COLLECTION OVERVIEW

SCIENCE AND TECHNOLOGY

The Library of Congress has one of the largest and most diverse collections of scientific and technical information in the world. Such materials make up roughly one-fourth of its total collections. It has often been said that if one were to read ten books a day for a thousand years, one would not have exhausted the Library's scientific resources. The Library collects intensively in all areas of science and technology with the exception of clinical medicine and technical agriculture, which are subject specialties of the National Library of Medicine and the National Agricultural Library. The Library's scientific and technological collections contain more than seven million books, pamphlets and serials. Materials are collected worldwide, the majority of the collection being in English and major European languages.

Because it has been acquiring scientific and technical material since its foundation at the close of the eighteenth century, the Library's relevant collections are unusually broad and deep. The content of the early Library is very well known; the invoice for the initial 740 volumes purchased in 1800 survives, and catalogs were published in 1802, 1804, 1808, and 1812, with supplements in between. By 1812, the Library contained 3,076 volumes, on a surprisingly wide spectrum of subjects. In addition to the expected holdings in law, politics, and history, there were volumes on voyages and travels, agriculture, natural history, arts and sciences, medicine, literature, and many other topics. What Congress initially needed, and what was initially conceived, was a reference library to support its routine conduct of business. There was, at first, no concept of an all-encompassing collection such as the Library now has, documenting the sum of human knowledge. The wide spectrum of the Library's content by 1812 was largely owing to the influence of Thomas Jefferson, the most eminent American intellectual of the Enlightenment. As president, Jefferson appointed the first Librarian of Congress, and Jefferson himself drew up lists of desiderata which formed the basis of early purchases. Jefferson donated books from his own extensive library to the collection, and he followed its progress closely. Thanks to Jefferson, the original vision of a rather narrow reference library was gradually expanded.

By 1812, when the last catalog of the original Library of Congress was published, the collection included a number of volumes concerning science and its applications. Surely this reflected Jefferson's pronounced interest in science and technology as much as any corresponding interest by members of Congress, and there is little doubt that the sage of Monticello's taste in book selection influenced the early scientific content of the young congressional library.

The initial Library was housed in cramped and inadequate quarters in the U.S. Capitol. There, the collection met an ignominious end during the War of 1812; on August 24, 1814, Washington, D.C. was captured by British forces, who set fire to the Capitol. In the words of historian of the Library David C. Mearns, "The books of Congress were used as kindling. The Library was an ash heap."

Congress made the replacement of its library an urgent priority. Enter again Thomas

Jefferson, then living in retirement, heavily in debt. He offered a mutually beneficial solution. In a letter dated September 21, 1814, he volunteered to sell his vast personal library, fifty years in the making, at a price to be determined by Congress. According to Jefferson, his collection included all that was "chiefly valuable in science and literature generally," and "more particularly to whatever belongs to the American statesman... I do not know that it contains any branch of science which Congress would wish to exclude from their collection; there is, in fact, no subject to which a Member of Congress may not have occasion to refer." This was a magnanimous, perhaps necessary, offer from Jefferson, who once wrote that "I cannot live without books."

There was considerable debate in Congress about the usefulness of the very wide range of subjects in Jefferson's library, as well as its cost, but in January 1815 the purchase bill was passed. The most eminent private library in the United States had been obtained for Congress, forming the basis of what would become a great national library. And, because of Jefferson's strong interest in science, that basis would form a good foundation of science and technology in the Library of Congress. Jefferson, who could not live without books, began the accumulation of a second private library.

The Library of Congress, which was housed in commodious and even elegant quarters in the restored Capitol, grew rapidly. In December 1851 a fire, caused by a faulty chimney, consumed about 35,000 volumes, but perhaps 20,000 volumes, including most of Jefferson's 1815 library, were saved. There was a second period of rebuilding. At a meeting of the Joint Committee on the Library it was decided "to commence operations, without delay, for restoring the Library in its great usefulness, and for extending it in every department of literature," including science. Considerable sums were expanded, and a new "Fireproof" library room was opened in 1852.

Two fortunate circumstances later in the century fostered the acquisition of scientific and technological materials following Thomas Jefferson's initial efforts. The first was the "Smithsonian Deposit." The Smithsonian Institution, founded in 1846 and headed by its first secretary, the eminent physicist Joseph Henry, had assembled through purchase and exchange a superb library with great strength in scientific subjects. Especially abundant were memoirs, transactions, and periodicals of learned scientific societies, museums, exploring expeditions, and observatories throughout the world. When in 1865 a serious fire in the Smithsonian "Castle" jeopardized the collection, Henry sought permission from Congress to deposit the books in the "fireproof" quarters of the Library of Congress. An act approving this transfer was passed in 1866. In his first annual report (1866) as Librarian of Congress, Ainsworth Rand Spofford explained that conveyance of the deposit was under way. By 1867 the collection of about 40,000 volumes was within the precincts of the Capitol.

Secretary Henry explained the mutual benefits: "The Smithsonian fund is relieved by this arrangement from the maintenance of a separate library, while at the same time the Institution has not only the free use of its own books, but also those of the Library of Congress. On the other hand, the collection of books owned by Congress would not be worthy of the name of a national library were it not for the Smithsonian deposit." Subsequent yearly deposits by the Smithsonian ran this total to over 500,000 volumes before it was merged with the Library's general collections and rare

book collections, considerable broadening the science and technology collections and permanently influencing their development.

A second special circumstance was the Copyright Act of 1870. Historian David Mearns explained its impact on the Library: "On July 8, 1870, it became law that all records and other things relating to copyrights and required by law to be preserved, shall be under the control of the Librarian of Congress." According to the law, "no one could claim a copyright upon any book, map, chart, dramatic or musical composition, engraving, cut, print, or photograph or negative thereof, without depositing in the mail, addressed to the Librarian of Congress, two copies of the same within ten days of publication." There have been considerable emendations to the procedure since the 1870 act, but Mearns correctly stated that the result became the keystone of the Library of Congress as the National Library of the United States. The effect on the Library's science and technology collections has been immense: every copyrighted book, pamphlet and periodical published in the United States has theoretically come to the Library, although in actual practice there have been difficulties in always securing compliance.

By 1886 the collections of the Library had become so vast that they had outgrown storage space in the U.S. Capitol. In that year, legislation was enacted for the construction of a new "fireproof" building. After many years of planning and construction, the new Library of Congress (now appropriately named the Thomas Jefferson Building), situated across First Street, Southeast from the Capitol, was opened in 1897.

Within the new Library building, the Smithsonian deposit and the general scientific collections were housed on the second floor. A reappraisal of the Library's total holdings in science, technology and related subjects was held at the beginning of the new century. The 1901 annual report of the Librarian of Congress revealed that the Library had been somewhat deficient in building its scientific collections to acceptable modern standards, except for those works acquired through copyright deposit and the Smithsonian acquisitions. Remedial steps were taken, so that by the time of the 1904 Librarian's report, many recent improvements in relevant collections development could be noted; with resulting accessions in mathematics, physics, astronomy and chemistry, and the announcement that improvements in geological and biological sciences were to be anticipated.

The next development of moment in the history of science and technology at the Library of Congress was the Library's relatively sudden rise to great prominence in aeronautics and astronautics. This came about through the efforts of the Daniel Guggenheim Fund for the Promotion of Aeronautics. Guggenheim was a prominent capitalist and philanthropist who had a clear and prescient view of the potential of aviation. In 1926, after consultation with President Calvin Coolidge and Herbert Hoover, he established his Fund, for the study and promotion of the science of aeronautics. He contributed a total of $3,000,000.00 to the effort. For some time the officers of the fund considered the desirability of a national aeronautical library. Negotiations were initiated in 1929 with Librarian of Congress Herbert Putnam about forming at the Library an aeronautical collection "which eventually might become the most important aeronautical library in this country, and perhaps even in the world." Putnam wholeheartedly agreed, and in 1930 the plan was

announced.

A sum was appropriated by the Fund to found a Division of Aeronautics and a Guggenheim Chair of Aeronautics at the Library. Albert F. Zahm, a distinguished scholar of aeronautics who had been director of the Navy Aerodynamic Laboratory since 1916, was appointed first chief of the Division and first incumbent of the chair. Putnam and Zahm set out immediately to expand the collections. Negotiations with Maggs Brothers, the noted London booksellers, resulted in Maggs' offer to send for inspection four extensive aeronautical collections, which together were considered the finest library on the subject available anywhere in the world. The collections were shipped and inspected, and Putnam approved their purchase from the Guggenheim grant. Later in 1930 the Library acquired from the Smithsonian the Samuel Pierpont Langley aeronautical collection and other important aviation books. Thus, in less than a year the Library had established a Division of Aeronautics, had considerably augmented its holdings of aviation materials (the total in April 1930 was estimated at nearly 10,000 volumes), and had obtained materials of the greatest rarity and importance, notably including the beginnings of its eventually vast aeronautical manuscript collections. During this annus mirabilis the Library had partially achieved the goals expressed to Herbert Putnam; it was now the most important aeronautical library in this country, and was well on its way to accomplishing the second part of the Guggenheim vision, "perhaps even in the world."

The Division of Aeronautics, under Zahm's leadership, set out on an ambitious mission to further enrich its collections, endeavoring to obtain all relevant new and retrospective worldwide materials by purchase, exchange, copyright deposit and gift. The tradition of purchasing entire libraries was continued. Early publications not in the collections were purchased from dealers or at auction, or, as a last resort, obtained in photocopy. In 1932 the Library acquired its first major manuscript collection in the history of aviation, the personal papers of Octave Chanute (1832-1910), who became a pioneer in American aeronautics and greatly influenced the Wright brothers, who depended on his advice during the development of their epoch-making contributions. The Chanute papers would be joined by using other collections, which would eventually make the Library's manuscript resources in aeronautics unequaled. In his report for fiscal year 1932, after consulting data about other repositories, Zahm could finally inform the Librarian that Guggenheim's second goal had been reached: the aeronautical collection of the Library of Congress was now the largest and most comprehensive in the world.

In summer 1939 the Division of Aeronautics moved from the main building of the Library into its new quarters in the recently constructed Annex, now the John Adams Building. The Library's general science collections were also housed in the new building, with commodious reading facilities and a considerable increase in storage space. As events would dictate, the move was indeed fortunate. World War II began in September, and the Library soon began to receive a vast outpouring of relevant wartime scientific literature, much of it related to aeronautics. The Allied victory in 1945 resulted in a much greater influx of literature, and World War II had highlighted the indispensability of an adequate technical library to the research worker. The Library's budget estimates presented to Congress for fiscal year 1947 contained a request for a substantial Science and Technology Division, with numerous positions and an ample budget. The new Science Division was actually created within the Reference Department in June 1949. It was

given responsibility for "planning and... conducting the reference service for the Library's scientific and technological collections." The order stated that the division should "make recommendations for the acquisition of scientific and technological literature, and suggest techniques for the cataloging and other bibliographical control of such literature." Thus was initiated the development of a new science program for the Library, with its roots continuing to the present day. It was eventually decided that a separate Aeronautics Division was unnecessary, and aeronautical and astronautical functions were absorbed within the Science and Technology Division (which is now known as the Science, Technology and Business Division.) Additions to the collections are now obtained as part of a highly developed, Library-wide acquisitions program which continues to acquire all relevant materials.

One final subject that should be at least mentioned in an overview of the development of the Library's increasing activity in science and technology is the very rapid growth after the conclusion of World War II of Library contract operations associated with Government-sponsored, defense-related research. This activity let to a number of contractual arrangements between the Library and Government agencies; some of these are of considerable interest, such as the now vast amount of cold regions bibliographies (arctic and antarctic) produced by the Library and now continued by the Federal Research Division, and such historical footnotes as a bibliographical project undertaken because of a real concern, that regarding unidentified flying objects (UFOs). The records of the Library's science-related contractual arrangements are maintained in the Library of Congress Archives, housed in the Manuscript Division.

The preceding historical summary of the development of science and technology collections at the Library is followed by a detailed analysis and description of some of the more important components of these collections.