, the Atomic Energy Commission, the National Bureau of Standards, Argonne National Laboratories, General Electric, and the Lockheed Corporation. The latter, for example, had been assigned by the Air Force to study the physical processes taking place in the fireball created by exploding the first hydrogen bomb. Margenau's early work on spectral line measurement led Lockheed to seek his expertise; measuring the spectral lines produced by the bomb's explosion was the key to discerning the bomb's internal heat, and necessary for the success of the project.

Margenau was a prolific author. His books include: *Physics: Principles and Applications* (1949), *The Nature of Concepts* (1950), *Open Vistas* (1961), *Ethics and Science* (1964), *Scientific Indeterminism and Human Freedom* (1968), *The Scientist* (1965), *Integrative Principles of Modern Thought* (1972), and *The Miracle of Existence* (1984). He coauthored *Foundations of Physics* (1936), with R. Bruce Lindsay; *The Mathematics of Physics and Chemistry* (1943), with George Murphy; *Theory of Intermolecular Forces* (1969, 1971), with N. Kestner; and co-edited *Cosmos, Bios, Theos* (1992), with Roy Abraham Varghese. Margenau also published numerous physics and philosophical articles, and served as editor of such journals as *Foundations of Physics*, *Main Currents in Modern Thought*, *Journal of the Philosophy of Science*, *American Journal of Science*, *Reviews of Modern Physics*, *Journal of Chemistry and Physics*, *Journal of Quantitative Spectroscopy and Radiative Transfer*. He was consulting editor for the *Time Life Science Series*.

Henry Margenau became a citizen of the United States in 1930, and married Louise M. Noe in 1932. They have three children: Rolf Carl, Annemarie Luise, and Henry Frederick.

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## Scope and Contents

The Henry Margenau Papers are arranged in two series: Personal and Correspondence, and Writings. The collection reveals very little about Margenau's personal life, but it does afford the researcher a good picture of his personality. Through his philosophical and ethical writings and speeches, the researcher can study the workings and development of Margenau's philosophy and thought. Specifically, the researcher can trace his evolution from a specialist in spectral line broadening to a philosopher of science, religion, ethics, and the power of the human mind. Margenau's correspondence and publications reveal not only the great diversity of thought within the scientific community, but also that the establishment of scientific "truth" is a long and complex process. For example, the collection documents the disagreement and tension surrounding the acceptance of such theories as relativity and quantum mechanics, as well as the serious attention prominent scientists paid to notions like extrasensory perception and parapsychology. Margenau's papers also reveal the connection between science, government, and industry. Rather than work solely within the walls of a university, Margenau's prominence at Yale led him to consult for the Argonne National Laboratories, General Electric, and the Lockheed Corporation, among others, and he was long affiliated with the Office of Naval Research.

There are biographical musings made by Margenau in June 1963 on five Soundscriber discs in Historical Sound Recordings (HSR) in the Yale University Library. The researcher must make an appointment with the HSR curator in order to listen to the discs.

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## Arrangement

The papers are arranged in two series: Series I. Personal and Correspondence, 1931-1989. Series II. Writings, 1927-1990.

## Collection Contents

### Series I. Personal and Correspondence, 1931-1989

The first folder in this series, "Personal," includes Margenau's personal creed, notes, biographical newspaper clippings, and reviews of *Vistas in Physical Reality* (1976), a festschrift celebrating Margenau's career. The correspondence in the series is arranged alphabetically by last name of the correspondent and includes both incoming and outgoing letters. Much of the correspondence consists of travel arrangements, academic recommendations, and thank you notes. A large portion of the series pertains to Margenau's retirement in May, 1969. Yale celebrated the event with a symposium in Margenau's honor, and he received numerous letters of congratulation. Although Margenau maintained contact with many physicists, philosophers, psychologists, and parapsychologists, the volume of correspondence with them is rather slight. There are, however, quite interesting letters that deal with major questions in the field of physics. Margenau, for example, discusses probability theory with Walter Brattain, parapsychology with Gardner Murphy, and the Einstein-Podolski-Rosen Paradox with Nick Fremont-Smith. The letters tend to be brief, and center primarily around articles and published responses to them. Despite the routine nature of many of the letters in the series, as a whole it provides broad insight into Margenau's philosophy and interactions within and outside of the scientific community.

|              |   |           |
|--------------|---|-----------|
| b. 1, f. 1   | Personal  | 1948-1977 |
|              | Correspondence  |           |
| b. 1, f. 2   | A-C   | 1931-1983 |
| b. 1, f. 3   | Benor, Daniel [includes three papers by Sir John C. Eccles] | 1982      |
| b. 1, f. 4   | D-E [includes letter from Albert Einstein in German]        | 1936-1969 |
| b. 1, f. 5   | F-H [includes equation by Enrico Fermi]                     | 1955-1988 |
| b. 1, f. 6   | J-L   | 1940-1986 |
| b. 1, f. 7-8 | Keppel, John  | 1979      |
| b. 1, f. 9   | M-O   | 1956-1983 |
| b. 1, f. 10  | P-R   | 1955-1971 |
| b. 1, f. 11  | S-U   | 1959-1969 |
| b. 1, f. 12  | V-Z   | 1932-1989 |
| b. 1, f. 13  | Unidentified surnames                                       | 1969-1986 |

## Series II. Writings, 1927-1990

This series is comprised of five sections: articles; books; discussions; speeches, lectures, symposia; and other. Each section is arranged alphabetically by title, and, unless otherwise specified, contains materials that were written by Henry Margenau. The first folder in the series contains a list of Margenau's publications, but it is undated and not all inclusive.

The first folder in the articles section (1929-1980) contains several book reviews written by Margenau. The remainder of the section is divided into Margenau's philosophical and scientific articles. The philosophical articles cover Margenau's views on physics and its role in the world, and his personal ethical and religious thoughts and concerns. They also include some musings on parapsychology and extra sensory perception. The scientific articles are highly technical essays in various fields of physics. They include useful information on who funded Margenau's research, the purposes behind it, and the uses to which it was put. They therefore provide context for the researcher who might lack a specialized knowledge of physics.

The books section (1943-1985) primarily consists of correspondence, reviews, drafts, and notes regarding a selection of Henry Margenau's books. They include: *Einstein's Space and Van Gogh's Sky* (1982), *Ethics and Science* (1964), *The Mathematics of Physics and Chemistry* (1943), *The Miracle of Existence* (1984), *Open Vistas* (1961), *Physics and Philosophy* (1978), one chapter from an unidentified book, and one chapter from *Measurement in Quantum Mechanics*, an unpublished collaboration with Eugene Wigner.

For *Physics and Philosophy*, a compilation of Margenau's articles on the philosophy of physics, Margenau was asked to write a brief autobiographical sketch to introduce the collection. It is filed under the book's title as a draft, and offers the most comprehensive biographical information of Margenau available in the collection, including his work as a consultant. Margenau also wrote a preface to the book, in which he describes the long and intimate relationship between physics and philosophy. The editor of the volume, Mario Bunge, also offers biographical information about Margenau, documenting his importance in both physics and philosophy. Bunge's biographical information can be found on the page directly before Margenau begins his autobiography.

Of special note is the correspondence that followed in the wake of the publication of *Ethics and Science*. In a folder Margenau himself titled "reviews and controversy," there is an unfavorable review by philosopher Ernest Nagel. Margenau and Nagel carried on a dialogue in the pages of the *New York Times* regarding the role of scientists in matters of ethics and philosophy. Margenau also sent copies of the review and his reply to a number of friends and colleagues, and used what he considered the "controversy" as a starting point for at least two speeches he later delivered. Margenau's strong reaction to Nagel's opinion affords great insight into Margenau's personality, as well as into his views on the role of scientists, and others, in the fields of ethics and philosophy.

Speeches, Lectures, Symposia (1950-1987) is comprised of writings Margenau prepared for public appearances. They document a wide-range of subject matter, though they are weighted heavily toward philosophical, ethical, and religious matters. Margenau was concerned that the sciences be integrated into society, and he felt that the teaching of physics was central to the cultural and ethical concerns of America. For example, in a 1953 speech, "Fusion or Fission: Can the Art of Living Together Prevail Over the Science of Destruction?" Margenau used common conceptions about scientific inquiry to compare communism, a dogma supported by ideology, to democracy, a way of life supported by facts. His aim was to demonstrate the power ideas may have over facts in certain circumstances. This is just one example of how Margenau saw his role as a scientist and a patriot merge with his role as an intellectual.

Discussions (1934-1972) contains seven short published pieces on a variety of topics, and one typescript, accompanied by a letter from Eugene Wigner. The pieces were often collaborative, and fell under the rubric "discussion" or "news and views" in the publications in which they appeared. For the most part they are confined to clarifications of published articles, responses to criticism, and elaborations of theories or new ideas.

The Other (n.d.) section contains writings that have not been identified for date or context. With the exception of "Annotated Writings of Others," however, they were all written by Margenau.

|             |   |           |
|-------------|---|-----------|
| b. 2, f. 14 | Publications by Henry Margenau  | undated   |
|             | Articles  |           |
| b. 2, f. 15 | Book Reviews  | 1929-1980 |
|             | Philosophy  | 1931-1981 |
| b. 2, f. 16 | "Advantages and Disadvantages of Various Interpretations of the Quantum Theory,"<br>English | 1954      |
| b. 2, f. 17 | "An Approach to A Science of Psychical Research" [with Lawrence LeShan]<br>English          | 1980      |
| b. 2, f. 18 | "Are There Particles Traveling Faster Than Light?,"<br>English                              | undated   |
|             | "Atomic and Molecular Theory Since Bohr" (three parts)                                      |           |
| b. 2, f. 19 | "Historical Survey" [with Arthur Wightman]<br>English                                       | 1944      |
| b. 2, f. 20 | "Logical and Mathematical Survey" [with Arthur Wightman]<br>English                         | 1944      |
| b. 2, f. 21 | Résumé of Specific Results [with R.B. Setlow]   | 1945      |
| b. 2, f. 22 | "Can Time Flow Backwards?,"<br>English  | 1954      |
| b. 2, f. 23 | "Causality,"<br>English   | 1960      |
| b. 2, f. 24 | "Causality and Modern Physics,"<br>English  | 1931      |
| b. 2, f. 25 | "Causality in Quantum Electrodynamics,"<br>English  | 1954      |
| b. 2, f. 26 | "The Competence and Limitations of Scientific Method,"<br>English                           | 1955      |
| b. 2, f. 27 | "Critical Points in Modern Physical Theory,"<br>English                                     | 1937      |
| b. 2, f. 28 | "Deductive Method in the Physical Sciences,"<br>English                                     | 1953      |
| b. 2, f. 29 | "Die Philosophie im xx. Jahrhundert" [German]<br>English                                    | 1959      |
| b. 2, f. 30 | "Effects of an Observer on Measurements in Quantum Mechanics,"<br>English                   | undated   |
| b. 2, f. 31 | "Einstein's Conception of Reality,"<br>English  | 1949      |



## Articles &gt; Philosophy (continued)

|             |  |         |
|-------------|--|---------|
| b. 2, f. 32 | "The Emergence of Integrative Concepts,"<br>English                    | 1972    |
| b. 2, f. 33 | "The Exclusion Principle and Its Philosophical Importance,"<br>English | 1944    |
| b. 2, f. 34 | "The Field Concept in Modern Science,"<br>English                      | 1959    |
| b. 2, f. 35 | "Fields,"<br>English   | undated |
| b. 2, f. 36 | "Foundations of the Unity of Science,"<br>English                      | 1941    |
| b. 2, f. 37 | "Integrative Education in the Sciences,"<br>English                    | 1967    |
| b. 2, f. 38 | "Intercultural Communication of Ethical Judgments,"<br>English         | 1963    |
| b. 2, f. 39 | "Knowledge, Faith and Physics,"<br>English                             | 1954    |
| b. 2, f. 40 | "The Meaning and the Faith of Science,"<br>English                     | 1957    |
| b. 2, f. 41 | "Meaning and Scientific Status of Causality,"<br>English               | 1934    |
| b. 2, f. 42 | "Measurements and Quantum States" (2 parts)<br>English                 | 1963    |
| b. 2, f. 44 | "Measurement in Quantum Mechanics,"<br>English                         | undated |
| b. 2, f. 43 | "Measurements in Quantum Mechanics,"<br>English                        | 1963    |
| b. 2, f. 45 | "Metaphysical Elements in Physics,"<br>English                         | 1941    |
| b. 2, f. 46 | "The Method of Science: A Technical Summary,"<br>English               | 1945    |
| b. 2, f. 47 | "Methodology of Modern Physics,"<br>English                            | 1935    |
| b. 2, f. 48 | "The Modern Predicament,"<br>English                                   | 1957    |
| b. 2, f. 49 | "The Modern Predicament and Its Possible Removal,"<br>English          | 1957    |
| b. 2, f. 50 | "Natural Science and Liberal Arts,"<br>English                         | 1945    |
| b. 2, f. 51 | "The New Style of Science,"<br>English                                 | 1963    |

## Articles &gt; Philosophy (continued)

|             |  |      |
|-------------|--|------|
| b. 2, f. 52 | "On the Frequency Theory of Probability,"<br>English   | 1945 |
| b. 3, f. 53 | "Perspectives of Science,"<br>English  | 1959 |
| b. 3, f. 54 | "Phenomenology and Physics,"<br>English  | 1944 |
| b. 3, f. 55 | "The Philosophical Legacy of Contemporary Quantum Theory,"<br>English  | 1966 |
| b. 3, f. 56 | "Philosophical Perspectives of the Science of Modern Physics" [one<br>page in English, the rest in Spanish]<br>English | 1956 |
| b. 3, f. 57 | "Philosophical Problems Concerning the Meaning of Measurement in<br>Physics,"<br>English                               | 1958 |
| b. 3, f. 58 | "Philosophy of Physical Science in the Twentieth Century" [with J.E.<br>Smith]<br>English                              | 1958 |
| b. 3, f. 59 | "Physics and Ontology,"<br>English   | 1952 |
| b. 3, f. 60 | "Physics and the Doctrine of Reductionism,"<br>English   | 1981 |
| b. 3, f. 61 | "A Principle of Resonance,"<br>English   | 1957 |
| b. 3, f. 62 | "Probability and Causality in Modern Physics,"<br>English  | 1932 |
| b. 3, f. 63 | "Probability, Many-Valued Logics, and Physics,"<br>English   | 1939 |
| b. 3, f. 64 | "The Problem of Physical Explanation,"<br>English  | 1929 |
| b. 3, f. 65 | "The Pursuit of Significance,"<br>English  | 1967 |
| b. 3, f. 66 | "Quantum Mechanics, Free Will and Determinism,"<br>English   | 1967 |
| b. 3, f. 67 | "Reality in Quantum Mechanics,"<br>English   | 1949 |
| b. 3, f. 68 | "Relativity: An Epistemological Appraisal" [with Richard Mould]<br>English   | 1957 |
| b. 3, f. 69 | "Report on the Recent Developments in the Philosophy of Quantum<br>Mechanics" [with John Compton]<br>English           | 1950 |

## Articles &gt; Philosophy (continued)

|             |  |           |
|-------------|--|-----------|
| b. 3, f. 70 | "Science and Ethics, Their Parallelism and some of its Consequences,"<br>English                   | 1979      |
| b. 3, f. 71 | "The Structure of the Philosophy of Science" [including a note from Margenau, 1990]<br>English     | undated   |
| b. 3, f. 72 | "The Teaching of Intermediate Physics,"<br>English   | 1938      |
| b. 3, f. 73 | "Theory and Scientific Development,"<br>English  | undated   |
| b. 3, f. 74 | "Western Culture, Scientific Method and the Problem of Ethics,"<br>English                         | 1947      |
| b. 3, f. 75 | "Why Teach Philosophy of Science?,"<br>English   | 1957      |
|             | Physics  | 1927-1974 |
| b. 4, f. 76 | "Absorption Coefficient and Microwave Conductivity of Plasmas" [with P. Malozzi]<br>English        | 1963      |
| b. 4, f. 77 | "Asymmetries of Pressure Broadened Spectral Lines,"<br>English                                     | 1933      |
| b. 4, f. 78 | "Binding Energies of Light Nuclei,"<br>English   | 1939      |
| b. 4, f. 79 | "Binding Energy of He6 and Nuclear Forces,"<br>English   | 1939      |
| b. 4, f. 80 | "The Binding Energy of Li6" [with Kenneth G. Carroll]<br>English                                   | 1938      |
| b. 4, f. 81 | "Collision Theories of Pressure Broadening of Spectral Lines" [with J.H. Van Vleck]<br>English     | 1949      |
| b. 4, f. 82 | "Collisions of Alpha-Particles in Deuterium" [with E. Pollard]<br>English                          | 1935      |
| b. 4, f. 83 | "Collisions of Alpha-Particles in Hydrogen" [with E. Pollard]<br>English                           | 1935      |
| b. 4, f. 84 | "The Complex Neutron,"<br>English  | 1934      |
| b. 4, f. 85 | "Conduction and Dispersion of Ionized Gases at High Frequencies,"<br>English                       | 1946      |
| b. 4, f. 86 | "Conductivity of Plasmas to Microwaves" [with Edward A. Desloge and Steven W. Matthyse]<br>English | 1958      |

## Articles &gt; Physics (continued)

|              |  |      |
|--------------|--|------|
| b. 4, f. 87  | "Correlation Between Measurements in Quantum Theory" [with Robert Nyden Hill]<br>English                               | 1961 |
| b. 4, f. 88  | "Dependence of Ultra-Violet Reflection of Silver on Plastic Deformation,"<br>English                                   | 1929 |
| b. 4, f. 89  | "Effects of Electron Collisions on the Width of Spectral Lines" [with Bennett Kivel]<br>English                        | 1955 |
| b. 4, f. 90  | "Electron Conductivity and Mean Free Paths" [with Fred Adler]<br>English   | 1950 |
| b. 4, f. 91  | "Electron Impact Broadening of Spectral Lines" [with B. Kivel and S. Bloom]<br>English                                 | 1954 |
| b. 4, f. 92  | "The Equation State of Real Gases,"<br>English   | 1931 |
| b. 4, f. 93  | "Excited States of the Alpha-Particle,"<br>English   | 1938 |
| b. 4, f. 94  | "The Exclusion Principle and Measurement Theory,"<br>English   | 1966 |
| b. 4, f. 95  | "Experimental Evidence Involving the Field of the Deuteron,"<br>English  | 1935 |
| b. 4, f. 96  | "Fields in Physics and Biology: the Significance and Difficulties of Applied Field Theory,"<br>English                 | 1959 |
| b. 4, f. 97  | "Fields Within Fields Within Fields,"<br>English   | 1974 |
| b. 4, f. 98  | "The Forces Between a Hydrogen Molecule and a Hydrogen Atom,"<br>English   | 1944 |
| b. 4, f. 99  | "The Forces Between Hydrogen Molecules" [with Arthur A. Evett]<br>English  | 1953 |
| b. 4, f. 100 | "Frequency Shifts in Hyperfine Splitting of Alkalis Caused by Foreign Gases" [with P. Fontana and L. Klein]<br>English | 1959 |
| b. 4, f. 101 | "A Correction,"<br>English   | 1961 |
| b. 4, f. 102 | "Fysikkens Oprinnelse og Utvikling,"<br>English  | 1947 |
| b. 4, f. 103 | "General Theory of Resonance Between Dipole Molecules" [with Dana T. Warren]<br>English                                | 1937 |

## Articles &gt; Physics (continued)

|              |   |      |
|--------------|---|------|
| b. 4, f. 104 | "High-Frequency Breakdown of Air" [with Donald Kelly]<br>English                                    | 1960 |
| b. 4, f. 105 | "Interaction of Alpha-Particles,"<br>English  | 1941 |
| b. 4, f. 106 | "Inversion Frequency of Ammonia and Molecular Interaction,"<br>English                              | 1949 |
| b. 4, f. 107 | "Ion Clustering" [with Stanley Bloom]<br>English  | 1952 |
| b. 4, f. 108 | "Is the Mathematical Explanation of Physical Data Unique?,"<br>English                              | 1960 |
| b. 4, f. 109 | "Line Broadening by Electrons: Validity of Simple Theories" [with<br>Ronald E. Meyerott]<br>English | 1955 |
| b. 4, f. 110 | "Line Broadening of an Impurity Spectrum in Silicon" [with Douglas<br>Sampson]<br>English           | 1956 |
| b. 4, f. 111 | "Magnetic Moments of Odd Nuclei" [with Eugene Wigner]<br>English                                    | 1940 |
| b. 4, f. 112 | "The Meaning of 'Elementary Particle,'"<br>English  | 1951 |
| b. 4, f. 113 | "Microwave Conductivity of Slightly Ionized Air,"<br>English  | 1959 |
| b. 4, f. 114 | "Natural Width of K $\alpha$ -Lines,"<br>English  | 1934 |
| b. 4, f. 115 | "Nonadditivity of Intermolecular Forces" [with J. Stamper]<br>English                               | 1967 |
| b. 4, f. 116 | "Normal States of Nuclear Systems" [with Dana Warren]<br>English                                    | 1937 |
| b. 4, f. 117 | "Note on Pressure Effects of Band Spectra,"<br>English  | 1936 |
| b. 4, f. 118 | "Note on the Calculation of Van Der Waals Forces,"<br>English                                       | 1931 |
| b. 4, f. 119 | "Note on the Quantum Dynamical Correction of the Equation of State,"<br>English                     | 1932 |
| b. 4, f. 120 | "Note on the Validity of Methods Used in Nuclear Calculations" [with<br>Dana T. Warren]<br>English  | 1937 |
| b. 4, f. 121 | "Nuclear Energy Levels and the Model of a Potential Hole,"<br>English                               | 1934 |
| b. 4, f. 122 | "On Film Formation of Water Flowing Through Thin Cracks,"<br>English                                | 1945 |

## Articles &gt; Physics (continued)

|              |   |      |
|--------------|---|------|
| b. 4, f. 123 | "On the Forces Between Positive Ions and Neutral Molecules,"<br>English   | 1941 |
| b. 4, f. 124 | "On the Interaction of Closed Shells" [with Philip Rosen]<br>English  | 1953 |
| b. 5, f. 125 | "Physical Processes in the Recovery of TR Tubes,"<br>English  | 1946 |
| b. 5, f. 126 | "The Physics and Semantics of Quantum Measurement: A Reply to<br>Prugovecki" [with James L. Park]<br>English          | 1973 |
| b. 5, f. 127 | "Pressure Broadening on the Inversion Spectrum of Ammonia,"<br>English  | 1949 |
| b. 5, f. 128 | "Pressure Effects of Foreign Gases on Sodium D-Lines" [with William<br>W. Watson]<br>English                          | 1933 |
| b. 5, f. 129 | "Pressure Effects of Nitrogen Potassium Absorption Lines,"<br>English   | 1933 |
| b. 5, f. 129 | "Pressure Shifts of Krypton Lines" [with William W. Watson]<br>English  | 1937 |
| b. 5, f. 130 | "Progression of Nuclear Resonance Levels with Atomic Number,"<br>English  | 1934 |
| b. 5, f. 132 | "Quantum Dynamical Correction for the Equation of State of Real<br>Gases,"<br>English                                 | 1931 |
| b. 5, f. 133 | "Quantum Mechanical Description,"<br>English  | 1935 |
| b. 5, f. 134 | "Quantum Theory of Line Broadening by an Ionic Plasma,"<br>English  | 1955 |
| b. 5, f. 135 | "Quantum Theory of Spectral Line Broadening" [with Stanley Bloom]<br>English  | 1953 |
| b. 5, f. 136 | "Relativistic Magnetic Moment of a Charged Particle,"<br>English  | 1939 |
| b. 5, f. 137 | "Relativity and Nuclear Forces,"<br>English   | 1936 |
| b. 5, f. 138 | "Resonance Interaction Between Deuterons and Alpha-Particles,"<br>English   | 1935 |
| b. 5, f. 139 | "The Role of Definitions in Physical Science, with Remarks on the<br>Frequency Definition of Probability,"<br>English | 1942 |
| b. 5, f. 140 | "Role of Quadruple Forces in Van Der Waals Attractions,"<br>English   | 1931 |

## Articles &gt; Physics (continued)

|              |   |      |
|--------------|---|------|
| b. 5, f. 141 | "Second Virial Coefficient for Gases: A Critical Comparison Between Theoretical and Experimental Results,"<br>English | 1930 |
| b. 5, f. 142 | "Shift of the Transmission Band of Silver by Cold Working,"<br>English  | 1932 |
| b. 5, f. 143 | "Simultaneous Measurability in Quantum Theory" [with James L. Park]<br>English  | 1968 |
| b. 5, f. 144 | "Stark Effects in Line Broadening" [with Marvin Lewis]<br>English   | 1957 |
| b. 5, f. 145 | "Statistical Theory of Radiative Processes in Plasmas,"<br>English  | 1966 |
| b. 5, f. 146 | "Statistics of Excited Energy States of Nuclei,"<br>English   | 1941 |
| b. 5, f. 147 | "Structure of Spectral Lines From Plasma" [with Marvin Lewis]<br>English  | 1959 |
| b. 5, f. 148 | "Surface Energy of Liquids,"<br>English   | 1931 |
| b. 5, f. 149 | "Tachyons,"<br>English  | 1969 |
|              | "Theory of High Frequency Gas Discharges" [article in four parts; part III is missing]                                |      |
| b. 5, f. 150 | I. "Methods for Calculating Electron Distribution Functions,"   | 1948 |
| b. 5, f. 151 | II. "Harmonic Components of the Distribution Function,"   | 1948 |
| b. 5, f. 152 | IV. "Note on the Similarity Principle,"   | 1948 |
| b. 5, f. 153 | "Theory of Magnetic Resonance in Nitric Oxide" [with Allan Henry]<br>English  | 1950 |
| b. 5, f. 154 | "Theory of Plasma Radiation" [with P. Malozzi]<br>English   | 1966 |
| b. 5, f. 155 | "Theory of Pressure Effects of Foreign Gases on Spectral Lines,"<br>English   | 1935 |
| b. 5, f. 156 | "Theory of Pressure Effects on Alkali Doublet Lines,"<br>English  | 1958 |
| b. 5, f. 157 | "Theory of Pressure Shifts of HC1 Lines Caused by Noble Gases" [with H.C. Jacobson]<br>English                        | 1963 |
| b. 5, f. 158 | Über die Veränderlichkeit der Anzahl dreier Metallelektrinen mit der Temperatur,                                      | 1930 |
| b. 5, f. 159 | "Van der Waals Forces,"<br>English  | 1939 |

## Articles &gt; Physics (continued)

|                             |   |           |
|-----------------------------|---|-----------|
| b. 5, f. 160                | "Van der Waals Forces in Magnetic Fields,"<br>English   | 1951      |
| b. 5, f. 161                | "Variational Theory of the Alpha-Particle" [with Warren A. Tyrrell, Jr.]<br>English                             | 1938      |
| b. 5, f. 162                | "The Zeeman Effect in the Cerium Spectrum Between 3000 and 5000A,"<br>English                                   | 1927      |
| b. 5, f. 163                | Zeitschrift Für Physik [three articles in German]   |           |
| b. 5, f. 163                | "Zur Theorie der Moleklarkrafte bei Dipolgasen,"<br>English   | 1930      |
| b. 5, f. 163                | "Zur Abweichung vom Ohmschen Gesetz bei hohen Feldstarken,"<br>English  | 1930      |
| b. 5, f. 163                | "Die Abweichungen vom Ohmschen Gesetz bei hohen Stromdichten der Sommerfeldschen Elektronentheorie,"<br>English | 1929      |
| Books                       |   |           |
|                             | <i>Einstein's Space and Van Gogh 's Sky</i>   | 1982      |
| b. 6, f. 164                | Background material [includes material from <i>Miracle of Existence</i> ]                                       |           |
| Correspondence              |   |           |
| b. 6, f. 165                | General [majority from John Archibald Wheeler]  | 1984-1986 |
| b. 6, f. 166                | Publisher   | 1979-1984 |
| b. 6, f. 167                | Reviews   | 1979-1984 |
| <i>Ethics and Science</i>   |   |           |
|                             | <i>Ethics and Science</i>   | 1964      |
| Correspondence              |   |           |
| b. 6, f. 168                | General   | 1964-1965 |
| b. 6, f. 169                | Nagel, Ernest   | 1964-1965 |
| b. 6, f. 170                | Reviews [includes several responses by Margenau]  | 1964-1981 |
| b. 6, f. 171                | <i>The Mathematics of Physics and Chemistry, 2nd Edition</i> [review]   | 1956      |
| b. 6, f. 172                | <i>The Mathematics of Physics and Chemistry, Vol. II</i> , [reviews]  | 1964-1965 |
| b. 6, f. 173                | <i>Measurement in Quantum Mechanics</i> ["Some Comments on..."; book was never published]<br>English            | 1971      |
| <i>Miracle of Existence</i> |   |           |
|                             | <i>Miracle of Existence</i>   | 1984      |
| b. 6, f. 174                | "An Afterthought,"<br>English   | 1985      |
| b. 6, f. 175                | Reviews and notices   | 1984-1986 |



## Books (continued)

|              |  |           |
|--------------|--|-----------|
|              | <i>Open Vistas</i>   | 1961      |
| b. 6, f. 176 | Correspondence [with Yale University Press]  | 1962-1980 |
| b. 6, f. 177 | Reviews  | 1961-1962 |
| b. 6, f. 178 | <i>Perspectives in Quantum Theory</i> [draft of a chapter called, "The Logic of Noncommutability of Quantum Mechanical Operations and its Empirical Consequences"] | 1971      |
|              | <i>Physics and Philosophy</i>  | 1978      |
|              | Correspondence   |           |
| b. 6, f. 179 | Bunge, Mario   | 1976-1981 |
| b. 6, f. 180 | Publisher  | 1977-1978 |
|              | Drafts   |           |
| b. 6, f. 181 | Autobiographical introduction  | undated   |
| b. 6, f. 182 | Preface  | undated   |
| b. 6, f. 183 | Handwritten pages  | undated   |
| b. 6, f. 184 | Reviews  | 1978-1981 |
| b. 6, f. 185 | "What is Scientific Method" [chapter in unidentified book]<br>English  | undated   |
| b. 6, f. 186 | Discussions  | 1934-1972 |
|              | Speeches, Lectures, Symposia   | 1950-1987 |
| b. 7, f. 187 | "Anatomy of a Sacred Cow" [Connecticut College]<br>English   | 1956      |
| b. 7, f. 188 | "Bacon and Modern Physics: A Confrontation" [conference commemorating the 400th anniversary of the birth of Francis Bacon, Pennsylvania]<br>English                | 1961      |
| b. 7, f. 189 | "Causality" [Florence, Italy]<br>English   | 1968      |
| b. 7, f. 190 | "The Common Denominator of Science and Religion" [Carleton College, Minnesota]<br>English  | 1957      |
| b. 7, f. 191 | "Elegance as a Criterion of Validity in Science" [Rollins College, Florida]<br>English   | 1960      |
| b. 7, f. 192 | "ESP in the Framework of Modern Science" [American Society for Psychical Research Forum on Extrasensory Perception]<br>English                                     | 1966      |
| b. 7, f. 193 | "Ethics and Science" [International Conference on the Unity of the Sciences]<br>English  | 1977      |

## Speeches, Lectures, Symposia (continued)

|              |   |           |
|--------------|---|-----------|
| b. 7, f. 194 | "Evidence of Teleology in Scientific Theories" [Sicily]<br>English                                      | 1977      |
| b. 7, f. 195 | "For Lars" [Eulogy for Lars Onsager, Yale University]<br>English  | 1976      |
| b. 7, f. 196 | "Fusion or Fission: Can the Art of Living Together Prevail over the Science of Destruction?"<br>English | 1953      |
| b. 7, f. 197 | How Science Finds Truth and Reality — With Some Thoughts on Religion<br>[Star Island Conference]        | 1954      |
| b. 7, f. 198 | "Integration in the Sciences" [Cleveland, Ohio]<br>English  | 1950      |
| b. 7, f. 199 | "Introduction" [Fulbright Conference]<br>English  | 1962      |
| b. 7, f. 200 | "Ionization Phenomena in Gases,"<br>English   | 1959      |
| b. 7, f. 201 | "The New Faith of Science" [University of Wichita, Kansas]<br>English                                   | 1953      |
| b. 7, f. 202 | "The New View of Man in his Physical Environment" [Michigan State<br>College, Michigan]<br>English      | 1955      |
| b. 7, f. 203 | "Note on the Calculation of Exchange Forces" [Office of Naval Research,<br>Washington, D.C.]<br>English | 1951      |
| b. 7, f. 204 | "Objectivity in Quantum Mechanics" [Delaware Seminar on the Foundation<br>of Physics]<br>English        | 1967      |
| b. 7, f. 205 | "The Philosophical Legacy of Quantum Mechanics" [Washington, D.C.;<br>Amsterdam]<br>English             | 1977      |
| b. 7, f. 206 | "Philosophy of American Science" [University of Tokyo]<br>English                                       | 1960-1961 |
| b. 7, f. 207 | "Philosophy of Science" [Florence, Italy]<br>English  | 1968      |
| b. 7, f. 208 | Propriétés Optiques et Acoustiques des Fluides Comprimés [Bellevue]                                     | 1957      |
| b. 8, f. 209 | "The Role of Natural Philosophy in Multidisciplinary Research and Teaching,"<br>English                 | 1979      |
| b. 8, f. 210 | "The Role of Scholarship in an Age of Science" [University of Wyoming]<br>English                       | 1964      |
| b. 8, f. 211 | "Science and Philosophical Perspectives" [Science Symposium, Fort<br>Monmouth, New Jersey]<br>English   | 1966      |

## Speeches, Lectures, Symposia (continued)

|              |  |           |
|--------------|--|-----------|
| b. 8, f. 212 | "Science and Society" [public talk at Town Hall, Los Angeles, program plus text]<br>English  | 1956      |
| b. 8, f. 213 | "Science in Perspective" [Gerstein Lecture, York University, Toronto]<br>English   | 1967      |
| b. 8, f. 214 | "Science, Philosophy and Religion" [Dalhousie University, Halifax]<br>English  | 1960      |
| b. 8, f. 215 | "The Scientific Basis of Value Theory [Conference of New Knowledge in Human Values]<br>English   | 1957      |
| b. 8, f. 216 | "The Search for Meaning in a Senseless World" [Hartwick College, inaugurating Margenau Lecture Series]<br>English                          | 1967      |
| b. 8, f. 217 | "The Search for Meaning in a Troubled World" [Hadley Lecture]<br>English   | 1975      |
| b. 8, f. 218 | "Some Thought on Science and the Doctrine of Creation" [Duodecim Theological Society, New York]<br>English                                 | 1955      |
| b. 8, f. 219 | "The Teaching of Science" [Pennsylvania State University]<br>English   | 1960      |
| b. 8, f. 220 | "Theoretical Physics and Biology" [Versailles Conference, Institut de la Vie]<br>English   | 1967      |
| b. 8, f. 221 | "Theory of Pressure Shifts of HC1 Lines Caused by Noble Gases" [Israel Conference; includes notes, drafts, some correspondence]<br>English | 1961?     |
|              | Untitled talks   |           |
| b. 8, f. 222 | Artificial Intelligence and the Human Mind [symposium, Yale University]  | 1986      |
| b. 8, f. 223 | The Nature of Concepts, Their Inter-Relation and Role in Social Science [proceedings of the Stillwater Conference, Oklahoma]               | 1950      |
| b. 8, f. 224 | Oberwalfach Symposium  | undated   |
| b. 8, f. 225 | Remsen Bird Lecture [Occidental College; program only]   | 1956      |
| b. 8, f. 226 | Spontaneous Phenomena [conference, Cambridge University]   | 1967      |
| b. 8, f. 227 | Whitman College Lectures   | 1971-1972 |
|              | Other  |           |
| b. 8, f. 228 | "Ancient History of Physics,"<br>English   | undated   |
| b. 8, f. 229 | "ESP and Statistics,"<br>English   | undated   |

## Other (continued)

|              |   |         |
|--------------|---|---------|
| b. 8, f. 230 | "Methodology" [essay in application for funds for the Foundation for Integrated Education]<br>English | undated |
| b. 8, f. 231 | "What is a Probability Field?"<br>English   | undated |
|              | Untitled  |         |
| b. 8, f. 232 | Notes and equations   | undated |
| b. 8, f. 233 | Unidentified handwritten manuscript   | undated |
| b. 8, f. 234 | Annotated writings of others  |         |

## **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.

### **Subjects**

Nuclear physics  
Philosophy  
Physics  
Quantum theory

### **Occupations**

Philosophers  
Physicists

### **Names**

Brattain, Walter H. (Walter Houser), 1902-1987  
Eccles, John C. (John Carew), 1903-1997  
Einstein, Albert, 1879-1955  
Margenau, Henry, 1901-1997

### **Corporate Body**

United States. Office of Naval Research