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Guide to the Bertram Borden Boltwood Papers

MS 90

Compiled by Linda Wrigley

November 1970

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Collection Overview

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CALL NUMBER: MS 90

CREATOR: Boltwood, Bertram Borden, 1870-1927

TITLE: Bertram Borden Boltwood papers

DATES: 1890-1932

PHYSICAL DESCRIPTION: 3 linear feet (8 boxes, 1 folio)

LANGUAGE: English

SUMMARY: Correspondence, laboratory notebooks, lectures, and other writings of B.B. Boltwood, scientist and professor of radiochemistry at Yale, best known for his early work in the study of radiation. Of particular note is Boltwood's extended correspondence with Lord Rutherford, the father of atomic physics.

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

b. box
f. folder

Administrative Information

Conditions Governing Access

The materials are open for research.

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Preferred Citation

Bertram Bordon Boltwood Papers (MS 90). Manuscripts and Archives, Yale University Library.

Biographical / Historical

Bertram Borden Boltwood (1870-1927), born in Amherst, Massachusetts, was the son of Thomas Kast Boltwood (1844-1872) and Margaret Mathilda Van Hoesen (1842-1909), and the grandson of Lucius Boltwood (1792-1872) and Fanny Haskins Shepard (d. 1888).

Boltwood attended Albany Academy, Albany, New York, before entering Sheffield Scientific School of Yale University in 1889. He graduated from Sheffield in 1892 with the highest rank in chemistry. From 1892 to 1894 Boltwood studied rare earths and analytical methods in Germany. Boltwood returned to Yale as an assistant in chemistry in 1894 and was made an instructor of chemistry in 1896. He received his Ph.D. degree in chemistry from Yale in 1897. In 1900 Boltwood left Yale to open a private laboratory in New Haven which he operated with mining engineer Joseph Hyde Pratt until 1906. It was during this latter period that Boltwood began his career as a consulting chemist to manufacturers, miners, and prospectors.

Boltwood became interested in the field of radioactivity around the time Rutherford and Soddy announced their theory of disintegration of radioactive elements in 1900. Stimulated by the prospect of a visit by Rutherford to New Haven in 1904, Boltwood began experiments to prove that uranium and radium exist in a constant ratio in unaltered minerals. The results of the experiments gave strong support to the disintegration theory. Impressed with Boltwood's work, Rutherford urged him to continue working in the field. Rutherford's visit to Boltwood's laboratory in New Haven marked the beginning of a productive, friendly association between the two men. Boltwood's successive experiments in radioactivity led to the important discoveries and proofs referred to in the preceding pages.

Boltwood returned to Yale in 1906 as assistant professor of physics. During the academic year 1909-1910 Boltwood worked in Rutherford's laboratory at the University of Manchester. Upon his return from abroad, Boltwood was made professor of radiochemistry of Yale College, a position he held until his death in 1927. By this time, however, Boltwood's years of productivity in the field of radioactivity were largely over.

In the years following his return from England, Boltwood assisted Professor H. A. Bumstead in the building of the Sloane Physics Laboratory (1912) and became its acting director during Bumstead's absence in 1913-1914. Boltwood later devoted much of his time to planning the construction and equipment of the Sterling Chemical Laboratory (1921). This work seems to have put a tremendous strain on Boltwood's health and he suffered several nervous breakdowns before his eventual suicide in Maine on August 15, 1927.

Additional biographical material may be found in the *Dictionary of American Biography,* in A. S. Eve's biography, *Rutherford*, and in *Rutherford and Boltwood, Letters on Radioactivity*, edited by Lawrence Badash.

Scope and Contents

Bertram Borden Boltwood (1870-1927) is best known for his work in the field of radioactivity. Important contributions by Boltwood in this field include: the discovery of a new chemical element, ionium; the proof

that uranium, ionium, and radium are genetically related; the proof that certain elements could not be chemically separated which led to the discovery of isotopes by Frederick Soddy and Kasimir Fajans; the proof that lead is the end product of the uranium-radium series; the development of the method used to determine the age of the earth, based on the ratio of lead to uranium; and the proof that actinium is a genetic descendant of uranium in a *different* line than radium. Much of Boltwood's work in radioactivity seems to have been inspired by suggestions made by Ernest Rutherford (Lord Rutherford), the father of atomic physics. In turn, Boltwood's proofs of various radioactive theories supported Rutherford's findings and provided a basis for further discoveries. The Boltwood-Rutherford correspondence, consisting of approximately 125 letters dating from 1904 to 1924, forms an important part of these papers.

Correspondence and writings make up the bulk of the Bertram Borden Boltwood Papers. Besides the correspondence with Lord Rutherford, there is, correspondence with other notable scientific figures including: Frederick Soddy, pioneer in the field of isotopes; Otto Hahn, discoverer of nuclear fission; Stefan Meyer, physicist and director of the Radium Institute in Vienna; Ellen Gleditsch, Norwegian chemist who, under Boltwood's direction, determined an accurate method for determining the half-life of radium; Howard A. Kelly, pioneer in the application of radium to malignancies; and physicists Hans Geiger, Robert W. Wood, A. S. Eve and J. C. McLennan. Boltwood's correspondence also includes letters of advice as chemical consultant to miners, prospectors and chemical manufacturers.

The writings of Bertram Borden Boltwood include laboratory notebooks which cover the years 1892-1893, 1896-1900, 1904-1917, 1924, and 1926. There are also drafts of lectures on radioactivity, as well as several copies of scientific reports stemming from Boltwood's work as a consulting chemist. Four drafts of scientific papers attributed to Boltwood are found in the papers. They deal generally with the disintegration products of uranium.

The section on writings of others includes four papers by Lord Rutherford and "The Life of Radium" by Ellen Gleditsch.

See: *Rutherford and Boltwood: Letters on Radioactivity*. Edited by Lawrence Badash. Yale University Press, 1969.

Arrangement

Arranged in three series: I. Correspondence. II. Writings. III. Subject File.

Collection Contents

Series I: Correspondence, 1890-1928

15″ - 3 boxes

CORRESPONDENCE is arranged alphabetically by name of writer or recipient in two sections: *General Correspondence* and *Correspondence of Others*. Selected correspondence is filed in folders bearing the name of the correspondent. The remaining correspondence is arranged under the appropriate letter of the alphabet.

General Correspondence is about evenly divided between correspondence with other scientists and correspondence revolving around Boltwood's career as a chemical consultant for manufacturers, miners, prospectors, and the United States Government.

The correspondence with other scientists is especially valuable in studying the development of theories and the growth of knowledge about radioactivity and the atom. In addition to the correspondence with the notable scientific figures already mentioned, the correspondence between Boltwood and Lord Rutherford, the father of atomic physics, which consists of approximately 125 letter written between 1904 and 1924, is of special interest.

As a consulting chemist, Boltwood corresponded with representatives of government agencies such as the Department of Agriculture and the Bureau of Standards, with representatives of large companies such as the Standard Chemical Company, Pittsburgh, and the German Gold and Uranium Mining Company, Denver, as well as with industrialists, notably A. I. DuPont. This correspondence throws light on the growth of the technology of radioactive materials.

Also included under *General Correspondence* are fourteen letters written by Boltwood to his mother from Europe during the summer of 1890.

Correspondence of Others is a very small section containing only seven letters. This includes two letters written by Rutherford to Lansing Hammond, Boltwood's heir, after Boltwood's death and one letter from Rutherford to H. A. Bumstead dated 1908.

General Correspondence

b. 1, f. 1	A.	1911, 1919
b. 1, f. 2	Alsberg, C. N., Chief of Bureau of Chemistry, USDA	1914, 1917
b. 1, f. 3	Angell, James Rowland, President of Yale University	1921, 1923
b. 1, f. 4	B.	1907, 1911, 1913–1915, 1918, 1920–1923, 1925, undated
b. 1, f. 5	Baskerville, Charles, Professor of Chemistry at CCNY	1910-1911, 1914
b. 1, f. 6	Baumbach, Otto	1910, 1915, 1917
b. 1, f. 7	Becker, George F.	1913-1914
b. 1, f. 8	Blan, S. A.	1909-1910
b. 1, f. 9	Bleecker, Warren F.	1921-1922
b. 1, f. 10	Boltwood, Bertram Borden: letters to his mother	1890

General Correspondence (continued)

b. 1, f. 11	Boltwood, Bertram Borden: letters filed under correspondent	
b. 1, f. 12	Bosworth, Rowland S.	1911-1913, 1916
b. 1, f. 13	Boyd, Thomas W.	1913-1914
b. 1, f. 14	Boyle, R. W.	1914
b. 1, f. 15	Brill, Otto	1912
b. 1, f. 16	Browne, Hugh C.	1911-1913
b. 1, f. 17	Bumstead, Henry Andrews	1914
b. 1, f. 18	Burnam, Curtis F., M. D.	1911-1914, undated
b. 1, f. 19	C.	1911-1918, 1920, 1925
b. 1, f. 20	Cattell, James McKeen	1910, 1914
b. 1, f. 21	Chininfabrik Braunschweig, Buchler & Co.	1911-1912
b. 1, f. 22	Collins, W. D., Food Investigation Chemist, USDA	1914, 1916
b. 1, f. 23	Craig, Archibald Gordon	1914
b. 1, f. 24	Craig, William Jr.	1916, 1920
b. 1, f. 25	Curran, Thomas F. V.	1912-1915
b. 1, f. 26	D.	1910-1911, 1913-1915, 1919, 1925
b. 1, f. 27	Dana, Professor E. S.	1910-1911, 1920
b. 1, f. 28	Day, George Parmly, Treasurer of Yale	1911
b. 1, f. 29	Deaderick, William H.	1913-1914, 1916
b. 1, f. 30	Denison, W. C.	1910-1911
b. 1, f. 31	Dorsey, N. Ernest, Bureaus of Standards A copy of this material is available in digital form from Manuscripts and Archives. Contact Manuscripts and Archives at beinecke.library@yale.edu to request access to the digital copy.	1913-1915, 1921
b. 1, f. 32	DuPont, Alfred I. See also: box 7, folder 49	1913
b. 1, f. 33	Dwight, Mrs. Timothy	1914
b. 1, f. 34	Dwight, Winthrop E.	1914
b. 1, f. 35	E.	1913
b. 1, f. 36	Eve, A. S.	1909-1911

General Correspondence (continued)

b. 1, f. 37	F.	1910-1911, 1919, 1921
b. 1, f. 38	Fleck, Alexander	1914
b. 1, f. 39	Foote, W. M., Foote Mineral Co.	1914-1915
b. 1, f. 40	Fowler, Eileen Rutherford	1922
b. 1, f. 41	G.	1911, 1913, 1916
b. 1, f. 42	Geiger, Hans	1914, undated
b. 1, f. 43	Giesel, F.	1910-1911
b. 1, f. 44	Gleditsch, Ellen	1914-1916
b. 1, f. 45	H.	1906, 1910, 1914, 1919, 1923
b. 1, f. 46	Hadley, Arthur T., President of Yale Univ.	1918-1919
b. 1, f. 47	Hahn, Otto	1906-1907, 1910-1911, 1914
b. 1, f. 48	Hooper, Franklin W., The Brooklyn Institute of Arts and Sciences	1910
b. 1, f. 49	Hopkinson, Sir Alfred	1912
b. 1, f. 50	J.	1918, 1920
b. 1, f. 51	Johnstone, J. H.	1919, 1921
b. 1, f. 52	K.	1910-1911, 1914, 1918, 1921
b. 1, f. 53	Kamerlingh-Onnes, Dr. H.	1910
b. 2, f. 54	Kelly, Howard A., M. D.	1911, 1913-1914, 1920
b. 2, f. 55	L.	1910-1911, 1913-1915, 1919, 1924, 1927
b. 2, f. 56	Leavitt, C. W., and Co.	1911
b. 2, f. 57	Ledoux & Company	1910, 1914

General Correspondence (continued)

b. 2, f. 58	Lees, George E., Standard Chemical Co. A copy of this material is available in digital form from Manuscripts and Archives. Contact Manuscripts and Archives at beinecke.library@yale.edu to request access to the digital copy. See also: Joseph M. Flannery, box 1, folder 37 Otto Brill, box 1, folder 15 Charles H. Viol, box 3, folder 94	1911
b. 2, f. 59	Lieber, Hugo	1911
b. 2, f. 60	Lockwood, Stephen T.	1910-1911
b. 2, f. 61	Lyman, Theodore	1911, 1915
b. 2, f. 62	M.	1910-1911, 1913-1914, 1920, 1922
b. 2, f. 63	McLaren, George	1913-1914
b. 2, f. 64	McLennan, J. C.	1914, 1921
b. 2, f. 65	MacMillan & Co. Ltd.	1910-1911, 1917
b. 2, f. 66	Menge, G. A., USDA	1914
b. 2, f. 67	Meyer, Anna	1916, 1919-1920
b. 2, f. 68	Meyer, Stefan	1911, 1913-1915, 1920, 1924
b. 2, f. 69	Meyer, Stefan, Secretary of the International Radium Standards Committee	1910-1912, 1923
b. 2, f. 70	Miner, H. S.	1907-1909, 1911, 1914, 1919, 1921
b. 2, f. 71	Moore, R. B.	1911, 1914
b. 2, f. 72	N.	1913, 1915-1916
b. 2, f. 73	Nesmith, Loring Gale	1910-1911
b. 2, f. 74	O.	1896, 1913-1914
b. 2, f. 75	P.	1913, 1920-1921, 1926
b. 2, f. 76	Paddock, H. C.	1925
b. 2, f. 77	Parsons, Charles L., Secretary of the American Chemical Societ	1910, 1914-1915, 1921
b. 2, f. 78	Pegram, George B.	1910-1911, 1913-1915

General Correspondence (continued)

b. 2, f. 79	Pickett, George B.	1914
b. 2, f. 80	Puckner, W. A., American Medical Assoc., Council on Pharmacy and Chemistry	1915-1916
b. 2, f. 81	R.	1911, 1913–1914, 1919, 1921, 1924, undated
b. 2, f. 82	Radium Limited, USA	1915
b. 2, f. 83	Richards, Professor T. W., Harvard	1913-1914, 1916-1917
b. 2, f. 84	Lord Rutherford	1904-1905
b. 3, f. 85-88	Lord Rutherford	1906–1916, 1919–1922, 1924, undated
b. 3, f. 89	Rutherford, Mary	1913, 1921
b. 3, f. 90	S.	1904, 1907, 1910-1916, 1918, 1921
b. 3, f. 91	Soddy, Frederick	1912
b. 3, f. 92	Stokes, Anson Phelps, Secretary of Yale University	1910-1918
b. 3, f. 93	T.	1911-1912, 1920, 1922, 1922
b. 3, f. 94	U, V. A copy of this material is available in digital form from Manuscripts and Archives. Contact Manuscripts and Archives at beinecke.library@yale.edu to request access to the digital copy.	1914, 1923-1924
b. 3, f. 95	Unidentified	1912-1913
b. 3, f. 96	van Arsdale, G. D.	1911-1912
b. 3, f. 97	W.	1911, 1913-1916, 1921-1922, 1925
b. 3, f. 98	Wheelock, C. W.	1911
b. 3, f. 99	Williams, Francis, M. D.	1914
b. 3, f. 100	Wood, Henry E.	1911
b. 3, f. 101	Wood, R. W.	1921
b. 3, f. 102	X, Y, Z.	1905
	Correspondence of Others	
b. 3, f. 103	Claus, P., to Yale University	1911

Correspondence of Others (continued)

b. 3, f. 104	Moore, Richard B., to Dr. Parsons	1913
b. 3, f. 105	Rogers, Henry T., to George Parmly Day	1911
b. 3, f. 106	Lord Rutherford to H. A. Bumstead	1908
b. 3, f. 107	Lord Rutherford to Lansing Hammond	1927-1928

Series II: Writings, 1890-1926

1′ 51/2″ - 4 boxes

WRITINGS are arranged in two sections: *Writings* and *Writings of Others*. The material in the first section is arranged alphabetically by type; material in the latter section is arranged alphabetically by author.

The *Writings* of Bertram Borden Boltwood include laboratory notebooks covering the years 1892-1893, 1896-1900, 1904-1917, 1924, and 1926, a journal dated June 25-July 17, 1890, and undated notes for a series of lectures on radioactivity, all in Boltwood's hand. There are also type-written drafts of scientific reports, notably Boltwood's findings on the radioactive content of the waters around Hot Springs, Arkansas dated 1904, as well as some drafts of scientific papers concerning the disintegration products of uranium. Finally, there are a series of twelve ore analyses, an autobiographical sketch, and score miscellaneous scientific notes.

The *Writings of Others* consist almost entirely of drafts or printed copies of scientific papers. There are four papers by Rutherford. Of particular interest is the draft of Ellen Gleditsch's "The Life of Radium," in which an accurate method for determining the half life of radium is presented.

b. 4, f. 1	Autobiographical Sketch	undated
b. 4, f. 2	Book Review by BBB on *Unit Photography* by F. M. Steadman	June 1, 1915
b. 4, f. 3	Journal	June 25-July 17, 1890
b. 4, f. 4	Laboratory Notebook	1892–1893, after 1898
b. 4, f. 5	Laboratory Notebook	1896, 1900, 1904-1911
b. 4, f. 6	Laboratory Notebook	Circa 1896-1900
b. 4, f. 7	Laboratory Notebook, Volume B	1905, 1907-1908, 1924
b. 4, f. 8	Laboratory Notebook Index, Vol. 1-8	1906-1908
b. 4, f. 9	Laboratory Notebooks, Vols. 1-4	January 1906-September 1907
b. 5, f. 10	Laboratory Notebooks, Vols. 5-8	September 1907-November 1908
b. 5, f. 11-16	Laboratory Notebook	after 1910?, circa 1908, after 1910?, 1909–1914, 1916, December 1913–July 1914, 1917, 1926
b. 5, f. 17	Lecture: Elementary Chemistry	undated
	Lecture: Radioactivity:	
b. 5, f. 18	I. Discharge of Electricity through Gases	undated

Lecture: Radioactivity: (continued)

b. 5, f. 19	II. The Ion Properties of Radioactive Substances	undated
b. 5, f. 20	III. Radiations and Occurrence of Radium	undated
b. 5, f. 21	IV. Radioactive Change	undated
b. 5, f. 22	V. The Rare Gases of the Atmosphere	undated
b. 6, f. 23	Lecture: Radioactivity and its Bearing on Chemical Theories (BBB?)	undated
b. 6, f. 24	Lecture Outline: Chemistry of Engineering Materials Review	undated
b. 6, f. 25	Memoranda on the chemical Situation, Dec 1917	December 1917-February 1918
b. 6, f. 26	Memorandum: On the Occurrence of Uranium Ores, their Uses and their Commercial Value, with Special Reference to the Pitchblende Ore found in Gilpin County, Colorado	December 7, 1910
b. 6, f. 27	Notes: Chemistry lectures	1921, undated
b. 6, f. 28	Notes: Elementary Theoretical Chemistry	undated
b. 6, f. 29	Notes: Miscellaneous notes on radioactivity	1921, 1925–1926, undated
b. 6, f. 30	Notes:"On the State in which Helium Exists in Minerals," by Morris W. Travers, article appeared in *Nature,* Jun 12, 1905	June 12, 1905
b. 6, f. 31	Notes: Organic Chemistry	September 26, 1905-?
b. 6, f. 32	Notes: Physics	undated
	Ore Analysis:	
b. 6, f. 33	1. Calculation of Ratio of activities of Minerals to Uranium	1906?
b. 6, f. 34	2. Polonium and Actinium	1906, undated
b. 6, f. 35	3. Eve's Uraninite and Radium Solution	undated
b. 6, f. 36	4. Standard RaBr2 Solution and Uraninite	undated
b. 6, f. 37	5. N. C. Uraninite once Ignited, Calculation of U:Ra Ratio	undated
b. 6, f. 38	6. Activity of Florium and Thorium Minerals	undated
b. 6, f. 39	7. Uranium Oxide, Ignition of in O and H, Phosphate from?	undated
b. 6, f. 40	8. Uranium Nitrate Solution, Gas from, Radium in	July 8, 1904?
b. 6, f. 41	9. Thorianite	undated
b. 6, f. 42	10. Radium: Uranium, Direct Determination of Ratio Act.	undated
b. 6, f. 43	11. North Carolina Uraninite, Ignited own Blast	undated
b. 6, f. 44	12. North Carolina Uraninite, Third Heating	1906?

b. 6, f. 45	Outline for Elementary Organic	undated
b. 6, f. 46	Outlines to Professor LeBlanc's lectures on *Allgemeine* und *Physikalische Chemie*, S.S. Leipzig	April 28, 1896
b. 6, f. 47	Report: Criticism of Method of Treatment of Carnotite Ores as outlined in memorandum	1911?
b. 7, f. 48	Report: the Radioactive Properties of the Waters of the Hot Springs on the Hot Springs Reservation, Hot Springs, Arkansas	1904
b. 7, f. 49	Report: Radium Estimates, for Mr. DuPont see also: box 1, folder 32Corres. With Forbes Rickard	1913?
b. 7, f. 50	Scientific Paper: Atoms and Molecules	November 16, 1920
b. 7, f. 51	Scientific Paper: The Life of Radium	undated
b. 7, f. 52	Scientific Paper: notes made by BBB on an article in *Journal of the American Chemical Society*	
b. 7, f. 53	Scientific Paper: The Relative Activity of Radium and the Uranium with which it is in Radioactive Equilibrium, by BBB and J. H. L. Johnstone	undated
b. 7, f. 54	Scientific Paper: The Ultimate Disintegration Products of Thorium as indicated by the pro-portions of Lead and Helium in minerals	November 14, 1905
	Writings of Others	
b. 7, f. 55	Bishop, H. E.: "The Present Situation in the Radium Industry," *Science*	March 23, 1923
b. 7, f. 56	Crommelin, C. A.: "Apparatus and methods in the Cryogenic Laboratory," reprinted from Transactions of the Faraday Society, No.53, Vol. XVIII, part 2, with notes by BBB	December 1922
b. 7, f. 57	Gleditsch, Ellen: "The Life of Radium"	undated
b. 7, f. 58	Haywood, J. K.: "Analysis of the Hot Springs on Hot Springs Reservation and Geological Sketch of Hot Springs, Arkansas"	1902
b. 7, f. 59	Jones, Lauder William: "Electromerism, A Case of Chemical Isomerism Resulting from a Difference in Distribution of Valence Electrons," *Science*	November 23, 1917
b. 7, f. 60	Langley, Clifford: Thesis	June 1899
b. 7, f. 61	Robb, Alfred A.: poem, "An Alpha Ray"	undated
b. 7, f. 62	Lord Rutherford (and BBB?): "Amount of Radium in Uranium?"	undated
b. 7, f. 63	Lord Rutherford and J. Chadwick: "The Bombardment of Elements by #-particles," reprinted from *Nature*.	March 29, 1924
b. 7, f. 64	Lord Rutherford: "Henry Gwyn Jeffreys Moseley," reprinted from *Nature*	September 9, 1915
b. 7, f. 65	Lord Rutherford: "Radioactivity"	undated

Series III: Subject file, 1897-1932

21/2″ - 1 box

The SUBJECT FILE contains a few anonymous articles concerning Yale University, some papers relating to Boltwood's position at Yale, a bibliography of radioactive salts, some biographical information on Boltwood, miscellaneous certificates, scientific tables and graphs, a grade book, newspaper clippings, photographs, publishers agreements, and papers concerning *United States of America v. Mountain Valley Water Company*. Entries are arranged alphabetically by subject matter.

b. 8, f. 1	Articles: The New Sterling Chemistry Laboratory of Yale University," (2), anonymous	undated
b. 8, f. 2	Articles for Yale Scientific Magazine, anonymous	1930-1932
b. 8, f. 3	Bibliography: radioactive salts	undated
b. 8, f. 4	Biographical sketches	1927, undated
b. 8, f. 5	Birth certificate	1870 July 27
b. 8, f. 6	BBB: appointment as acting professor of chemistry	undated
b. 8, f. 7	BBB: eulogy, Yale University	1927
b. 8, f. 7	reprint, *Nature*	1928
b. 8, f. 8	BBB: resolution concerning his death; Chemistry Department, Yale University	1927
b. 8, f. 9	Book Review: *Les Notions Fondamentales d'Element Chimique et d'Atom,* by Georges Urbain, anonymous	undated
b. 8, f. 10	Certificates of attendance: Royal Bavarian Ludwig-Maximilian University of Munich; University of Leipzig	1892; 1896
	Certificates of membership:	
b. 8, f. 11	American Academy of Arts and Sciences	1913 January 8
b. 8, f. 11	American Association for the Advancement of Science	1920 December 27
b. 8, f. 11	American Philosophical Society See: Folio	1911 April 22
b. 8, f. 11	Chemische Gesellschaft	1897
b. 8, f. 11	National Academy of Sciences. See: Folio	1911 April 20
b. 8, f. 12	Chemical tables in French. See: Folio	undated
b. 8, f. 13	Chemistry course requirements: brief outlines by BBB	undated
b. 8, f. 14	Death certificate, Matilda van Hoesen Boltwood. See: Folio	1909

b. 8, f. 15	Death notices, wedding invitation, and calling card	1921, 1926, undated
b. 8, f. 16	Diagram: periodic table	undated
b. 8, f. 17	Grade book	1921-1922
b. 8, f. 18	Graphs of experimental data. See: Folio	undated
b. 8, f. 19	International Congress on Radiology and Electricity (Brussels, 1910), delegate to. See: Folio	1909 December 11
b. 8, f. 20	Newspaper clippings about BBB's work	1904, 1913, undated
b. 8, f. 21	Newspaper clippings re: the Lord Rutherford-Sir William Ramsay dispute	undated
b. 8, f. 22	Photographs: pictures of Boltwood laboratory equipment and data, Rutherford's home, and postcard of various scientists accompanied by letter from H. R. Robinson	undated
b. 8, f. 23	Press Notice: Large Deposits of Radium Ore Discovered in Africa, Released by Radium Chemical Company, Pittsburgh	1922
b. 8, f. 24	Publishers' agreements: BBB and John Wiley and Sons. See: Folio	1898, 1902
	USA v. Mountain Valley Water Company:	
b. 8, f. 25	legal document	1917
b. 8, f. 26	analysis of Mountain Valley water compared with the analyses of various other waters of similar compositions	undated
b. 8, f. 27	miscellaneous samples examined for radioactivity by the Bureau of Chemistry	undated
b. 8, f. 28	percentage composition of Mountain Valley water compared with the percentage composition of various natural waters of similar composition, photocopy	undated
b. 8, f. 29	radioactivity of Mountain Valley water as reported by various observers	1911 March 9-1917 June 4
b. 8, f. 30	radioactivity of waters, etc.	1917
b. 8, f. 31	resume of depositions taken at St. Louis, Missouri, and Hot Springs, Arkansas	1917 July 2–3, 1917 July 5

Folio

Contains materials from Series III. Subject file. The following is an inventory of the materials which were too large to fit in the regular manuscript boxes and were therefore placed in a folio. Each item is also listed in the Register in its appropriate series and box.

b. 9	Chemical tables in French box 8, folder 12	undated
	Certificates of membership:	
b. 9	American Philosophical Society box 8, folder 11	1911 April 22
b. 9	National Academy of Sciences box 8, folder 11	1911 April 20
b. 9	Death certificate, Matilda van Hoesen Boltwood box 8, folder 14	1909
b. 9	Graphs of experimental data box 8, folder 18	undated
b. 9	International Congress on Radiology and Electricity, delegate to box 8, folder 19	1909 December 11
b. 9	Publishers' agreements: BBB and John Wiley and Sons box 8, folder 24	1898, 1902

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

Educators
Nuclear physics
Radioactivity
Science

Occupations

Physicists

Names

Boltwood, Bertram Borden, 1870-1927
Rutherford, Ernest, 1871-1937

Corporate Bodies

Yale University. Sheffield Scientific School
Yale University -- Faculty