Dibner Library 25th Anniversary Symposium: "Working with the Past and Heading for the Future" October 3, 2001

*O*ctober 3, 2001 will mark the 25th anniversary of the opening of the Dibner Library of the History of Science and Technology in the Smithsonian Institution's National Museum of American History, Behring Center. The collection of approximately 10,000 rare books and 1,600 manuscript groups that came to the Smithsonian from the Burndy Library was donated to the nation at the time of the bicentennial celebrations. The Libraries' will celebrate the 25th anniversary of that generous gift with an afternoon symposium at the National Museum of American History, Behring Center in Washington, DC, and through it explore aspects of the significance of the Dibner Library's collection of treasures dating from 1500 to the mid twentieth century as we enter the new millennium. "Working with the Past and Heading for the Future" will bring together speakers and panelists to discuss research in history of science and technology, the collections at the Smithsonian Institution that make such research possible, and the continued relevance of these national treasures. Directly following the symposium will be the 2001 annual Dibner Library Lecture, delivered by Owen Gingerich, senior astronomer at the Smithsonian Astrophysical Observatory and Emeritus Professor of Astronomy and of the History of Science at Harvard University. A reception will follow the lecture and end the day's activities. More details and a program will follow in the coming months.

Be sure to visit the Dibner Library's website:
www.sil.si.edu/Branches/dibner.htm

Recent Acquisitions

*T*he past year has seen the acquisition of a number of exceptional works for the Dibner Library's collection. In recent years staff discovered that the library was missing four items from Bern Dibner's two hundred "Heralds of Science." The recent push to complete the set bore serious fruit in 2000 with the purchase of Herald 133, Joseph Lister's *Lancet* article, "On the antiseptic principle in the practice of surgery," and Herald 178, a set of acts of Parliament relating to the determination of longitude. The Lister article is included in the full two-volume issue for the 1867 *Lancet*. The volumes also include Lister's important article, "On a new method of treating compound fracture, abscess, etc., with observations on the conditions of suppuration." The longitude collection was put together by a collector named Joseph R. Bouvier and includes two newspapers with relevant articles: "A vindication of the practice of navigation, against the Portsmouth Objector's conclusions, concerning Mr. Harrison's watch, or time-piece / by the Palladium author [i.e. Robert Heath]", in *The London chronicle, or universal evening post*, (1764), and "Longitude / [anonymously written]", in *The courier* (1806). Having already purchased Herald 118 (Guido Guidi's *Chirurgia*, Paris 1544) in 1999, that leaves the Smithsonian Libraries with only one Herald short of a complete set, number 109, the Gottfried Wilhelm Leibniz article, "Nova methodus pro maximis et minimis," from the 1684 volume of *Acta eruditorum*.

Other recent acquisitions include a number of mathematics titles from the 16th and 17th centuries, including Paul Guldin's *De centro gravitates* (Vienna, 1635-41), Christiaan Huygens's *De circuli magnitudine inventa* (Leiden, 1654), Joseph Lang's *Artis mathematicae* (Freiburg, 1617), and Giovanni Benedetti's *Diversarum speculationum mathematicarum & physicarum liber* (Venice, 1599).

For more details on these and other new acquisitions, please go to the Dibner Library website. The address is printed at left.

Smithsonian Institution Libraries

Dibner Library Resident Scholars for 2001

Alberto Martinez obtained his Ph.D. in 2000 from the University of Minnesota. His degree is in the history of science and technology with a minor in the philosophy of science. Dr. Martinez proposes to conduct research on the history of the modern science of motion. He states that "since antiquity, many scientists regarded statics as the fundamental physical science." In the early twentieth century, however, this view was replaced by those who argued that the study of motion was based essentially on observations and measurements. In addition, since the eighteenth century, kinematics was being represented in a symbolic manner rather than diagrammatic. This evolution from a geometric science to an algebraic one eventually led to profound interpretive difficulties for those studying the science of motion, because of the ambiguities of traditional algebraic methods. In his research project, Dr. Martinez "will analyze treatises on mechanics, mainly from the eighteenth and nineteenth centuries, to trace the evolution of physicists' conceptions of the science of motion." He will then "chart how succeeding editions of encyclopedias portrayed the relationships among the sciences of kinematics, statics, dynamics, kinetics, and mechanics, and between geometry and algebra." For the academic year 2001-2002, he will be a postdoctoral fellow at the Dibner Institute for the History of Science and Technology, located at MIT in Cambridge, Massachusetts.

Jill H. Casid is currently a Visiting Lecturer in the Art Department at the University of North Carolina, Chapel Hill. She comes to us from an Ahmanson-Getty postdoctoral fellowship at the Center for 17th & 18th Century Studies, UCLA. She took her Ph.D. from Harvard University in Art History in 1999. Her project is titled "Necromancy of Empire: The Magic Lantern and Technologies of Projection, 1650-1850," an attempt to study "the importance of understanding technologies as not simply instruments but as discursive and social devices including the medium of text and image in print." Her eventual book-length project argues that the magic lantern, and the technologies of projection it represented between 1650 and 1850, played a crucial role in the transformation of existing conceptions of European identity and ideas of rationality. While at the Dibner Library, Dr. Casid will "read the works associated with the formation of rationalist and empiricist modes of inquiry in relation to those relegated to the sphere of natural magic through the lens of their shared reliance, in different ways and to distinct ends, on the magic lantern as a discursive device." She will then examine "the popularization of the magic lantern as a form of educational entertainment and its shift in use and meaning from 'scientific recreation' to a phantasmagoria machine that worked to describe and demonstrate the late-eighteenth to mid-nineteenth century's contribution to how the mind affects the human subject, namely imagination and ideology."

Richard Cunningham is assistant professor in the Department of English at Acadia University in Wolfville, Nova Scotia. In 2000 he was a Killam Postdoctoral Fellow in the English Department at the University of Alberta. He received his Ph.D. in English from Pennsylvania State University in 1999. Dr. Cunningham proposes to study "Image and Text in the Education of English Mariners." In his proposal, he states that "the earliest navigational texts in English had to help educate, for the technical needs of the empire, a readership comprised of artisans, tradesmen, and craftsmen which was often only marginally literate." He believes that many of these texts were for the benefit of the men who sailed from England to explore the world and capture its riches for the Crown. An example he cites shows a text that was re-issued with the original dedication replaced by one "To the Industrious Seamen and Mariners of England." How did these men (who were not likely to be literate in the view of some) learn from printed texts to pilot and chart coastal waters and to navigate the open ocean? Dr. Cunningham's larger study "will contribute to our understanding of the connection between reading and practice in education by examining texts produced as part of the new, illustrated manuals of mechanical arts education in early modern England." At the Dibner Library he will "access specific texts which will form the core of my investigation into the relationship between printed text and visual image" during this period.

Bertrum H. MacDonald is Associate Professor and Director of the School of Library and Information Studies at Dalhousie University in Halifax, Nova Scotia. In 2000 he was awarded the Marie Tremaine Medal, the highest honor of the Bibliographical Society of Canada. He received his Ph.D. in Library and Information Science from the University of Western Ontario in 1990. Dr. MacDonald proposes to study "Rhetoric and Reality: Was Science Borderless in the Victorian Era?" There was a view in the mid-19th century that science was stateless, that it knew no political boundaries. But was it? Dr. MacDonald asks, "Did the scientific enterprise that grew up in the late Victorian period in North America really ignore the boundary between Canada and the United States? Can it be said that annexation did occur?" The short answer is "no," the enterprise of science developed separately in both countries, but the story is more complex. At the Dibner Library, he will study the two aspects that underlie his research: "First, what are the origins of the view that science was stateless? How widespread was this view, and were there any periods when it was more prominent than others?" and "Second, what relationship did the rhetoric have with actual activity of scientists. In particular, what influence did it have, if any, on the systems and infrastructure of information dissemination?"

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

Gaspard Monge was instrumental in the establishment of the École Polytechnique for the training of engineers and also taught at the École Normal along with Lagrange, Legendre, and Laplace. His 1794-1795 lectures at the latter school were published in 1798 as the now classic *Géométrie descriptive* (the Dibner Library of the History of Science and Technology has this edition along with the later 1811 edition). Smithsonian Libraries also has his other important work, *Feuilles d'analyse appliquée à la géométrie* (1800 or 1801). This was the text of his lectures on what we now call differential geometry, given at the École Polytechnique. Lazare Nicolas Marquerite, comte Carnot, is probably best remembered as a member of the Committee of Public Safety and the general who organized and led the Revolutionary Army to victory. He fell from power, however, and returning to his mathematical studies he managed to complete his extraordinary work, *Réflexions sur la métaphysique du calcul infinitésimal* (1797). The Library also holds Carnot's important books on modern geometry, *De la corrélation des figures de géométrie* (1801) and *Géométrie de position* (1803). Adrien Marie Legendre was the author of the mathematically rigorous yet extremely successful text, *Éléments de géométrie* (1794). The Dibner Library has this edition along with a number of later English translations, including the most influential one in America, Charles Davies's *Elements of geometry and trigonometry, from the works of A.M. Legendre* (1853). We also have Legendre's work, the first treatise devoted exclusively to the theory of numbers, *Essai sur la théorie des nombres* (1797 or 1798). Pierre Simon, marquis de Laplace, made great contributions to the theory of probability, and we have his two great works in this field: the introductory *Essai philosophique sur les probabilités* (1814) and the definitive *Théorie analytique des probalités* (1812).

If you asked a number of mathematicians who they believed to be the greatest mathematician of all time, most of them would probably choose Carl Friedrich Gauss (1777-1855). The Dibner Library has a copy of Gauss's best known work, the *Disquisitiones arithmeticae* (1801), on the theory of numbers, particularly the algebra of congruences. We also have his first publication, his doctoral thesis from 1799 with the weighty title, *Demostratio nova theorematis omnem functionem algebraicam rationalem integram unius variabilis in factores reales primi vel secundi gradus resolui posse* (1799; "New demonstration of the theorem that every rational integral algebraic function in one variable can be resolved into real factors of first or second degree").

Gauss's contributions were a major factor in the development of non-Euclidean geometry, a subject with a number of related works in the Dibner Library. Gauss believed that efforts to prove Euclid's fifth ("parallel") postulate were fruitless but he kept that to himself along with his work relating to it. As a result others kept attempting to prove the postulate. A Russian mathematician, Nikolai Ivanovich Lobachevskii, became convinced that there was no proof and outlined a new system of geometry, now called non-Euclidean. Although Smithsonian Libraries does not have the incredibly rare first edition of his printed exposition of the theory from 1829, it does have copies of the 1887 German and the 1891 English edition of *Geometrical researches on the theory of parallels*. Since Gauss did not support his theory publicly, few learned of Lobachevskii's work and others kept trying to prove the parallel postulate. A young Hungarian, János Bólyai, came independently to the same conclusion as Lobachevskii and the Library has a copy of his *Scientiam spatii absolute veram exhibens*, published as an appendix to his father's 1832 work, *Tentamen....* Only four copies are known to exist. Non-Euclidean geometry remained on the fringes of the mathematical discipline until Bernhard Riemann integrated it into the mainstream. The Library has a copy of his groundbreaking article, "Ueber die Hypothesen, welche der Geometrie zu Grunde liegen," printed in 1867.

I would like to conclude this article by taking a look at one final item in the Library's collections. This is a copy of J. Willard Gibbs's *Elements of vector analysis* (1881-84), a rare work printed at New Haven, Connecticut, for use only in Gibbs's classes at Yale (hence the phrase "not published" on the cover sheet). Gibbs, a well-known scientist in the 19th century, helped develop vector analysis into a useful mathematical tool along with his British counterpart, Oliver Heaviside. Gibbs and Heaviside used the new methods of vector analysis to express Maxwell's laws of thermodynamics in a more concise form (the expressions we now call "Maxwell's Laws"). Our copy of Gibbs's work is particularly interesting since it is his presentation copy to Heaviside and it contains a number of manuscript notes by Heaviside in the text. Such association copies are frequently found in the Dibner Library, adding a new dimension to the historical value of these works.

Ronald Brashear

Portrait of Carnot, from *Oeuvres mathématiques . . . 1797*

In Brief...

…Ronald Brashear has been named Acting Head of Special Collections at the Smithsonian Institution Libraries. He will continue as Curator of Science & Technology Rare Books in the Dibner Library, Smithsonian Institution Libraries.

…William E. Baxter has been appointed Librarian of the National Air and Space Museum Library. His many contributions since he joined the Libraries in 1995 include serving as Exhibition Officer and curator of the Libraries' exhibition *Frontier Photographer: Edward S. Curtis*. We wish him the best in his new position.

…Bonnie Sousa, the dedicated and well-organized Technician of the Dibner Library moved to New England in May. It is unimaginable that anyone can come close to taking her place, and we wish her all the best in her new endeavors.

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...If you are making plans for the year 2003, keep in mind the Dibner Library Resident Scholar Program. The deadline for applications is March 1, 2002. The Program awards stipends of $2,500 per month for up to six months to individuals working on a topic relating to the collections in the Dibner Library of the History of Science and Technology. Scholars are expected to be in residence at the Dibner Library during the course of their award. Application materials will be available later this year directly from the Dibner library staff or through our website at www.sil.si.edu.

Smithsonian Institution Libraries

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