



Dibner Library NEWS

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A NEWSLETTER FROM THE DIBNER LIBRARY OF THE HISTORY OF SCIENCE AND TECHNOLOGY

Recent Acquisitions

In July 2000, the Dibner Library of the History of Science and Technology acquired a large set of the Amsterdam printing of the *Journal des sçavans* (sçavans being an early form of savants, the French word for scholars). The purchase of the set was made possible through funds provided by the Libraries' Spencer Baird Society. This set consists of 220 volumes and is complete from the first volume of 1665 through to October 1759. The *Journal des sçavans* will be a significant addition to the research value of the collections in the Dibner Library.

The *Journal des sçavans* is widely regarded as the first scientific journal published. The first issue of the *Journal des sçavans* appeared on January 5th, 1665. Interest in the *Journal* grew steadily after it first appeared, and in 1684 an unauthorized edition appeared in Amsterdam to help fill the Continental appetite for the work. The Amsterdam *Journal* was printed in a smaller size, being a duodecimo (12mo) format rather than the French quarto. The Dibner Library's copy is this Amsterdam reprint and all volumes are identically bound in eighteenth-century brown calf leather. All in all, this marvelous set is a welcome addition to the holdings of the Dibner Library.

You can find more detailed information about this and other new acquisitions at the Dibner Library's website.

Be sure to visit the Dibner Library's website:

www.sil.si.edu/Branches/dibner.htm

Resident Scholar Program 2002

The Smithsonian Institution Libraries Dibner Library Resident Scholar Program awards stipends of \$2,500 per month for up to six months to individuals working on a topic relating to collections in the Dibner Library of the History of Science and Technology. Historians, librarians, doctoral students, and post-doctoral scholars interested in the history of science and technology are invited to apply for the calendar year 2002. The deadline for applications is March 1, 2001.

Successful applicants for the Dibner Library Resident Scholar Program must make substantial use of the materials housed in the Dibner Library of the History of Science and Technology. Scholars are expected to be in residence at the Smithsonian Institution in Washington, DC, full-time during their award tenures. Support for the Dibner Library Resident Scholar Program comes from The Dibner Fund.

Three Ways to Obtain an Application Form

- ❖ **Download** the form from the Libraries' web site (www.sil.si.edu)
- ❖ **Email** libmail@sil.si.edu to request the form
- ❖ **Mail** a request for the form to:
Smithsonian Institution Libraries
Resident Scholar Programs
NMAH 1041
Washington, DC 20560-0672



Smithsonian Institution Libraries

Anthropological Research at the Dibner Library

Michael Schiffer, Professor of Anthropology at the University of Arizona, is an anthropologist who specializes in the study of technological variation and change. He has published many works in the anthropology of technology, including work in theoretical frameworks and detailed case-studies. He most recently published *The Material Life of Human Beings: Artifacts, Behavior and Communication*, Routledge, 1999.

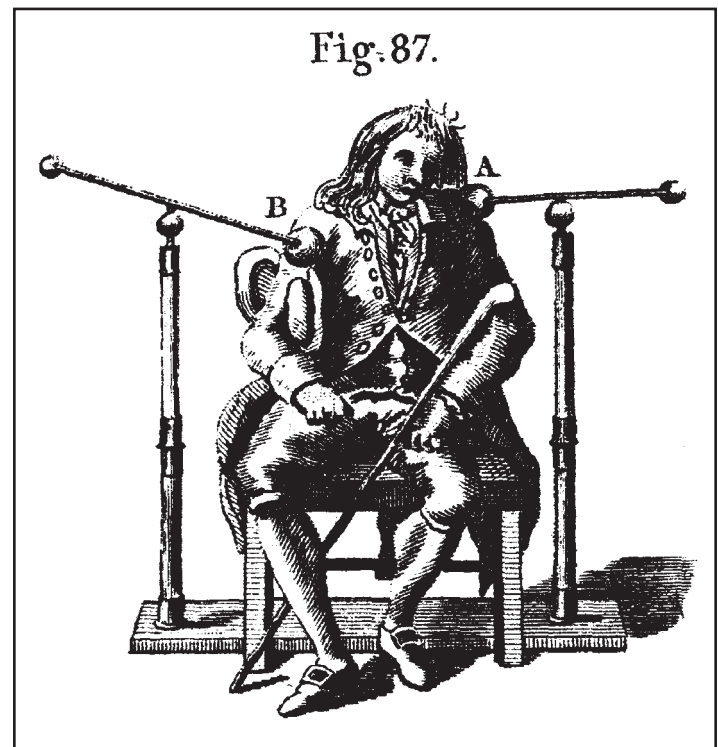
Dr. Schiffer states that his current project focuses on the process of “technological differentiation,” the common tendency of technologies to diversify into many new variants. For example, when pottery technology was adopted by Neolithic society, only a few vessel forms were made at first, often just for cooking. Over the decades, centuries, even millennia, dozens of new variants were developed as pottery came to serve in an even wider range of activities from food storage to religious rituals. This pattern of technological differentiation can be seen in countless technologies, ancient and modern.

Technological differentiation arises because, as technologies are transferred between and among communities within societies, members of adopting communities redesign the technology so that its performance characteristics are better suited for their own activities. In his research, Dr. Schiffer has developed a theoretical framework, called “technology transfer,” that helps one to approach the study of technical differentiation systematically. Schiffer says: “The case that I am using to elaborate and illustrate the technology-transfer framework is electrical technologies of the 18th century. By ‘electrical’ technology, I mean any systems, devices, and components involved in generating, collecting, or manipulating electricity.”

Beginning as an esoteric technology in the hands of early physicists, electrical technology was transferred rapidly to many other communities and redesigned along the way. For example the community of “electro-medical practitioners,” who applied electrical technology therapeutically, developed not only new electrical machines and electro-meters, but also clever devices for applying an electrical charge (safely and conveniently) to afflicted parts of the body. The apparatus included flexible or jointed conductors; specialized adaptors for treating teeth, ears, and eyes; “electrical bandages;” and even insulated furniture for the comfort of patients being electrified. By the end of the century, the electro-medical community had proliferated dozens of new variants of electrical technology, many of which had been commercialized by instrument makers.

In addition to the communities of early physicists (“the electricians”) and electro-medical practitioners, Dr. Schiffer is giving detailed attention to the electrical technologies adopted by instrument makers, demonstrator-lecturers, collector-hobbyists, electro-biologists, earth scientists, electro-chemists, property protectors, and visionary inventors. For each community, he is identifying the kinds of electrical technologies that were used and the general performance characteristics that seem to have been heavily weighted in their design. The technology-transfer framework (which stresses communities, activities, and artifact design) is helping him to situate and understand hundreds of variants of electrical technology developed (both inside and outside of science) in the 18th century.

The main product of his project will be a book having a full scholarly apparatus that is also accessible to an interested lay audience. He also anticipates publishing a number of theoretical papers, including one that sets forth in detail the technology-transfer framework. Dr. Schiffer wishes to underscore the importance of the resources in the Dibner Library to his work. “The Dibner Library has been indispensable in allowing me access to 18th-century materials. In addition, the staff is extraordinarily helpful in keeping up with my incessant demands as I rummage through an enormous body of literature in search of new technological variants.”



Patient sitting between the large electrodes of a “universal discharger upon a large scale,” from George Adams’s *An essay on electricity...* (London, 1784).

Spotlighting the Dibner Library's Collections History of Mathematics. Part II

Isaac Newton's mathematical works are well represented in the Dibner Library, including his earliest account of infinite analysis, *De analysi per æquationes infinitas*, composed in 1669 but not published until 1711 in the collection *Analysis per quantitatum series, fluxiones, ac differentias*. The *De analysi* was the first systematic account of the calculus and demonstrated Newton's ability to find the area under a curve through the inverse of differentiation. Newton always saw his method of infinite analysis closely linked to the calculus, and his most popular presentation of the new method was titled *The method of fluxions and infinite series* (1736), also in the Dibner Library along with his greatest work, the *Philosophiæ naturalis principia mathematica* of 1687. The Library has a number of editions of the *Principia*, including a special large-paper presentation copy of the 1726 edition (of which less than twenty copies were probably printed), the first English edition (1729) translated by Andrew Motte, and the 1759 French edition, translated and edited by Voltaire's paramour, Gabrielle Emilie Le Tonnelier de Breteuil, marquise Du Châtelet. Among the works of the co-discoverer of calculus, Gottfried Wilhelm von Leibniz, in the Dibner Library is his 1686 paper on the integral calculus, "De geometria recon-dita et analysi indivisibilium atque infinitorum," where he details the inverse relationship between differentiation and integration.

While Newton and Leibniz were the discoverers of the calculus, it was up to others to promote the development and dissemination of the method to the world. Foremost among these were the Swiss Bernoulli brothers, Jakob and Jean. The Dibner Library has Jakob's classic work, *Ars conjectandi, opus posthumum : accedit Tractatus de seriebus infinitis* (published posthumously in 1713), the first sub-

stantial work on probability, with an appended work on infinite series. Jean, while working in Paris in the 1690s, instructed Guillaume François Antoine, marquis de L'Hôpital, in the calculus in return for a salary and the proviso that L'Hôpital could use the information as he wished. It turned out that L'Hôpital wished to publish a book, the first textbook on the differential calculus, *Analyse des infiniment petits* (1696), a copy of which is in the Dibner Library. While Bernoulli thanked the marquis for mentioning him in the preface, he privately accused L'Hôpital of plagiarism. Jean's text on the integral calculus finally appeared well after he had composed it, in his *Opera omnia* of 1742.

Another famous student of Jean Bernoulli's was the great Swiss mathematician, Leonhard Euler, who became the leading mathematician at the new Academy of Sciences in St. Petersburg, Russia. The Dibner Library has a nice run of the Academy's proceedings, *Commentarii Academiae scientiarum imperialis petropolitanae* (1728-51) in which Euler published his important mathematical papers. Euler's monumental work, *Introductio in analysin infinitorum* (1748), often called the "keystone of modern analysis," is in the Dibner Library along with a French edition of 1796-97. Among other works in the Library by other mathematicians of this time are the *Encyclopédie, ou, Dictionnaire raisonné des sciences, des arts et des métiers* (1751-65) which contains important mathematical entries by Jean Le Rond d'Alembert (as well as his celebrated 1743 work, *Traité de dynamique*) and Alexis Claude Clairaut's *Elémens de géométrie* of 1741.

The Dibner Library has a number of works by the eminent French mathematicians of the Revolutionary period. Our copy of Joseph Louis Lagrange's famous *Mécanique analytique* (1788) was a prize book awarded at the University of Glasgow by Lord Kelvin. Lagrange's classic work on analysis, *Théorie des fonctions analytiques* (1797) is also in the collections. Jean-Antoine-Nicolas de Caritat, marquis de Condorcet, is best remembered for his work in social mathematics using probability and statistics. He had great hopes for the French Revolution but was denounced by extremists and ordered arrested. The Library has a copy of his *Esquisse d'un tableau historique des progrès des l'esprit humain* (1795), which he wrote while in hiding. It was published after his suicide while in prison.

Ronald Brashear

This article will conclude in the next issue of *DLN*



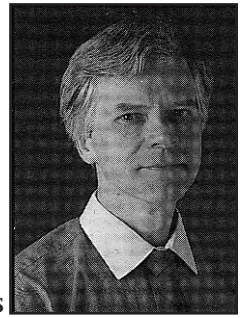
Allegorical headpiece from Part One of the marquis de L'Hôpital's *Analyse des infiniment petits* (Paris, 1696).

Meet the Staff of the Dibner Library

William E. Baxter, Head, Special Collections, joined the staff in May 1995. As head of Special Collections, he serves in two additional capacities: branch librarian of the Dibner Library and Exhibitions Officer for the Smithsonian Institution Libraries. Mr. Baxter recently served as curator of the Smithsonian Institution Libraries' exhibition, **Frontier Photographer: Edward S. Curtis**. This exhibition theme was developed around the adversities Curtis encountered as he created his epic work **The North American Indian** between 1900 and 1930. An electronic version of this exhibition may be seen at www.sil.si.edu/exhibitions. Mr. Baxter is also responsible for the Dibner Library Resident Scholar Program and the Baird Society Resident Scholar Program, and the annual Dibner Library Lecture, and serves as editor of **DLN**.

Mr. Baxter came to the Smithsonian Institution Libraries from the American Psychiatric Association where he served as Director of its Library and Archives and also as the Association's Archivist. During his tenure with the APA, he developed a special library for the association's significant collection of rare books, created the programs and events for the association's 150th anniversary, and wrote a book,

America's Care of the Mentally Ill: A Photographic History (1994), which describes the evolution and history of the diagnosis and treatment of mental illness. Mr. Baxter is also the author of several articles in the medical literature on the history of psychiatry. He has a master's degree in American History from St. Louis University and a master's degree from Drexel University in library science. His research interests include architecture (particularly the work of Piranesi and Palladio), Gregorian Chants, and Edward S. Curtis.



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