Brown University Library **Special Collections**

History of Science Collections

Frontispiece (detail) from
Curiosities of Entomology
(London: Groombridge and Sons, 1871)

"Each time there is a transmission there is a transformation."

—David Pingree, Brown University Professor and
Professor of History of Mathematics and Classics, 1971–2005

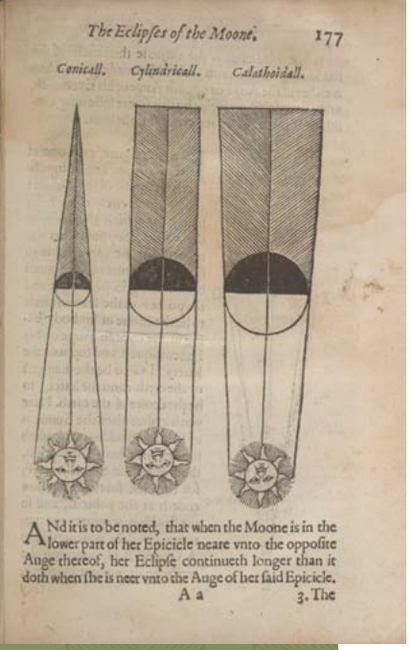


Illustration from The Theoriques of the Seven Planets, *a volume from the Library's original circulating collection*

Telescope used by Brown astronomer Benjamin West to observe the Transit of Venus in 1769

Brown University History of Science Collections

From astronomical events to zoological phenomena, the History of Science Collections at Brown University cover an extraordinary range of subject matter. They are among the largest collections of their kind, indelible reminders of the unrelenting, albeit frequently painful, progress of science, technology, and medicine from the early Renaissance to the modern day. The range, depth, and quality of the collections are testament to the unstinting generosity of countless Brown alumni and other benefactors throughout the University's long history. At its core are manuscripts, books and other printed materials that document seminal scientific and mathematical advances as well as the social application of scientific technology. These materials chart the development of a variety of scientific disciplines over the course of many centuries to recent discoveries in the study of atomic energy and radioactivity.

Early American Science and Science Education Collections

The Williams Table Collection, representing the Library's earliest holdings dating from the founding of the University in 1764, includes works in natural history, medicine, mathematics, and the practical arts. The name derives from William Williams, a Baptist minister and 1769 graduate of Brown, who sequestered the University's library at his home during the Revolutionary War to protect it from destruction. The oldest volumes are Thomas Blundeville's astronomical study, *The Theoriques of the Seven Planets* (London, 1602) and Bartholomaeus Keckermann's *Systema Compendiosum Totius Mathematices* (Hanover, 1617). Also covered in the Williams Table collection are navigation, natural history, plant physiology, and astronomy. Standout items include three 18th century editions of Euclid's *Geometry*, Richard Norwood's navigation book *The Sea-man's Practice* (London, 1702), and Stephen Hales' natural history study *Statical Essays* (London, 1702). Print materials are supplemented by a selection of early scientific instruments, most notably the telescope used by astronomer and Brown faculty member Benjamin West to track the transit of Venus in 1769.

The Lownes Collection of Significant Books in the History of Science

The jewel of Brown's outstanding collections in the history of science is the collection developed by Albert E. Lownes, class of 1920. Containing over three quarters of what are regarded as the "great books" of science published since the middle of the 15th century, the Lownes Collection originated from the 1970 gift of the double elephant folio edition of Audubon's *The Birds of America* (London, 1827–38). The double elephant folio contains 435 hand colored plates of 1,065 birds.

The bulk of the collection, however, is derived from a bequest arranged by Lownes, who was a successful manufacturer and occasional lecturer at Brown. Topics covered include zoology, ornithology, astronomy, chemistry, geology, physics, and mathematics. Among the 5,000 volumes housed in the

Albert E. Lownes (Class of 1920), collector and lecturer in the history of science

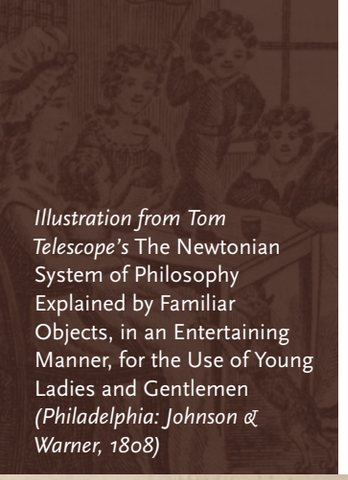


Illustration from Tom Telescope's The Newtonian System of Philosophy Explained by Familiar Objects, in an Entertaining Manner, for the Use of Young Ladies and Gentlemen *(Philadelphia: Johnson & Warner, 1808)*

collection are Aristotle's *De Animalibus* (1476), Joannes Regiomontanus' *Epytoma in Almagestum Ptolemaei* (Venice, 1496), which postulates that the universe is earth-centric, Hippocrates' *Aphorismi*, a seminal work on anatomy, and Konrad von Megenberg's *Das Buch der Natur* (Augsberg, 1482), the first work to contain illustrations of animals.

The great debates that divided the scientific and mathematical community in the 16th and 17th centuries can be seen in many of the Lownes Collection's holdings. These include a first edition of Rene Descartes' *Discours de la Méthode* (1637). Published anonymously, Descartes' work provided criteria for establishing a set of knowledge that can be empirically measured as being true, but is popularly known for the author's famous claim "Cogito Ergo Sum." Also housed in the Collection is a first edition Galileo Galilei's *Dialogo…Sopra I Due Massimi Sistemi del Mondo Tolemaico e Copernicano* (1632), which at the behest of Pope Urban VIII provided arguments for the validity of heliocentrism, eventually leading to a charge of heresy over the author's perceived sympathy for the Copernican view that the earth revolves around the sun. Isaac Newton's *Philosophiae Naturalis Principia Mathematica* (1687), one of the most influential works of science from the period and the foundation of modern physics, can also be found in the collection. In it, Newton formed the foundation of classical mechanics by establishing set laws of motion (most famously, the law of universal gravity).

Among the principle strengths of the Lownes Collection are its substantial holdings in natural history. Along with general works in botany and zoology by a variety of authors, these include first editions of nearly all of Charles Darwin's writings, from the 1839 publication of his original research from the voyage on the H.M.S. *Beagle* to the posthumously published essay on instinct included in George John Romanes' *Mental Evolution in Animals*. The Lownes bequest also included original manuscripts from Darwin and other renowned natural historians such as William Bartram, Alexander Wilson, and Louis Agassiz.

Modern works in the Lownes Collection include Einstein's "Zur elektrodynamik bewegter Korper" (Leipzig, 1905), one of his early publications from the "annus mirabilis" (1905) which helped establish the theory of relativity; Marie Curie's *Traité de Radioactivité* (Paris, 1910), the physicist's principal work on radiation theory, and Henry DeWolf Smyth's account of the Manhattan Project, *A General Account of Using Atomic Energy for Military Purposes* (Washington, D.C., 1945). These are augmented by complementary items in the Hay's general History of Science Collection.

The enormity and significance of the Lownes bequest has attracted other significant donations. Recently, Daniel G. Siegel, class of 1957, gave to the Library a complete set of the original issue for Audubon's *The Quadrupeds of North America*, which complements other Audubon materials in the Lownes Collection.

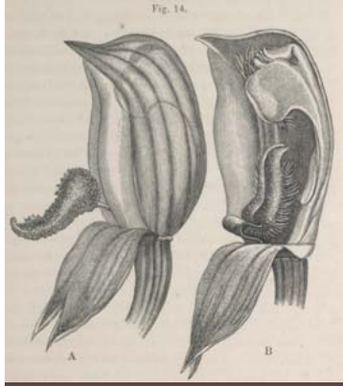
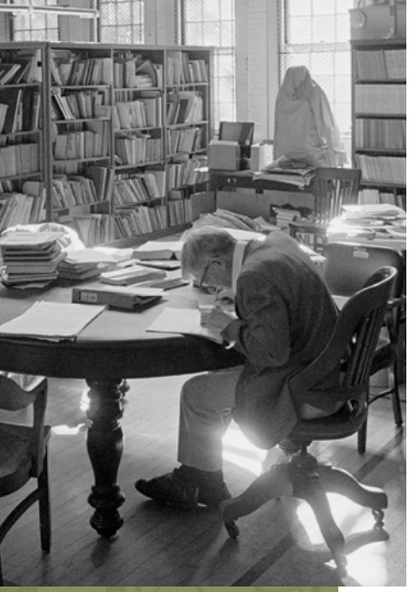


Illustration from Darwin's On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects, and on the Good Effects of Intercrossing *(London, 1862)*

Right: Porcupine (detail) from John James Audubon's The Quadrupeds of North America *(New York: Published by V.G. Audubon, 1849–1854)*



Prof. David E. Pingree (1933–2005) at work in his extensive library

The Pingree Collection in the History of Mathematics and Exact Sciences

In 2007, the Library was fortunate to acquire the David E. Pingree Collection on the History of Mathematics. Pingree taught in the Department of the History of Mathematics at Brown from 1971 until his death in 2005; his research interests were specific to the "exact sciences" (mathematics and mathematical astronomy) but covered mathematics in the ancient world, with a focus on India, and the relationship of Eastern mathematics to the development of mathematics and related disciplines in the West. The Pingree collection consists of both antiquarian and recent books published in Sanskrit, Arabic, Hindi, and Western languages as well as microfilm and photostats of manuscript material from around the globe, much of which is now lost in its original format. Many of the published texts in the collection are available nowhere else in the world outside of India.

Illustration from John Martin Honigberger's Thirty-Five Years in the East: Adventures, Discoveries, Experiments, and Historical Sketches, Relating to the Punjab and Cashmere; in Connection with Medicine, Botany, Pharmacy... *(Calcutta: Pub. by the "Bangabasi" Office, 1905)*

Medical History and Botany

A superb amount of material on early medical history is housed at Brown. Early works of medicine such as Lazare Rivière's *Praxis Medica* (Hague, 1651) and *Obvservationum Medicarum* (Leyden, 1659) reflect initial attempts to develop a comprehensive understanding of disease and anatomy. The dissolution of Brown's first medical school in 1827 represented a boon to the collection, as the University received a number of medical books from Dr. Usher Parsons, a professor of anatomy and surgery (1823-1828), as well as the libraries of Dr. William Hunter, a Newport surgeon, and Dr. Solomon Drowne, class of 1773, a surgeon in the Continental Army and Brown's first professor of materia medica.

Over 10,000 volumes comprise the Rhode Island Medical Society Collection, which was received by Brown in 1987. Of particular note is the Davenport Collection, covering medical history, biography, and Davenport's own writings on physicians. Among the writers featured are Charles Darwin, Arthur Conan Doyle, and Oliver Wendell Holmes. Rare books that together are the spine of early Western medical knowledge are also housed as part of the collection, including works such as Boerhaave's *Libellus de Materia Medica* (1719), Haller's *Elementa Physiologiae* (1757–1766), and Thomas Addison's *On the…Disease of the Supra-Renal Capsules* (1855).

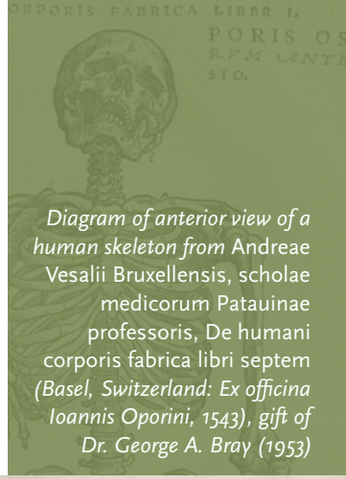


Diagram of anterior view of a human skeleton from Andreae Vesalii Bruxellensis, scholae medicorum Patauinae professoris, De humani corporis fabrica libri septem *(Basel, Switzerland: Ex officina Ioannis Oporini, 1543), gift of Dr. George A. Bray (1953)*

Illustration from François André Michaux's The North American Sylva, or a Description of the Forest Trees of the United States, Canada and Nova Scotia *(Paris: Printed by C. d'Hautel, 1818–1819)*

For over thirty years, the History of Science Collections, and especially medicine and anatomy, have been strengthened by ongoing gifts from George Bray, class of 1953, a noted medical researcher in the fields of diabetes and obesity. Among the important works given by Dr. Bray are the 1543 edition of Vesalius' *De Humani Corporis Fabrica*; thirteen works by Claude Bernard, a pioneer in the application of the scientific method to medicine; nine books by Charles Darwin including *The Descent of Man* and *On the Origin of Species*; Edward Jenner's *Inquiry* that led to the vaccine for smallpox; and numerous significant works by, among many others, Boerhaeve, Robert Hooke, Laennec, Lavoisier, and Paracelsus.

Attracted by the Lownes bequest, Dr. Meyer Saklad, former chief of anesthesiology at Rhode Island Hospital, donated more than 300 books and publications on the history of anesthesiology from the 18th–20th centuries. Saklad's gift was followed shortly thereafter by other significant donations in medicine, including the Sidney Fox collection on opthalmology, the Reitman collection on pharmacopeia and the DiMaio collection on obstetrics, gynecology, and pediatrics.

Botanical study forms a key element of the Library's collections in the history of science and medicine. The connections between botany and medicine were first recognized in the appointment of Solomon Drowne as Professor of Materia Medica and Botany in 1811. Although the first medical school at Brown was disbanded by President Wayland in 1827, botanical study was re-established at Brown fifty years later under William Whitman Bailey, who created the Brown University Herbarium. Over the next century, the Herbarium was a major contributor to the worldwide project to catalog and classify all known species of plants. Closely related to the Herbarium collection is the Snell collection on mycology. Donated by Walter H. Snell, class of 1913 and Professor of Botany, and comprising some 300 monographs and serials, the Snell Collection documents developments in the study of fungi in all their variety, from medical to culinary, between 1640 and 1970.

Engineering and Technology Studies

In 1911, Elmer L. Corthell, class of 1867, presented his collection of books, drawings and pamphlets on river and harbor engineering to the University. Corthell, a prominent civil engineer, had gathered these materials during a successful career spanning more than 40 years. Corthell's collection was the genesis of the Corthell Engineering Library. The original gift and the Corthell Papers are now part of special collections at the John Hay Library, while his books are stored at the Sciences Library. Other items include professional papers, correspondence, blueprints, and maps.

Another significant collection is that of engineer George Earl Church. Though Church's collecting interests were most heavily geographic and ethnographic, his collection also includes a number of important works on engineering in Latin America, notably Bolivia, where he worked on several railroad projects.

Complementing these materials are technical manuals found in the Dupee Fireworks Collection, which detail the physical chemistry necessary to produce fireworks, military ordnance and other explosive devices.

Illustration #4 from C.T. Brock & Co.'s Crystal Palace Fireworks, *circa 1890; artist uncertain.*

Prof. Lester Frank Ward (1841–1913) taught at Brown from 1907 to his death in 1913

Early postcard of Ladd Observatory, founded 1891 and still in operation

Related Collections

Manuscript Holdings

Brown's manuscript holdings in the history of science include papers and the personal library of paleontologist Lester Frank Ward (1841–1913), a Brown faculty member widely credited as being one of the founders of the study of sociology; as well as papers of James Whitbread Lee Glaisher (1842–1929), English mathematician and astronomer; chemical engineer and explosives expert Walter Nickerson Hill; and George H. Corliss, a Providence mechanical engineer and inventor.

Records of Ladd Observatory

Since its establishment in 1891, the Ladd Observatory has connected generations of Brown students and faculty with the solar system in a visceral way, as well as contributing to important research in the observation of astronomical phenomena. Much of the work that the Observatory helped to inspire is now housed as part of the collections in the John Hay Library. The bulk of the collection comprises correspondence, papers and photographs of and relating to the research of Brown University astronomers Winslow Upton (Director of Ladd Observatory from 1891 to his death in 1914), Charles Hugh Smiley (Director of the Observatory from 1938 to 1977), and Clinton Harvey Currier. There are also astronomical instruments, including sextants, octants, and an azimuth.

"Carolina Parrot or Parrakeet" (now extinct), from John James Audubon's Birds of America

Contact Us

John Hay Library
Box A, Brown University
20 Prospect Street
Providence, RI 02912

Phone: 401-863-3723
Fax: 401-863-2093

Related Library Exhibits

"The Demon of Melancholy: Genealogies, Modernities"
http://dl.lib.brown.edu/melancholy/

"From Euclid to Newton"
http://library.brown.edu/exhibits/math

"Dupee Fireworks Collection: Recent Additions"
http://library.brown.edu/exhibits/fireworks

Related Links

Ladd Observatory:
http://www.brown.edu/Departments/Physics/Ladd/

Funding provided by the Richard and Edna Solomon Publications Fund.

Brown University Library **Special Collections**

History of Science Collections

Lynx from John James Audubon's The Quadrupeds of North America
(New York: Published by V.G. Audubon, 1849–1854; in its original wrappers)

John Hay Library | Box A, Brown University | Providence, RI 02912 | (401) 863-3723 | hay@brown.edu