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## **Finding Aid for the Ira Sprague Bowen Papers 1916-1961**

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## **Descriptive Summary**

**Title:** Ira Sprague Bowen Papers,

**Date (inclusive):** 1916-1961

**Collection number:** 10007-MS

**Creator:** Bowen, Ira Sprague 1898-1973

**Extent:** 2.5 linear feet

**Repository:** California Institute of Technology. Caltech Archives  
Pasadena, California 91125

**Abstract:** Ira Sprague Bowen: 1898-1973. Astrophysicist; Director, Mt. Wilson Observatory, 1946-1964; Professor of Physics, Caltech 1926-45. Much of his physics research was concerned with studies of spectral lines and spectroscopy; in the 1930s his interests turned more to astronomy and astrophysics and he devised many new instruments and techniques for observational astronomy. Papers include correspondence (ca. 1933-47), notebooks (many from his years at University of Chicago, 1916-21), articles, speeches, and photographs.

**Physical location:** Archives, California Institute of Technology.

**Language of Material:**

**Languages represented in the collection:**

English

### **Access**

The collection is open for research. Researchers must apply in writing for access.

### **Publication Rights**

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### **Preferred Citation**

[Identification of item], Ira Sprague Bowen Papers, 10007-MS, Caltech Archives, California Institute of Technology.

### **Biography**

One of the most distinguished astrophysicists of the twentieth century, Ira Sprague Bowen made fundamental contributions to the analysis of atomic spectra, the physics of gaseous nebulae and practical optics. Born in Seneca Falls, New York, in 1898, he graduated from Oberlin College in 1919 before entering the University of Chicago. There, he studied with Albert Michelson who infused in Bowen a love of optics. He also met Robert A. Millikan, who invited him to the California Institute of Technology in 1921.

By 1926 Bowen had received his doctorate from the institute and was appointed an assistant professor at Caltech. Soon after he made his first outstanding discovery: the identification of the so-called nebulium lines in the spectra of gaseous nebulae. The following decade, Bowen built an innovative device, called an image slicer, which placed the spectra of successive strips across an extended object, side by side upon a photographic plate. This invention enormously increased the efficiency of observations of gaseous nebulae and he received international attention when he provided an explanation for lines appearing in the spectra of planetary nebulae. During World War II he participated in the Caltech ordnance rocket project, developing the use of high-speed cameras in rocket design. Following the Second World War, he continued to research nebulae in collaboration with Rudolf Minkowski and published many significant papers on the subject.

Upon the retirement of Walter Adams, Bowen assumed the directorship of the Mount Wilson Observatory and, in 1948, the combined Mt. Wilson and Palomar venture. Despite his administrative duties, he continued to make significant contributions to optics, even following his retirement in 1964.

Bowen received many honors. He was a Gold Medallist and Halley lecturer of the Royal Astronomical Society. Among the other medals he received were the Ives (Optical Society of America), Draper (National Academy of Sciences), Potts (Franklin Institute), Rumford (American Academy of Arts and Sciences) and Bruce (Astronomical Society of the Pacific). He was a member of the National Academy of Sciences, the Royal Swedish Academy of Sciences and the Indian Academy of Sciences.

### **Scope and Content**

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Papers, 1916-1961. More than half of this collection is comprised of class notes (primarily physics) made by Bowen between 1916 and 1920 at the University of Chicago. Also included is a small amount of correspondence (primarily 1920-1945); manuscript articles and speeches; and biographical material.

The collection is organized into the following series:

Series 1. Correspondence

Series 2. Manuscripts

Series 3. Biographical

#### **Related Material**

[Papers of Jesse L. Greenstein](#)

[Papers of Robert A. Millikan](#)

[Papers of George Ellery Hale](#)

Records of the Palomar Observatory

#### **Indexing Terms**

The following terms have been used to index the description of this collection in the library's online public access catalog.

#### **Subjects**

California Institute of Technology

Mount Wilson Observatory

Palomar Observatory

Michelson, Albert Abraham, 1852-1931

Millikan, Robert Andrews, 1868-1953

Minkowski, Rudolf, 1895-1976

Astronomy

Astrophysics

Spectrometry

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#### Series 1. **Correspondence**

Box 1, Folder 1

##### **A Miscellaneous**

###### **Scope and Content Note**

Adams, Walter S.ca. 1946

American Russian Institute of Southern California1935

Box 1, Folder 2

##### **Boyce, Joseph C. 1933-1935, undated, 1941**

Box 1, Folder 3

##### **Bush, Vannevar 1941-1942, 1945, 1947**

Box 1, Folder 4

##### **B Miscellaneous**

###### **Scope and Content Note**

Barrett, Edward C. 1939

Birge, Raymond T.1941

Box 1, Folder 5

##### **DuBridge, Lee A. 1961**

Box 1, Folder 6

##### **Edlen, Bengt 1937-1939, 1941**

Box 1, Folder 7

##### **E-F Miscellaneous**

###### **Scope and Content Note**

Eisenhart, L.P.1940

Frazer, John1945

Frerichs, R.1933

Frost, Edwin B.1927

Box 1, Folder 8

**G-K Miscellaneous**

**Scope and Content Note**

Gilbert, W. M.1945  
Hale, George Ellery1927  
Haskins, Caryl P.1962, undated  
King, Arthur S.1943  
Kriel, Jacob F., Jr.1940

Box 1, Folder 9

**Kraus, Edward H. 1941, 1945**

Box 1, Folder 10

**McMath, Robert R. 1944-1945**

Box 1, Folder 11

**Menzel, Donald H. 1933-1935**

Box 1, Folder 12

**Millikan, Robert A. 1921-1923, 1928, 1931**

Box 1, Folder 13

**M-N Miscellaneous**

**Scope and Content Note**

Merrill, Paul W.1943  
Moody, Seth E.1946  
Morgan, Thomas Hunt1928  
My, Tai-ze1945

Box 1, Folder 13.1

**Russell, Henry Norris 1934, 1939, 1945**

Box 1, Folder 14

**R-T Miscellaneous**

**Scope and Content Note**

Ruddock, A. B.1957  
Shane, C. D.1945  
Sitterly, Charlotte Moore1939  
Sproul, Robert G.1937, 1945  
Stoner, Edmund G.1924  
Stoy, R. H.1934-1935  
Swings, P.1941-1943  
Tate, John T.1927  
Tiffany & Co.1935

Box 1, Folder 14.1

**Wright, W. H. 1934, 1937-1939**

Box 1, Folder 15

**Wyse, Art B. 1938-1940**

Series 2. **Manuscripts**

Box 1, Folder 16

**Research, Miscellaneous Documents 1940, 1945**

Box 1, Folder 17

**Miscellaneous Exams undated**

Box 1, Folder 18

**Speeches**

**Scope and Content Note**

The Telescope at Workundated  
Mr. Wilson Observatoryundated  
Astronomy in a Changing Worldundated  
Millikan Statements re: Ira Bownundated  
The 200-Inch Cameraundated

Box 1, Folder 19

**Articles**

**Scope and Content Note**

The Origin of the Nebulum Spectrumundated  
Telescopesundated  
Some New Tools of the Astronomerundated  
The 200-Inch Telescope at Workundated  
The First Decade of Observation with the Hale 200-Inch Telescopeundated  
The Palomar Observatoryundated  
Research Narrativesundated

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Box 1, Folder 20	<b>"A Very High Altitude Survey of the Effect of Latitude Upon Cosmic-Ray Intensities and an Attempt at a General Interpretation of Cosmic-Ray Phenomena" by I. S. Bowen, R. A. Millikan and H. Victor Neher 1934</b>
	Series 3. <b>Biographical</b>
Box 1, Folder 21	<b>Biographical Material undated</b>
Box 1, Folder 22	<b>Honors undated</b>
Box 1, Folder 23	<b>New Stories undated</b>
Box 1, Folder 24	<b>Magazines, Press Releases undated</b>
Box 1, Folder 25	<b>Photos undated</b>
Box 2, Folder 1	<b>Notebooks from the University of Chicago: Miscellaneous Topics in Physics ca. 1919-1921</b>
Box 2, Folder 2	<b>Notebooks from the University of Chicago: Miscellaneous Topics in Physics ca. 1919-1921</b>
Box 2, Folder 3	<b>Notebooks from the University of Chicago: Miscellaneous Topics in Physics ca. 1919-1921</b>
Box 2, Folder 4	<b>Notebooks from the University of Chicago: Miscellaneous Topics in Physics ca. 1919-1921</b>
Box 2, Folder 5	<b>Notebooks from the University of Chicago: Math ca. 1919-1921</b>
Box 2, Folder 6	<b>Notebooks from the University of Chicago: Math 172 ca. 1919-1921</b>
Box 2, Folder 7	<b>Notebooks from the University of Chicago: Physics Oct 1916-May 1917</b>
Box 2, Folder 8	<b>Notebooks from the University of Chicago: Physics 75 ca. 1919-1921</b>
Box 2, Folder 9	<b>Notebooks from the University of Chicago: Extension Division Correspondence. Study Department Elementary Physics ca. 1919-1921</b>
Box 3, Folder 1	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Vol. 1 Mechanics and Wave Motion Oct-Dec 1919</b>
Box 3, Folder 2	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Vol. 2 Mechanics and Wave Motion Oct-Dec 1919</b>
Box 3, Folder 3	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Vol. 3 Mechanics and Wave Motion. Electro-Magnetic Theory of Light Oct-Dec 1919</b>
Box 3, Folder 4	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Vol. 4 Mechanics and Wave Motion. Electro-Magnetic Theory of Light Jan-Mar 1920</b>
Box 3, Folder 5	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Vol. 5 Electro-Magnetic Theory of Light Jan-Mar 1920</b>
Box 3, Folder 6	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Volume 6 Electricity and Magnetism Mar-Jun 1920</b>
Box 3, Folder 7	<b>Notebooks from the University of Chicago: Theoretical Physics. A. A. Michelson: Volume 7 Electricity and Magnetism ca. 1920-1921</b>
Box 3, Folder 8	<b>Notebooks from the University of Chicago: Differential Equations ca. 1919-1921</b>
Box 3, Folder 9	<b>Notebooks from the University of Chicago: Electron Theory Physics 53 ca. 1919-1921</b>
Box 3, Folder 10	<b>Notebooks from the University of Chicago: Electricity Sound and Light ca. 1919-1921</b>
Box 4, Folder 1	<b>Notebooks from the University of Chicago: Problems on Mechanics. Molecular Physics and Heat ca. 1919-1921</b>
Box 4, Folder 2	<b>Notebooks from the University of Chicago: Analytic Mechanics ca. 1919-1921</b>
Box 4, Folder 3	<b>Notebooks from the University of Chicago: Thermodynamics ca. 1919-1921</b>
Box 4, Folder 4	<b>Notebooks from the University of Chicago: Thermodynamics ca. 1919-1921</b>
Box 4, Folder 5	<b>Notebooks from the University of Chicago: R. A. Millikan. Thermodynamics ca. 1919-1921</b>
Box 4, Folder 6	<b>Notebooks from the University of Chicago: A. C. Lunn. Vector Analysis and Applications, Vol. 1 Oct-Dec 1917</b>
Box 4, Folder 7	<b>Notebooks from the University of Chicago: A. C. Lunn. Vector Analysis and Applications, Vol. 2 Electro-magnetic Theory ca. 1919-1921</b>
Box 4, Folder 8	<b>Notebooks from the University of Chicago: A. C. Lunn. Vector Analysis and Applications, Vol. 3 Electro-magnetic Theory ca. 1919-1921</b>
Box 4, Folder 9	<b>Notebooks from the University of Chicago: Quanta Theory ca. 1921</b>
Box 4, Folder 10	<b>Notebooks from the University of Chicago: A. A. Michelson. Physics Optics Oct-Dec 1920</b>

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Box 4, Folder 11	<b>Notebooks from the University of Chicago: A. A. Michelson. Physics Optics Oct-Dec 1920</b>
Box 5, Folder 1	<b>Notebooks from the University of Chicago: E. J. Moore and R. A. Millikan. Kinetic Theory of Gases Feb-Jun 1919</b>
Box 5, Folder 2	<b>Notebooks from the University of Chicago: Physics 62 ca. 1919-1921</b>
Box 5, Folder 3	<b>Notebooks from the University of Chicago: Chemistry Notes, Vol. 1 1919</b>
Box 5, Folder 4	<b>Notebooks from the University of Chicago: Chemistry Notes, Vol. 2 1919</b>
Box 5, Folder 5	<b>Reprints 1924-1950</b>