



Smithsonian  
*National Museum of American History*  
*Kenneth E. Behring Center*

## Guide to the Charles Sumner Tainter Papers

NMAH.AC.0124

Robert Harding

1984



Archives Center, National Museum of American History  
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## Collection Overview

<b>Repository:</b>	Archives Center, National Museum of American History
<b>Title:</b>	Charles Sumner Tainter Papers
<b>Identifier:</b>	NMAH.AC.0124
<b>Date:</b>	1878-1937
<b>Extent:</b>	2 Cubic feet (6 boxes)
<b>Source:</b>	Electricity and Modern Physics, Division of, NMAH, SI. Mechanisms, Division of (NMAH, SI) Tainter, Charles Sumner, 1854-1940 Hartsook Studio (San Diego, Calif.)
<b>Language:</b>	English  Collection text is in English. Some collection materials are in French.
<b>Summary:</b>	Charles Sumner Tainter has been recognized as the father of the talking machine, and much of the material in this collection represents his experimental work on the graphophone. Alexander Graham Bell, Chichester Bell, and Tainter established the Volta Laboratory Association in 1881. This collection presents a comprehensive picture of the early development of the phonograph and Tainter's substantial contributions to the project.

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## Administrative Information

### Acquisition Information

The collection was donated by Laura F. Tainter, Charles Sumner Tainter's widow, in 1947 and 1950.

### Provenance

Collection transferred to the Archives Center from the Division of Mechanisms (now the Division of Work & Industry) in October 1984.

### Separated Materials

#### **Materials Located at the National Museum of American History**

Medal award given to Charles Sumner Tainter, Exposition Internationale d'Electricite, Paris, 1881. See Accession #: ME\*313452.02

Gold medal award given to Charles Sumner Tainter. Panama - Pacific Exposition, 1915. See Accession #: ME\*313452.01

## Available Formats

Series 2: Laboratory Notes digitized in 2014.

## Processing Information

Processed by Robert Harding, 1984; finding aid revised by Franklin A. Robinson, Jr., November 2008, supervised by Vanessa Broussard Simmons, archivist.

## Preferred Citation

Charles Sumner Tainter Papers, Archives Center, National Museum of American History.

## Restrictions

Collection is open for research. Researchers must handle unprotected photographs with gloves.

## Conditions Governing Use

Collection items available for reproduction, but the Archives Center makes no guarantees concerning copyright restrictions. Other intellectual property rights may apply. Archives Center cost-recovery and use fees may apply when requesting reproductions.

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## Biographical / Historical

Charles Sumner Tainter, son of George and Abigail Sanger Tainter, was born on April 25, 1854, in Watertown, Massachusetts, near Boston. His father was an inventor with several patents to his name. In his memoirs Tainter describes his father as "a man of much force of character and inventive ability" and his mother as, "a woman of high character and beloved by all." His school years left him with a terror of public speaking that followed him all his life. He completed public school without much enthusiasm and then became essentially self-educated, studying only subjects that interested him. He obtained scientific and technical books from the public library, and was an avid reader of *Scientific American*. In his memoirs he recalls: "I believe that this journal had a great influence in molding my thoughts in mechanical and scientific directions as I grew up with it and used to read it regularly."

In 1870 Tainter started to work for Charles Williams, Jr., a manufacturer of telegraphs and electrical apparatus in Boston, for five dollars a week. Two years later he became associated with Johnson and Whittlemore, manufacturers of electrical instruments in Boston. He stayed with them until the business folded in 1873, and then joined Alvan Clark and Sons, a well-known manufacturing company of large telescopes and optical instruments in Cambridgeport, Massachusetts. As a technician at the Alvan Clark and Sons Company, Tainter assisted with the building of the Equatorial Telescope mounted in the U.S. Naval Observatory in Washington, D.C. He also constructed much of the equipment that was used during the U.S. government expedition to observe the transit of Venus in the South Pacific on December 8, 1874. The Secretary of the Navy appointed Tainter a member of this expedition, and Tainter vividly reveals his role in the event in his memoirs: "Early History of Charles Sumner Tainter." See Series 1, Box 1. [Note: Henry Draper, (1837 1882), a scientist whose collection of papers are also stored in the Archives Center, Series 3, Box 6, was superintendent of the government commission for the observation of the transit of Venus.] After he returned from the expedition in 1875, Tainter rejoined Alvan Clark and Sons Company and stayed there for three years.

Tainter started his own business in 1878 in Cambridgeport, Massachusetts, constructing scientific instruments. It was in Cambridgeport, that he met Alexander Graham Bell. A year later Tainter accepted

Bell's proposal to join him in Washington, D.C. to establish a small laboratory. After a series of experiments they developed the radiophone, an instrument for transmitting sound to distant points through the agency of light, using sensitive selenium cells. The radiophone was shown at an electrical exhibition in Paris in 1881, where Tainter was awarded a gold medal and diploma for his part in the invention. Between 1879 and 1880, Tainter and Bell also experimented with and tried to improve on Edison's talking machine.

The Academie des Sciences of Paris awarded Bell the Volta prize in 1880 for his development of the telephone. The prize included \$10,000 that Bell used a year later to establish the Volta Laboratory Association, a small research laboratory in Washington, D.C. He asked his cousin, Chichester A. Bell, a chemist from London, and Tainter to join him in this venture. Although they devoted much of their attention to electrical and acoustical research, most of their efforts went into the improvement of Edison's talking machine. Edison had used tinfoil as the recording medium for his first phonograph in 1877, but then abandoned the project and turned his attention to the electric light and power distribution system. Meanwhile, Chichester Bell and Tainter saw the fragile tinfoil as a major obstacle in any further development of the instrument, and after much experimenting came upon the idea of replacing the tinfoil with a wax compound onto which they could engrave the sound waves directly. This invention was patented in May 1886 under the name Graphophone. It was an important step in the development of the phonograph since for the first time it was possible to manufacture the device commercially. Tainter recorded his experiments on the graphophone in thirteen notebooks ("Home Notes") and two large volumes of technical drawings and sketches. See: Series 2, Boxes 1, 2, and 3.

Bell and Tainter recognized Edison as the inventor of the talking machine, and they wanted to work with him and carry the costs for all further experiments in exchange for half the share of the profits, but Edison rejected this proposal. He felt that they wanted to steal his invention. In 1885 the partnership between Bell, his cousin, and Tainter was dissolved, and the graphophone rights were given to a group of Washington court stenographers who felt that the graphophone could best be utilized as a dictaphone. The group subsequently formed the Volta graphophone Company where Tainter continued to work for several years. The Volta Graphophone Company was reorganized two years after its formation as the American Graphophone Company. Eventually Edison sued the Volta Graphophone Company (1894), and the American Graphophone Company (1895-96).

In June 1886 Tainter married Lila R. Munro, daughter of William J. Munro of Newport, Rhode Island. Two years later he suffered a severe case of pneumonia, which was to incapacitate him intermittently for the rest of his life.

The Volta Graphophone Company sold the foreign rights for the graphophone in the spring of 1889 to form the International Graphophone Company. Tainter became associated with this new company and went to Europe to look after its interests there. In the same year the graphophone was exhibited at the Paris Exposition and Tainter was awarded the Decoration of "Officier de L Instruction Publique" from the French government for his invention of the graphophone. Upon his return from Europe Tainter established a factory for the International Graphophone Company in Hartford, Connecticut in 1889. When he left the company in 1890, he launched his own laboratory in Washington, D.C., where he continued to improve on the phonograph and a number of new inventions were patented.

At the Chicago Exposition in 1893 Tainter was asked to manage the exhibition of more than a hundred machines for the American Graphophone Company. In 1897 a fire destroyed Tainter's Washington laboratory and much valuable material was lost, including three volumes of his "Home Notes", which contained some of the findings of his experiments on the graphophone. Three years later the city of Philadelphia awarded the John Scott medal to Chichester Bell and Tainter for their work in connection with the graphophone.

Tainter's chronic illness forced him to suspend his work frequently and seek treatment and relief in various sanatoria and spas both in Europe and in the United States. He and his wife eventually moved to California. They settled in San Diego in June of 1903 to enjoy the better climate there. Again Tainter established a laboratory and continued to work whenever his health allowed. In 1915 he was awarded a

gold medal and diploma for his work with the graphophone at the San Francisco Exposition. Tainter's wife died in 1924. Four years later he married Laura Fontaine Onderdonk, widow of Charles G. Onderdonk.

At the meeting of the American Association for the Advancement of Science in Pittsburgh in December 1934, Tainter was made an Emeritus Life Member, having been a fellow for 55 years. His obituary also mentions that in 1915 Tainter was awarded a gold medal at the Panama Pacific Exposition for his work on the graphophone.

Tainter died on April 20, 1940. He was considered an inventor, a physicist, and a manufacturer of electrical apparatus, but most of all he was known as the father of the talking machine.

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## Scope and Contents

Charles Sumner Tainter has been recognized as the father of the talking machine, and much of the material in this collection represents his experimental work on the graphophone.

Alexander Graham Bell, in partnership with his cousin Chichester Bell, and Tainter, established the Volta Laboratory Association in 1881, which stayed in operation until 1885. During this time Tainter recorded his experiments on the graphophone in thirteen note books or "Home Notes" and in two large volumes of technical drawings and notes. One of these volumes contains very exact drawings for a multiple record duplicator (1897-1908); the other contains rough sketches of his experiments with various apparatuses (1883-1884).

Tainter also wrote an unpublished, undated manuscript on *The Talking Machine and Some Little Known Facts in Connection with Its Early Development*. Another document consists of a binder with the printed patent specifications of Tainter, Alexander Graham Bell, and Chichester Bell (1880-1903). All of these documents are contained within this collection, except Volumes 9, 10, and 13 of Tainter's "Home Notes" which were destroyed in a fire in Tainter's Laboratory in Washington, D.C., in September 1897. The other ten volumes were needed in a law suit and were in possession of his attorney at the time of the fire. Records of Court testimony in suits involving the phonograph (1894-1896) are also included in this collection.

Tainter's memoirs, *Early History of Charles Sumner Tainter* provide a personal account of his childhood and youth, and of his later role as a member of the U. S. Government Expedition to observe the transit of Venus in 1874. Certificates, photographs, clippings, some correspondence, handwritten notes, and articles on the history of the phonograph complete the collection of his papers.

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## Arrangement

The collection is divided into three series:

- Series 1, Papers, 1878-1937
- Series 2, Laboratory Notes, 1881-1908
- Series 3, Artifacts, undated

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## Bibliography

- Frow, George L. and Sefl, Albert F. The Edison Cylinder Phonographs 1877 1929. Kent, Great Britain: Flo Print, 1978.
- Juttlemann, Herbert. Phonographen und Gramophone, Braunschweig, Germany: Klinkhardt and Biermann, 1979.
- Marty, Daniel, The Illustrated History of Phonographs. Translation by Douglas Tubbs. New York: VILO Inc., 1981.
- The Phonograph and How to Use It. The National Phonograph Company. New York: Allen Koenigsberg, 1971 (circa 1900).
- Proudfoot, Christopher. Collecting Phonographs and Gramophones. Christie's International Collectors Series. New York City: Mayflower Books, 1980.
- "Phonographs and Gramophones. An Edison Centenary Exhibition Edinburgh": The Royal Scottish Museum, 1977.
- Phonographs and Gramophones. Edison Phonograph Centenary Symposium. Edinburgh: The Royal Scottish Museum, 1977.
- "A Wonderful Invention." A Brief History of the Phonograph from Tinfoil to the L.P. Washington, D.C.: An Exhibition in the Great Hall of the Library of Congress in Celebration of the 100th Anniversary of the Invention of the Phonograph." 1977.

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## Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

Dictating machine  
Electrical engineers  
Inventors  
Light machinery  
Mechanical engineering  
Phonograph  
Physicists  
Sound recording and reproduction  
Talking machine

Types of Materials:

Laboratory notebooks

Names:

American Graphophone Company  
Bell, Alexander Graham, 1847-1922  
Bell, Chichester  
Berliner, Emile, 1851-1929  
Clark, Alvin and Sons Company  
Edison Phonograph Works  
Electricity and Modern Physics, Division of, NMAH, SI.  
International Graphophone Company

Mechanisms, Division of (NMAH, SI)  
Volta Graphophone Company



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## Container Listing

### Series 1: Papers, 1878-1937, undated

- Box 1, Folder 1      Manuscript of Tainter's memoirs, 1878  
Early History of Charles Sumner Tainter (Enclosed in leather folder)
- Box 1, Folder 2      Typewritten copy of Tainter's memoirs, 1878  
Early History of Charles Sumner Tainter, pages 1-71, also an excerpt, pages 46-53
- Box 1, Folder 3      Printed patent specifications of Tainter, Alexander Graham Bell, and C.A. Bell, 1880-1887  
[Image\(s\)](#)
- Box 1, Folder 3      Apparatus for recording and reproducing speech and other sounds. [patent], December 27, 1887  
*1 Item (Ink on paper.; 11.3" x 7.4".)*  
[Image\(s\): Apparatus for recording and reproducing speech and other sounds. \[patent\].](#)  
Tainter, Charles Sumner, 1854-1940, Author  
Patent number 375,579.
- Unrestricted research use on site by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.
- Local Numbers  
AC0124-0000002 (AC Scan)
- Topic:            Phonograph  
                    Sound -- Recording and reproducing
- Genre/           Patents  
Form:
- Box 1, Folder 4      Tainter, Charles Sumner Manuscript: *The Talking Machine and Some Little Known Facts in Connection with its Early Development*, undated
- Box 1, Folder 5      Tainter, Charles Sumner. Typewritten copy of: *The Talking Machine and Some Little Known Facts in Connection with its Early Development*, undated
- Box 1, Folder 6      Tainter, Charles Sumner. Four excerpts from printed copy: *The Talking Machine and Some Little Known Facts in Connection with its Early Development*, undated  
Photostat of Model number 235,496. Alexander Graham Bell and Charles Sumner Tainter Photophone Transmitter, and four other models, all patented either on December 14, 1880, or on May 24, 1881. (These photostats are also included in folder number 5 in the printed copy of Tainter's *The Talking Machine and Some Little Known Facts in Connection With Its Early Development*.)
- Box 2, Folder 1      Notes, correspondence, clippings, 1881-1937

- Box 2, Folder 2 Handwritten notes for memoirs, clippings, and articles on phonograph history, short biography, correspondence, certificate (Emeritus Life Membership in the American Association for the Advancement of Science), 1887-1937
- Box 2, Folder 3 Certificate of nomination to "Officier de L'Instruction Publique" by the "Ministere de Instruction Publique et des Beaux Arts", 1889
- Box 2, Folder 4 Record of court testimony, *Volta Graphophone Company vs. Columbia Phonograph Company*, Supreme Court of the District of Columbia, 1894
- Box 2, Folder 5 Records of court testimony in suits involving the Phonograph, 1894-1896
- Box 2, Folder 6 Photographs, Mrs. George Tainter, mother of C. S. Tainter (albumen print, circular, on circular mount), circa 1890

- Box 2, Folder 6 C. S. Tainter in San Diego, 1919 - 1919  
[Image\(s\)](#)

- Box 2, Folder 6 [Charles Sumner Tainter reading, black & white photoprint], 1919  
*1 Item (Silver gelatin on paper.; 9.5" x 7.8".)*  
[Image\(s\)](#)  
Hartsook Studio (San Diego, Calif.), Photographer  
Unrestricted research use on site by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

## Local Numbers

AC0124-0000001 (AC Scan)

Topic: Portraits  
Genre/ Photographs -- 1910-1920 -- Black-and-white photoprints  
Form: -- Silver gelatin

- Box 2, Folder 6 Emile Berliner, Charles S. Tainter, 1919 September  
[Image\(s\)](#)

- Box 2, Folder 6 [Emile Berliner and Charles Sumner Tainter, black & white photoprint], Circa 1920  
*1 Item (Silver gelatin on paper.; 9.1" x 7.7".)*  
[Image\(s\): \[Emile Berliner and Charles Sumner Tainter, black & white photoprint\].](#)  
Tainter, Charles Sumner, 1854-1940 (collector and subject)  
Unrestricted research use on site by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

## Local Numbers

AC0124-0000004 (AC Scan)

Names: Berliner, Emile, 1851-1929  
Topic: Portraits

Genre/ Photographs -- 1910-1920 -- Black-and-white photoprints  
Form: -- Silver gelatin

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## Series 2: Laboratory Notes, 1881-1908

- Box 3, Folder 1      Volume 1 Home Journal Invention Notebook, 1881 March 25-1881 June 1  
*1 Item (17.0" x 11.0").*  
[Image\(s\): Volume 1](#)  
Tainter, Charles Sumner, 1854-1940, Author  
Inscription on cover: Vol. 1. 1881 March 28 to June 1. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.  
  
In Box 3, Folder 1.  
  
Ink on paper.  
  
Topic:              Phonograph  
                          Sound -- Recording and reproducing  
  
Genre/Form:      Notebooks
- Box 3, Folder 2      Volume 2 Home Journal Invention Notebook, 1881 June 1-1881 July 3  
*1 Item (17.0" x 11.0").*  
[Image\(s\): Volume 2](#)  
Tainter, Charles Sumner, 1854-1940, Author  
Inscription on cover: Vol. 2. 1881 June 1 to July 3. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.  
  
In Box 3, Folder 2.  
  
Ink on paper.  
  
Topic:              Phonograph  
                          Sound -- Recording and reproducing  
  
Genre/Form:      Notebooks
- Box 3, Folder 3      Volume 3 Home Journal Invention Notebook, 1881 July 3-1881 November 19  
*1 Item (17.0" x 11.0").*  
[Image\(s\): Volume 3](#)  
Tainter, Charles Sumner, 1854-1940, Author  
Inscription on cover: Vol. 3. 1881 July 3 to November 19. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.  
  
In Box 3, Folder 3.  
  
Ink on paper.  
  
Topic:              Phonograph  
                          Sound -- Recording and reproducing  
  
Genre/Form:      Notebooks
- Box 4, Folder 4      Volume 4 Home Journal Invention Notebook, 1881 November 20-1881  
December 9

*1 Item (17.0" x 11.0".)*

[Image\(s\): Volume 4](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 4. 1881 November 20, to December 9. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 4.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

Box 3, Folder 5

Volume 5 Home Journal Invention Notebook, 1881 December 11-1882 January 31

*1 Item (17.0" x 11.0".)*

[Image\(s\): Volume 5](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 5. 1881 - 1882, December 11 to January 31. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 5.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

Box 3, Folder 6

Volume 6 Home Journal Invention Notebook, 1882 February 2-1882 May 4

*1 Item (17.0" x 11.0".)*

[Image\(s\): Volume 6](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 6. 1882, February 2 to May 4. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 6.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

Box 3, Folder 7

Volume 7 Home Journal Invention Notebook, 1882 May 7-1882 June 16

*1 Item (17.0" x 11.0".)*

[Image\(s\): Volume 7](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 7. 1882, May 7 to June 16. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 7.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

Box 3, Folder 8

Volume 8 Home Journal Invention Notebook, 1882 June 17-1882 December 11  
*1 Item (17.0" x 11.0".)*

[Image\(s\): Volume 8](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 8. 1882, June 17 to December 11. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 8.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

Box 3, Folder 8

[Notes and diagram from invention notebook], June 25, 1882  
*1 Item (Ink on paper.; 10.2" x 7.8".)*

[Image\(s\): \[Notes and diagram from invention notebook\].](#)

Tainter, Charles Sumner, 1854-1940, Author

From notebook volume 8 page 19.

Unrestricted research use on site by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Local Numbers

AC0124-0000003 (AC Scan)

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/  
Form: Notebooks

Box 3, Folder 9

Volume 11 Home Journal Invention Notebook, 1883 March 25-1883 June 20

1 Item (17.0" x 11.0")

[Image\(s\): Volume 11](#)

Tainter, Charles Sumner, 1854-1940, Author

Inscription on cover: Vol. 11. 1883, March 25 to June 20. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.

In Box 3, Folder 9.

Ink on paper.

Topic: Phonograph  
Sound -- Recording and reproducing

Genre/Form: Notebooks

- Box 4, Folder 1      Volume 12 Home Journal Invention Notebook, 1883 June 24-1883 November 21  
1 Item (17.0" x 11.0")  
[Image\(s\): Volume 12, Home Notebook](#)  
Tainter, Charles Sumner, 1854-1940, Author  
Inscription on cover: Vol. 12. 1883, June 24 to November 21. This home journal written by Charles Tainter details his notes, thoughts and ideas on his inventions.  
In Box 4, Folder 1.  
Ink on paper.  
Topic: Phonograph  
Sound -- Recording and reproducing  
Genre/Form: Notebooks
- Box 4, Folder 2-11      Copies of Volumes 1-8; 11-12, 1881-1883
- Box 5, Folder 1      Notebook drawings, notes, and experiments , 1883-1884  
Contains drawings, notes, and experiments (used in court testimony: U.S. Circuit Court, District of New Jersey, *American Graphophone Company vs. Edison Phonograph Works*, Complainant's Exhibit, Tainter Drawings, Volume 1).
- Box 5, Folder 2      Book of drawings and notes for a multiple record duplicator , 1897-1908
- Box 5, Folder 2A      Tainter House Drawings, 1907 - 1908

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## Series 3: Artifacts, undated

### *Box 6*

Consists of one medal and parts to medals. The medals are housed in the Division of Work and Industry.

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