The Library of the Delightful Dee

Having survived the machinations of King Henry VIII and Queen Mary, John Dee (1527–1609), moved to the village of Mortlake, eight miles north of London, just a few years after Elizabeth I assumed the throne of England. Although not a stranger to Elizabeth’s court, Dee was short of funds and did what so many in his situation do: he went to “live with his mother.” What transpired thereafter in Mortlake, enthralling to any book lover but especially intriguing to chemists, is described in the following excerpt from a recent biography.—Ed.

Excerpt from The Queen’s Conjuror by Benjamin Woolley: © 2000 by Benjamin Woolley. Reprinted by permission of Henry Holt and Company, LL.C.

*Titles marked thusly are to be found in the Othmer Library at the Chemical Heritage Foundation.

Currently the John Dee Society (www.johndee.org) seeks “to reconstruct John Dee’s library, based on his catalogue of manuscripts and books of 1583, prior to its dispersal throughout Europe. To this end, we have begun assembling a microfilm archive of Dee’s manuscripts and books from the libraries where they now reside, and are in the process of transcribing this material for eventual publication. At 4000 volumes, it was the largest philosophical and scientific library collection in Elizabethan England, and arguably the greatest in all of Renaissance Europe.” [This Web page has not been updated for a while, but is still a good starting point.] For a mystery novel featuring John Dee and his cast of characters, see Lisa Goldstein, The Alchemist’s Door, New York: Tor 2002. See also Iain McCalman, The Last Alchemist: Count Cagliostro, Master of Magic in the Age of Reason, New York: Harper Collins, 2003.—Ed.
A Raving Review

There was a time when popular lectures on science were quite common. This review, from Joseph Pulitzer’s newspaper The World, 30 January 1892, reflects an unknown reviewer’s reaction to a collection of lectures by John Tyndall.—Ed.

Various lectures and magazine articles by Prof. John Tyndall, delivered and written within the past 12 years, have been collected and are now issued by the Appletons. The subjects, fifteen in all, are historical, reminiscent and scientific, the latter predominating in interest, though the recollections of Carlyle and the sketch of the mysterious Count Rumford are thoroughly entertaining, as is the paper on the “Life and Labors of Pasteur.” Among the scientific papers none I find more beautifully instructive than the one “About Common Water,” which closes with these poetical paragraphs:

When water passes from the liquid to the solid condition it is usually by a process of architecture so refined as to baffle our most powerful microscopes. I never observe without wonder this crystalline architecture. Look at it on the window-panes or on the flags over which you walk on a frosty morning. Nothing can exceed the beauty of the branching forms that overspread the chilled surfaces. Look at the feathery plumes that sometimes sprout from wood, or cloth, or porous stones. The reflecting mind cannot help perceiving from this definite grouping and ordering of the ultimate particles of matter suggestions of the most profound significance.

The ice-crystal is hexagonal in form, and the snow-stars invariably shoot forth six rays. The hexagonal architecture is carried on in the formation of common ice. Some years ago I set a large lens in the sun and brought the solar rays to a focus in the air. I then placed a slab of pure ice across the convergent beam. Sparks of light, apparently generated by the beam, immediately appeared along its track.

Examining the ice afterwards with a magnifying lens I found that every one of those brilliant points constituted the center or nucleus of a beautiful liquid flower of six petals. There was no deviation from this number, because it was inexorably bound up with the crystalline form of the ice.

Thus, in a region withdrawn from the inattentive eye, we find ourselves surprised and fascinated by the methods of Nature.

The Mechanics’ Institutes, so wide spread in early to mid-nineteenth century Europe, typified the self-help mania of that period. Raised within this framework, John Tyndall (1820–1893) strove for continual self-improvement by way of a well-rounded education coupled with new life experiences. Thus, he was, at various times, able to write and lecture on such seemingly disparate topics as physics (his true intellectual love) and mountaineering. Often overshadowed by more famous scientists such as Michael Faraday and T.H. Huxley, he became well-known for his gift of being able to disseminate, through lectures and books, complex scientific theories in a manner understandable to lay people. This ability is most prevalent in his Fragments of Science, which contained Tyndall’s published essays, reviews, and Royal Institute lectures on a wide variety of subjects. Beginning in 1871, Fragments went through several title changes, and focused, at various times, on natural science, religion, and biography, as well as pure science.

Thus, like Tyndall himself, Fragments underwent continuous transformations, creating, when taken together, a portrait of both nineteenth-century science and Tyndall as an intellectual. The Othmer Library of Chemical History holds five volumes of Tyndall’s Fragments in both English and German. Although the library holds mainly later editions, they are valuable additions to the library’s collection, highlighting Tyndall and nineteenth-century scientists’ views of their profession, their role in society, and each other.

—Christopher Stanwood
Volumes on View

Bolton Society member and science book collector Ronald K. Smeltzer is an active member of numerous book collecting organizations. From 17 November 2004 to 14 January 2005, his exhibition Four Centuries of Graphic Design for Science was on view at the Grolier Club in New York City. Chemical Heritage Foundation staff and Bolton Society members visited the Grolier Club on 14 December 2004 to view the sixty items on display. An edited version of the introductory essay from the published catalog appears below. —Ed.

In many collecting specialties, and in science in particular, the significance of the text is the principal factor around which most collections are developed. In the case of the physical sciences, a few authors have been innovative in the illustration of scientific concepts and information and a few authors have been interested to produce particularly attractive books. The exhibition “Four Centuries of Graphic Design for Science” attempted to illustrate that the scientific text offers special and sometimes unique opportunities to apply the book arts for scientific purpose and also simply the opportunity to produce attractively designed books.

The major subject collections from which the exhibition was drawn are the historical development of scientific instruments, microscopy, optics, physics in general since Newton, science by women, geometry, and chemistry. In keeping with the emphasis on the book arts, the organization of the exhibition was by matters of graphic design and the book arts, with only secondary attention paid to the significance of the science and to the authors. The items were organized within five major themes: photographic illustration, color illustration, general book design and printing, graphic invention, and prints and broadsides. Because the emphasis was on graphic design, not the text, not everything shown is well-known or important for the scientific ideas therein. The items included in the exhibition spanned the time period from 1597 to 2001. Most of the books shown were first editions.

The illustration of books in the nineteenth century with real mounted photographs and with early types of photomechanical reproductions has been a subject of great interest to collectors and institutions during the past few decades. However, with only a few exceptions, little notice has been taken of scientific books with photographic illustrations. The inventions of the collodion negative process and the albumen positive printing process during 1850–51 were a major inspiration for the application of photography to scientific publishing in the nineteenth century. Microscopy, in particular, was an ideal field for photography because many of the subjects are inanimate, thus not imposing a limitation on the long exposure times needed for the early photosensitive materials. The exhibition included the earliest publication, dated 1853, with an albumen print.

From Louis Jablot, Description et Usages de Plusieurs Nouveaux Microscopes, tant simples que composez; avec de nouvelles observations faites sur une multitude innombrable d’insectes, & d’autres animaux de diverses especes, qui naissent dans des liqueurs prepares, & dans celles qui ne le sont point. Paris: Jacques Collomat, 1718 (Ronald K. Smeltzer Grolier Club exhibit).

Boltonia Number 7—Page 4
of a photomicrograph and the earliest English, French, and German books on microscopy with mounted albumen prints.

Astronomy is another field in which photography is important, but because of the need to deal with the earth’s motion for reasonable exposure times, the application of photography to astronomy was delayed. Hence, early examples of books with mounted albumen prints of astronomical subjects are few. In addition to publications with mounted photographs, books with photomechanical reproductions of photographs by methods such as collotype and Woodburytype became important late in the nineteenth century, and scientific books with numerous types of early photomechanical illustrations were included in the exhibition.

Color illustration has been justly appreciated in many collecting fields. In the case of color-illustrated publications in the physical sciences, a few high spots are well-known, but many other works have received little or no notice by historians of color illustration. Methods used to include color illustration in scientific books include printing, hand painting, and attachment of specimens. Chemistry texts in the nineteenth century, in particular, were a fertile field for the application of color illustration, and numerous examples were included in the exhibition. Scientific publications in the fields of physics, astronomy, optics, and microscopy with color illustrations were also represented.

For the general subject referred to as book design and printing, a selection of scientific books with unusual typography, special illustrations, and other features of attractive book design were highlighted. Examples of typography with unusual type faces, text in intaglio, and early lithography were represented. For the cases in which illustrations are highlighted, the engravers and designers of the illustrations, often not mentioned in descriptions of scientific publications, were identified. Particularly appealing are texts in which intaglio illustrations and letterpress are integrated on the same leaf, and a number of examples were included.

Publications representing unusual concepts of graphic design were grouped under the topic of graphic invention. The primary focus of this part of the exhibition was on methods by which illustration in three dimensions is achieved. Three-dimensional concepts can be illustrated with true three-dimensional objects, with illustrations that take advantage of our binocular vision, and with illustrations that consist of multiple layers that are lifted in sequence to reveal details in depth. Examples of all these ideas were shown. Methods by which motion is illustrated were also represented.

A number of prints and broadsides filled out the exhibition. Included were two very rare, eighteenth-century engravings of astronomical subjects by Benjamin Martin. One of these two perhaps belonged with the theme of graphic invention, as it is a true three-dimensional broadside: it has features elevated not only above but also below the main sheet of paper. Also from the eighteenth century, an important mezzotint of an astronomical subject was included. A few, more modern items were included to bring the exhibition into the twenty-first century.

In summary, “Four Centuries of Graphic Design for Science” served to highlight and to provide some insight into the role that graphic design and the printer’s art have played during four centuries of scientific publications. Attempts to explain scientific ideas have prompted at least a few authors to be creative in different ways, others to be expressive with color, and yet others to utilize numerous methods, new and old, of illustration.

—Ronald K. Smeltzer

Ghost Chemistries in Bolton’s Bibliography—I

In this issue Bill Williams joins forces with Wyndham Miles to continue his ghost hunting. See Boltonia Number 4, December 2002, for other ghosts Williams has encountered.—Ed.

Henry Carrington Bolton’s Select Bibliography of Chemistry is an invaluable resource on chemical literature. While Bolton’s work is remarkably free of errors, we have found three erroneous listings of American texts. Two of these are “ghost” titles that never actually existed. The third has an “etherial” nature because the author’s name was misspelled and because it apparently existed only in proof form and was never actually published. Details and some of the history surrounding each error follow.

William Darlington: Agricultural Chemistry

Bolton’s Bibliography contains the listing “Darlington, William. Agricultural Chemistry, Philadelphia, J. W. Moore, 1847 (1).” Darlington, 1782–1863, was a physician, politician, and accomplished botanist. He wrote several works on botany, among which was Agricultural Botany, published by J. W. Moore in 1847. He did not write a work on chemistry. Agricultural Chemistry is not found in the National Union Catalog, nor is it mentioned by any of Darlington’s biographers.

Agricultural Chemistry is also attributed to Darlington in other bibliographies (2). Roorbach (1852) lists the title with “J. W. Moore, 1847, 12 mo and $1.00.” Trubner (1859) and Bernard (1863) both list “Philadelphia, 1847, 12 mo.” Bolton (1899) must have incorporated the error from the earlier bibliographies.

The original error was probably made by Roorbach. He lists imprints alphabetically by both title and author. Under D he has both Darlington, Agricultural Chemistry, and Darlington, Agricultural Botany, but under A, only Darlington, Agricultural Botany, is listed. The next entry following Agricultural Botany, however, is Agricultural Chemistry, by J. F. W. Johnston. Apparently Roorbach mistakenly cross-referenced both titles under Darlington.

Christian Link: Chemistry

While one proof copy of this volume is extant, it remains “invisible” because it was apparently never published and because Bolton misspelled the author’s name. Bolton’s entry reads “Link, Christian. Chemistry. Buffalo, N.Y., 185-., 8vo (3).” The National Union Catalog contains the same listing, stating “title page wanting” and listing Harvard University as the only holder. The author’s name, however, was Linck not Link. The Harvard library incorrectly cataloged the name as Link, and Bolton probably copied that mistake. We cannot locate another reference to the text.

An investigation of this text and its author reveals an interesting interweaving of contacts between Linck and other more well-known chemists—Justus Liebig, Eben Horsford, and Charles H. Peirce.

The Harvard copy of Linck’s Chemistry has a bookplate indicating that the book once belonged to Harvard chemistry professor Charles H. Peirce and, upon his death in 1855, was given to the Harvard library by his mother. A handwritten note on the flyleaf, apparently written by Peirce, states, “This book was printed in or near Buffalo, New York, written by Christian Linck, a German who studied a short time with Liebig about 1848, and who was an assistant with Prof. Horsford in the Lawrence Scientific School at Cambridge, Massachusetts, U.S.A. (4).”

The 224-page volume is bound in marbled boards with a leather spine inscribed “Linck’s Chemistry.” It is typical of college-level chemistry texts of the era but lacks title page, preface, and table of contents. It abruptly ends without a discussion of organic chemistry or an index. Since the introduction seemed to anticipate an organic part, we have concluded that this imprint is an unfinished proof copy.

Part I contains general laws of affinity and introduces fundamental principles and terms. The author describes his purpose as “designed to give an outline of theoretical chemistry; it will comprise all matters of general interest, setting aside such as are of interest exclusively to the professional chemist. Not only will the results of the labors of professional men be given, but some mention will also be made of their methods of investigation. In the latter respect, I have limited myself more to modern times, representing most of the well-confirmed results of elder periods as axioms, in order to gain space for the labors which are now progressing. It will be endeavored to combine practical usefulness and scientific interest as much as possible; and though no regard will be paid to any particular class of applications, pains will be taken to explain all those principles which will enable the student to follow larger works on special applications of chemistry (5).” A forty-one page section titled “Chemical Manipulations” is a unique contribution that few texts of the period contained.

Part II, Inorganic Chemistry, is a systematic survey of the sixty-one known elements. Liebig’s views and apparatus are frequently mentioned, and Giessen is cited once. There are no literature references, but leading chemists were named as originating certain concepts.

Information about Christian Linck is limited. A native German, he studied under Justus Liebig at the University of Giessen. By the fall of 1849, he was in the United States and was paid $125 per term as assistant to Eben Horsford at the Harvard Lawrence Scientific School (6). At the August 1849 meeting of the American Association for the Advancement of Science, Linck, listed as an assistant in the Cambridge Laboratory, presented three research papers (7). These papers, quite professional in their content, were delivered with
such chemists as Horsford, Robert Hare, Thomas D. Mitchell, Franklin Bache, and Charles T. Jackson in attendance. In October, 1849, with recommendations from Horsford and Liebig, Linck was appointed professor of chemistry and botany at Central Medical College in Syracuse, New York. His successor as assistant in Horsford’s lab was Charles H. Peirce.

Linck’s arrival at Central Medical College, an Eclectic institution, was eagerly anticipated. A local medical journal reported “Dr. C. Linck was educated in Germany, under the personal instruction of Dr. Liebig, of worldwide reputation. He has been several years Professor of Analytical Chemistry in Cambridge University, Massachusetts, and will resign his chair there on the 15th Oct next, and come here furnished with all suitable apparatus and laboratory of his own. He lectures finely in English and is most warmly recommended by Cambridge, Harvard, and other colleges, as well as Dr. Liebig, himself (8).”

A later issue reported his arrival: “Prof. C. Linck, Ph.D., from Harvard University, Mass., has already arrived with a full and complete supply of chemical apparatus, got up at Cambridge, in good style, and will order a laboratory from Germany, immediately, where it can be obtained cheaper and of better quality than can be obtained in this country. Professor Linck is a pupil of Dr. Liebig, of Giessen, in Germany, at which place he graduated, and in the express language of Prof. Horsford, of Harvard University, ‘I cannot but believe that he will honor and adorn any institution to which he may bring the aid of his distinguished acquirements.’ He will also take private pupils at fifty dollars per term, and one can have the privilege of attending his lectures in the College, by taking the ticket on chemistry (9).”

—William D. Williams and Wyndham D. Miles

(To be completed in the next issue.)

Notes
4. From the author’s photocopy of the Harvard volume. Charles H. Peirce (1814–1855) was the son of the Harvard librarian, Benjamin Peirce, and brother of the noted Harvard professor of mathematics and astronomy, Benjamin Peirce. After receiving an M.D. at Harvard in 1836, Charles practiced medicine at various locations until 1848, when he returned to Harvard to study chemistry. He was one of the first students under Eben Horsford in the new Lawrence Scientific School. From August 1850 to January 1855, Peirce served as examiner of drugs for the Port of Boston. His book Examination of Drugs, Medicines, Chemicals, etc. as to their Purity and Adulterations (Cambridge, Massachusetts: J. Bartlett, 1852) described methods of assay and detection of adulterants. Peirce’s American translation of Stockhardt’s German chemistry text (The Principles of Chemistry, Cambridge, Massachusetts: J. Bartlett, 1851) passed through several editions and was reprinted in England. He died at the age of 41 after a lingering illness.
6. Clark A. Elliott, associate curator, Harvard University Archives, personal communication, 9 July 1982. Eben N. Horsford (1818–1893) began his career in chemistry under Amos Eaton. He then studied under Liebig at Giessen from 1844 to 1846 and was named Rumford Professor of Chemistry and Applied Science at Harvard in 1847. It is not clear whether Horsford meet Linck at Giessen or in the United States, nor is it clear just when Linck began working under Horsford. Horsford later developed a phosphate baking powder and became a noted industrial chemist.
8. The Eclectic, Medical and Surgical Journal 1849, 1, 96.
9. Ibid., 126.

This and That

Can collecting books be hazardous to your health? Consider the plight of a San Diego man who was buried under 9,900 hardcover books when his apartment was rattled by an earthquake. Or a New York man who was trapped for two days under a mountain of books, catalogs and newspapers that he had been collecting for ten years, as reported by CNN at www.cnn.com/2003/US/Northeast/12/30/man.trapped.ap/.

The San Diego man is the lead in the Library of Congress Information Bulletin review of For the love of books: 115 celebrated writers on the books they love most (www.loc.gov/loc/lcib/9911/shwartz.html) by Ronald B. Shwartz (New York: Grosset/Putnam, 1999).

—Submitted by Jack Stocker (My grandfather had so many books he cracked the wooden support beam in the basement of his house.—Ed.)
Eventual Events


Is it s or f?

At a recent meeting of the Bolton Society, when two eighteenth-century books by Joseph Priestley were shown, a few members expressed unfamiliarity with the long s—the form of s that appears similar to an f with a left-side-only cross-bar. The long s was standard in European and American printing until about 1800 and was used for almost all text except for a final s, which was printed with a short s, today’s s. A detailed history of the long s can be found in Paul W. Nash, “The abandoning of the long s in Britain in 1800,” in the Journal of the Printing Historical Society, new series, no. 3, Summer 2001, 3–19.

—Ronald K. Smeltzer

Millions in Sumptuous Books

Millions are invested in “extra illustrated” books in this city—enough probably to endow that great public library which has been so long talked about.

An “extra illustrated” book is what its name implies. Say, for instance, you want to “extra illustrate” Shakespeare’s “Hamlet.” An edition deluxe, expensive in itself, of the poet’s masterpiece, will be taken apart, page by page, by the bookbinder, the backing and the cover of the book being destroyed. Then will be found all the portraits of Shakespeare, all of the old play-bills of “Hamlet,” and all of the prints of different actors in the part, and numerous creations of the illustrator’s imagination as to how the mad prince really looked and these will be bound together with the pages of reading matter, making probably five times as many volumes as there were in the original. The result is a very expensive edition, but its owner has something that is not only not “common,” but the duplicate of which no one else in the world possesses.

Among the prominent people who are devoted to this hobby are J. Pierpont Morgan, George Vanderbilt,[and] William Waldorf Astor. —The World, 18 March 1894