A History of
THE NATIONAL LIBRARY OF MEDICINE
The Nation's Treasury of Medical Knowledge

by
Wyndham D. Miles

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health

National Library of Medicine
Bethesda, Maryland
1982

NIH Publication No. 85-1904

Reprinted August 1985

National Library of Medicine Cataloging in Publication

Z
733.N277
M643h

Miles, Wyndham Davies
A history of the National Library of Medicine : the nation's treasury of medical knowledge / Wyndham Davies Miles.—Bethesda, Md. : U.S. Dept. of Health and Human Services, Public Health Service, National Institutes of Health, National Library of Medicine ; Washington : for sale by the Supt. of Docs., U.S. G.P.O., 1982.
p. : ill., ports. — (NIH publication ; no. 82–1904)

1. Libraries, Medical—history—United States 2. National Library of Medicine (U.S.) I. Title II. Series

The photograph of the interior of Ford's Theatre, 1893, is from the National Archives. The photograph of the chemistry laboratory is from the Armed Forces Institute of Pathology. All other photographs are from the National Library of Medicine.

Preface

The word library is no longer adequate for the National Library of Medicine, as Wyndham Miles makes abundantly clear in this splendid and searching history. The NLM and its offspring have become the central nervous system of American medical thought and research. My unlikely association with the Library goes back more than 50 years because of the Library's juxtaposition to the old Army Medical Museum. As a lad I visited the Museum out of nothing better than morbid curiosity and then wandered around the Surgeon General's Library. Decades later it was my good fortune to be a member of the Board of Regents twice over a 12-year span that saw a changing in the guard and the movement from the Old Red Building on the Mall to the present site in Bethesda.

Few people besides parents can form any reasonable opinion of a newborn babe's future greatness. The birth of an almost invisible library occurred when the brand new Army Surgeon General Lovell needed a few medical books of his own in 1818. The story of the growth and transformation of the Library as it grew up to be a supremely valuable central nervous network of medical memory is detailed in a fashion which embodies Wyndham Miles' dedication, thoroughness, great concentration, and endurance. He has made what might have been a mere chronicle into a story of imagination, of organizations, of ideas, and of many remarkably dedicated persons, military and civilian. Under a variety of governmental auspices they have managed to perform miracles.

For there to be an Army medical library there had to be an Army Medical Department, which was established in 1818 when Joseph Lovell became Surgeon General. A list of the Library's very small holdings was written in a thin notebook in 1840. By the latter part of the Civil War a printed catalog noted 485 titles including about 50 journals. The total number of volumes was a little over 2,000.

The shape which the Library took and its remarkable importance as repository and source of a great index are the work of that remarkable genius John Shaw Billings who *was* the library from 1865 to 1895. In the days of candles and kerosene lamps, before air conditioning, the Library, under Billings' impetus, produced its first general catalog in volume after volume. This catalog would have amounted to very little if Billings had not been a master buyer and exchanger and had not learned the ways of book dealers in American cities and, in particular, those of British and European agents. The massive catalogs and indexes represent in a unique way the work of one person aided, to be sure, by soldier clerks, scribes, and some professional catalogers.

Today we reckon bureaus as inefficient. They are characterized by the denigrating term bureaucracy. But here was a government organization run on a shoestring. A surprising book collection in the Army where, in one place, were assembled the major medical books, journals, and indeed the historic medical masterpieces of Western Civilization.

Following Billings' retirement the Surgeon General's Library went into a slower phase. The indexes flourished, the search for and purchase of important medical books continued, the serials proliferated. During World War I there was a certain amount of difficulty from reduced staff, but progress continued. Some of the librarians—Phalen, Ashburn, and Hume—achieved real scholarship.

The beginning of important changes occurred with the arrival of Harold W. Jones in the late depression year 1936. In 1943 Jones got the Rockefeller Foundation to appoint a committee to review the function, policies, and future course of the Library. This was the beginning of the approach to the modern period. Two groups—the Friends of the Army Medical Library and the Association of Honorary Consultants—flourished at different times during this period and many who later served on the Board of Regents, a group of experienced teachers, clinicians, administrators, and scholars, had a strong supporting role. This was very helpful during the later period of changing homes for the Library and of developing and broadening the program of accession, indexing, storage and retrieval as the computer and electronic age arrived.

Joseph McNinch, the director from 1946 to 1949, with his considerable Army experience was able to introduce many administrative advances and efficiencies. There was a notable improvement in the morale of the staff as the pressures of World War II began to fade into the background.

The true coming of age in the modern sense was associated with the arrival in 1949 of Brad Rogers as the Director. He was given the opportunity to study modern librarianship, its arts and techniques, and thus was the first Director whose training gave him insights into the ways and means of solving problems, both those common to all libraries and those unique to a large medical library, particularly one run under Army auspices. Two great achievements of Rogers' 14 years were the building and transfer of books to the splendid modern National Library of Medicine in Bethesda and the development of MEDLARS.

An especially important year was 1956, when Senators John Kennedy and Lister Hill supported a bill to create the National Library of Medicine.

The dedication of the new building was held in the main reading room on December 14, 1961. A cutting from the Hippocratic plane tree was planted and there were two days of congratulations and speeches, as well as solemn wonder and admiration. Before the books had been moved from the old Library to the new, when there was only one other book in the Library, I presented a copy of Osler's *Aphorisms* to the Library and was able to say that for about two weeks I had donated half the books in the NLM. Actual movement took

place in two very busy months—March and April—done with amazing skill; and it was open to the public on the 16th of April, 1962.

The current era opened with the arrival in 1964 of Martin Cummings as Director. In 1964 and 1965 MEDLARS got into production in many different fields. The Billings Centennial was held in June 1965 and in October President Johnson signed the Medical Library Assistance Act which authorized a grant program to rejuvenate medical libraries throughout the Nation. A Drug Literature Program began this year, followed in 1966 by the Toxicology Information Program. In 1967 the National Medical Audiovisual Center was transferred from the Public Health Service's Communicable Disease Center in Atlanta to the Library, and the Francis A. Countway Library at Harvard became the first Regional Medical Library in a network that ultimately contained eleven. Library research and development was inaugurated by Director Cummings. President Johnson signed the law which designated a proposed National Library of Medicine Annex as the Lister Hill National Center for Biomedical Communications.

It is eminently fitting that this history of the National Library of Medicine be produced on the 25th anniversary of the bill Senators Lister Hill and John F. Kennedy submitted on March 13, 1956, "To promote the progress of medicine and to advance the national health and welfare by creating a National Library of Medicine."

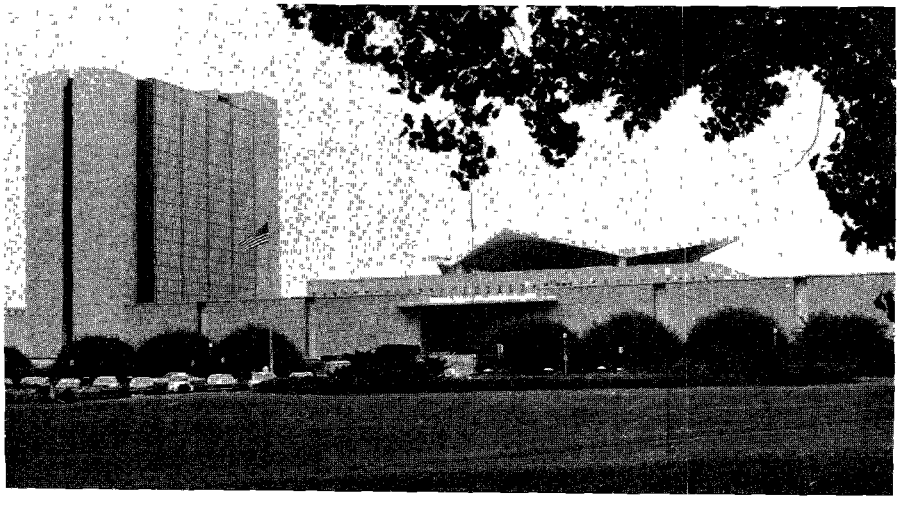
If the ghosts of our ancestors, lineal, literary and bibliographical, could review the state of their works and the state of the art today they would swell with satisfaction. Lovell, Billings, Fletcher, Garrison, Phalen, Ashburn, Hume and many others whose work was often little noticed or appreciated, made this library possible. Fortunately McNinch, Rogers and the contemporary team, Cummings, Blake, Olch, Corning, and the rest can admire the labor of love, skill and endurance of Wyndham Miles, another milestone in the history of a great, perhaps *the* great, medical library.

I conclude with a personal note: One does not have to have done exhaustive biographical or bibliographical work to recognize the vast undertaking this volume represents. One can only have profound admiration for the happy conjunction of the task and the person chosen to perform it. In addition to the interminable hours of seeking and finding, checking, collating, and correlating, Wyndham Miles had a sharp eye out for Walter Reed material. Every so often he would send to me some missed item which I would add to the collected papers, works, and writings which I have been assembling and which rest in the Alderman Library at the University of Virginia.

William B. Bean, M.D.
Sir William Osler Professor of Medicine, Emeritus
University of Iowa

August 1981

CONTENTS



I

Beginning of the Library of the Surgeon General's Office

Books in the Office of Surgeon General Joseph Lovell, 1818–1836

FEW of the world's great libraries started out with the intention of being that. The National Library of Medicine, the greatest or one of the greatest medical libraries in number of volumes and service rendered to patrons, began as a few books in the office of a Surgeon General of the Army in 1818 or '19. The officer was Joseph Lovell, 30 years old, a native of Massachusetts, who had joined the Army in 1812 and been appointed chief of the Medical Department in 1818.[1] There had been medical officers with titles of Physician General and Surgeon General in the Continental Army during the Revolution and in the United States Army during the following third of a century but the present-day Medical Department began in 1818 when the Army was reorganized, and a regular succession of Surgeons General began with Lovell.

Lovell's first office was in one or two rented rooms in some privately owned building (which building is not known) in Washington.[2] During the summer of 1819 he moved to a room in an early War Department building, now demolished, on Pennsylvania Avenue at Seventeenth Street, N.W. His furnishings were simple; a table, six chairs, and a bookcase.[3] From this office, with assistance from a clerk who copied outgoing correspondence, filed incoming letters, and maintained records, Lovell directed approximately three score post surgeons, regimental surgeons, and surgeons' mates who served at forts, barracks, posts, hospitals, and arsenals within the United States.

The Army expected medical officers to buy whatever medical and scientific books they preferred to read, study, and consult, but it provided them with a reference book for each branch of medicine.[4] Among the volumes purchased by the Medical Department during the early years for distribution to officers were the following: John Pringle, *Observations on the Diseases of the Army,* with notes by Benjamin Rush;[5] *Pharmacopoeia of the United States of America;*[6] Robert Thomas' *Modern Practice of Physic* and Samuel Cooper's *Surgical Dictionary;*[7] "Bell on venereal," *Surgeons' Vade-Mecum,* and Thomas Sydenham, *The Works, on Acute and Chronic Diseases . . .* , with notes by Rush;[8] John

Joseph Lovell, Surgeon General, United States Army, 1818 to 1836.

Syng Dorsey's *Elements of Surgery,* and Thomas Miner and William Tulley, *Essays on Fevers . . . .*[9]

The department also subscribed to a medical periodical for each officer to enable him, even when he was isolated at a frontier post, to keep up with advances in the profession. The *Medico-Chirurgical Journal and Review*, published in London, was usually distributed, but apparently a different journal might be sent if an officer preferred. [10]

Surgeon General Lovell also procured, within limits of his tiny budget, whatever official documents, medical journals, newspapers, and reference books he needed as director of the Army's physicians. In 1823 he noted that he had purchased, during the 5 years he had been in office, an American atlas, seven maps of states and Mexico, Peter Force's *National Calendar,*[11] Laws of the 16th Congress, the Washington newspaper *National Intelligencer*, Judah Delano's *Washington Directory,* the *Medical Recorder*, and the *Medical Repository* for 1821.[12] He probably bought other publications, but the only one of which there is a record is John Godman's *Western Quarterly Reporter of Medical, Surgical and Natural Sciences.*[13]

During 1820 and 1821 the department spent approximately $400 each year for medical publications, presumably for books and journals furnished to officers. In 1822 and '23 the amount dropped to $300 a year. In 1824 the funds spent for books and "vaccine matter" were lumped together at $400 a year and from 1825 to 1836 at $500 a year, without any indication of the proportions spent for publications and vaccine matter.[14]

Books and journals purchased with government funds sat in the office book-

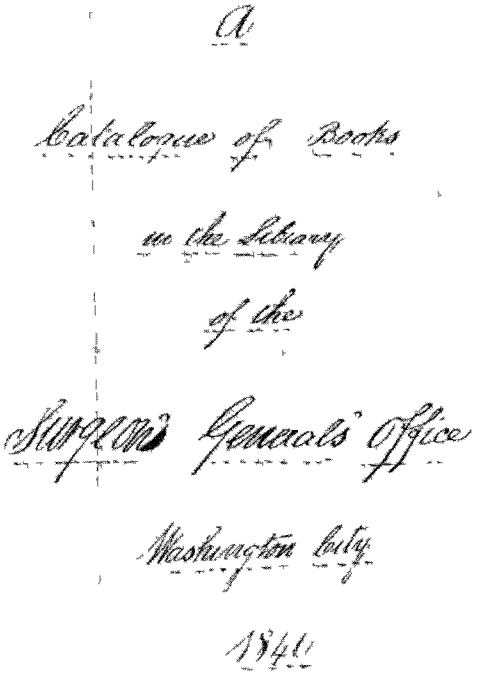
case, probably in the company of some of Lovell's own books, perhaps those that he had studied at Harvard College and Medical School or purchased to improve his skill as a physician when he was in private practice from 1811 to 1812 and an Army surgeon in the Northern states, 1812 to 1818. There was also a variety of pamphlets, several of which, perhaps all, had been presented to Lovell by their authors.[15] And the bookcase probably contained a copy of William Beaumont's *Experiments and Observations on the Gastric Juice*, for Lovell appreciated Beaumont's investigations, encouraged him and tried to accommodate his requests for favors and furloughs, in appreciation of which Beaumont dedicated his book to the Surgeon General.[16]

In 1830 the little collection of publications moved with the Surgeon General from the War Department to a State Department building on Pennsylvania Avenue at 15th Street, N.W., and in 1831 to a room or two in "Mr. Vevan's House" at 18th and G Streets. Lovell and his family lived in an attractive home he built across the street from the White House. Now known as Blair House, it is owned by the United States and is used as the residence of visiting foreign dignitaries. In 1836 Lovell died shortly after his wife passed away, leaving 11 children fatherless and motherless. He was buried in Congressional Cemetery in the presence of the President's family, Cabinet members, the faculty of Columbian College Medical School, and officers of the Army, Navy, and Marine Corps.

From the few dozen books, journals, and pamphlets whose accumulation took place over a span of 18 years during the presidencies of James Monroe, John Quincy Adams, and Andrew Jackson, when the steamboat and railroad were in their infancies, when the United States was primarily a land of farmers, and the flag had only half of the stars it has today, developed over the next one and one-half centuries the mammoth million-volume National Library of Medicine.[17]

The Collection of Books Becomes a "Library" during the Term of Thomas Lawson, 1836–1861

Assistant Surgeon Benjamin King, who was on duty in Washington at the time of Lovell's death, was placed in charge of the small office for a few weeks until President Jackson appointed Thomas Lawson, a veteran of 25 years of service, as the new Surgeon General.[18] While King was Surgeon General "ad interim," the time arrived for submission of the Medical Department's estimates of expenses for the coming fiscal year. King sent to the Secretary of War an estimate including $150 for "medical books for office."[19] This seems to have been the first request for funds to buy books specifically for the Surgeon General's office. Even though King signed the document, undoubtedly Lawson, as senior surgeon of the Army and the person expected to be promoted to the rank of Surgeon General, expressed his wishes in the estimates. For several years thereafter, until at least 1841, Lawson submitted the same estimate for books.[20]


A

Catalogue of Books

in the Library

of the

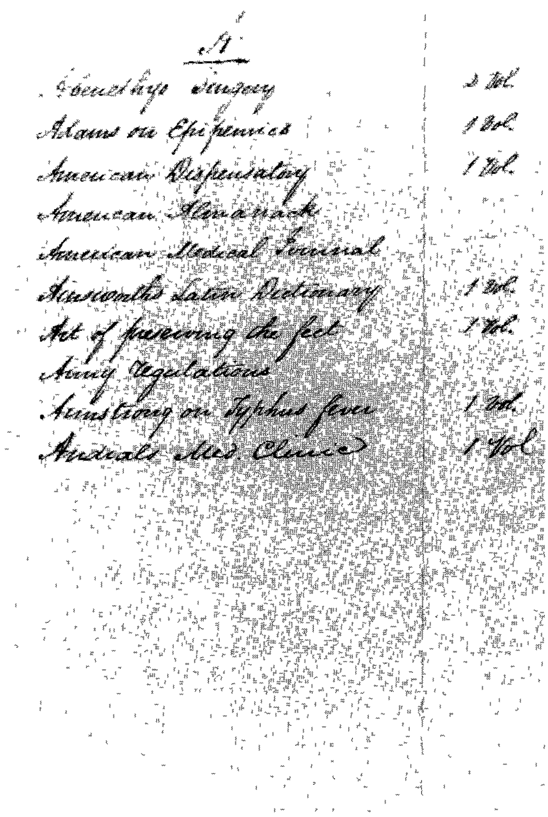
Surgeon's Generals' Office

Washington City.

1840

The earliest known list of books and journals in the Library. The collection was less than two decades old, and contained fewer volumes than many persons owned in their home libraries.

In 1842 Congress, apparently alarmed at the growth of government libraries (there were libraries for the House of Representatives, Senate, State Department, Coast Survey, Army Artillery School, Army Bureau of Ordnance, Navy Department, Patent Office, Treasury, and more on the way) laid down guidelines for the purchase of books through a provision in the appropriation act. During fiscal year 1842–1843 the Surgeon General had to affirm to the Secretary of War that such works as he ordered were "necessary and proper to carry on the business."[21] Secretary John Spencer approved subscriptions to several medical journals and other strictly medical works but not to Audubon's *Birds of America*, parts of which the Medical Department had already bought, nor to Samuel Hazard's *United States Commerical and Statistical Register*, nor to the Washington newspaper *Daily Globe* [22] But within a few years restrictions relaxed, and the Surgeon General was purchasing Audubon's *Quadrupeds of North America* [23]


A

Abernethy's Surgery	2 Vol.
Adams on Epidemics	1 Vol.
American Dispensatory	1 Vol.
American Almanack	
American Medical Journal	
Ainsworth's Latin Dictionary	1 Vol.
Art of preserving the feet	1 Vol.
Army Regulations	
Armstrong on Typhus fever	1 Vol.
Andral's Med. Clinic	1 Vol.

Page of the catalog of 1840, showing the volumes listed under the letter A.

After 1843 books and journals for the office were purchased with money from the contingency fund. Books and journals for distribution to officers in the field were bought with money from the appropriations for "medical books and vaccine matter," or "medical books, stationery, printing, etc.," or other groups of supplies.

Four years after Lawson became Surgeon General, someone in his group of associates listed in a small notebook the authors and short titles of the volumes in the office. This is the earliest known catalog of the Library; through some miracle it escaped the housecleanings that went on in the department during the 19th and 20th centuries, and today it rests in the History of Medicine Division of the National Library of Medicine.[24]

At that time there were 134 titles, of which 8 were journals, on the shelves. The exact number of volumes was not stated in the catalog and cannot now be ascertained; it could have been any number between 187 and 226, depending

upon the number of volumes present in each series of journals.[25] The entire collection could have been held by a four-shelf bookcase, shoulder high and 7 or 8 feet wide.

In the collection were works on anatomy, physiology, fevers, diseases of children, dentistry, epidemics, pharmacy, midwifery, medical jurisprudence, and military surgery. There were books and journals that had been purchased for distribution and others apparently for reference. Among the latter were Robert J. Thornton's *Family Herbal*, Benjamin Moseley's *Treatise on Tropical Diseases*, Joseph Nancrede's translation of Orfila's *General System of Toxicology*, John M. Good's multivolume *Practice of Medicine*, works on civil and military law, Robert Ainsworth's Latin Dictionary, Samuel Johnson's English Dictionary, Baron George Cuvier's *Theory of the Earth*, Erasmus Darwin's *Zoonomia*, and James Cutbush's *Philosophy of Experimental Chemistry*.

The catalog lists only the titles present in 1840. Other volumes had been purchased for the office between 1818 and 1840, among them Godman's *Western Quarterly Reporter of Medical, Surgical and Natural Sciences* and Miner and Tulley's *Essays on Fevers*, but they were missing when the catalog was compiled. Perhaps books had been borrowed but not returned, or outmoded works had been thrown away.[26]

The Surgeon General's was one of the smaller medical literature collections of the country.[27] The Medical and Chirurgical Faculty of Maryland possessed at least 437 books and several journals, the medical library at the Philadelphia Almshouse more than 1,100 volumes plus several journals, and the New York Hospital library about 5,000 volumes and 100 periodicals.[28] A decade earlier the library of Pennsylvania Hospital in Philadelphia owned more than 3,400 titles, hundreds of theses, and approximately 150 periodicals.[29] Seventeen years earlier the Boston Medical Library contained more than 1,300 volumes and several journals.[30] Firmly established medical schools had bigger libraries, and some scholars and physicians possesed larger collections. William Byrd of Virginia had 141 volumes, and Thomas Dale of South Carolina had 325 volumes on medicine back in colonial times.[31] The library of John Redman Coxe contained 4,835 lots when it was auctioned in 1864, and that of John B. Beck had 784 lots when auctioned in 1851.[32]

During the late 1830's, 1840's, and 1850's, the little Library continued to expand. Surgeons stationed outside Washington used the following books, copies of which were probably in the Library: John Hennen, *Principles of Military Surgery*; William P. Dewees, *A Compendious System of Midwifery*, *A Treatise on the Medical and Physical Treatment of Children*, and *Treatise on the Diseases of Females*; "Paris' Med. Dictionary," probably John A. Paris, *Pharmacologia*; James Copland, *A Dictionary of Practical Medicine*; William Gibson, *The Institutes and Practice of Surgery*, George Gregory, *Treatise on the Theory and Practice of Physic*; Benjamin Ellis, *The Medical Formulary*, William J. Erasmus Wilson, *Practical and Surgical Anatomy*, Anthony T. Thomson, *Conspectus of*

the Pharmacopeias of the London, Edinburgh, and Dublin Colleges of Physicians; John Eberle, *A Treatise on the Practice of Medicine*; Robert Hooper, *The Surgeon's Vade-Mecum*, and *Medical Dictionary*; Louis Martinet, *Manual of Pathology* (or perhaps his *Manual of Therapeutics*), Bernard M. Byrne's *An Essay to Prove the Contagious Character of Malignant Cholera*; the *United States Pharmacopeia*; and dispensatories.[33] Some of the books consulted by surgeons of the previous generation, as the works of Rush, Bell, and Cooper, still lingered at forts and posts, perhaps no longer used but still retained because regulations forbade the destruction of government property.[34]

For the use of surgeons in the General's office was purchased Jean-Nicholas Gannal, *History of Embalming*, Jones Quain and W. J. E. Wilson, *Anatomical Plates*; Robley Dunglison, *New Remedies and Medical Lexicon*; Thomas Watson, *Lectures on the Principles and Practice of Physic*; Samuel Ashwell, *Practical Treatise on the Diseases Peculiar to Women*; Charles Meigs' translation of Marc Colombat, *A Treatise on the Diseases and Special Hygiene of Females*; John Elliotson, *Principles and Practice of Medicine*; Robert Graves, *Clinical Lectures*; William Stokes and John Bell, *Theory and Practice of Physic*; Joseph Maclise, *Surgical Anatomy*; François C. Maillot, *Aide-Mémoire Médico-légal*; George B. Wood, *A Treatise on the Practice of Medicine*; Maximilian Joseph von Chelius, *A System of Surgery*; William Pirrie, *The Principles and Practice of Surgery*; Charles D. Meigs, *Obstetrics*; Samuel D. Gross, *A Practical Treatise on the Diseases and Injuries of the Urinary Bladder, the Prostate Gland, and the Urethra*; William Stokes, *Treatise on the Diagnosis and Treatment of Diseases of the Chest*, John H. Bennet, *Clinical Lectures on the Principles and Practice of Medicine*, Joseph Leidy's translation of Gottlieb Gluge, *Atlas of Pathological Anatomy*, Jonathon Pereira, *The Elements of Materia Medica*; William B. Carpenter, *Principles of Human Physiology*; Carl Rokitansky, *A Manual of Pathological Anatomy*; Robert W. Smith, *A Treatise on Fractures in the Vicinity of Joints*.[35]

The department continued to supply journals to regular (not "acting" or temporary) officers for their "professional improvement."[36] *New York Journal of Medicine and the Collateral Sciences* was chosen by a board of officers as the standard periodical in 1843[37] and was continued until 1851 when Surgeon General Lawson replaced it by *American Journal of the Medical Sciences* and *British and Foreign Medico-Chirurgical Review*.[38] Thereafter officers received both of these journals.[39]

The Surgeon General himself received two or three other periodicals. In the early 1840's these included *American Medical Intelligencer, Boston Medical and Surgical Journal*, and *Bell's Medical Library*.[40] When the *Intelligencer* expired in 1842, Lawson switched to *American Journal of the Medical Sciences*.[41] A few years later he was also receiving *Journal of the Franklin Institute* and *American Journal of Science and Arts*.[42] In the 1850's he took, at times, *American Medical Monthly, Half-yearly Abstract of the Medical Sciences, Ret-*

rospect of Medicine, and the New York edition of the London *Lancet*.[43] In 1861 he ordered a subscription for *American Medical Times*, which had recently begun publication.[44]

That the journals in the General's office were considered part of a library rather than current reading material to be thrown away periodically is indicated by the binding of issues into annual volumes. On one occassion in 1850 Lawson had bound six volumes of *New Orleans Medical and Surgical Journal*, six of *New York Journal of Medicine*, four of *British and Foreign Medico-Chirurgical Review*, three of *American Journal of Science*, three of *Lancet*, four of *Journal of the Franklin Institute*, four of *Boston Medical and Surgical Journal*, and three of *American Journal of the Medical Sciences*.[45]

Early Exchanges and Gifts

The Medical Department was the first government organization to collect data on the weather systematically, decades before the U.S. Weather Bureau was established. Surgeons and mates at hospitals, forts, and posts kept diaries in which they noted the temperature at three specified times each day, the course of the winds, and other information. In 1840 the Surgeon General's staff edited and published some of the data in a small volume, *Meteorological Register for the Years 1826–1830*. They also compiled observations on the health of soldiers from 1819 to 1839, publishing the material in a book, *Sickness and Mortality in the Army of the United States*. Lawson sent these works to the Medical Department of the British Army, receiving in return statistical compilations which he referred to as "a valuable acquisition to our little library."[46] This was perhaps the first exchange.

The first gift to another library may have been the meteorological and statistical volumes sent by Lawson to Harvard College library in 1847.[47]

A few years later the Philadelphia College of Medicine sent Lawson three dozen copies of its constitution and bylaws for distribution. Presumably the college hoped to induce Army surgeons to call the attention of prospective students to the school. This led to another exchange, the Surgeon General sending to the college library copies of the *Meteorological Register*, *Statistical Report on the Sickness and Mortality*, *Regulations for the Medical Department*, *Directions for Taking Meteorological Observations*, James Espy's meteorological charts, and Thomas Henderson's *Hints on the Medical Examination of Recruits for the Army*.[48]

The first gift to the Library may have come from John Kearsley Mitchell who offered 50 copies of his recent book, *On the Cryptogamous Origin of Malarious and Epidemic Fevers*. Mitchell, a prominent physician of Philadelphia who attended Edgar Allen Poe and fathered S. Weir Mitchell, the novelist and neurologist, may have been trying to gain recognition for and to spread his theories rather than help develop the Library, but one copy undoubtedly ended up in the bookcase while the other 49 were distributed to surgeons in the South, Southwest, and West where fevers were more prevalent.[49] Daniel

Thomas Lawson, Surgeon General, United States Army, 1836 to 1861.

Drake sent a copy of his *Systematic Treatise, Historical, Etiological, and Practical, on the Principal Diseases of the Interior Valley of North America*, in return for which the Surgeon General promised to send him suitable Army reports on illness of the region.[50] Blanchard & Lea, a Philadelphia publisher, sent the Surgeon General a copy of the latest edition of Robley Dunglison's *New Dictionary of Medical Science*, perhaps hoping for a large order from the department.[51]

Because a group subscription to a journal or book from the department meant a sale of up to 80 copies, a number sufficiently large to cause publishers to compete for business, publishers sent sample issues.[52] Lindsay & Blakiston sent Lawson numbers of the *Medical Examiner*, but he would not substitute it for either of the journals being purchased by the department.[53] On the other hand three volumes of the *Virginia Medical Journal* sent by editor James B. McCaw caused Lawson to place an order for 20 subscriptions.[54]

Thomas Lawson served as Surgeon General longer than any other officer; he died on May 15, 1861, shortly after the Civil War started. During the quarter century of his tenure the practice was begun of calling the small collection of books and journals the "Library," the first estimate of funds for books was made, the Library's first catalog was compiled, and the first exchange and gift of books took place. Yet, the collection was still insignificant and unorganized if the statement of Joseph J. Woodward, a member of the Surgeon General's office from 1862 to 1884, is accepted: "At the time the late Civil War broke out nothing deserving the name of a medical library existed in Washington."[55]

Notes

[1] Histories of the Medical Department may be found in Louis C Duncan, *The Medical Department of the United States Army in the Civil War* (1910), Percy M Ashburn, *A History of the Medical Department of the United States Army* (1929), Harvey E Brown, *The Medical Department of the United States Army from 1775 to 1873* (1873)

Biographies of Surgeons General and other notable medical officers may be found in James E Pilcher, *The Surgeon Generals of the Army of the United States of America* (1905), James M Phalen, *Chiefs of the Medical Department United States Army 1775–1940* (1940), Edgar Erskine Hume, *Ornithologists of the United States Army Medical Corps, Thirty-six Biographies* (1942) Biographies of individual officers, as of George M Sternberg, Walter Reed, and John Shaw Billings, have appeared in books, and biographical articles of many officers have been published in journals

[2] Locations of the office are from George A Sheirer, *Notes on the Army Surgeon General's Office in Washington, 1818–1948* (1948), and other sources

[3] " a suitable case for the papers and books of the office ", letter, Lovell to Secretary of War John C Calhoun, July 31, 1819 NA (National Archives)

[4] " the object in furnishing books to medical officers being merely to secure to them a standard work in each department of medical science, and not to supercede the necessity of their providing themselves with such other books as they may deem necessary", letter, Surg Henry L Heiskell, SGO, to Asst Surg J J Milhau, Sept 10, 1852 NA

[5] Letter, Lovell to Surg William Wheaton Nov 9, 1818 NA Sir John Pringle, *Observations on the Diseases of the Army* with notes by Benjamin Rush

[6] Letters, Lovell to Sec of War Calhoun, Jan 12, Feb 21, 1820, Lovell to Apothecary General Francis Le Baron, Aug 15, 1820 NA Calhoun directed Lovell to subscribe to 75 copies for use of surgeons and mates

[7] Letters, Lovell to Surg Sylvester Day, Mar 1, 1823, Lovell to Surg Thomas G Mower, Aug 13, 1831 NA Probably, Robert Thomas, *The Modern Practice of Physic*, with an appendix by David Hosack (New York, 1820), and Samuel Cooper, *A Dictionary of Practical Surgery*, with notes and additions by John Syng Dorsey (Philadelphia, 1810) Also mentioned were a dispensatory and the U S *Pharmacopoeia*

[8] Letter, Lovell to Surg Thomas G Mower, Aug 13, 1831 NA Probably, Thomas Sydenham, *The Works, on Acute and Chronic Diseases, with their Histories and Modes of Cure*, with notes by Benjamin Rush Dorsey's Cooper was also mentioned "Bell on venereal" may have been Benjamin Bell, *Treatise on Gonorrhoea Virulenta*

[9] Letter, Lovell to Asst Surg Samuel W Dalton, Nov 14, 1831 NA Also mentioned were *Army Regulations*, a dispensatory, *Surgeon's Vade-Mecum*, Thomas' *Practice*, Cooper's *Surgery*, Dorsey's Cooper, and the U S *Pharmacopoeia* Probably, John Syng Dorsey, *Elements of Surgery*, Thomas Miner and William Tully, *Essays on Fevers and other Medical Subjects* and Alexander P Wilson Philip's book on fevers or on laws of vital functions

[10] Letter, Surg Gen ad interim Benjamin King to Asst Surg Lyle Day Jan 20, 1837 NA "I presume there will be no objection to supplying you with the Select Medical Library in lieu of Johnsons Medical Journal which is the periodical usually furnished ' James Johnson's *Med Chir J Rev* started publication in 1816 and underwent changes in title

[11] The National Library of Medicine (hereafter referred to as NLM) has a copy of Peter Force's *National Calendar*, vol 6, Washington 1828, with Lovell's name on the title page and front cover It seems to me that this volume was Lovell s personal property else he would not have written his name in large letters in such prominent places

[12] Letter, Lovell to Sec of War Calhoun Jan 24, 1823 NA The publications were paid for with money from the contingency fund

[13] Letter, Lovell to Godman, July 29, 1822 NA

[14] Letter, Lovell to Sec of War Calhoun Nov 1, 1819, estimate of expenses of the medical department for the years 1821 1822, 1823 1824, 1825, 1826, 1831, letters Lovell to Sec of War James Barbour, Oct 18 1826, Oct 12 1827, to Sec of War Peter Porter Oct 30 1828, to Sec of War John Eaton, Oct 23 1829 to Sec of War Lewis Cass, Oct 20 1831, Oct 20, 1832, Oct 14, 1833, Oct 23, 1834, Nov 2, 1835, Nov 12, 1836 NA

[15] In NLM is a volume containing 18 medical essays and tracts, 1804–1807 six of which have inscriptions from the authors to Lovell call no WZ/270/M4889/1804

Another volume of pamphlets, 1819–1827, presumably presented to Lovell by the authors was titled "Slang Whanging" by an office hu

morist because of the controversies engaged in by the writers call no WZ/270/S631/1819

[16] In the records of the SGO, National Archives, are many letters from Lovell to Beaumont

[17] In the mid-1930's the Librarian, Colonel Edgar E Hume, decided that the Library ought to have a birthdate He picked the year 1836 Apparently he did this arbitrarily for he had no evidence to support his claim Billings had been careful to state that the book collection was begun *prior to 1836* [Billings, "Who Founded the National Medical Library?" New York *Med Rec* 17 298–9 (1880)] Surgeon General Barnes, equally cautious, wrote "From the purchase of a few common textbooks and one or two current medical journals commenced *about* 1830 " (Letter, Barnes to Senator L M Morrill, Chairman, Joint Committee on Libraries, Feb 9, 1872. NA) But Hume wrote "Lovell, in the year 1836—we do not know the exact date—began a collection of books for the use of his officers and himself" ["Buildings for the Army Medical Library," *Military Surgeon* 80 45 (1937)] Hume used this date to bring about the Library's "Centenary Celebration" in 1936 The date has been used on other occasions

[18] Lovell died on Oct 17, 1836 Lawson was appointed Nov 30

[19] Letter, King to Secretary of War, Nov 12, 1836 NA

[20] Letters, Acting Surg Gen King to Sec of War, Nov 20, 1837, Lawson to Sec of War Joel Poinsett, Nov 14, 1838, July 15, 1840, Acting Surg Gen Henry L Heiskell to Sec of War John C Spencer, Nov 3, 1841, re estimates for fiscal year 1842–43 NA

[21] Letter, Acting Surg Gen Heiskell to Sec of War Spencer, Sept 2, 1842, with endorsement by the Secretary of War NA

[22] Letters, Heiskell to Spencer, above, Heiskell to Blair and Rives Sept 1, 1842 NA

[23] Letter, Surg R C Wood to C S Francis & Co , May 1, 1856 NA

From the time of Lewis and Clark Army officers explored the West, and sent back to Washington accounts of birds, fishes, animals, shrubs, climate, minerals, and much else It is probable that Audubon s writings were used for reference in the Surgeon General's office

[24] A facsimile was published in 1961 to commemorate the founding of the National Library of Medicine

[25] Fielding H Garrison, *John Shaw Billings, a Memoir* (1915) p 213, wrote "In 1840, there was prepared a manuscript catalogue which shows, by actual count, that it consisted of 135 works, comprising 228 volumes " Since the 1840 catalog does not give the number of volumes for 10 titles, including 3 journals, I do not know how Garrison could have calculated a precise total Addition shows that there were 134 titles and at least 187 volumes, but there could have been as many as 226 volumes

[26] Some of the volumes mentioned in the 1840 catalog have disappeared from the Library Some were judged later to be out of scope and were exchanged away It is uncertain whether some of the books now in the Library were the copies actually there in 1840, for the Library then had no acquisition book or numbering system, and rebinding has destroyed the original end papers and covers that might have provided evidence

[27] The first medical library, that of the Pennsylvania Hospital, was started in 1763 Excluding libraries in medical schools, succeeding libraries were those of the College of Physicians in Philadelphia, 1788, Medical Society of South Carolina, 1791, and New York Hospital, 1796 By 1800 there were 8 medical libraries, by 1876 60 See J S Billings, "Medical Libraries in the United States," in *Public Libraries in the United States* (1876), pp 171–82, reprinted in F B Rogers, *Selected Papers of John Shaw Billings* (1965) C D Spivak, "The Medical Libraries of the United States," *Philadelphia Med J* 2 851–8 (1898)

[28] *Catalogue of Books Belonging to the Library of the Medical and Chirurgical Faculty of Maryland* (Baltimore, 1835) *A Catalogue of the Medical Library Belonging to the Philadelphia Almshouse* (Philadelphia, 1824) *A Catalogue of the Books Belonging to the Library of the New York Hospital* (New York, 1845)

[29] *Catalogue of the Medical Library of the Pennsylvania Hospital* (Philadelphia, 1829)

[30] *Catalogue of Books in the Boston Medical Library* (Boston, 1823)

[31] Wyndham Blanton *Medicine in Virginia in the Eighteenth Century*, pp 109–111 Joseph I Waring, *History of Medicine in South Carolina, 1670–1825*, p 205

[32] George L McKay, *American Book Auction Catalogues, 1713–1934*

[33] Hennen's Military Surgery, Dewees on Females, Dewees on Children, Dewees on Midwifery, Paris' Medical Dictionary, along with Bell on Venereal and Bell on Ulcers, are mentioned in letter Lawson to Surg Edward Macomb, Ft Leavenworth Aug 12, 1837 Hennen is also mentioned in letter, Asst Surg R H Coolidge to Asst Surg Charles H Smith, Fort Meade, Fla , Jun 26, 1854 Copland is mentioned in letter, Lawson to Surg W V Wheaton, West Point, Feb 4, 1840 Gibson's Surgery, and Thomas' Practice, are mentioned in letter, Acting Surg Gen H Heiskell to Surg

Nathan S Jarvis, Fort Jessup, La , Apr 26, 1842 Gregory is cited in letter, Heiskell to Surg Presley H Craig, New Orleans, July 7, 1843 Ellis is mentioned in letter, Lawson to Asst Surg J H Bailey, Fort Smith, Ark , Nov 3, 1845 Wilson's Anatomy, mentioned in letter, Heiskell to Surg W L Booth, Nov 21, 1849 For Thomson see letters, Heiskell to Asst Surg Jonathon Letterman, Ft Meade, Fla , May 8, 1851 For Eberle, see letter, Heiskell to Dr S G J DeCamp, Fort Columbus, N Y , Jan 21, 1853 For Hooper's Vade Mecum see letter, Heiskell to Dr J J B Wright, Jan 27, 1853, and for Dictionary see letter, Coolidge to Langworthy, Oct 19, 1854 For "Martinet's Manual" see letter, Coolidge to Asst Surg C Sutherland, Fort Fillmore, Mo , May 2, 1854 Byrne, a surgeon in the U S Army Medical Dept , was courtmartialed in 1859, his book is mentioned in letter, Lawson to Childs & Peterson, Phila , ordering 100 copies of the book "provided the cost does not exceed one dollar per copy " Letters in NA

[34] At Fort Defiance, N Mex , there was a copy of Bell s Anatomy in 1854 letter, Surg Richard H Coolidge to Asst Surg Elisha P Langworthy, Oct 19, 1854 At Fort McHenry there were copies of Rush's Pringle, Rush's Sydenham, and Bell on Venereal in 1846 according to letter, Acting Surg Gen H Heiskell to Asst Surg J F Head, Sept 1, 1846, and of Rush's Sydenham in 1852, letter, Surg R H Coolidge to R C Wood, Jan 3, 1852 SGO records, NA

[35] For Gannal see letter, Act Surg Gen H Heiskell to Sec of War Spencer, Nov 3, 1841 For Quain see letter, Lawson to Sec of War Porter, May 19, 1843 For Dunglison, Watson, Ashwell, Colombat, Elliotson, Graves, Maclise, and Stokes, see statement of disbursements of contingent expenses for year ending 30 June 1846 NA For Maillot, see statement of contingent expenses for year ending 30 June 1850 NA For Dunglison, Wood, Chelius, Pirrie, Meigs, and Gross see letter, Surg Heiskell to Surg T G Mower, Sept 14, 1852 NA For Stokes, Bennet, Gluge, Pereira, Carpenter, Rokitansky, and Smith see letter, Heiskell to Mower Apr 20, 1853 NA

[36] Letter, Surg H Heiskell to J M Galt, 1851 NA

[37] Letter, Lawson to Surg T G Mower, Aug 8, 1843 NA

[38] Letters, Sug H Heiskell to Surg T G Mower, Dec 9, 1851, Heiskell to Blanchard & Lea, Dec 9, 12, 1851, Jan 9, 1852, Lawson to Mower, Aug 8, 1843 NA Eighty subscriptions of *Amer J Med Sci* and *British Foreign Med Chi Rev* were ordered at a cost of $3 50 a subscription

[39] Letter, Surg H Heiskell to Lindsay & Blakeston, Mar 7, 1854 NA

[40] Letters, Act Surg Gen H Heiskell to Sec of War J C Spencer, Sept 2, 1842, Surg R C Wood to D Clapp July 3, 1856, stopping subscription to *Boston Med Surg J* NA

[41] Letter, Act Surg Gen H Heiskell to Sec of War Spencer, Nov 30, 1842 NA

[42] Letters, Heiskell to editor of *J Franklin Inst* , July 20, 1848, Feb 22, 1850, Dec 11, 1857 In the Dec 11 letter the subscription was cancelled owing to shortage of funds Letter, Heiskell to Silliman & Dana, July 21, 1848 NA

[43] Letters, Surg R C Wood to editor of *Amer Med Monthly*, Dec 11, 1857, cancelling subscription owing to lack of funds, Wood to Surg R S Satterlee, Dec 23, 1859, re obtaining back issues of *Retrospect* and *Abstract* to complete office sets for binding, Surg R Coolidge to Stringer & Townsend, Mar 14, 1854, Wood to Satterlee, Dec 23, 1859, re binding of volumes of *Lancet*, Wood to Asst Surg W H Babcock, Mar 2, 1859, stating that *Lancet* was not distributed NA The *Lancet* was reprinted in New York under the title *London Lancet*

[44] Letter, Surg R C Wood to Baillière Bros , Apr 11, 1861, requesting back issues NA

[45] Statement of contingent expenses for vear ending 30 June 1850 NA There are several references to the binding of publications in the records of the 1840's and 1850 s

[46] Letters, Act Surg Gen H Heiskell to Maj A M Tullock, London, Jan 31, 1842, Heiskell to Rep D D Barnard, Mav 18, 1842, Lawson to Sec of War J C Spencer, Apr 6, 1843, Lawson to Sir J McGrigor, June 15, 1843 NA

[47] Letter, Act Surg Gen H Heiskell to John L Sibley Harvard College, Oct 19, 1847 NA

[48] Letter, Lawson to James Brvan, president, Med Ch College, June 11 Sept 7, 1849 NA Although the letter was addressed to the Med Ch College, I believe this referred to the Philadelphia College of Medicine, with which Bryan was associated at this date

[49] Letters, Lawson to Asst Surg Benj King, Sept 21, 1849, to J K Mitchell, same date NA

[50] Letter, Lawson to Drake, Mav 27, 1850 NA

[51] Letter, Surg R C Wood to Blanchard & Lea, June 15, 1858 NA

[52] Perhaps the Armv and Navv medical departments ordered the only group subscriptions in medical journalism at that time

[53] Letter, Surg H L Heiskell to Lindsav & Blakiston, Mar 7, 1854 NA

[54] Letter, Surg. R. C. Wood to McCaw, Jan. 8, 1856: NA

[55] Quoted by F. Harner, "A Plea for an American Medical Library," *Med. Surg. Reporter* 38: 449–50 (1878). Woodward was one of the editors of the *Medical and Surgical History of the War of the Rebellion*. At the time Woodward made this statement he was accustomed to the everyday sight of the country's largest medical library, and in his mind's eye the few hundred volumes of 1861 were hardly worthy of being called a "library."

II

Development of the Library During the Civil War

Surgeon General Clement Alexander Finley

CLEMENT ALEXANDER FINLEY, who had been in the Army for 43 years and served in the Indian and Mexican wars, was appointed Surgeon General on May 15, 1861. The Civil War was bringing hundreds of physicians to the door of the Medical Department, and Finley needed more office space for his expanding staff. He moved from the Winder Building at F and Seventeenth Streets to a building on the southeast corner of F and Fifteenth Streets, where he had several rooms.[1] There, with his military aides, at least eight civilian clerks and one messenger, he administered the procurement of medical supplies, construction of hospitals, recruitment of physicians, and all the other tasks that came with the war.

The Library moved with the Surgeon General. During the war it was

Clement Alexander Finley, Surgeon General, United States Army, 1861 to 1862.

probably consulted more than any time in the past. Finley preferred certain books for his own use, among them Gross' *Surgery*, John E. Erichsen's *Surgery*, Bennet's *Practice of Medicine*, John Foote's *Practitioner's Pharmacopeia*, Amos Dean's *Principles of Medical Jurisprudence*, and Claude Bernard and Charles Huette's *Manual of Operative Surgery*.[2] The standard list of books for distribution was revised to fit war conditions. Surgeons in the armies received the following: Thomson's *Conspectus*, William J. E. Wilson's *Practical and Surgical Anatomy*, Thomas Watson's *Practice of Physic*, and Erichsen's *Surgery*. Surgeons at hospitals and posts received the same, plus George Fowne's *Elementary Chemistry*, the *Dispensatory of the United States*, Robley Dunglison's *Medical Dictionary*, Alfred S. Taylor's *Medical Jurisprudence*, and Ellis' *Formulary*.[3] Finley cancelled the office's subscription to *American Medical Times* and ordered 35 copies of the Philadelphia *Medical and Surgical Reporter* for distribution.[4]

Finley, owing to the seniority system then followed generally in making promotions, was 64 years when he was appointed Surgeon General. He probably would have been a satisfactory leader during placid, peaceful times, but he did not act fast enough, according to his critics, in developing the small medical department into the large, energetic organization needed by the Federal armies during war. In 1862 he was relieved of his duties and transferred, whereupon he retired.

Surgeon General William Alexander Hammond

Owing to the influence of the Sanitary Commission, seniority was ignored in choosing the next Surgeon General and 34-year-old William Alexander Hammond was appointed on April 25, 1862. Hammond had been an assistant surgeon in the Army from 1849 to 1860 and then had resigned to teach in the University of Maryland's Medical School. Energetic and competent, Hammond improved the department as rapidly as chaotic wartime conditions would permit. Shortly after he took office he established the Army Medical Museum and ordered the beginning of the compilation of statistics that was to be published many years later under the title *Medical and Surgical History of the War of the Rebellion*.[5]

Two months after Hammond arrived he moved his office to the buildings owned by Riggs and Company, a private banking firm, on the northwest corner of Fifteenth Street and Pennsylvania Avenue.[6] Attached to the bank was a two-story brick building that had originally been a private house. In the back yard was a two-story frame structure and a large stable. The general's private office occupied the back room on the first floor of the brick house, and his clerk's office the adjacent pantry. Surgeon John H. Brinton, whom the general appointed to organize the Army Medical Museum, sat in the front room, formerly the parlor, and there he began accumulating the first specimens. Also in the parlor were shelved books and journals, handy for the general.[7] On the second floor of the house were several small rooms occupied by officers on the general's staff and their clerks, and a large room for files and clerks. Other officers and

William Alexander Hammond, Surgeon General, United States Army, 1862 to 1864.

clerks had desks in rooms on the second floor of the bank building. The frame building housed a printing press, a distribution room where Medical Department publications and medical journals were sorted and sent to surgeons in the armies and military hospitals, and one or two rooms for clerks. In the stable were two horses and three carriages, used mainly in picking up and delivering mail and packages. In the spring of 1862 Brinton moved with his increasing number of museum specimens into another building, and eventually medical books and journals filled the parlor, which served as the library for a few years.

Under Hammond's direction recently published books were selected and purchased for distribution. A score of reference books was provided for each general hospital and permanent post.[8] Surgeons attached to regiments in the field could not carry around a box of books, but they were supplied with five of the most useful.

Journals for distribution comprised *American Journal of the Medical Sciences*,[9] apparently a copy for every surgeon; *Boston Medical and Surgical Journal*,[10] probably for selected officers; *British and Foreign Medico-Chirurgical Review*, for the most senior officers[11]; and *Medical Times*.[12]

For office use Hammond ordered *Annales d'Hygiène*,[13] Charles Lyell's *Antiquity of Man*,[14] *Boston Medical and Surgical Journal*,[15] *Recueil de Mémoires de Médecine, de Chirurgie et de Pharmacie Militaries*,[16] *Archives Générales de Médecine*, Virchow's *Archiv*, Alexander Tweedie's *Lectures on . . . Fevers*, Charles Murchison's book on "continued fevers," and the publications of the Académie de Médecine and Société Nationale d'Acclimatation of Paris.[17] He stopped the office's subscription to the *Medical and Surgical Reporter*, taken by Finley, and subscribed to the *Chicago Medical Journal*.[18]

Blanchard & Lea, a Philadelphia publishing firm, generously donated volumes "towards forming a library."[19]

Many years later a person, identity unknown, in the Surgeon General's office, jotted down the following account of Hammond's influence on the book collection: "Up to 1862 there was no library connected with the office except a few common works of reference and such public documents as are annually distributed. Surgeon General Hammond, however, began to buy books which he wished to use himself. The first were brought from Baillière Bros. in August 1862. From that time on they were bought continuously for use in making up the Medical and Surgical History."[20]

Hammond might have enlarged the little collection into a first-class library had he not made an enemy of Secretary of War Edwin Stanton. Stanton exiled him to New Orleans in August 1863 and elevated Joseph K. Barnes to the rank of Acting Surgeon General. Hammond was court-martialed and dismissed from the Army in August 1864. He became a prominent physician, textbook writer, teacher, researcher, novelist, and journal editor, and he continually appealed his court-martial sentence. The government finally exonerated him in 1879 and restored his rank, but he never returned to the Army.

Surgeon General Joseph K. Barnes[21]

Barnes, who had been in the Army since 1840, was appointed Surgeon General on August 22, 1864. He retained, with few exceptions, the same standard medical books chosen by his predecessor for distribution. A large number of these were purchased during the war: 7,317 copies of Bumstead on *Venereal Diseases*, 5,370 of Erichsen's *Surgery*, 4,850 of the *Dispensatory of the United States*, 3,895 Power's *Sugical Anatomy*, 3,442 Gray's *Anatomy*, 3,254 Watson's *Practice of Medicine*, 3,251 Stephen Smith's *Principles of Surgery*, 3,239 Woodward's *Hospital Steward's Manual*, 3,100 Parkes' *Hygiene*, 2,671 Sargent's *Minor Sugery*, 1,905 Dunglison's *Medical Dictionary*, 1,640 Fowne's *Chemistry*, 1,542 Bennett s *Practice of Medicine*, 1,412 Dalton's *Physiology*, 1,333 Parrish's *Pharmacy*. 1,237 Hartshorn's *Principles of Medicine*, 1,178 Longmore's *Gunshot Wounds*, 1,062 Beck's *Jurisprudence*, 1,024 Stillé's *Therapeutics*, and lesser quantities of Webster's *English Dictionary*, McLeod's *Surgical Notes*, Virchow's *Pathology*, Jones' *Diseases of the Eye*, Bedford's *Midwifery*, Toynbee's *Diseases of the Ear*, Wilson's *Diseases of the Skin*, and Guthrie's *Commentaries*.[22]

Books and journals for the Library were selected mainly by Brinton, Assistant Surgeon George A. Otis, and Assistant Surgeon Joseph J. Woodward, who needed works on anatomy, surgery, and other subjects for reference in the museum and for compiling the *Medical and Surgical History of the War of the Rebellion*.[23] Surgeons James R. Smith, Charles H. Crane, and Charles H. Alden sent the orders for books to publishers and booksellers.[24]

Purchases for Hammond, Brinton, Otis, and Woodward during 1862, '63, and early '64 increased the collection greatly. Books and journals were con-

stantly added to the shelves in the front parlor of the brick house, where bookcases probably lined the walls except for door and window openings.

In January 1864 Barnes decided that the Library, now containing approximately 1,800 volumes, should be reorganized, enlarged, and cataloged.[25] On May 10 of that year the first printed catalog of the Library was published, perhaps for distribution to surgeons with the armies and in the many military hospitals.[26] Barnes had not yet appointed an officer to act as librarian, and it is not known who superintended the preparation of the catalog of 1864.

The catalog was a pamphlet of 24 leaves, the rectos bearing titles and the versos blank for additions or notes. Books were listed alphabetically by authors under nine subject headings: anatomy; physiology; materia medica, pharmacy and therapeutics; general pathology and practice of medicine; surgery; midwifery and diseases of women and children; medical jurisprudence and medical police; natural philosophy, chemistry, etc.; miscellaneous, journals, reviews, reports, encyclopedias, etc. A logical assumption is that the volumes were arranged on the shelves in the same order. All-in-all the catalog carried 485 titles, including about 50 journals, showing a total of approximately 2,100 volumes.[27]

The catalog contained the titles of William James Rhees' *Manual of Public Libraries* (1859) and of William T. Lowndes' multivolume *Bibliographer's Manual of English Literature* (1857–1861). This indicated that the Surgeon General was trying to develop a library on principles advocated by professional librarians. If the volumes had been considered previously as an incidental collection, they were no longer.

According to the 1864 catalog the Library had not yet acquired any incunabula, any 16th or 17th century books, or any 18th century works except Robert Hamilton's *Duties of a Regimental Surgeon* (1787), which had been in the catalog of 1840, and *Hamburgisches Magazin, oder Gesammelte Schriften aus der Naturforschung* (1747–63), 25 volumes. A number of books mentioned in the catalog of 1840 (among them the works of Gannal, Dunglison, Ashwell, Colombat, Elliotson, Graves, and Maclise) and others acquired during Surgeon General Lawson's term did not appear in the catalog of 1864. Perhaps in the hustle and bustle of the office at the start of the Civil War, along with a shortage of space for the ever expanding volume of medical records accumulating during the conflict, volumes that were obsolete or obsolescent were simply thrown away.

Otis and Woodward continued to choose most of the books purchased through 1864 and '65, the orders being sent to booksellers by Crane, by Surgeon William C. Spencer from 1864 to 1866, and by Assistant Surgeon John Shaw Billings from November 6, 1865, onward.[28]

In the autumn of 1865 Surgeon General Barnes ordered that a new catalog be compiled. One would assume that the primary reason for a second catalog only a year and a quarter after the first was that almost all copies of the 1864 catalog had been distributed to medical officers. A second reason may have

been the accumulation of more than 100 works, about 200 volumes, since the previous catalog had been issued.

The second printed catalog was published on October 23, 1865. Like its predecessor it was a pamphlet.[29] Titles were on the recto of the leaves while the verso and interleaves were blank so that the owner could add notes or titles.

According to this catalog the Library now contained 2,282 volumes.[30] Six hundred and two titles were listed, including at least 67 journals.[31] The publications were grouped in 11 classes, the differences between this and the previous catalog being the addition of a new class, natural history, and the division of one class into two classes, a) medical journals and reviews, and b) miscellaneous. The largest class was surgery with 120 titles; followed by pathology with 116 titles; natural philosophy, chemistry, etc., with 76; medical jurisprudence and medical police, 72; medical journals and reviews, 44; anatomy, 40; miscellaneous, 39; natural history, 37; midwifery and diseases of women and children, 20; materia medica, pharmacy and therapeutics, 20; and physiology the smallest with 18. Books were listed alphabetically by author, journals by title.

Riggs Bank, Pennsylvania Avenue and Fifteenth Street, N.W., Washington. From 1862 to 1888 the small building on the left and the upper story of the bank on the right was the headquarters of the Surgeon General. The Library was shelved in the front parlor of the house on the left from 1862 to 1866. This photograph was taken in the 1890's, a decade before the buildings were torn down.

In the latter half of 1865 an unusual source of publications opened up for the Library as the Army began to close temporary military hospitals. Erected during the war for the care of the tens of thousands of wounded soldiers, these hospitals possessed medical books and journals for the use of the surgeons, and a miscellany of fiction and nonfiction works donated by the Sanitary Commission, citizens, and relief organizations for patients. On June 26, 1865, Barnes issued the following order: "when hospitals shall be discontinued and the libraries disposed of, the most valuable works, Scientific, Historical, etc. shall be carefully selected, packed and turned over to the Quartermaster's Department for transportation to Surgeon George A. Otis, U.S.V., Curator of the Army Medical Museum."[32]

It is not known how many publications the Library acquired from hospitals. The following anecdote by Daniel S. Lamb, a pathologist at the museum for half a century, indicates that the men dismantling the hospitals were not very discriminating in the choice of works they forwarded to the Capital: "On May 25,[1866] a lot of non-medical books which had been sent to the Museum from discontinued hospitals were ordered to be divided among four employees who were connected with Sunday Schools in Washington, to be given to the said schools."[33] Furthermore among books accessioned after the war were a few on navigation, astronomy, calculus, algebra, geometry, trigonometry, logarithms, geology, and agriculture, hardly the subjects that would have been purchased for a medical library but more likely that would have arrived from closed hospitals.[34]

Notes

[1] The office had moved to the Winder Building at F and 17th Sts. in 1848 from "Mrs. Elsey's House," on G Street between 17th and 18th, whence it had moved in 1845 from "Mr. Vevan's House." The latter two buildings no longer exist.

[2] "If you have any of the following books in the purveying dept. the Surg. Gen'l. wishes to have a copy of each (with the usual lettering) . . . He does not however wish to have them purchased for this purpose": letter, Surg. L. A. Edwards to Surg. R. S. Satterlee, Nov. 11, 1861: NA.

The last volume on the above list was probably *Illustrated Manual of Operative Surgery and Surgical Anatomy*, by Bernard and Huette, edited with notes by W. H. Van Buren and E. C. Isaacs, N.Y., 1855.

[3] Letter, Surg. Robert C. Wood to Surg. R. S. Satterlee, Nov. 11, 1861: NA.

[4] Letters, Surg. L. A. Edwards to Butler & Levis, Mar. 10, 1862, Edwards to Baillière & Bros., Mar. 10, 1862: NA.

[5] The museum was started by Hammond's order issued in Circular No. 2, May 21, 1862. From the museum developed the Army's Medical School and the Armed Forces Institute of Pathology.

The most recent history of the famous museum is Robert S. Henry's *The Armed Forces Institute of Pathology, Its First Century, 1862–1962* (1964). Daniel S. Lamb, pathologist of the museum for half a century, wrote History of the United States Army Medical Museum, 1862–1917, which contains reminiscences and lists of publications of museum members, but which is scarce because it was mimeographed in a small edition.

The necessity of having reference works for use of the writers of the *Medical and Surgical History* was one of the chief reasons why books were purchased for the Library during the 1860's.

[6] The correct name of the bank was Riggs and Company until 1896 when it incorporated as The Riggs National Bank.

[7] ". . . there were in the private office of the Surgeon General a few preparations of human anatomy, which had long been there, or in the

adjoining *library* room" (italic supplied) Lamb, History, p 1

[8] Titles of books may be found in the standard supply tables of Sept 20, 1862, of Oct 20, 1862, in SGO Circular No 12 and of May 7, 1863, in SGO Circular No 7

[9] Letter, Asst Surg J R Smith to Blanchard & Lea, Apr 10, 1863, increasing the subscription to 200 copies NA

[10] Letter, Asst Surg Smith to editor, *Boston Med Surg J*, July 2, 1863 NA Fifty copies were ordered

[11] Letter, Hammond to Lindsay & Blakiston, Mar 11, 1863 NA Ten copies were ordered

[12] Letter, Asst Surg J R Smith to Bailhère & Co, Oct 22, 1862 NA The number of copies is not given

[13] Letter, Asst Surg J R Smith to Bailhère Bros, Sept 16, 1862 NA Baillère Bros, a New York firm, imported the journal for SGO

[14] Letter, Surg C H Alden to J Pennington & Son, Mar 23, 1863 NA

[15] Letter, Asst Surg J R Smith to editor, *Boston Med Surg J*, July 2, 1863 NA Fifty copies were subscribed to, plus a complete set of back issues—the latter would have been for the SGO

[16] Letter, Asst Surg J R Smith to Surg R S Satterlee, Oct 22, 1862 NA

[17] Letter, Surg Gen Hammond to Joseph Henry, Smithsonian Institution, Mar 23, 1863 NA The volumes were obtained through the Smithsonian's book agents in Europe Hammond requested complete sets of *Archives Générales*, Virchow's *Archiv*, and *Bulletin* of the Académie

[18] Letters, Asst Surg J R Smith to ed *Med Surg Rep*, Sept 10, 1862, Smith to S W Butler, Aug 5, 1863, Smith to editor, *Chicago Med J*, July 6, 1863 NA Hammond wanted as many back numbers as were available of the Chicago journal

[19] Letters, Asst Surg J R Smith to Blanchard & Lea, July 14, 1862 NA Perhaps the firm continued to donate books throughout the war, for on May 13, 1865, Act Surg Gen J K Barnes sent a letter of thanks for a copy of Hodges' *Obstetrics*

[20] Around 1890 a person in the Medical Department began to make notes for a historical sketch of the Surgeon General's office Only a fragment of the manuscript remains, from which the above quotation is taken MS/C/64

Baillière Bros, N Y, went out of business in 1870

John Shaw Billings, letter to editor, "Who founded the National Medical Library?" *New York Med Rec* 17 298–9 (1880) stated that 359 volumes, including sets of *Annales d'Hygiène Publique* and *Boston Medical and Surgical Journal*, were added during Hammond's period I believe Billings' figure is incorrect because a catalog published in May 1864 listed 2,100 volumes, whereas the catalog of 1840 listed aproximately 200, a difference of about 1,900 volumes, and most of these were purchased, I believe, during Hammond's time

[21] Barnes had no middle name He took the letter K to distinguish himself from his father, Joseph Barnes

[22] Letter, Gen Barnes to Sec of War E Stanton, Oct 20, 1865 NA

[23] Billings, "Who founded the National Medical Library?" *New York Med Rec* 17 298–9 (1880), credited Woodward and Otis with selecting volumes in 1864 and '65

Brinton was the first curator of the Museum from August 1862 to October 1864 Brinton and Woodward were directed to begin preparing the *History* in June 1862 Otis succeeded Brinton as editor of the *History* and curator of the museum in October 1864

[24] These three were senior officers in the Surgeon General's office Copies of letters sent by them to publishers and booksellers may be found in SGO records, NA I assume they merely ordered books selected by Brinton, Otis, and Woodward, but possibly they also selected books they ordered

[25] Letter, Surg C H Crane to Joseph Henry, Smithsonian Institution, Jan 25, 1864, "The Library of this office, now being reorganized, contains about 1800 volumes, and as it is the intention to increase the same, and to make it an institution for the Medical Department [the remainder asks for Smithsonian publications]" NA

[26] There are two copies of the catalog in the History of Medicine Division, National Library of Medicine One copy has the original paper wrappers and bears the signature of E Shaw, clerk and assistant of John Shaw Billings

[27] Fielding H Garrison *John Shaw Billings*, p 213, wrote that a "catalog was prepared and published, showing that at this time, the collection comprised 1365 volumes ' By my count there are 485 titles, approximately 50 of which are journals, and a total of 2,094 volumes

[28] "During the years 1864 and 1865 about 1000 volumes were added to the library, mainly works selected by Drs Woodward and Otis", John S Billings, *New York Med Rec* 17 298–299 (1880)

[29] The History of Medicine Division, National Library of Medicine, has copies of the catalog, two of which have the original paper wrappers, one green and one yellow, bound in

[30] Fielding H Garrison, *John Shaw Billings*,

p. 214, stated that the catalog of 1865 contained 602 entries, comprising 2,253 volumes. Billings, in his memorandum or preface to the catalog of 1872, said that the catalog of 1865 accounted for about 1,800 volumes. My count of 602 entries and 2,282 volumes is approximately the same as Garrison's figure.

[31] "Letter from Washington," by an anonymous writer in *Boston Med. Surg. J.* 99. 706–709 (1878), credited the catalog with listing 26 American journals and 17 foreign, or 43 in all. By my count, the catalog gives the titles of at least 67 journals.

[32] S.G.O. Circular Orders No. 6. It would appear from this order that Otis had been placed in charge of the growing library and might be considered as the first librarian of the Surgeon General's office. Perhaps he supervised the preparation of the catalogs of May 1864 and October 1865.

[33] Lamb, History of the United States Army Medical Museum, p. 39.

[34] Titles are in the early registers, for example, Register 3, p. 14.

III

The National Medical Library

JOHN SHAW BILLINGS BEGINS TO TAKE CARE OF THE BOOKS AND JOURNALS

TO the Surgeon General's office in December 1864 was called a 27-year-old assistant surgeon, John Shaw Billings.[1] Billings had joined the Army in 1861, a year and a half after receiving his degree from Medical College of Ohio. He had been a surgeon in military hospitals and had tended wounded soldiers at the battles of Chancellorsville, Gettysburg, the Wilderness, Spottsylvania Court House, Cold Harbor, and the siege of Petersburg before being assigned a desk job in Washington in August 1864.

Billings reported to General Barnes on January 4, 1865,[2] and was directed to help manage the myriad of civilian physicians working for the Medical Department under contract. A few months later the war ended, and he was given responsibility for some of the financial matters that arose with the closing of military hospitals. His job as a "disbursing" officer was dull compared with his previous duties as a surgeon in the Army of the Potomac, but he had clerks to handle bookkeeping, correspondence, and other routine work, and the flood of invoices, receipts, vouchers, and similar documents soon crested and receded.[3]

Around the time the second library catalog was published in October 1865, Barnes decided that the growing collection of books and journals should be placed in the charge of one officer. He chose Billings.[4] Barnes' reason for picking Billings from among the several staff officers is not known. Billings was a booklover, and this may have been sufficient for the general.[5]

Billings' duties, whatever they were in caring for the books and journals, did not add much to his workload. He seems to have considered the collection as one of his routine responsibilities, and paid no special attention to it. Occasionally he ordered monographs, reference books, texts, and journals requested by officers in the museum, chemistry laboratory, Surgeon General's office, or at Army posts.[6] But other officers also ordered publications, Surgeon William C. Spencer more often than Billings.[7]

By the beginning of 1866 Billings had systematized his duties and generally had ample free time to follow paths on which his curiosity led him.[8] He browsed

The notable group of officers who developed the Army Medical Museum and Library, and produced the Medical and Surgical History of the War of the Rebellion, *in the years following the conflict.*

through medical books, learned to read a little German, dissected small animals and a tarantula, dabbled with chemistry, and meandered through poetry and literature. He was associated with energetic, competent persons, among them George A. Otis, who was developing the museum, and Joseph J. Woodward, a pioneer in photomicrography

The museum, which was to be adjacent to the Library for the next three-quarters of a century, was not merely a repository for medical specimens of the Civil War. Staff members were studying comparative anatomy, anthropology, Indian archaeology, and microbiology, compiling the *Medical and Surgical History of the War*, and teaching such subjects as histology and clinical microscopy to officers. Taking advantage of the laboratory facilities, apparatus, and specimens in the museum and the companionship of talented men, Billings tried his hand at microscopy. He mounted and stained anatomical sections of animals and began to investigate fungi, supposed by some physicians to be the cause of certain diseases called "cryptogamous" fevers.[9]

Ford's Theatre, Washington. This view is half of a steroscopic photograph taken around 1870 when the Library was shelved on the second floor of the building.

THE LIBRARY MOVES INTO FORD'S THEATRE

The Civil War brought about a permanent enlargement of the Army and Medical Department. No longer could a handful of military physicians take care of the infantry, cavalry, and other troops as they had in the days of General Winfield Scott. Now surgeons were needed to staff scores of barracks, posts, and forts dotting the United States from the Atlantic to the Pacific, the gulf to the Great Lakes Surgeons accompanied regiments on active service in the West. The Medical Department was given the job of "providing for the comfort

of sick and discharged soldiers." It was made custodian of hundreds of thousands of pension and medical records. It had to provide artificial limbs and trusses for veterans.

In 1866 the department was authorized by Congress to have a Surgeon General, an Assistant Surgeon General, 5 purveyors, 60 surgeons, 150 assistant surgeons, and 5 storekeepers. In addition it had 264 civilian physicians under contract as acting assistant surgeons,[10] scores of clerks and messengers, and almost 200 hospital stewards.

The Surgeon General needed more space for his office, records, and museum. The museum possessed so many specimens that it had had to move into larger quarters twice, and it still needed additional room. The pension and medical records required an area where they could be filed and consulted. The buildings rented from Riggs Bank in 1862 were simply not spacious enough by the war's end.

On Good Friday, April 14, 1865, President Lincoln was assassinated while attending a performance of *Our American Cousin* at Ford's Theatre on Tenth Street. Citizens protested so violently against further performances that the government took over the theater and purchased it the following year "for the deposit and safekeeping of documentary papers relative to the soldiers of the Army of the United States and of the Museum of the Medical and Surgical Department of the Army."[11]

During the summer and autumn of 1866 the interior of the building was remodeled. The balcony was removed, and two floors, supported by cast iron columns, wrought iron girders and beams, were inserted in the spacious interior, converting the theater into a three-story building. An iron stairway was erected from the first floor to the third.

The new floors were brick, covered with tile. The ceiling of the top floor consisted of plaster over lath nailed to wooden joists. The roof was slate over pine sheathing supported by wooden rafters. Thus the interior of iron and brick was fireproof, but the roof and third floor ceiling were not.

Attached to the south side of Ford's, along Tenth Street, was a smaller three-story brick building (which originally housed Taltavul's Star Saloon on the first floor, a lounge for dress circle patrons on the second, and Ford's apartment on the third) with wooden floors and stairs, and therefore not fireproof. Attached to the back of Ford's to the north was another small structure (originally dressing rooms and a carpenter's shop), also not fireproof.

After alterations were completed, Surgeon General Barnes allotted the third floor of Ford's to the museum, the second to the Division of Surgical Records and the Library, and the first to the Record and Pension Division. In the adjacent building on Tenth Street rooms were converted into offices for Woodward, Otis, and other officers, and into the Medical Department's chemistry laboratory. The small building at the back was converted into workshops for the museum.

During November and December 1866 Surgeons Otis and Woodward su-

perintended the moving of specimens, cases, and apparatus from the museum's temporary location into the third floor of Ford's. Woodward, who managed the Record and Pension Division and the medical and microscopical sections of the museum, was placed in charge of the entire building.[12] In December medical records were moved in. Sometime in 1867 the library books and journals were transferred from Riggs to the second floor.

The second floor consisted of one large hall approximately 100 feet long, 67 feet wide, and 14 feet high. Light came through four windows at the front, two at the back, and the stairwell in the center. Most of the space was occupied by records of the 200,000 men wounded and the 40,000 operated upon during the war.[13] The Library took up a relatively small amount of space at first, and for several years it would be used almost exclusively by the officers compiling the *Medical and Surgical History*.

The fear of a fire that might destroy museum specimens and the irreplaceable Civil War medical records was always in the minds of the staff. Fire hoses connected to a steam pump were kept handy, and a few years later the joists and other woodwork in the attic were soaked with a concentrated solution of sodium silicate which, it was hoped, would act as a fire-retardant.

Billings Becomes Librarian in His Spare Time

The collection now contained several thousand volumes and needed someone to keep it in order. General Barnes hired F. L. O. Roehrig as a contract surgeon and on January 10, 1867, placed him in charge of the Library.[14] Roehrig did not select or order books; that was done by Billings and other officers at Riggs. Purchases were received at Riggs, examined (Billings' clerks checked books and journals meticulously to make certain that no pages were missing or damaged) and then sent to Roehrig at Ford's for shelving.[15]

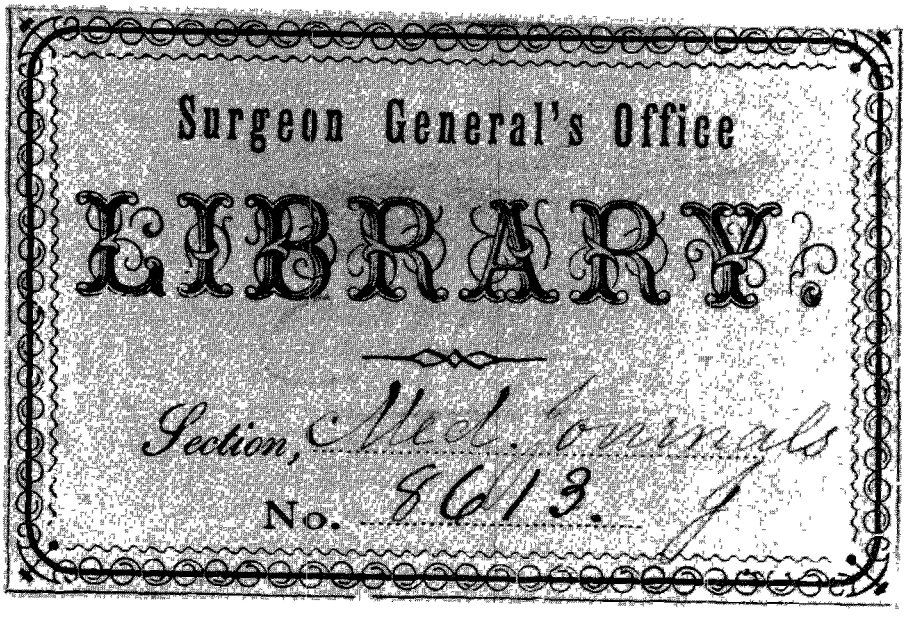
Presumably because of confusion or duplication in ordering by Crane, Spencer, Otis, and Billings for the Library and department, an agreement was reached among the officers in mid-1867 to give Billings sole responsibility for procuring publications. "In accordance with the arrangements made with Dr. Otis, by direction of the SG, USA," Billings wrote his British book supplier, "all orders for purchases for the museum or library of this office will be issued in future by myself, and all bills or accounts against this office, with the correspondence relating thereto, should in future be sent to me."[16] Finally, sometime in 1867 or early 1868 General Barnes asked Billings to devote "all his spare time" to medical bibliography and to developing the Library.[17]

The upgrading of the Library and the delegation of authority to Billings seems to have given him a personal interest in the collection and crystallized his instincts in book collecting. A few months later he was informing one of his book agents: "I wish in time to make the Library of this office as complete as possible. . . ."[18]

His first priority was publications needed by his colleagues for their re-

searches in the museum, for compiling the *Medical and Surgical History*, and for keeping up-to-date in medicine and allied sciences.[19] Otis, for example, sent Billings a list of 22 books on resections that he wanted, recommended procurement of reports of Lt. Charles Wilkes' "Exploring Expedition," and asked for John Cleland's paper, "Cranial measurements of different races."[20] Surgeon Joseph H. Bill, stationed at the Army Laboratory, Philadelphia, requested Billings to purchase nine scientific books, stating in his letter: "I certify that I need the above books to maintain and increase my knowledge of the subjects of which they treat."[21] But generally Billings was the sole selector of the books he ordered. He visualized a library with every type of publication for military surgeon, researcher, scholar, and practicing physician, and he sought all manner of publications, including reports of hospitals and other health agencies, doctoral dissertations, pamphlets, journals,[22] books of the 16th, 17th, and 18th centuries, and even incunabula.[23]

He selected books mainly from catalogs of American and European booksellers, sometimes tearing out pages, marking them, and returning them to the dealers, other time sending lists of numbers and short titles. He kept an eye on book trade journals and reviews. Occasionally he sent bids by mail to a book auction or asked a friend to bid for him. Once in a while he picked a book from approvals sent by hopeful dealers.[24]



Possibly the first bookplate designed for the Library. This is in Boston Medical and Surgical Journal, *volume 79, 1868–69. The accession number, 8613, shows the volume was received July 28, 1869.*

Billings economized in every way, instructing his agents: "when books can be bought secondhand not much damaged it is preferred that they should be so obtained . . . the above request is made for the reason that our fund for the purchase of books is limited. . ."[25] He wanted old books but told his agents he could not pay much: "if you meet with any old medical or surgical works (especially if in Black Letter) . . . please send them, if obtainable at a reasonable price."[26]

In purchasing books and journals from European countries Billings found it convenient to deal with a few agents who, in turn, acted on his behalf with booksellers in their geographic areas. Among these agents were Felix Flügel, a physician (though apparently not in practice), lexicographer, and medical book dealer of Leipzig; William Wesley, London; Trübner & Company, London; Gustave Bossange, Paris; and Frederick Muller, Amsterdam.[27]

These agents sent Billings catalogs issued by sellers in their areas, transmitted Billings' orders to the sellers, received the books and paid for them, packaged the volumes in sturdy water-proof crates and shipped them to the Medical Department purveyer in New York, who forwarded them by express to Washington. In the same manner Billings purchased through these agents microscopes, scientific apparatus, chemicals, and medical instruments for the medical museum and department. The agents distributed Medical Department publications given to or exchanged with European medical libraries, schools, societies, and military medical departments; they also received gifts and exchanges for the SGO Library and shipped them to New York.

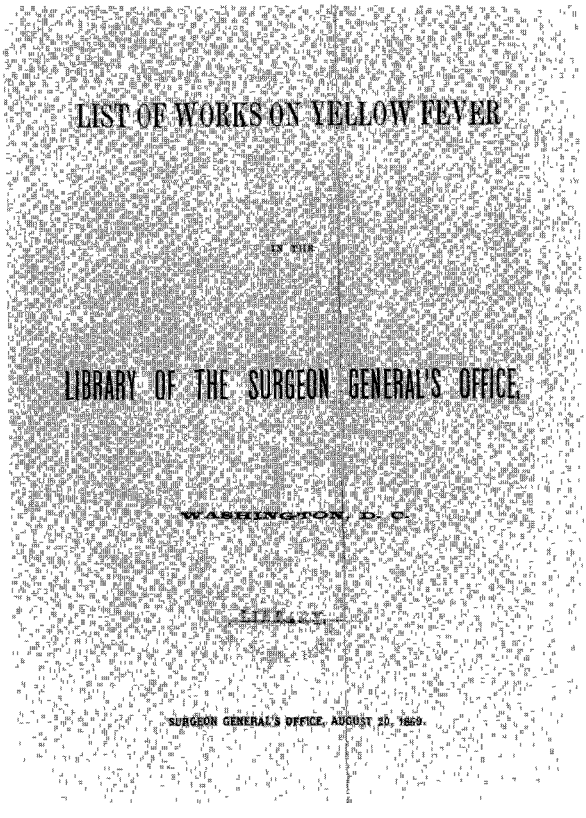
This arrangement saved Billings and his clerks much correspondence; minimized the loss of publications in transit, and kept expenses down through use of periodic large shipments rather than daily small shipments; expedited the delivery of current European journals, which the agents sent by fast mail rather than slow express; and was efficient in that the agents were closer to booksellers, apparatus dealers, medical libraries, and organizations than was Billings, thousands of miles away. For their services these agents received a commission of 10 percent (at times more or less) on Billings' purchases, and a stipend for distributing and receiving exchanges and gifts.

At the time when Billings became the sole purchaser of books, payment to European agents was made through an American firm which in turn sent payment to European agents. The American firm received a commission for acting as middleman. This roundabout method was necessary because, according to government regulations, checks had to be made out to someone in the United States. Billings appointed one of his clerks as middleman—Andrew Bischoff in the 1870's, Frederick W. Stone from 1880 onward. After a bill for books arrived, a voucher and check for the amount were made out to the clerk, who used the check to purchase a bill of exchange for transmittal to the agent. Billings thus saved the expense of a commission. This system was the most convenient and inexpensive one for the Library and it expedited payment to agents.[28] Unfortunately in 1880 clerk Bischoff took to drink, went off with almost

$500 instead of sending it abroad, and Billings had to replace the money out of his own pocket.[29]

The Library's First Bibliographies

Another indication of Billing's enthusiasm for developing the small Library was the compilation of the first large catalog and the first bibliographies. Owing to the rapid accumulation of publications during 1866 and 1867, the Library had almost tripled in size since the last pamphlet catalog had appeared in October 1865. Apparently Billings planned and, with the aid of clerks, began compiling the manuscript for another catalog in 1867, for it was in the printer's hands in early February 1868.[30] The new catalog, the third to be issued by the Surgeon General's office, was published on June 12.[31] There were now 2,887 titles, whereas the previous catalog had listed 602; now 6,984 volumes where there had been 2,282.[32] In 1865 there had been no incunabula, 16th or 17th


LIST OF WORKS ON YELLOW FEVER

IN THE

LIBRARY OF THE SURGEON GENERAL'S OFFICE,

WASHINGTON, D. C.

SURGEON GENERAL'S OFFICE, AUGUST 20, 1869.

One of the earliest bibliographies published by the Library on topics of major importance at that time.

century books, and only six books and one periodical from the 18th. Now there were two incunabula, seventeen 16th, fifty 17th, and 162 18th century titles.

While selecting books Billings had sought works on three subjects of special interest to the Medical Department: cholera, yellow fever, and military surgery.[33] Military surgery was important because of accidents at forts and posts and of wounds received by soldiers in battles with Indians in the West. Yellow fever had invaded the country frequently since colonial times, killing soldiers on many occasions. Cholera had arrived less frequently than Yellow Jack but was just as deadly. In 1864 an epidemic of cholera along the coast of North Carolina had caused 278 deaths among Northern soldiers. In 1866 the disease had appeared at several forts. In 1867 cholera was responsible for 139 deaths and yellow fever 427 in the Army.

The Medical Department published long reports on cholera and yellow fever,[34] and Billings prepared bibliographies that were published as pamphlets on August 20, 1869: *List of Works on Cholera in the Library of the Surgeon General's Office, Washington, DC; List of Works on Yellow Fever . . .*; and *List of Works on Military Surgery. . . .*[35] Copies were distributed to surgeons and sent to appropriate libraries and agencies as gifts and exchanges. These were the forerunners of a host of bibliographies to be compiled in the Library during the next century.

Billings as Mycologist, Hospital Examiner, Editor

Although Billings was selecting publications, managing the collection, and compiling bibliographies, he was not yet concentrating on the Library. He studied mycology, off and on, and ordered books on the subject for the Library and himself. He wrote to Flügel, the Library's agent in Leipzig: "I am at present specially interested in the study of fungi, particularly as connected with recent theories of the causation of disease by their means. I find much trouble however in verifying some of the specimens that come into my hands, and want several books if not too costly."[36]

The infant Bureau of Agriculture was also interested in mycology because it was thought that a prevalent cattle disease might be a "cryptogamous" fever. In February 1869 the Commissioner of Agriculture requested the Surgeon General to permit Billings and Assistant Surgeon Edward Curtis, an expert photomicrographist of the museum, to help the Bureau determine if fungi really infected cattle.[37]

Intermittently from February to June 1869 the two men experimented at the museum.[38] Later that year an account of their investigation, which did not move the Bureau of Agriculture any closer to a knowledge of the cause and prevention of the illness, was published as a chapter, "Report of results of examinations of fluids of diseased cattle with reference to presence of cryptogamic growths" in a government document, *Reports of the Diseases of cattle, made to the Commissioner of Agriculture. . . .*[39]

Billings continued to dabble with fungi until the early 1870's, publishing

three articles on the subject. [40] In 1878 he sold his specimens and collection of books to the Bureau of Agriculture, which was building its library.[41]

In the autumn of 1869 Billings was borrowed by the Treasury Department to make a survey of marine hospitals, at that time loosely organized under the name Marine Hospital Service.[42] This agency, in existence since 1798, was composed of hospitals, some government-owned, some privately owned, where ill and injured merchant seamen were treated. The hospitals were located in busy ports on the Atlantic, gulf, and Pacific coasts, the Great Lakes, and major rivers.

During the period from September to October 1869 Billings visited many of the hospitals.[43] His report, which was not published and which has been lost for almost a century among myriads of government records, has been credited with providing Treasury officials with information and suggestions that led to improvements in the administration and organization of the Marine Hospital Service, which later evolved into the Public Health Service.[44]

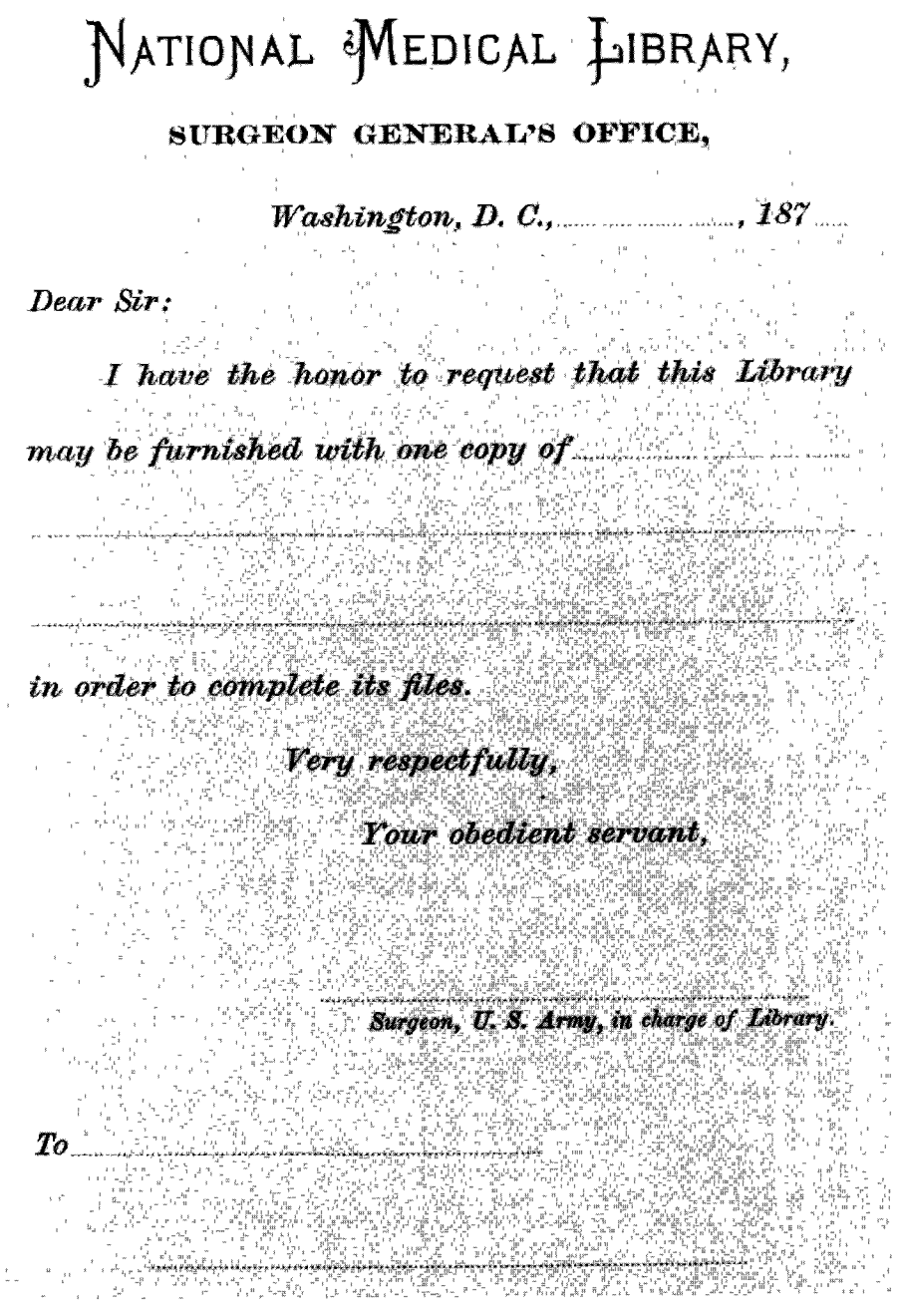
Sometime during the winter of 1869–70 General Barnes considered transferring Billings from Washington to an Army post, purveying depot, or regiment in the field. Billings had been in the Surgeon General's office for 5 years and normally he could expect to be reassigned.[45] This was a crucial time for the Library and Billings. If he had been transferred, he would not have had the opportunity to develop into an internationally famous librarian and bibliographer, and the Library might not have risen to prominence as the world's best. But Barnes changed his mind and retained Billings at headquarters.

General Barnes now asked Billings to prepare for publication a group of reports that surgeons had been writing and sending to Washington for a year, describing medical facilities at Army posts. Billings edited the documents, wrote to the authors to obtain additional information that he felt was needed, secured supplementary information from regular Army officers stationed in Washington, composed a 30-page general introduction, and shepherded the large manuscript through the press. Published in December 1870 under the title *Report on Barracks and Hospitals, with Descriptions of Military Posts*, it is referred to today by historians of western America for the information it contains on old forts, now in ruins.[46]

The National Medical Library

By the end of 1870 the Library contained approximately 10,000 volumes, more than 8,000 of which had been accumulated since the middle of the Civil War. In less than a decade the Library had become one of the largest medical libraries in the United States, exceeded only by those of the Pennsylvania Hospital and the College of Physicians in Philadelphia.[47]

During 1871 discussions must have taken place in the Surgeon General's office for the purpose of deciding the objective for the Library. Nothing is known of the views expressed there, but alternatives suggest themselves: should the Library level off its rate of growth and merely keep up with new medical literature, or should it continue to expand rapidly; should its use be restricted



NATIONAL MEDICAL LIBRARY,

SURGEON GENERAL'S OFFICE,

Washington, D. C., ..., *187* ....

Dear Sir:

I have the honor to request that this Library may be furnished with one copy of .....

.....

.....

in order to complete its files.

Very respectfully,

Your obedient servant,

.....

Surgeon, U. S. Army, in charge of Library.

To .....

.....

Letterhead used by Billings in the 1870's, showing his intention of developing the collection into a national library. This preceded by eighty years the official designation of the collection as the National Library of Medicine.

to government employees, or should it be open to the public? The spirit of ambition that desired to make the Army Medical Museum the greatest medical museum in the world was now directed toward the Library. The important decision, one which required some courage on the part of the Surgeon General because it would necessitate his making annual requests to tight-fisted congressional committees for funds, was made to develop the collection into the "National Medical Library."[48] To Surgeon General Barnes and Billings, this meant a library that would contain "every medical book published in this country and every work relating to public health and state medicine,"[49] that would be "as complete as possible in all publications relating to military organization, medicine, and the allied sciences,"[50] and would be "an universal library of references."[51] Thenceforth Billings concentrated on developing the Library. He did not put aside all other activities in medicine, but for his remaining quarter of a century in the Army his major goal was the building of a library for the American medical profession.

Up to this time the Library was known to Army physicians, to visitors to the museum who passed by as they walked up the stairs to the third floor of Ford's, and to those who heard of it by word-of-mouth. Now Billings set out to inform the American medical profession that the Library existed, was to be developed for the use of all physicians, and that it would welcome support and contributions. During 1871 and 1872 he wrote hundreds of letters to leaders of the profession about the Library. On trips to other towns (at least four trips in 1871 and five in 1872 to Philadelphia, New York, Cincinnati, Louisville, Baltimore, Boston, and other cities) to transact department business he visited influential physicians.[52] He compiled a new catalog and distributed copies to libraries, societies, and major donors.[53] He advertised for journals and books. He asked friendly editors to publicize the library, as did the widely circulated *Boston Medical and Surgical Journal,* which informed its readers:[54]

> Many members of the profession are probably unaware of the fact that the Surgeon-General of the U. S. Army has authorized the collection of a medical library in connection with his office and the Army Medical Museum at Washington, and that this collection has so rapidly increased that it has already reached an aggregate of 17,000 volumes
>
> For this national collection of books we are indebted to the intelligent appreciation of the Surgeon-General and the medical gentlemen connected with his office, the most active agent in its increase has probably been Dr. J. S. Billings, Assist. Surgeon U. S. A., who for five years has devoted himself constantly to the library, and still remains in charge of it. . . . Dr Billings hopes, by means of appropriations made for the purpose and by the aid he shall receive from the profession, to make it a valuable auxiliary in medical study and research.

The establishment of a "national" medical library seems to have been accepted calmly and with approval by the medical profession: at least there is no record of opposition while there is all manner of evidence that influential physicians showed by their subsequent contributions, support, and communications that they favored the idea.

Notes

[1] Billings was relieved from duty with the Army of the Potomac and assigned to the Surgeon General's office by Special Order 476, Adjutant General's office, Dec 31, 1864

[2] Letter, Billings to Thomas McParlin, medical director, Army of the Potomac, Jan 4, 1865 NA

[3] As a disbursing officer Billings paid accounts referred to him by the Property Division, accounts for purchase and distribution of artificial limbs and trusses for apparatus and supplies for the museum, for expenses of compiling and publishing the *Medical and Surgical History,* and for books and journals for the Library Vouchers that he signed are in NLM

[4] The precise date when Billings was appointed librarian is not known It is not in Billings' record of military service Probably the general, seeing Billings several times a day in the small house in which they had their offices, gave Billings an oral order to take care of the books Fielding H Garrison, who was associated with Billings for several years in the Library, wrote "In December 31, 1864, Dr Billings was assigned to duty in the office, acquiring among other things, nominal, though not official, care of this collection of books" (*John Shaw Billings, a Memoir* (1915, pp 213–214) Billings himself said "when the library came under my charge, in the fall of 1865 " (New York *Med Rec* , 17 298–299, 1880) I am disposed to believe the date given by Billings, who was there, rather than Garrison Garrison made minor errors in writing the biography of Billings, and I believe that this was one of them

[5] Letter, Surg Charles S Tripler to Billings, Mar 14, 1866, "You are I believe something of a bibliomaniac' MS/C/81

[6] The first letter, to my knowledge, sent by Billings for a book was dated Nov 6, 1865, to Medical Purveyor R S Satterlee, New York Later letters went to Satterlee on Feb 9, Apr 17, 1866, to Blanchard and Lea, Jan 3, 1866, to David Clapp and Son, Jan 3, 1866, to Frank Taylor, June 5, 1867 NA

[7] Judging by a comparison of the letters sent by Spencer and Billings for books SGO records, 1865–1867, NA

[8] See excerpts from Billings' diary, Jan –Nov , 1866, in Garrison, *Billings,* pp 142–150

[9] According to Billings' diary he began to experiment in microscopy in 1866 See Garrison, *Billings,* pp 144–148

[10] *Annual Report of the Surgeon General 1866,* p 8 The number of contract surgeons varied considerably On July 1, 1865 there were 1997, on July 1, 1866, 264

[11] Information about the Ford Building may be found in George J Olszewski, *Restoration of Ford's Theatre* (1963), and Henry's and Lamb's histories, referred to previously

[12] Letter, Asst Surg Gen Crane to Woodward, Dec 18, 1866 NA

[13] 'The second floor of the building is chiefly occupied by the division comprising the surgical records", J J Woodward, "The Army Medical Museum at Washington," *Lippincott's Mag* 7 234 (Mar 1871) The Library was so insignificant at this time that Woodward did not mention it in his 10-page article

On the title page of William Bromfeild, *Chirurgical Observations,* 1723, is stamped "SURG GEN'S OFFICE/DIV SURG RECORDS/454 TENTH STREET " The volume was purchased between 1865 and 1868 One wonders if the Library was considered as part of the Division of Surgical Records for a time Of course the book may have been purchased for the Division and later placed in the Library, or it may have been stamped accidentally

[14] Letter, Billings to Roehrig, Jan 10, 1867, "Roehrig is hereby assigned to duty in this office in charge of the library" NA

Roehrig had previously been a contract acting assistant surgeon from 1862 to 1865 in Philadelphia, 1865 to 1866 in South Carolina, and 1866 in the Dept of the Platte Roehrig remained at the Library until his contract was terminated on Sept 1, 1868 See note by Billings re Roehrig, Sept 1, 1868, NA

[15] There is little information about Billings' routine as a librarian during this period Garrison, *Billings,* 214–5, and George M Kober, *Reminiscences of George Martin Kober* (1930), pp 61-62, 70–71, remark on Billings' quarters at Riggs

[16] Letter, Billings to W Wesley, London, July 27, 1867 NA

[17] Letter, Barnes to Senator L M Morrill, chairman, Joint Comm on Library, Feb 9, 1872, "During the past four years a medical officer in this Office has devoted all his spare time to building up the library and to medical bibliographical work " NA

[18] Letter, Billings to W Wesley, London, Oct 17, 1867 NA

[19] Letter, Billings to Frederick Muller, bookseller, Amsterdam, Feb 19, 1868, "with regard to purchase of books, our fund for that purpose is not large, and as we have to get all new medical and scientific publications, we do not have much to spare for the old books" NA Billings made essentially the same statement to other booksellers

[20] Letters, Otis to Billings, Jan 25, Feb 14, 1869, Mar 11, 1871 MS/C/81

[21] Letter, Bill to Billings, Mar 16 1868 MS/C/81

[22] The number and titles of journals subscribed to each year may be found in notebooks, as Record of Medical Journals Received, vol 2, 1869, NLM

[23] The earliest incunabulum ordered was Matthaeus Silvaticus, *Liber Pandectarum Medicinae*, Venice, 1488 See letter Billings to Wesley, Oct 19, 1867 NA Perhaps the volume had been sold before Wesley could purchase it for Billings, it is not in NLM

[24] Billings' correspondence with American and European booksellers in NLM and in SGO records NA contain the titles of many books he ordered

Among Billings' early American books suppliers were the following firms Dr Samuel Butler, Peter Doyle, J D Price W A Leary, Jr , H C Lea, Lindsay & Blakiston, and John Campbell, all of Philadelphia, J P Des Farges, Kelly Piet & Co , R A Reed, and Gibson & Co , of Baltimore, James Campbell, Boston William Wood & Co , L W Schmidt, D Van Nostrand, Stechert & Wolff, E Steiger, Frank Mackay, B Westermann & Co , W A Townsend, and F W Christern, of New York

[25] Letter, Billings to Bossange, Jan 13, 1868, also letter, Billings to Wesley, Jan 4 1868 NA

[26] Letter, Billings to Wesley, Oct 17, 1867 also Billings to Wesley, Dec 13 1867 NA

On at least one occasion Billings tried to buy books at less than catalog prices by returning a catalog to a dealer, Frederick Muller, with prices he was willing to pay It is not certain whether Muller agreed to Billings offer Letter Billings to Muller, Mar 26, 1868 NA

[27] Later, Billings commissioned additional foreign agents Details of business arrangements with agents may be found in the following letters Billings to Wesley, July 27, Oct 12, 1867, to Bossange and Son, Oct 12, Dec 19, 1867, to Flugel, Oct 14, 1867, Mar 7 1868, to Muller, Jan 13, Feb 19, 1868 Surg Gen Barnes to Secretary of War, Mar 14, 1878, Surg Gen Sternberg to Second Comptroller of the Treasury, Feb 16, 1894, and to Comptroller Mar 30, 1900 NA Trubner & Co to Billings Oct 21, 1871 Wesley to Billings, May 12, 1871 NLM

Much of the correspondence between Billings and his agents, with invoices, bills, letterheads, and other documents, is in NLM

Billings did not inaugurate the custom of using European bookagents The Surgeon General s office had used the services of Flugel in the 1850's, see letter, Asst Surg Charles Smith to J Henry, Apr 4, 1861 NA The Smithsonian Institution, and perhaps other government agencies, also dealt with European bookagents

Billings' agents in Europe were very helpful, particularly Felix Flugel When Billings first visited Europe in 1881 he sent his uniform ahead to Flugel, preferring to wear civilian clothes until he reached Leipzig Flugel guided him around the city and introduced him to persons Billings wished to meet The two men became friends, and thereafter Flugel occasionally dropped personal remarks into his business letters, telling of young Flugel's progress in medical school, of his own studies in philology, exclaiming about the ' dreadful news from Washington" when Garfield was shot, and telling sadly of his wife's death in 1885 Billings visited Flugel again in 1881 and 1884 Flugel s correspondence is in HMD, NLM

[28] Letters, Billings to Wesley, Oct 12, 1867, June 19, 1869, to Bossange, Oct 12, 14, Dec 19, 1867, Surg Gen Barnes to Secretary of War, Mar 14, 1878, Surg Gen Sternberg to Second Comptroller of the Treasury, Feb 16, 1894, and to Comptroller, Mar 30, 1900 NA

[29] Letter, Billings to Bischoff, July 3, 1880 MS/C/81

[30] Letter, Billings to W Wesley, Feb 7, 1868 "I am now having a catalogue of our library printed " NA

[31] The 1868 catalog has 147 pages Books and titles are listed alphabetically from A to Z up to page 133, and from A to V in an appendix from p 135 to p 147 To the right of each title is the accession number There is no indication as to why the catalog had to contain an appendix, perhaps the printing proceeded so slowly that Billings accumulated many volumes that he listed in the catalog by means of the appendix

The National Library of Medicine, History of Medicine Division, has five copies of this catalog, one of which has the titles of many later acquisitions written on interleaves

During this period Billings probably started the Register or accession book of the Library The early entries in the Register were not dated, and for that reason the precise date when the Register was begun is not known But the accession numbers were printed along side of the titles in the June 1868 catalog, therefore the Register preceeded the catalog Furthermore the listing of titles in the front of Register 1 is similar to that in the catalog of October 1865 but had additional titles indicating that the Register was started some time after that catalog was published

[32] According to Garrison, *Billings*, p 214, the catalog of June 12, 1868 contained 2,887 entries, amounting to 6,066 volumes But Reg-

ister No 3, the accession book, recorded volume no 6984 on June 15, 1868 Therefore there is a discrepancy of 918 volumes, I assume that Garrison was wrong in his estimate or there is a difference in the definition of "volume "

[33] Letters, Billings to S W Butler, Jan 14, 1868, and to F Muller, Mar 26, 1868, emphasizing his desire for works on cholera and yellow fever NA

[34] *Report on Epidemic Cholera in the Army of the United States, during the Year 1866* War Dept , SGO, Circular 5, May 4, 1867

Report on Epidemic Cholera and Yellow Fever in the Army of the United States during the Year 1867 War Dept , SGO, Circular 1, June 10, 1868

[35] Copies in NLM have the original wrappers, and are interleaved with additional titles written in Titles are arranged alphabetically by author, and are accompanied by the accession numbers The cholera bibliography has 35, military surgery 22, and yellow fever 10 pages

[36] Letter, Billings to Flugel, Sept 3, 1868 Also letters to F Muller, Aug 27, 1868, to Wesley, Aug 28, 1868, Jan 19, 1869, to Bossange, Nov 7, 27, 1868, regarding orders for works on fungi NA

[37] Letter, Asst Surg Gen C H Crane to H Capron, Commissioner of Agriculture, Feb 17, 1869, in reply to Capron's letter NA

[38] Letter, Surg Gen J K Barnes to Capron, July 1, 1869, transmitting report NA

[39] This 190-page book published by the Government Printing Office, 1869, also contains chapters by C N Riley, John Reid, H W Ravenel, and the noted British veterinarian John Gamgee

[40] "The Study of Minute Fungi," *American Naturalist* 5 323–9 (1871), "The Genus Hysterium and Some of its Allies," *American Naturalist* 5 626–31 (1871), 'On Some Minute Fungi," (abstract of a talk by Billings, Feb 5, 1872) *Bulletin of the Philosophical Society of Washington* 1 42–3 (1871–4) Billings also may have written a humorous, fictitious article, "Microscopical Memoranda, by Dr Newlenz," Philadelphia *Med Times* 1 200 (March 1, 1871)

In a letter to S Cháille, April 3, 1876, Billings wrote "I have not done anything with the microscope for several years" MS/C/81 A statement by Garrison in *Billings*, p 152–3, also confirms that Billings put away his specimens in the early 1870's

[41] Letters, W LeDuc, Commissioner of Agriculture to Billings, Mar 15, 1878, Billings to LeDuc, Mar 25, 1878 MS/C/81 Attached to the letter of Mar 25 is a list of Billings' books and specimens with prices—the total price that he asked was $1,123, a large sum in those days

[42] Billings was ordered to report to the Secretary of the Treasury on Sept 11, 1869, by A G O Special Order 219

Surgeon General Barnes may have inadvertently brought about this inspection by his comments on a bill to appoint a supervising surgeon general for the Marine Hospital Service, letter Barnes to Senator C D Drake, May 14, 1868 NA

[43] Billings was absent from Washington inspecting hospitals from mid-September to mid-October 1869 according to letters to W Wesley, Sept 13, 1869, and October 1869 NA

[44] This report has not been seen since the 19th century Therefore some of the statements about Billings' influence on the reorganization of the Marine Hospital Service by biographers are not based on an examination of records and may not be reliable

Billings published an unsigned editorial, "The Marine Hosptial Service," Philadelphia *Med Times* 1 97 (Dec 15, 1870), giving views based on his inspection

[45] Letter, Billings to Flugel, Mar 29, 1870, "My connection with this office will probably cease on the 1 of June I will notify you as to who is to be my successor ", letter, Billings to Wesley, April 1, 1870, with same information NA

[46] The volume was published by the War Department, Surgeon General's Office, as Circular No 4, Dec 6, 1870 The book has been reprinted by Sol Lewis, New York, 1974, with an introduction by Col Herbert M Hart, U S Marine Corps

[47] During the Civil War money called the "slush fund" was accumulated at hospitals from the sale of fat, swill, and soap Upon the closing of the hospitals after the war, Surgeon General Barnes ordered that the fund, amounting to some $80,000, be used to develop the Army Medical Museum (Circular Orders 15, Sept 27, 1865, reprinted in Lamb, History Medical Museum, p 37 letter, Barnes to J M Brodhead, 2d comptroller, July 21, 1866, NA) George Otis, curator of the museum, spent the money for specimens and apparatus, and to have illustrations prepared for the *Medical and Surgical History* Billings was given responsibility for the accounting of the "slush" and other funds of the Surgeon General's office in 1870 His records (now in NLM) of the disbursement of the slush fund show that the money was used for the museum, not the Library While it is possible that some money may have been spent on books, it could not have been a large amount This explanation of the slush fund is given here to modify the statement made by S Wier Mitchell in his obituary of Billings (*Science* 38 830 (1913)),

copied by Garrison in his biography of Billings (p 214), that the early growth of the Library after the war was owing the availability of the slush fund for the purchase of books

[48] Letter, Surg Gen Barnes to J Eaton, Nov 25, 1872, "about one year ago it was decided to make this the National Medical Library, and it is intended to make it as complete as possible in that branch of science" NA One wonders how much of this decision Surgeon General Barnes and Billings were each responsible for It is possible that Billings was the prime mover and that Barnes merely signed Library letters written for him by Billings, but in view of the continual support given the Library by Barnes this seems improbable

[49] Letter, Barnes to Rep J A Garfield, Jan 6, 1872, also letter, Barnes to Sen L M Morrill, Feb 9, 1872 NA

[50] Letter, Billings to Gen A de Gorloff, Russian Legation, N Y , [Nov] 1871 NA

An editorial in *Boston Med Surg J* n s 9 May 9, 1872, p 305, quoted Billings as stating that the Library's scope was "military hygiene, medicine and surgery, public hygiene, medical police, and state medicine, including epidemics and quarantine, vital and medical statistics, medical and scientific journals and periodical literature, chemistry, meteorology and physics "

[51] Letter, Billings to A Jewett, May 13, 1872 MS/C/81

[52] Information on trips is from documents in the National Archives, Xerox copies of which are in MS/C/273

For example, he visited W H Mussey, book collector, Cincinnati (letter, Mussey to Billings, Sept 20, 1872) and T G Griffiths and D W Yandell, editors, Louisville (letters, Billings to Griffith and Yandell, Oct 10, 1872 MS/C/181)

[53] Billings and his clerks began compiling the catalog in 1871, and delivered the manuscript to the printer perhaps around the beginning of 1872 Billings hoped to have it "thro the press" in February 1872 (letter to Surg Eugene Abadie and Surg Warren Webster, Jan 17, 1872 MS/C/81) but apparently it was not completed until Apr (letter to Paul Eve Mar 12, 1872 MS/C/81)

This catalog was thrice as large as the previous catalog of 1868 (454 to 147 pages) and listed twice as many volumes (13,330 to 6066) Books were listed alphabetically by author, periodicals alphabetically by title From p 433 on is an index of the principal subjects

[54] Editorial, *Boston Med Surg J* , n s 9 305–6 (1872)

IV

The Great Journal Hunt

Billings Concentrates on Collecting Journals

THE purchase of medical publications was restricted by funds appropriated by Congress. For fiscal year 1872 Congress gave the Medical Department $7,000 to be divided between the Library and museum. From 1873 until 1884 Congress appropriated $10,000 each year, to be shared. Even though the price of publications was lower than now, Billings did not have much money to build a "national" medical library. He never had sufficient funds to buy all the books and journals that were published, and he had to decide what works were most useful and would be bought and what works would have to be passed over. From the beginning to the end of each fiscal year he had to watch the balance of appropriations. The necessity for conserving funds was a constant influence in Billings' life during all his years as Librarian.

Billings' collecting had two characteristics: an effort to collect *every* type of publicaton relating to medicine, and to obtain publications from *every* possible source. In addition to perusing book catalogs in search of bargains, he used every other legitimate means of obtaining printed materials. He wrote to physicians, publishers, editors, health officials, government officials, librarians, and society officers, in short, to every person and organization that had works he desired, hoping to receive donations, arrange exchanges, or, as a last resort, buy publications at a low price. He was an unusual bibliomaniac. He did not covet books for himself but for the Library, almost as though the Library were his own. Indeed, after his family, he considered the Library the most important thing in his life, telling a friend: "Providence has put three duties straight before me, i.e. 1, my wife + children: 2, this library + catalogue: 3, The Johns Hop Hospl. They are too much for me, by themselves, but I am doing my best for them . . ." Billings' letter writing and bibliomania set him apart from other departmental librarians of his time, who continued to enlarge their libraries in the customary manner, obtaining publications through the usual trade channels. Nowhere was Billings' tenacity, persuasiveness, and perserverance better illustrated than in his quest for journals.

During the acceleration of collecting in 1871 Billings added 3,760 publications to the Library, three times as many as in his previous most active year.[1]

Most of the new arrivals were books and pamphlets. Billings did not ignore journals, but neither did he show any unusual interest in them.

Toward the end of 1871, as he and his clerks were readying titles for a new catalog, Billings came to realize that there were large gaps in the Library's collection of American and foreign medical journals. He began to gather bibliographical information on the subject. He sent a clerk to the home of his friend collector-bibliographer-historian Joseph Toner to copy Toner's list of American periodicals.[2] He had a duplicate made of the list of current journals in *Physician's Annual*.[3] Undoubtedly he obtained information from journals themselves, from their practice of citing exchanges and reprinting or abstracting articles from other journals. He asked his European book agents for lists of foreign periodicals.[4] Once Billings became aware of the incompleteness of the periodical collection he began to fill the gaps as fast as possible.[5]

Medical Officers Serve as Billings' Book Scouts

Billings soon learned that booksellers could not supply out-of-date American journals quickly, if at all. One of his colleagues reported that New York book dealers looked upon old periodicals as "useless lumber, seldom called for, usually bought by weight as waste paper."[6] Billings had little response, other than promises, from dealers to whom he wrote. He decided to try to obtain old journals from elderly physicians with the assistance of his brother officers. Medical officers had collected and sent thousands of exhibits to the Army Medical Museum; perhaps this gave Billings the idea of asking them to seek out and send obsolete journals.

The Medical Department had more than 200 surgeons, assistant surgeons, purveyors, and storekeepers stationed at barracks, forts, posts, and depots. Some officers were in the western wilderness, but others were close to populated areas, and it was to the latter that Billings wrote and asked for help. He drafted a letter for his clerk to copy and send to Surgeons Andrew K. Smith, McPherson Barracks, Atlanta; James F. Weeds, Nashville; John F. Randolph, New Orleans; Alexander B. Hasson, Charleston; and Assistant Surgeons Bolivar Knickerbocker, Savannah; William J. Sloan, Louisville; and probably others:

> We are trying to make the files of medical journals (American) in our Library complete, so that there may be one complete collection of that sort to refer to, which at present is not the case. To this end we want to procure by purchase, exchange or otherwise the journals mentioned in the enclosed memorandum. Will you please try to procure for us all or a part of the journals wanted. It is unlikely that this can be done by a bookseller, though it would be well to put one on the look out, but they are undoubtedly in the hands of some of the physicians in the city, who might be willing to part with them in consideration of the purpose for which they are wanted. Please give the matter your best attention, and forward the journals by mail as you procure them, with memorandum of the cost which I will refund. Or if the publications of this Office in exchange can be used I will send them.

Billings wrote similar but more expansive letters to officers whom he knew

personally, as the following note to Surgeons Eugene Abadie, Detroit, and Warren Webster, Fort Independence, Boston:[8]

> I have been as you know trying to buld up a Lib for this Off. + have succeeded very well so far. We have now about 14000 vols + I hope by the middl of the next month to have a cat of it thro the press. The prep of this cat has enabled me to discover the gaps, + my next labor is to try + fill them up; especially do I wish to complete the files of Am. med. pers. [periodicals] for I think that we ought to have here every Am. med. j. good, bad, or indif, wh has ever been pub. I inclose herewith a list of some desiderata wh. you may be able to help me to procure + if you have the time + opportunity you will confer a favor not only upon myself but upon the Off if you will try to pro[cure] these for us. I am willing to pay any reasonable price for them, or to exchange the pub's of this Off or some of our dups for them. If you cannot procure all of the jrs asked for, odd vols, or even odd nos., will be better than nothing, as I may be able to complete the sets elsewhere. You will see by a glance at the list that there is little hope of finding anything on it fr. any regular book seller. This last chance is to find some public spirited old phys, or descendant of an old Phys who may have the books + be willing to part with them for the purpose for which they are designed, for a Nat Med Lib to represent Am. med. lit.

The lists of wanted journals that Billings attached to his letters were handwritten at first.[9] A few months later he had several different want-lists printed in editions of from 40 to 250 copies for distribution to his colleagues, agents, and correspondents.[10]

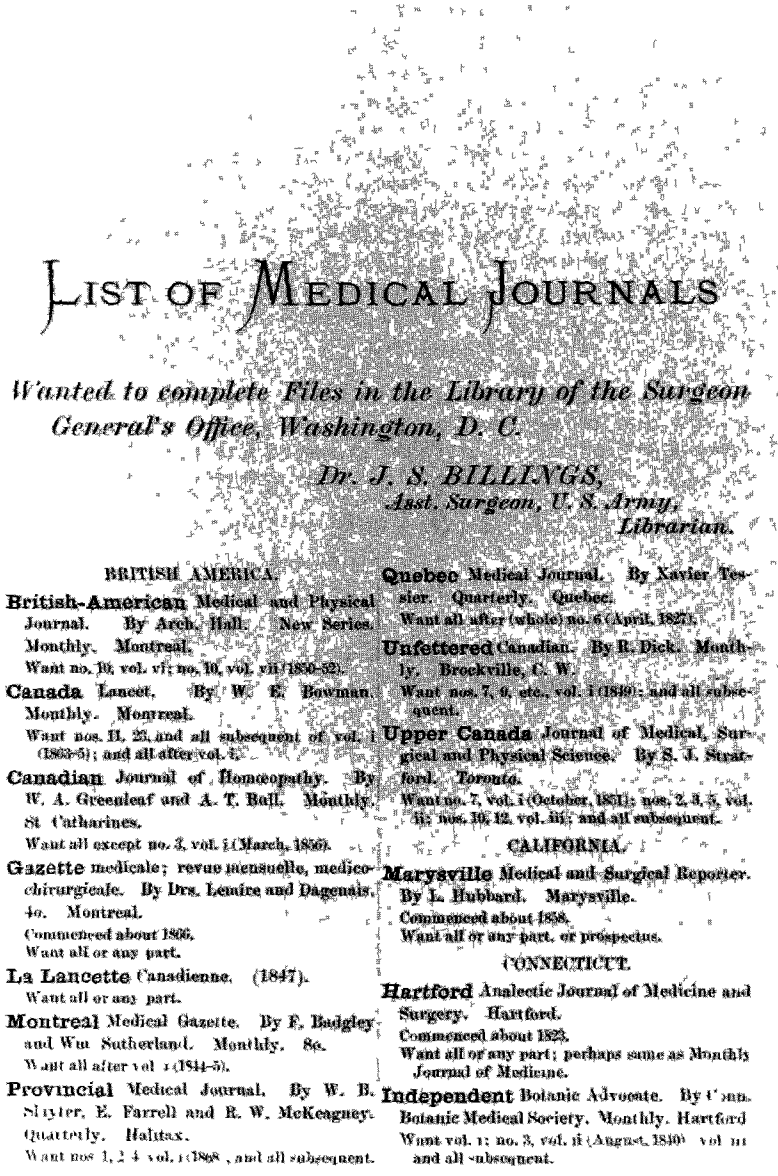
Receiving Billings' message, his volunteer book scouts ransacked second-hand bookstores, contacted editors, tracked down descendants of dead doctors, and raided libraries of living physicians. They cajoled physicians into donating desirable publications by appealing to patriotism and professional pride; and when appeals failed they offered exchanges or, as a last resort, money.

Assistant Surgeon Charles Smart, New York, sought out Samuel Smith Purple, one of the leading medical book collectors of his time. Smart told Billings of his reception:[11]

> I found Dr. Purple at home this P.M. He was very amiable, disposed of many duplicates he had a few years ago on the occasion of moving to a new house, but is hopeful that he may be able to assist a little yet as he has a box which contains he knows not what, but it may pay to overhaul it. He inquired if I had been to Miller and Christopher and gave me directions to find an Irishman named Lalor in University Square who has lots of old used medl books which may repay the time spent in looking over them. I shall hunt him up tomorrow and make a list of what he may have for your selection. I left a note of the journals wanted with Dr. P. and will call again about the end of the week. He says the four at the end of the list are quacks, more especially Hunters Specialist and you need not be anxious about them. He showed me them. He has a very handsome library, spent years in completing his magazine files, advertising, etc. found great difficulty anent certain western journals, and is extremely proud of the result of his labors on the well filled shelves around him. . . .

Smart visited the shop suggested by Purple, and told Billings of his success:[12]

> The old book store mentioned in my note of yesterday is a hard place to find



LIST OF MEDICAL JOURNALS

Wanted to complete Files in the Library of the Surgeon General's Office, Washington, D. C.

Dr. J. S. BILLINGS,
Asst. Surgeon, U. S. Army,
Librarian.

BRITISH AMERICA.

British-American Medical and Physical Journal. By Arch. Hall. New Series. Monthly. Montreal.
Want no. 10, vol. vi; no. 10, vol. vii (1850-52).

Canada Lancet. By W. E. Bowman. Monthly. Montreal.
Want nos. 11, 23, and all subsequent of vol. i (1863-5); and all after vol. i.

Canadian Journal of Homœopathy. By W. A. Greenleaf and A. T. Ball. Monthly. St Catharines.
Want all except no. 3, vol. i (March, 1856).

Gazette medicale; revue mensuelle, medico-chirurgicale. By Drs. Lemire and Dagenais. 4o. Montreal.
Commenced about 1866.
Want all or any part.

La Lancette Canadienne. (1847).
Want all or any part.

Montreal Medical Gazette. By F. Badgley and Wm Sutherland. Monthly. 8o.
Want all after vol. i (1844-5).

Provincial Medical Journal. By W. B. Slayter, E. Farrell and R. W. McKeagney. Quarterly. Halifax.
Want nos. 1, 2, 4 vol. i (1868), and all subsequent.

Quebec Medical Journal. By Xavier Tessier. Quarterly. Quebec.
Want all after (white) no. 6 (April, 1827).

Unfettered Canadian. By R. Dick. Monthly. Brockville, C. W.
Want nos. 7, 9, etc., vol. i (1849); and all subsequent.

Upper Canada Journal of Medical, Surgical and Physical Science. By S. J. Stratford. *Toronto.*
Want no. 7, vol. i (October, 1851); nos. 2, 3, 5, vol. ii; nos. 10, 12, vol. iii; and all subsequent.

CALIFORNIA.

Marysville Medical and Surgical Reporter. By L. Hubbard. Marysville.
Commenced about 1858.
Want all or any part, or prospectus.

CONNECTICUT.

Hartford Analectic Journal of Medicine and Surgery. Hartford.
Commenced about 1823.
Want all or any part; perhaps same as Monthly Journal of Medicine.

Independent Botanic Advocate. By Conn. Botanic Medical Society. Monthly. Hartford.
Want vol. i; no. 3, vol. ii (August, 1840) vol iii and all subsequent.

One of the want-lists that Billings sent to booksellers, physicians, librarians, book collectors, and medical officers.

> anything. The old fellow has no idea of what he has got. I hunted around this P.M. with the following result. But there is work for tomorrow there also. Almost the first book I came across was a copy of that 41–42 Medical Gazette — It never rains but it pours. [Then follows titles of 25 books he had found]

Two weeks later, after giving Purple an opportunity to search for duplicates, Smart returned to see the old bookworm. He informed Billings[13]

> Dr. Purple examined his box of duplicates and found that none of them filled any of your gaps the which he regrets very much. He says he is much given to looking over the old book stores; and many medical men in the city who know his penchant for old Am med literature, when they see or pick up anything of the kind come to him to mention it. If you correspond with him he might be able to help you, and seems very anxious to do all in his power.

Surgeon Webster talked with publishers, librarians, and physicians in and around Boston. Among the duplicates at Boston Public Library he found volumes of *Boston Medical Intelligencer, New England Journal of Medicine and Surgery and the Collateral Branches of Science, Medical Magazine, New England Medical Review and Journal, Medical World, Journal of Health and Monthly Miscellany,* and *Boston Journal of Chemistry*. From publishers he obtained volumes of *Good Health, New England Quarterly Journal of Medicine and Surgery, Boston Medical Intelligencer,* and *Boston Journal of Chemistry*. Henry Bowditch offered him *Georgia Blister and Critic,* and other physicians surendered *Guardian of Health* and additional journals. Webster asked Harvard for permission to search through the duplicates in its library, and he wrote to the librarians of Essex Institute and American Antiquarian Society. Unable to inspect every physician's library in the large city, he distributed copies of Billings' want lists.[14]

Surgeon Andrew K. Smith in Atlanta went to the publisher of *Georgia Medical Companion* and obtained recent issues and promise of a search for obsolete issues. With assistance from local physicians he secured numbers of *New Orleans Medical and Surgical Journal, Galveston Medical Journal, Southern Medical and Surgical Journal, Southern Dental Examiner,* some medical pamphlets, and medical regulations and orders of the Confederate States Army.[15]

Surgeon John F. Randolph, New Orleans, obtained complete runs of *Dental Obturator,* and *New Orleans Medical Record,* and issues of *New Orleans Medical and Surgical Journal, New Orleans Medical News and Hospital Gazette, Galveston Medical Journal, Southern Medical and Surgical Journal, L'Union Médicale de la Louisiana,* and *New Orleans Monthly Medical Register*. "A good many medical pamphlets, etc., have [been] found among the old rubbish," he told Billings.[16]

On the other side of the continent, Assistant Surgeon Edwin Bentley, Point San José, California, obtained a complete set of *San Francisco Medical Press* as well as numbers of *California Medical Gazette, California State Medical Journal,* and *San Francisco Medical Journal*. But the *Marysville Medical and*

Surgical Journal, an excessively rare periodical, defeated him, as he informed Billings:[17]

> I have applied myself with diligence to obtain the numbers. Dr. [Lorenzo] Hubbard [the editor] is dead. I have sought out his widow, and have had two interviews with her, without obtaining any definite information about it. I have inquired of all the physicians here, who would be likely to know anything of it. Some of them [illegible] others lived at Marysville at the time Dr. Hubbard did. I have written a number of letters and have caused others to be written in regard to it.

Despite Bentley's efforts, the Library never did acquire all the issues of the Marysville journal.

In Buffalo, Surgeon Charles H. Alden, Fort Porter, called on Thomas F. Rochester four times before finding him at home but then obtained numbers of *Western Lancet, Canada Lancet, Detroit Review of Medicine and Pharmacy, Buffalo Medical Journal and Monthly Review, New York Journal of Medicine and the Collateral Sciences, American Medical Gazette,* and *American Medical Monthly*. He told Billings about his visit to the home of Julius F. Miner, a teacher in the medical department of the University of Buffalo and an editor of *Buffalo Medical and Surgical Journal:* "He kindly let me go into his attic myself, but while willing I should take what was necessary to complete files, he desired me to take nothing else, though there were other things I think you would have liked." From Miner he obtained 247 items including transactions of societies, numbers of 23 journals, nine hospital reports, 38 medical college announcements, and 25 medical pamphlets.

Alden was also successful at the home of James P. White, another teacher in Buffalo's medical department. "Yesterday afternoon," Alden wrote Billings, "I spent in Dr. J. P. White's garret + got some needed pamphlets." Among these were issues of seven journals, several *Transactions of the New York State Medical Society,* old announcements of medical colleges, and duplicate journals. Alden estimated his loot "would about fill 3 whiskey boxes."

Alden tracked down the libraries of two deceased physicians and through the courtesy of the new owners obtained 130 items from one collection and 30 from the other, including journals, proceedings of societies, college catalogs, hospital reports, books, and pamphlets. After making seven visits to the home of George N. Burwell, Alden finally pried loose from the reluctant physician 46 pamphlets and journals. Regarding another Buffalo resident Alden wrote:[18]

> One old German physician had had a complete file of one of the German journals wanted but unfortunately it was destroyed by fire quite recently. . . . He was apparently so much disappointed at not having anything for me that he brought out some old medical works which he offered to contribute They are Bell's Surgery 6 vols, Cullen's Synopsis (Latin), Cullen's Practice 3 vols + Brooks Surgery. I took only a hasty memorandum but I think this edition of Cullen's Practice is not in your catalogue nor do I find Brooks Surgery in it.

Surgeon Francis L. Town, Fort Preble, Maine, acquired *Transactions of the Maine Medical Society,* the society's code of ethics, and a pamphlet on the

Maine General Hospital, under construction, but he had difficulty obtaining *Maine Medical and Surgical Reporter*, a short-lived periodical published in Portland, 1858–59. He told Billings:[19]

> Dr. Gilman, one of the old practitioners here, has repeatedly promised to let me have them, he says he knows that he has them stowed away with other med. literature in his garret, and will certainly hunt them up. Now Dr. Gilman is one of these easy going old gentlemen rather fond of his alcohol, though a leading practitioner, who fully lives up to the reverse priciple of never doing today what can possibly be deferred until tomorrow, or next week preferably. Simply I can not get him to look them up, but will suggest to him the propriety and desirability of doing so at suitable intervals.

After 2 months slipped by without any action from Gilman, Town tried another tack:

> I finally called upon Mrs. G, and stated my case. Mrs. G. kindly undertook to look them up herself. By an extraordinary coincidence every number was found except nos 8 and 12 [which Billings needed]. Mrs. G. stated that she made careful personal search but could not find the two missing nos.

Neither Billings nor Town knew at the time that the journal had expired after number 11 had been published, and that number 12 did not exist. Fortunately, number 8 came into Billings' possession later.

Surgeon Town's search for journals was heard of by R. D. Bibber, a physician of Bath, Maine. Bibber was just beginning to practice and was so debt-ridden that he could not afford to subscribe to the *Boston Medical and Surgical Journal*. He offered volumes from his library if Billings would lend him the *Boston* periodical for a year; but if regulations would not permit this, he would donate his volumes to the Library. Billings subscribed to the *Boston* journal in Bibber's name, and offered to send him other journals.[20]

In St. Louis, Acting Assistant Medical Purveyor George T. Beall obtained issues of *St. Louis Medical and Surgical Journal* and *St. Louis Medical Reporter* with assistance of a former editor, William M. McPheeters, who "had some trouble in collecting them." Trying to locate a copy of *Saint Joseph Medical Journal*, 1859–1860, by writing to a friend who lived in Saint Joseph, Beall learned that Joseph Toner had searched for the periodical. This was one of several instances when Billings' path intersected those of the other major medical collectors of his time. Beall was assiduous in gathering pamphlets, books, and journals, but some of his visits to physicians were in vain. He told Billings:[21]

> I made several calls on Dr. Geo. Johnson and on saturday night I called and waited for him. He informed me that Dr. Judd and several others had called on your behalf, but unfortunately he had given all of his journals, etc. to a young doctor who was now residing out of the city. I called on Dr. Hammer twice, looked through his library, and found nothing but bound works in German and French. . . . Dr. Martin when I called and presented your note said that he had promised his journals + pamphlets to a Dr. Gill who had called on him several days previous, but that he would look over his books and let me have some. I very politely informed him that I had a great deal of spare time and if he would permit me I would select such journals etc that was required and he

could inform me afterwards which I could take. He replied that he had plenty of time and preferred looking himself. . . .

Surgeon James Weeds called on Nashville physicians and editors:[22]

I have devoted a part of every week day for the last three weeks to this duty and I am now going four miles in the country to see Dr. Jones who was the editor [of] one of the journals required. And I will continue the labor daily and visit every phy in the city and will collect a journal here and there as I find them. The State Med. Society meets here on the 2d May. I will have a number of the lists you sent me printed and circulated amongst the members of the Society, and will introduce the subject to them and ask urgently for their co-operation.

Weeds found only one set of the extinct *Nashville Monthly Record of Medicine and Physical Science* in the city and cajoled former editor Thomas L. Maddin into parting with it. He obtained five volumes of *Southern Medical and Surgical Journal* from ex-editor Paul F. Eve. He visited the medical department of University of Nashville and found a lot of journals in "an out of the way closet." He arranged a trade whereby a former editor of *Nashville Journal of Medicine and Surgery* gave three volumes of the periodical and a promise to search for others in exchange for volumes of the London *Practitioner* and the London *Medical Times and Gazette*. He obtained other volumes of *Nashville Journal* from former editors W. K. Bowling and William L. Nichol, who "ransacked their private libraries and the library at the Medical College," and from Eve. But some issues of this journal continued to elude him except in the complete set owned by the current editor George Blackie. Blackie, who had had his set bound at a cost of $1.50 per volume, remained impervious to Weeds' appeals that he donate them; and after waiting months while Weeds searched vainly for the missing issues, Billings surendered and paid Blackie $4 each for the 30 volumes in his set. This was a rare occurrence, for seldom were Billings and his scouts unable to persuade book owners to give their treasures, or sell them at Billings' unbelievably low prices.

In Cincinnati, Acting Assistant Surgeon L. A. James "looked over the libraries of our older physicians where [I] would be most likely to find these old journals" and came away with volumes of *Western Journal of the Medical and Physical Sciences, Western Lancet, Ohio Medical and Surgical Journal, Columbus Review of Medicine and Surgery, Dental Register, Baker Journal (Medical News), Medical Counsellor,* and *Botanico-Medical Recorder*. He tracked down an editor and obtained from him the complete *American Psychological Journal*. From the son of a deceased physician he obtained "forty or fifty" numbers of *Western Journal of Medicine and Surgery*. Within 3 weeks he sent five boxes of journals to the library. "I find that Doctors are prompt in making promises," he told Billings, "but poor to execute them, and . . . the way I . . . obtained the large number of journals I sent you, was by coaxing . . . the ladies, to let me look over their libraries, which I did most thoroughly." A month after starting his search he reported: "I have looked over carefully some

dozen libraries & some of them three or four times & where to look next I am at a loss to know." But James kept going until he had literally cleaned out Cincinnati. He extracted at least five more boxes of journals, books, and reports from the libraries of at least nine physicians.[23]

James was defeated trying to obtain a complete copy of volume 7 of *Western Journal of Medical and Physical Sciences* to replace the volume in Washington, which lacked several pages. The only copy he could find in the city belonged to William H. Mussey, who had collected and donated the Mussey Medical and Scientific Library to the Cincinnati Public Library. Finally James persuaded Mussey to swap his supposedly perfect volume for Billings' imperfect volume. But when Mussey's volume arrived at the Surgeon General's Library Billings discovered that eight pages and parts of two other pages were missing. So Billings took the pages he needed from Mussey's volume and returned the remains.

Assistant Surgeon Ely McClellan did not have much luck in Kentucky. He sent Billings' want list to nine county medical societies but obtained only a few volumes. "It is hard work to get these doctors to take sufficient interest in anything from which they can expect no personal gain," he informed Billings.[24]

Retired Surgeon Burton Randall, who lived on the western shore of Chesapeake Bay, did not have any success. "I persuaded Dr. Handy the partner of Dr. Claude to examine all Dr. C books," he wrote Billings, "and he assures me there is but one your list calls for, and that is the one of the journals of Dr. N. Smith, which contains a description of his splint, and that he refused to let you have. Dr. Ridout refuses to part with any more of his books."[25]

Surgeon William J. Sloan picked up only one issue of a journal in Louisville. He informed Billings: "I have worked faithfully and unsuccessfully among sleepy doctors, who made promises which they did not keep . . . When in dispair I appealed to Dr. Griffiths, who knows everybody and is persistent. He has worked faithfully and is still at it. He is entitled to all the credit and I to none except applying the spurs to him." Sloan's major contribution was in recruiting Thomas J. Griffiths who scouted well for the library, and recruited other scouts.[26]

Assistant Surgeon Harvey E. Brown received Billings' request shortly before Brown sailed from New York to examine the condition of quarantines along the Atlantic and gulf coasts, a study that Congress had requested in the hope that quarantines could be improved, thereby barring yellow fever and other epidemic diseases from the United States.[27] At each port Brown visited he spread news of the developing library. From Norfolk he wrote back to Billings:[28]

> I arrived here day before yesterday, and have had an opportunity of seeing a number of the med'l gentlemen of the city, with whom I have conferred in reference to the Library. Dr. Wm G. Moore and Dr. Wm Selden of the regular school, and Dr. Hardy of the homeopathic persuasion have taken an especial interest in our enterprise. Dr. Moore is the president of the Norfolk Co. Med'l Soc, and wishes me to ask you to send him a dozen or so copies of the list of medical journals you need, and he will do all in his power to assist you. So will Dr. Selden who is the oldest + most respected physician in the place. Dr.

> Hardy, who although a homeopath, seemed like a very nice gentleman, told me he would do all in his power for the library. . . . I think if you could send each of these gentlemen I have named a copy of your catalogue and also of some of the reports issued from the S.G.O. viz, those on excisions at the hip etc, you would more than get it back in the work they would do for you. But if you cannot do that, at all events send Dr. Moore a dozen copies of the lists of med'l journals you want so that he can distribute them among the members of his society.

After Brown had sailed to Charleston and become acquainted with physicians there, he told Billings:[29]

> At Wilmington I met two most estimable physicians, Drs E. A. Anderson and W. G. Thomas, before whom I laid the library project. They both became very much interested in it, and the former especially was quite enthusiastic about it, promising the warmest cooperation. He told me of the library of a former partner of his, Dr. McCrea, now deceased, which contains an immense number of old journals and pamphlets, which he was sure were not at all valued by their present possessor who would doubtless part with them willingly.

Reaching Savannah Brown continued to act as the recruiting officer for Billings' growing army of book scouts.[30]

> To the list of physicians who will aid you in regard to the library to the extent of their ability let me add Dr A. S. Baldwin of Jacksonville, Fla, with whom I had a long conversation a few days ago. I found that my good friend Prof. Porcher of Charleston was very much interested in the matter, so I did not lay the matter before any other of the Charleston doctors, though I think you would find Drs Frank Robertson and Manning Simons very good men to write to. I find that Knickerbocker who is stationed here has the matter in hand so I have done nothing here. Dr W. G. Bullock of this place told me Dr Cuyler had written to him about it. Dr R. G. Arnold also seemed interested in the project, and gave me some pamphlets of his own which I will send you after I get through with them. I sent you this morning a lot of Mayor's reports of this city, that contain some valuable vital and mortuary statistics. I am going to leave for New Orleans this evening and will continue to say a word for the library when I have a chance, though I find my time so much occupied with my proper work that I can do but little personally toward collecting.

In New Orleans at the end of his tour of inspection, busy writing his report, Brown found time to publicize the growing library in Washington:[31]

> I send you this morning a valuable manuscript history of the epidemic of yellow fever in Wilmington, N.C. in 1862, from the pen of Dr E. A. Anderson, which has never been published. I have also quite a large number of other pamphlets which I will send when I have finished them. You will find Drs S. M. Welch and G. W. Peete of Galveston willing to help you about the library.
>
> * * * * *
>
> I have just had a very pleasant talk about the library with Dr. M. Schuppert, a most intelligent German practitioner and author of this city. He took great interest in the subject and promised to do his share and as a first installment asked me to forward with his compliments the accompanying copy of "Weidmann on Necrosis of Bones." I see you already have it in the library but a second copy

> may be useful for exchange, and I did not like to refuse what the Doctor evidently considered a valuable gift.
>
> Dr. M.S. told me he was going to Europe next year and that if you would send him a copy of the catalogue and accompanying supplement he thinks he could be of a good deal of service to you there, and would be glad to devote a portion of his time to the matter . . .
>
> I am getting along very well but shall be glad to get back north again. I am hampered in my work for want of books of reference, and could do more work in one day in the library than here in a week.

Joshua Simpson, retired medical officer, searched through three secondhand book stores in Baltimore without success but obtained the *Journal and Transactions* of the Maryland College of Pharmacy from the president of the institution.[32] Assistant Surgeon Bolivar Knickerbocker, Savannah, Georgia, made and distributed copies of Billings' want lists and thus obtained some journals.[33] Surgeon John H. Frantz, Columbia, South Carolina, also gathered southern journals.[34] Assistant Surgeon Samuel M. Horton, Plattsburgh Barracks, New York, sent 46 issues of *Nelson's Northern Lancet* from a physician who promised to look for other numbers.[35] Surgeon John F. Hammond, aided by one Dr. Sharp, "made as thorough a search as practicable" through San Antonio, Texas.[36] Later, asked by Billings to find several issues of *Texas Medical Journal* Hammond replied: "The town has been searched . . . not a number has been found."[37] Surgeon Glover Perrin, Fort Leavenworth, forwarded journals located by Acting Assistant Surgeon A. C. Van Duzen.[38] Assistant Medical Purveyor Charles Sutherland, New York City, obtained issues of a Canadian dental journal from a friend of a friend.[39] Surgeon Alexander B. Hassan found at least one patron, S. W. Barker who informed him: "My set of the *Charleston Journal* was raided upon during the war, when I lost several numbers," but the remainder was "at the service of the Surgeon General."[40] Assistant Surgeon J. V. D. Middleton, Baton Rouge; Acting Assistant Surgeon R. M. Reynolds, Mt. Vernon Arsenal, Alabama; Assistant Medical Purveyor Robert Murray, San Francisco; and Assistant Surgeon Morse K. Taylor, Thomas Barracks, Huntsville, Alabama, looked over old libraries and sent first copies and duplicates.[41]

Billings owed much of his success in collecting scarce, back-issue medical journals (and other publications) to his volunteer army of journal scouts. Without the help of these men Billings would never, in my opinion, have been able to put together the fine collection of American medical journals that now rests on the shelves in the National Library of Medicine. Although Billings and his scouts gathered the most complete collection of American medical journals in existence, many issues eluded them in spite of their zeal. Southern journals had been decimated during the Civil War. "So many libraries were removed, scattered & burnt during the war the medical journals are hard to procure," wrote Peter Porcher of Charleston.[42] Fires had burned physicians' homes and libraries.[43] Widows and children had sold unbound journals to paper mills.[44] Some journals published in rural communities had been printed in small num-

bers, are among the rarest of American medical periodicals, and were extremely difficult to find as early as the 1870's.

Acquiring Old Journals From Editors and Publishers

While Billings' scouts were reaping a harvest of journals, books, and pamphlets from physicians, Billings was trying to garner back issues and sets of periodicals from editors and publishers. One of the first editors to whom he wrote was Austin Flint, a prominent New York physician, author, and teacher at Bellevue Hospital Medical College:[45]

> I am trying to form for the library of this Office a complete collection of American medical periodicals, and to this end am desirous of obtaining sets as complete as possible of the old Buffalo Medical Journal, and of the New York Monthly Review of Medical and Surgical Sciences, of which, I believe you were, at one time, editor. Have you either a set, odd volumes or numbers, of these journals that you could spare for this purpose or, if not can you give me information as to the source from which it is most probable that I can obtain them by purchase, exchange or otherwise?

Assistant Surgeon Smart, who went to Flint's home on Billings' behalf, reported that the elderly surgeon "was very kind and anxious to oblige, hunting all over the upper shelves of his library with the activity of a young man."[46]

Another ex-editor whom Billings approached was Paul F. Eve, a former professor of surgery at University of Nashville and Confederate Army surgeon, who had been associated with the defunct *Southern Medical and Surgical Journal* and *Nashville Medical and Surgical Journal*:[47]

> I am trying to make our Library a complete collection, especially as regards American medical literature. We now have over 16,000 volumes besides 3000 or more pamphlets, have got the books safely and conveniently arranged on iron shelving in a fire proof building, and it is now understood to be a part of the National Library and is open to the public on the same regulations as the Congressional Library. We hope for regular appropriations and desire to make it a counterpart of the Library of the Royal College of Surgeons in London. The greatest difficulty is to get hold of the old medical pamphlets, addresses, lectures, &c, and to complete the files of American medical journals. I have made this statement thinking that if you knew the purpose and scope of the Library you might be able to help us. I enclose a list of desiderata in the way of journals.
>
> I hope to get out a preliminary catalogue of the Library (450 pages) in about three weeks. I want next to print a bibliography of American medical journals and periodical literature and would be much indebted to you for any data or memoranda which you can give with regard to western and southern journals, their dates of commencement and cessation &c. The scope of the Library includes irregular journals of all kinds if American.

Eve relied with bibliographical information and promised to donate journals.[48]

Bennet Dowler, retired editor of *New Orleans Medical and Surgical Journal* and *New Orleans Medical Record* received a visit from Surgeon John F. Randolph, who handed him the following letter from Billings:[49]

> The Library forms the medical section of the National or Congressional

> Library, and now contains about 18,000 volumes. . . . And my purpose in writing to you is to respectfully ask your aid in completing the files of Southern journals and also whether you have not some old medical pamphlets which you would be willing to spare for the Library. . . .
>
> In conclusion it may be proper to remark that the Library is now open to the public, conveniently arranged and catalogued, is in a fire proof building, and will, at no distant day it is hoped, be an object of pride to the medical profession of this country.

Dowler gave and sold journals and other publications to the Library.[50]

On one occasion Billings assembled all the volumes of a journal when even the editor could not put together a set for himself. Seeking issues of *Ohio Medical and Surgical Journal*, Billings learned that Surgeon Woodward of the medical museum knew a Mr. Sullivant of Columbus who was acquainted with the current editor Theodore C. Wormley. Billings wrote to Sullivant, who obligingly visited Woormley, who replied with the missing issues and the following note:[51]

> I send you with this mail nos 4 & 5, vol iv of the Ohio Med & Surg. Journal, which I believe completes your set of the journal. I have not yet been able to obtain No. 1, vol. 1, No. 2, vol. iv; & No. 3, vol. vi, of that journal for my own library. If you have duplicate nos of any of these, I would be much obliged for them.

Trying to get a copy of the first Canadian medical periodical, *Journal de Médicine de Québec* published in 1826 and 1827, he wrote to P. O. Tessier, son of the editor:[52]

> I enclose to you a list of medical journals which I am trying to make complete for the Library of this Office, and also a special manuscript list showing what we desire to obtain of British American journals so far as I know of their existence. This Library now numbers over 17,000 vols and we want to make it as complete as possible and especially in the medical literature of North America. And my purpose in writing to you is to respectfully request your assistance in completing our files, hoping especially that you can procure for us a copy of the Quebec Medical Journal edited by Xavier Tessier. I do not know how many volumes were published. I am willing to purchase any of the journals wanted for our files, or to furnish the valuable medical and surgical publications of the Office in exchange for them.
>
> Besides the journals I am desirous of obtaining old medical pamphlets and reports of all kinds, or printed theses. Such pamphlets can only be procured from the libraries of old physicians who may be willing to part with them in consideration of the object for which they are desired viz. to form on this side of the Atlantic one medical library of reference and record as complete as it can be made.
>
> If you will call the attention of some of the old physicians in Quebec to this request, and will act as agent for us in this matter you will confer a great obligation which I shall endeavor in some way to meet.

Tessier promised to "spare no trouble" to procure the volumes for Billings but remarked that old journals were difficult to find because Quebec had been burned by four fires within a period of 27 years. Apparently he was unable to

do so, for the volumes now in the Library were obtained almost two decades later.[53]

Presumably Billings wrote to every editor and publisher whose journal he needed, among them George E. Fenwick, surgeon to the Montreal General Hospital, professor of clinical surgery and medical jurisprudence at McGill, and one of the founders and coeditors of *Canada Medical Journal;*[54] Henry C. Lea, Philadelphia publisher, for copies of the old extinct *American Medical Intelligencer* and the *Medical News and Library;*[55] Samuel S. White of Philadelphia, manufacturer of dental supplies, and publisher of *Dental Cosmos* and the extinct *Dental Newsletter;*[56] Clarkson T. Collins, now of Great Barrington, Massachusetts, who had been a dispensary physician at New York Asylum for Lying-in-Women, a ward vaccine physician, and editor, 1845 to 1847, of the short-lived *New York Medical and Surgical Reporter;*[57] Samuel Worcester Butler, editor and publisher of *Half-Yearly Compendium of Medical Science, Medical and Surgical Reporter,* and many other medical works;[58] George Jacob Ziegler, formerly an editor of *Dental Cosmos* and now proprietor of *Medical Cosmos;*[59] Anson L. Clark, professor of obstetrics and diseases of women and children, and H. D. Garrison, professor of chemistry, pharmacy, and toxicology, Bennet College of Eclectic Medicine and Surgery, who had recently taken over the editorship of *Chicago Medical Times;*[60] H. A. Tilden, New Lebanon, New York, pharmaceutical manufacturer, editor and publisher of *Journal of Materia Medica;*[61] John Fulton, professor of physiology and institutes of medicine at Trinity College Medical School in Toronto, and editor of *Canada Lancet;*[62] the firm of Johnson & Lund, manufacturers of porcelain teeth and other dental items, and publishers of *Dental Quarterly;*[63] Homer Judd, professor of institutes of dental science in Missouri Dental College and editor of *Missouri Dental Journal;*[64] Stanford E. Chaillé, professor of physiology and pathological anatomy in University of Louisiana Medical Department and a former editor of *New Orleans Medical and Surgical Journal;*[65] I. Tisdale Talbot, soon to be the dean of the Medical School of Boston University, and editor of *New England Medical Gazette;*[66] Francis H. Brown, editor of *Boston Medical and Surgical Journal;*[67] Cl. T. Campbell, Stratford, Ontario, Canada, editor of the short-lived *Canada Health Journal;*[68] and Samuel D. Gross, noted surgeon of Philadelphia and formerly an editor of *Western Medical Gazette, Lousiville Review,* and *North American Medico-Chirurgical Review.*[69]

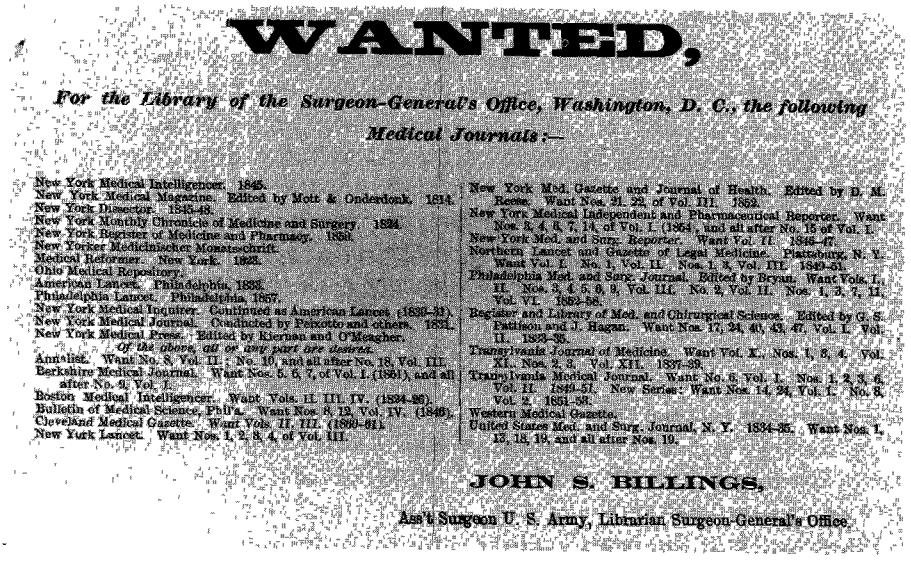
All of the forementioned editors and publishers reacted in a friendly manner to Billings. They donated, exchanged, or sold issues or volumes, relayed his requests to other editors, provided him with bibliographical information, and occasionally assisted him by mentioning, in their periodicals, the Library and its search for journals.

Editors seem to have been very helpful in Canada, where Billings had no medical officers serving as part-time book scouts. John Fulton published Billings' letter in *Canada Lancet* and thereby brought donations and exchanges from cooperative Canadians.[70] J. E. Fitzpatrick of Bay St. Paul, Quebec, sent

rare Quebec journals, annuaires of Laval University, and other publications.[71] H. J. Saunders, Kingston, Ontario, sent volume 6 of *Medical Chronicle or Montreal Monthly Journal of Medicine and Surgery* and numbers of *British American Journal of Medical and Physical Science* in exchange for circulars of the Surgeon General's office.[72] D. Robertson, Milton, Ontario, offered the first five volumes of *Medical Chronicle,* which, with Saunders' volume, gave the library a complete set.[73] James McIntosh, Vankleek Hill, Prescott County, Ontario, offered volumes of *Canada Medical Journal, Medical Chronicle, British American Journal,* and *Northern Lancet and Gazette of Legal Medicine.* McIntosh scouted around for Billings and found pamphlets, books, and journals that he forwarded to Washington.[74] C. A. Jones, Holstein, Ontario, offered issues of *British American Journal of Medicine, Canada Medical Journal, Upper Canada Medical Journal,* and *Medical Chronicle.*[75]

A year later, still searching for elusive Canadian publications, Billings ran an advertisement in the *Lancet.*[76] Daniel Clark, Princeton, Ontario, saw the ad and sent Billings issues of *Canada Lancet* and *Canada Health Journal,* in exchange for circulars.[77] Thomas Hawkins, Oxley, Ontario, sent numbers of *Upper Canada Journal of Medical, Surgical and Physical Science.*[78]

Editors and publishers helped Billings obtain recent issues of periodicals, but seldom could they supply back issues. Publishers, not having much storage space and not receiving many requests for old numbers, did not carry much of a stock of out-of-date issues. And there were other reasons why editors could



WANTED,

For the Library of the Surgeon-General's Office, Washington, D. C., the following Medical Journals:—

New York Medical Intelligencer. 1845.
New York Medical Magazine. Edited by Mott & Onderdonk. 1814.
New York Dissector. 1845-48.
New York Monthly Chronicle of Medicine and Surgery. 1824.
New York Register of Medicine and Pharmacy. 1850.
New Yorker Medicinischer Monatschrift.
Medical Reformer. New York. 1822.
Ohio Medical Repository.
American Lancet. Philadelphia, 1833.
Philadelphia Lancet. Philadelphia, 1857.
New York Medical Inquirer. Continued as American Lancet, (1839-41).
New York Medical Journal. Conducted by Francis and others. 1851.
New York Medical Press. Edited by Kiernan and O'Meagher.
Of the above, all or any part are desired.
Annalist. Want No. 8, Vol. II.; No. 10, and all after No. 18, Vol. III.
Berkshire Medical Journal. Want Nos. 5, 6, 7, of Vol. I. (1861), and all after No. 9, Vol. I.
Boston Medical Intelligencer. Want Vols. II. III. IV. (1824-26).
Bulletin of Medical Science, Phil'a. Want Nos. 8, 13, Vol. IV. (1849).
Cleveland Medical Gazette. Want Vols. II. III. (1860-61).
New York Lancet. Want Nos. 1, 2, 3, 4, of Vol. III.
New York Med. Gazette and Journal of Health. Edited by D. M. Reese. Want Nos. 21, 22, of Vol. III. 1852.
New York Medical Independent and Pharmaceutical Reporter. Want Nos. 3, 4, 5, 6, 7, 14, of Vol. I. (1864), and all after No. 18 of Vol. I.
New York Med. and Surg. Reporter. Want Vol. II. 1848-47.
Northern Lancet and Gazette of Legal Medicine. Plattsburg, N. Y. Want Vol. I. No. 1, Vol. II. Nos. 1, 3, Vol. III. 1849-51.
Philadelphia Med. and Surg. Journal. Edited by Bryan. Want Vols. I., II. Nos. 3, 4, 5, 8, 9, Vol. III. No. 2, Vol. II. Nos. 1, 3, 7, 11, Vol. VI. 1852-58.
Register and Library of Med. and Chirurgical Science. Edited by G. S. Pattison and J. Hagan. Want Nos. 17, 24, 40, 43, 47, Vol. I. Vol. II. 1839-35.
Transylvania Journal of Medicine. Want Vol. X., Nos. 1, 3, 4. Vol. XI. Nos. 2, 3. Vol. XII. 1837-39.
Transylvania Medical Journal. Want No. 6, Vol. I. Nos. 1, 2, 3, 6, Vol. II. 1849-51. New Series. Want Nos. 14, 24, Vol. I. No. 3, Vol. 2. 1851-53.
Western Medical Gazette.
United States Med. and Surg. Journal, N. Y. 1834-35. Want Nos. 1, 13, 18, 19, and all after No. 19.

JOHN S. BILLINGS,

Ass't Surgeon U. S. Army, Librarian Surgeon-General's Office.

One of the advertisements placed in medical publications by Billings, attempting to fill gaps in the Library's collection of journals. This appeared in the New York Medical Record, *September 15, 1873.*

not provide back copies. All of the supply of *Medical Investigator* had burned during the great fire that destroyed 3½ square miles of Chicago in October 1871. Editor Thomas C. Duncan tried to find a complete set among his subscribers to send to Billings, but physicians who owned sets refused to part with them.[79] Samuel Butler, one of the country's most industrious medical publishers, wanted to assist Billings but could not because he had kind-heartedly helped another physician some time before. "Several years ago," he wrote, "I permitted a Dublin, Ireland, surgeon to make a raid on my files of journals and he made very nearly a clean sweep up to that time (1867). I have never ceased regretting it."[80]

Postmasters Locate Editors for Billings

Unable to find the addresses of editors of several extinct journals, Billings conceived the idea of writing to postmasters in towns where the periodicals had been published and asking them to pass his message to a local physician who might know something about the journal. He sent the following letter to the postmaster at Keokuk, Iowa:[81]

> The Surgeon General is desirous of obtaining, for the Library of this Office, all that was published of a medical periodical called 'The Western Medico Chirurgical Journal' edited by J. F. Sanford and S. G. Armor and published monthly at Keokuk in 1851–54 and perhaps longer. You will confer a favor if you will place this communication in the hands of some physician who will probably be willing and able to assist us. The Surgeon General will be glad to purchase the journal, or to furnish some of the valuable publications of this office in exchange.

Through this postmaster or someone to whom the postmaster gave the letter, Billings learned that Armor had moved east and was now associated with Long Island College Hospital. He wrote to Armor who promised to donate his own copy of the journal when his books, in transit, arrived from the West.[82]

Billings' clerk used the Keokuk letter as a model in writing to postmasters at Knoxville regarding *East Tennessee Record of Medicine and Surgery;* Bridgeport, Belmont County, Ohio, for *Belmont Medical Journal,* Sandersville, Georgia, for *Georgia Medical and Surgical Encyclopedia,* Princeton, Indiana, for *Indiana Scalpel;* Galveston, Texas, for *Galveston Medical Journal;* Syracuse for *New York Eclectic Medical Journal, Union Medical Journal,* and *Syracuse Medical and Surgical Journal;* Concord for *New Hampshire Medical Journal;* Hartford, Connecticut, for *Monthly Journal of Medicine;* Abbeville, South Carolina, for *Peoples Medical Gazette;* Bloomsburg, Pennsylvania, for *Middle States Medical Reformer and Journal of Health;* and London, Ontario, for *Canada Health Journal.*[83]

Postmasters at Knoxville, Princeton, Concord, Abbeville, Bloomsburg, and London apparently were unable to help, but other postmasters assisted. The clerk at Galveston carried the letter to Greensville Dowell, an editor of *Galveston Medical Journal* from 1866 to 1871. Coincidentally, Surgeon Lewis A.

Edwards, stationed at San Antonio, had written to Dowell seeking the journal for Billings. Back issues were scarce, for Dowell's office had burned twice, but he told Edwards, "I am anxious to fill the file in the Surgeon General's office,"[84] and he gave the post office clerk several numbers to send to Washington.[85]

The postmaster at Bridgeport handed the letter to John G. Affleck, publisher and an editor of *Transactions of the Belmont Medical Society*, 1847 to 1855, and of *Belmont Medical Journal*, 1858 to 1860. Affleck advertised in the two county newspapers trying to obtain copies of the periodicals, but when he received no replies he sent his own sets to Billings, asking for "no recompense," but willing to accept any new or interesting publications.[86]

At Hartford the postmaster passed the letter concerning *Monthly Journal of Medicine* to Nathan Mayer, who had been a surgeon with a volunteer regiment during the Civil War.[87] Mayer tried unsuccessfully to obtain the old journal, already almost half a century out-of-print, but the Library acquired it a few years later.

The postmaster at Syracuse passed the letter to Edward E. Van de Warker, another ex-surgeon of volunteers. Van de Warker could not locate a complete set of *Eclectic Medical and Surgical Journal* (later, *Union Journal of Medicine*), but he offered Billings individual issues.[88]

In Sandersville the postmaster apparently presented his letter to Horatio N. Hollifield, one of the coeditors of *Georgia Medical and Surgical Encyclopedia*, a journal that lived less than a year in 1860. Hollifield obtained all the issues except one and mailed them to Billings.[89]

Obtaining Journals From Irregulars

During Billings' day there existed several different "schools" of physicians, each with its own philosophy about the cause and cure of disease. There were botanic, Thomsonian, eclectic, and homeopathic physicians, all derisively referred to as "irregulars" by orthodox physicians, who called themselves "regulars." Rivalry existed between the schools, each believing its opinions and methods to be correct. Regulars looked down on the irregulars and would not consult with them or mingle with them professionally.

Initially Billings was a typical regular. His bias toward irregulars was mirrored in the suggestions he sent to his journal scout Acting Assistant Surgeon L. A. James: "as to the Eclectic and Homeopathic Journals you can get some *non-professional person* to go and see the Editors of those now in existence and see what they can do."[90] James accepted this advice, telling Billings: "I have placed the collection of these homeopathic journals into the hands of a homeopathic doctor, who has promised me to get a large number."[91]

John J. Woodward, Billings' associate in the Surgeon General's office, felt the same way. Questioning Billings about the policy for acquiring publications he asked: "a friend writes to know the extent to which homeopathic books are acceptable? Please tell me how to answer. Of course we will receive all that are presented will we not? But do we care to buy? and if so how far?"[92]

The aloofness of Billings and his fellow medical officers kept them from making the personal, friendly contacts with irregulars that they had made with regulars, consequently the Library did not at first acquire homeopathic, eclectic, Thomsonian, and botanic journals with the same rapidity as it acquired regular journals. But Billings' desire to build the collection soon overcame his prejudice, and he wrote to editors of these periodicals. He found them as cooperative as editors of regular journals. Robert S. Newton, editor of *American Eclectic Medical Review*, received the following appeal from Billings:[93]

> Surgeon Moore USA wrote me that you would furnish some medical journals for the Library of this office and I have been hoping to hear from you especially in regard to eclectic journals. I have not been able to get any satisfactory bibliography of eclectic medical literature, and I have no doubt that there are several eclectic journals which I have not on my list. I should be much obliged for any information which you can give me on this subject. I have sent to press a list of all American journals that I know of, showing what we have, and I should like to receive your reply and any journals which you can let us have in time to use in correcting proof. I send you this day by mail circ's 1, 2, 3, 4 of this office, and will have other exchanges for you Pamphlets relating to eclectic medicine or its history in this country will be much appreciated.

Newton not only contributed but offered to become one of Billings' book scouts:[94]

> During the latter part of this week I will send you a small library.
>
> I find in this city several volumes of the rarest journals in your list of wants for which the holders ask from 50¢ to $1.50 per vol. Shall I purchase such for you. If you give the order and you should obtain duplicates I would receive them back and place them in my own library. So far as my own publications are concerned I will take great pleasure in donating them to the Library. I think I can send you from 40 to 50 volumes
>
> Is it your purpose to make a collection of medical books as well as journals. I am highly gratified and pleased to know that the Government, through your department has determined to carry out the purposes you have in view. Every medical man of every school no doubt will be proud of this National Museum and Library connected with and under the control of the War Department.

Amos R. Thomas, professor of anatomy at Hahnemann Medical College in Philadelphia and editor of *American Journal of Homeopathic Materia Medica and Record of Medical Science*, contributed homeopathic and eclectic journals, pamphlets, and books, and arranged exchanges between the libraries of Hahnemann and the Surgeon General. He spoke about the Library at a meeting of the American Institute of Homeopathy, resulting in the Institute's contributing periodicals and offering to help Billings fill his want list. He told Edward D. Buckman, a teacher at Eclectic Medical College of Philadelphia and editor of *Philadelphia University Journal of Medicine and Surgery*, that Billings needed a set of that periodical. Buckman offered the journal plus other journals to Billings as an exchange.[95]

As news of the "National Medical Library" spread among irregulars Billings benefitted. He received a letter from Isaac M. Comings, New York City, asking for a list of wanted journals. Then Comings, who had edited *Southern Botanico-*

Medical College Journal in 1843, *Journal of Medical Reform* from 1854 to 1856, and *Southern Medical Reformer and Review* from 1857 to 1858, sent 20 volumes of rare journals. He later provided information on dates of publication and other data concerning botanic journals and sent names and addresses of editors and publishers.[96]

Edwin A. Lodge, publisher and editor of *American Homeopathic Observer*, received the want list and offered to sell volumes of 10 journals from his private library.[97] Later he sent lists of other journals and pamphlets that he was willing to part with.[98]

Medical officers fared as well as Billings. Assistant Surgeon James, "stirring up the Quack Doctors" in Cincinnati, obtained volumes of the following scarce periodicals: *American Medical Journal, Family Journal of Health, Journal of Rational Medicine, Journal of Education and of Physiological and Medical Reform, Syracuse Medical and Surgical Journal, Thompsonian Recorder*, and *Physio-Medical Recorder*.[99]

Surgeon Alden, making a thorough sweep through the Buffalo medical fraternity, approached A. T. Bull, a homeopathic physician. Alden told Billings:[100]

> I had better luck with the homeopath yesterday than I expected & send you by express tomorrow morning a box of pamphlets chiefly homeopathic & eclectic & quack. There are a good many things as you will see from enclosed list that fill gaps in your files but there is a good deal besides. I thought best to send you all the duplicates as they were freely given & I fancy material of this kind may not be so easily obtainable as regular journals, & they may be therefore useful for exchanges.

Among the periodicals were issues of *Canada Journal of Dental Science, Canada Lancet, Canada Health Journal, Canada Medical Journal, Chicago Medical Times, Medical Investigator, New England Medical Gazette, Western Homeopathic Observer, American Homeopathic Review, Bistoury, Herald of Health, Medical Gazette, North American Journal of Homeopathy, Dental Advertiser, Homeopathic Sun, American Homeopathist, Ohio Medical and Surgical Reporter, Eclectic Medical Journal of Pennsylvania, Philadelphia University Journal of Medicine and Surgery*, and *Medical Independent*. Bull also sent a copy of Billings' list of wanted journals to a physician in Canada, hoping to get missing periodicals for the Library.

With the help of Thomas, Lodge, Newton, Buckman, Comings, and other kindly disposed "irregulars," Billings obtained for the Library an excellent collection of Thomsonian, botanic, eclectic, and homeopathic periodicals, some of them already scarce in Billings' time and virtually impossible to obtain today.

Acquiring Foreign Journals With the Aid of Bookagents and Consuls

Since the Library did not receive sufficient funds to subscribe to every journal that touched on medicine in North and South America, Europe, Asia,

Africa, and Australia, Billings chose the best known British, French, German, Austrian, Swiss, Scandinavian, and other journals, and directed his European agents to subscribe In the early 1870's he sometimes depended upon his agents for advice on the quality of periodicals he was unfamiliar with, for example, in 1871, having no experience with Italian journals, he instructed his agent Felix Flugel to select the best two from that country and obtain them for the library [101] As he became acquainted with the world's periodical literature he made such decisions himself

He also depended on his agents for news of the birth and the death of journals He subscribed to new journals for at least a trial period but did not hesitate to discontinue a journal after examination showed it to have little use From time to time he cancelled the least important and added newly established journals He had difficulty finding agents in Spain, Russia, and a few other countries, but he persisted He badgered his agents, Bossange in Paris, Brockhaus and Flugel in Leipzig, Muller in Amsterdam, Trubner in London, to forward journals as soon as they appeared He had journals mailed instead of being shipped by cheaper but slower express

As with extinct American journals, Billings had difficulty obtaining sets or issues of defunct foreign periodicals He sent want-lists to his agents [102] He belabored them to obtain volumes he needed, urging them to advertise in booktrade and medical journals [103] His agents obeyed him because he was a good customer, not because they believed it would yield results They were not very successful, still Billings persisted In 1875 the firm of Trubner, stung by Billings' complaints about their inability to locate old journals, replied [104]

> We can assure you that there is the greatest difficulty attached to the collecting of such things and could you but make the trial you suggest of "One Week in London" or a much longer trial than this, we feel sure you would find the result to be something more like despair than gratification There is one very strong reason for these journals being scarce Most of such things are failures (scarcely any can boast of much success) and are looked upon by the greater portion of the book trade as waste, and treated as such, with most of the trade in London If any fall into their hands in the ordinary course of trade, they are destroyed as packing paper, or consigned to some waste paper dealer, the demand being so limited that they would never pay for keeping

On a similar occasion Gustave Bossange, Paris, retorted to Billings "there is nothing so difficult & which requires more search & inquiry than to obtain odd numbers of periodicals and it is a work which can only be carried out successfully with time and patience "[105]

Because his agents could not obtain journals from some countries, or obtained journals too slowly or at too high a price, Billings asked United States consuls to aid him In June 1872 he sent, through the State Department, the following letter to consuls James Partridge, Rio de Janeiro, and Thomas Pearne, Kingston, Jamaica [106]

> To complete the files of American medical journals in the Library of the Office, the Surgeon General U S Army is very desirous of obtaining the medical journal

> mentioned in the enclosed memorandum, or any other medical periodicals which may have been published in Brazil [Jamaica]. He is willing to purchase the journal, or to exchange the publications of this Office for the same. Any expense incurred by you in processing the said journal will be refunded either through the State Department, or otherwise as you may direct.

Four months later he received word from Partridge that the Brazilian journals could not be found.[107] Pearne, however, managed to obtain several issues of *West India Quarterly Magazine* from the editor. This led Billings to ask Pearne to compile and send bibliographic information on any medical journal ever published in Jamaica.[108]

After this time Billings wrote to consuls in Cuba, Mexico, Spain, Portugal, India, Australia, Hawaii, Japan, Russia, Venezuela, Peru and other countries, with varying results.[109] Consuls attempted to fill Billings' requests through book dealers and editors, or by other means. Consul J. J. Cooper visited 12 book stores in Cadiz and sent Billings a list of 248 books and 60 periodicals that he saw on the shelves.[110] Henry Hall, consul in Havana, could not find back issues of a Cuban periodical but obtained the donation of an old medical treatise.[111] Julius A. Skilton, Mexico City, subscribed to a Mexican journal for the Library and located rare journals and old books.[112]

A lesser librarian would have been discouraged by the difficulties in obtaining journals from countries which did not have channels in the book trade, but some measure of Billings' tenacity and ingenuity in pursuing publications may be judged from his use of consuls as book scouts. Through them he procured periodicals, books and pamphlets that the Library otherwise might not have obtained.

When Billings began he did not know much about American medical journalism; the dates when certain journals had started and stopped, the changes that some journals had undergone in title, the names of past and present editors, and even the existence of a number of extinct and living periodicals. This hindered him, and he resolved to compile a bibliography of journals. By the spring of 1872 he had sufficient data to put together a preliminary bibliography, which would also serve the purpose of a want-list, and in April he published it as a 26-page pamphlet, *Library of the Surgeon General's Office, United States Army. Supplement to Catalogue. No. 1. List of American Medical Journals*.[113] He did not publish a final, separate bibliography but interspersed his detailed bibliographical information through the multivolume *Index-Catalogue of the Library of the Surgeon-General's Office* which he started in 1880, and in volume 1 of which he placed an alphabetical list of journals.[114]

During the journal hunt Billings accumulated historical information that he wove into writings that helped establish his reputation as a bibliographer.[115] An illustration of the otherwise unobtainable information that came his way, and which he did not use in an article, is the story about the *New York Medical*

and Surgical Reporter sent by its founder Clarkson T Collins of Great Barrington, Massachusetts [116]

> The only reason for my discontinuing the work was my own feeble health I am a native of N Y and had intended to spend my days in the city, but I became consumptive, was compelled to go abroad, and on my return I came here among the Berkshire hills where I have been living for 20 years I sold the Reporter to a rascal by the name of William R Wagstaff, M D who collected all he could of the subscribers and went to London, Eng I paid back to his subscribers all they paid him because I had recommended him to them

During the height of the hunt Billings considered publishing a historical sketch of American medical journalism into which, presumably, he would have poured all of his accumulated notes [117] It is unfortunate that he did not do so, if he had we would now know much more than we do about earlier publishers, editors, and periodicals

Billings accumulated journals with speed unparalleled in the development of any other American medical library, perhaps any other medical library in the world Five years after he began his journal hunt the Library had obtained partial or complete sets of 714 of the estimated 1,147 medical journals that had come into existence since the first one had appeared in 1679 The Library possessed 8,214 volumes of the estimated 10,736 volumes that had been published [118] Thereafter Billings concentrated on filling gaps among his American and foreign journals, and on obtaining every medical journal of value published in every country

Notes

[1] Publication number 10,001 was accessioned in the Register on Jan 2, 1871 Number 13,761 was accessioned at the end of the year Billings previous most active year was 1869 when according to the Register, he acquired 1,252 items

[2] Letter Billings to Toner, Jan 4 1872 LC

[3] The list of journals in medicine and the cognate sciences copied from the *Annual* is in Billings' correspondence, 1872 MS/C/81

[4] For example, G Bossange Paris, sent a list of French scientific and medical periodicals as requested by Billings, letter, Bossange to Billings, Dec 12, 1871 NLM

[5] 'The important part of a medical library, that which will give it character and value, and for deficiency in which nothing can compensate is its file of medical journals and transactions' Billings, "Medical Libraries in the United States, p 178 in Bureau of Education special report, *Public Libraries in the United States* , part 1, 1876

[6] Letter, Asst Surg C Smart to Billings, Jan 30, 1872 MS/C/81

[7] Letter Billings to Dear Doctor Jan 23, 1872 MS/C/81 Billings, on occasion, drew up a letter to serve as a form letter for his clerks to copy in writing to persons about books and journals The above letter was marked 'sample' and probably was copied and sent to other medical officers in addition to those mentioned above

[8] Letter, Billings to Webster and Abadie, Jan 17, 1872 MS/C/81

[9] For example a handwritten want-list of journals is attached to letter, Surg Weeds to Billings, March 18, 1872 MS/C/81

[10] In HMD, NLM, are several of the printed lists *List of Medical Journals, Transactions, and Reports, Wanted to complete Files in the Library of the Surgeon General's Office Washington, D C* 30 pp *List of Medical Journals, Transactions, and Reports* , 15 pp , *List of Medical Journals, Transactions, and Reports* , 2 pp , *List of Medical Journals Transactions, and Reports* , 11 pp In the Otis Archives, AFIP, is a scrapbook containing other lists *List of American Homeopathic Periodicals Wanted* , 3 pp , of which 40 copies were

printed, *List of Medical Journals Wanted* , 4 pp , of which 75 copies were printed, *List of Medical Journals Wanted* , 3 pp *Supplemental List of American Medical Journals of some of which specimens are in the Library* , Aug 26, 1872, 4 pp , 75 copies printed, *List of Medical Journals of which no copies are in the Library* , long, narrow broadside, 250 copies printed

[11] Letter, Smart to Billings, Jan 30, 1872 MS/C/81

[12] Letter, Smart to Billings, Jan 30, also letter, Smart to Billings, Feb 3, 1872 MS/C/81

[13] Letter, Smart to Billings, Feb 15, 1872 MS/C/81 Purple gave his library to the New York Academy of Medicine, which he helped to create

[14] Letters Webster to Billings, Jan 31, Mar 13, Apr 16, 20, 1872 MS/C/81

[15] Letters, Smith to Billings, Jan 26, Mar 9, June 19, 1872 MS/C/81

[16] Letters, Randolph to Billings, Mar 20, Jan 26, 1872 MS/C/81

[17] Letters, Bentley to Billings, Oct 19, 1872, Feb 6, Mar 31, 1873 MS/C/81

[18] Letters, Alden to Billings, Aug 25, 30, Sept 5, Oct 8, 1872, Jan 26, Mar 13, 1873 MS/C/81

[19] Letters, Town to Billings, Apr 8, May 20, Aug, 6, 1872 MS/C/81

[20] Letters, Bibber to Billings, June 19, July 20, Billings to Bibber, June 21, Billings to *Boston Med Surg J* July 6 1872 MS/C/81

[21] Letters, Beall to Billings, Jan 26 Feb 1, Mar 18, 28, Sept 23, Nov 2, 1872 J P Chesney to Beall, Feb 2, 1872, Billings to Beall, Feb 3, 1872 MS/C/81

[22] Letters, Weeds to Billings, Feb 1, Mar 11, 18, 25, Apr 17, June 9, Sept 20 Oct 18, Nov 3, 1872 MS/C/81

[23] Letters, James to Billings, Mar 10, 14, 19, 23, 30, Apr 18, June 25, Sept 21 Nov 2, 1872 MS/C/81

[24] Letters, McClellan to Billings, July 28, Aug 14, 1872, Jan 14, 15, 1873 MS/C/81

[25] Letter, Randall to Billings, July 18, 1872 MS/C/81

[26] Letters, Billings to Sloan, Jan 23, 1872, Sloan to Billings, Jan 26, May 21, 1872, Billings to Griffiths, May 13, 1872, Samuel L S Smith to Billings, July 1, Sept 11, 1872 MS/C/81

[27] Brown s report was published as Senate Executive Doc 9, parts 1 and 2, 42 Cong , 3 Sess , 1872, and as a book, *Report on Quarantine on the Southern and Gulf Coasts of the United States* (New York, 1873)

[28] Letter, Brown to Billings, June 24, 1872 MS/C/81

[29] Letter, Brown to Billings, June 30, 1872 MS/C/81

[30] Letter, Brown to Billings, July 8, 1872 MS/C/81

[31] Letters, Brown to Billings, July 25, Aug 26, 1872 MS/C/81

[32] Letter, Simpson to Billings, Jan 13, Feb 20, 1872 MS/C/81

[33] Letter, Knickerbocker to Billings, Jan 27, Billings to Knickerbocker, Feb 16, 1872 MS/C/81

[34] Letter, Frantz to Billings, Mar 28, 1872 MS/C/81

[35] Letter, Horton to Billings, Apr 19, 1872 MS/C/81

[36] Letter, Hammond to Billings, May 27, 1872 MS/C/81

[37] Letters, Billings to Hammond, Oct 30, Hammond to Billings, Nov 14, 1874 MS/C/81

[38] Letter, Perrin to Billings, June 8, 1872 MS/C/81

[39] Letters, Sutherland to Billings, Nov 21, 1872, May 10, 1873 MS/C/81

[40] Letter, Barker to Hassan, Mar 13, 1872 MS/C/81

[41] Letters, Middleton to Billings, June 10, Reynolds to Billings, June 22, July 6, Murray to Billings, Sept 28, Nov 21, Taylor to Billings, Dec 2, 1872 MS/C/81

[42] Letter, Porcher to (Billings?), Apr 28, 1873 MS/C/81

[43] Letters, J W Freer, Chicago, to Billings, May 4, 1872, T C Duncan, Chicago, to Billings, Apr 9, 1872, June 25, 1873, P O Tessier to Billings, May, 1872, G Dowell to Edwards, Mar 15, 1872 MS/C/81

[44] "The wife of a physn deceased some years ago tells me that she sent this spring barrels of old med journals to the paper mill' , letter, A Jewett to Billings, June 3, 1872 MS/C/81 Other letters in Billings' correspondence mention paper mills as the fate of physicians' books and journals

[45] Letter, Billings to Flint, Jan 13, 1872 MS/C/81 Billings, at this time, was far from being the expert on medical publications that he would become later One of several indications of this is the above letter where he did not know that *New York Monthly Review of Medical and Surgical Science* was *New York Monthly Review of Medical and Surgical Science, and Buffalo Medical Journal,* actually volume 15 of *Buffalo Medical Journal*

[46] Letter, Smart to Billings, Jan 29, 1872 MS/C/81

[47] Letter, Billings to Eve, Mar 12, 1872 MS/C/81 Eve had been an editor and associate editor of *Southern* journal, 1845 to 1849, of *Nashville* journal, 1852 to 1857 and 1866 to 1867

[48] Letters, Eve to Billings, Mar 22, Apr 6, 1872 MS/C/81

[49] Letter, Billings to Dowler, May 22, 1872 MS/C/81

[50] Letters, Dowler to Surg Randolph, July 15, 1872, to Surg Gen Barnes, Aug 7, 1872 MS/C/81

[51] Letter, Wormley to Billings, May 14, 1872 MS/C/81

[52] Letters, Billings to Tessier, May 4, Tessier to Billings, May (no date) 1872 MS/C/81 The periodical was bilingual, also titled *The Quebec Medical Journal* Billings sent circulars 3 and 4 as a good will gesture

[53] Paper covers, bound in volume 1, bear the name of Dr Cook The volumes were accessioned in 1890

[54] Letters, Fenwick to Billings, Dec 12, 1871, Apr 29, 1872 MS/C/81 Fenwick accepted publications of the Surgeon General's office in exchange for volumes he sent Billings

[55] Letter, Billings to Lea, Jan 29, 1872 MS/C/81 *American Medical Intelligencer* died with volume 4 in 1841 The publisher was A Waldie The firm of Lea & Blanchard (succeeded by Henry C Lea in 1865) took over the stock of Waldie and started a new journal, *Medical News and Library* (later, *Medical News*) in 1843 Billings needed back issues

[56] Letters, White to Billings, Jan 31, Billings to White, Feb 1, 1872 MS/C/81

[57] Smart, poking around New York to find journals for Billings, learned of Collins' address, otherwise Billings may never have obtained Collins' rare journal Letters, Smart to Billings, Jan 30, Billings to Collins, Feb 5, Collins to Billings, Feb 20, 1872 MS/C/81 The volume in NLM bears the inscription in Collins' hand "Presented by Dr C T Collins to the library of the S G O 1872 "

[58] Letter, Butler to Billings, Mar 14, 1872 MS/C/81

[59] Letter, Billings to Ziegler, Apr 8, 1872 MS/C/81

[60] Letter, Billings to Clark and Garrison, Apr 8, 1872 MS/C/81

[61] Letters, Billings to Tilden, Apr 8, 26, Tilden to Billings, Apr 22, 27, 1872 MS/C/81

[62] Letters, Billings to Fulton, printed in *Canada Lancet* 4 442–443 (May 1872), Fulton to Billings, Mar 11, 1872, bound in front of *Canada Lancet*, vol 3 NLM

[63] Letter, Billings to Johnson & Lund, June 11, 1872 MS/C/81

[64] Letter, Judd to Billings, June 13, 1872 MS/C/81

[65] Letter, Chaillé to Billings, Nov 29, 1872 MS/C/81 Chaillé was an editor 1857–1861, 1867 His signature is in volumes 3 and 19, NLM, it may have been in others and been cut off during rebinding In his letter Chaillé listed several journals he was willing to part with, and named persons to whom Billings should write

[66] Letter, Billings to Talbot, Apr 8, 1872 MS/C/81

[67] Postal card, Brown to Billings, July 18, 1873 MS/C/81 Brown offered journals from his own collection

[68] Letter, Campbell to Billings, July 18, 1872 bound in *Canada Health Journal* NLM Campbell sent the complete five issues, all that were published, of his periodical, and information about its fate

[69] Letters, Billings to Gross, Sept 23, Oct 8, 1872 MS/C/81

[70] Billings' letter, with remarks and an offer by Fulton to forward publications to Washington, is in *Canada Lancet* 4 442–3 (May, 1872)

[71] Letters, Fitzpatrick to Billings, May, June 1, June 22, 1872, Feb 22, 1873 MS/C/81 Billings offered $3 cash or volumes of *Scientific American* in exchange for Fitzpatrick's journals

[72] Letter, Saunders to Billings, May 14, 1872 MS/C/81

[73] Letter, Robertson to Billings, May 14, 1872 MS/C/81

[74] Letters, McIntosh to Billings, Aug, 12, 31, Sept 19, 1872 MS/C/81

[75] Letter, Jones to Billings, Oct 23, 1872 MS/C/81

[76] Letter, Fulton to Billings, May 7, 1873, sending bill for the ad The advertisement is missing in the NLM copy of *Canada Lancet*

[77] Letters, Clark to Billings, June 6, 23, 1873 MS/C/81

[78] Letter, Hawkins to Billings, Sept 8, 1873 MS/C/81

[79] Letters, Duncan to Billings, Apr 9, 1872, June 25, 1873 MS/C/81

[80] Letter, Butler to Billings, May 14, 1872 MS/C/81

[81] Letter, Billings to Postmaster, Keokuk, Mar 8, 1872 MS/C/81

[82] Letter, Armor to Billings, Apr 13, 1872 MS/C/81

[83] A list of post offices to which the clerk wrote is attached to the letter to Keokuk, above

[84] Letter, Dowell to Edwards, Mar 15, 1872 MS/C/81

[85] Letter, E S Fletcher, clerk, Galveston P O to Billings, Mar 21, 1872 MS/C/81

[86] Letter, Affleck to Billings, May 14, 1872 MS/C/81 Billings, according to pencilled note on the letter, sent circulars and the Library's catalog The first volume of the *Transactions* at NLM has Affleck's signature inside the cover and on the title page

[87] Letter, Postmaster, Hartford, to Billings, Apr 13, 1872 MS/C/81

[88] Letter, Van de Warker to Billings, June 27, 1872 MS/C/81 The Library, unfortunately, never completed its set of this periodical *Eclectic Medical and Surgical Journal* underwent changes in its title and ended as *Union Journal of Medicine* Billings had not yet become an expert on medical literature, and he thought that the two were different journals

[89] Letter, Hollifield to Billings, Mar 22, 1872 MS/C/81

[90] Letter, Billings to James, Cincinnati, Feb 19, 1872 MS/C/81 Italics supplied

[91] Letter, James to Billings, May 2, 1872 MS/C/81

[92] Letter, Woodward to Billings, April 26 1872 MS/C/81

[93] Letters, Surg John Moore to Billings, Mar 25, 1872 Billings to Newton, Apr 27, 1872 MS/C/81

[94] Letter, Newton to Billings, Apr 30, 1872 MS/C/81 Newton s subsequent letters show his continued helpfulness to the Library

[95] Letters, Thomas to Billings, Apr 23, 30, June 13, 1872 R D McClatchey, American Institute of Homeopathy, to Billings, June 13, 20, 1872 Buckman to Billings, June 27, 1872 MS/C/81 Buckman gave Billings bibliographic data about his journal

[96] Letters Comings to Billings, May 2, 15, June 11, 1872 MS/C/81

[97] Letter, Lodge to Billings, Apr 25, 1872 MS/C/81

[98] Letter, Lodge to Billings, June [no date] 1872, list of volumes purchased from Lodge, July 6, 1872 MS/C/81 Covers of *Medical Investigator*, Vol 4, 1866, Nos 3 and 5 in NLM carry Lodge's signature

[99] Letter, James to Billings, Oct 29, 1872 MS/C/81

[100] Letter, Alden to Billings, Dec 19, 1872 MS/C/81

[101] Letter, Billings to Flugel, Nov 11, 1871 NLM

[102] Italian book scouts who supplied journals to L W Schmidt of New York issued and circulated an Italian translation of Billings' want-lists

[103] For example, Billings' instructions to Bossange to advertise in *Bibliographie de la France* and local medical journals, in letter, April 11, 1874 MS/C/81

[104] Letter, Trubner & Co , to Billings, Mar 20, 1875 NLM

[105] Letter, Bossange to Billings, May 8, 1877 NLM

[106] Letters, Billings to Partridge and Pearne, June 7, 1872 MS/C/81 From the endorsement on the back of the letter to Pearne, I would assume this was a form letter, copied by Billings' clerk and sent to other consuls

[107] Letter, Partridge to Billings, Oct 25, 1872 MS/C/81

[108] Letters, Pearne to Billings, Aug 27, Billings to Pearne, Oct 18, 1872 MS/C/81

[109] For example, letter, Billings to William Hunter, Assistant Secretary of State, Sept 2, 1873 MS/C/81 Billings asked for names of consuls in Madrid, Barcelona, Cadiz, Saville, Lisbon, Calcutta, Bombay, and Melbourne to help him procure journals the Library had been unable to obtain There are letters to consuls in other cities in Billings' correspondence

[110] Letters, Cooper to Billings, Oct 2, 1874, (no date) 1875 MS/C/81

[111] Letter, Hall to Billings, Aug 7, 1873 MS/C/81

[112] Letters, Skilton to Billings, Jan 27, 1873, Nov 14, 17, 1874, Jan 26, April 22, 1875, Feb 25, 1877 MS/C/81

[113] Published by Government Printing Office, Washington The list contained information on almost 300 journals, Canadian as well as United States

[114] *Index-Catalogue*, v 1, pp 2–126 New lists or additions to the lists were published in front of each succeeding volume of *Index-Catalogue*

[115] "The Medical Journals of the United States," *Boston Med Surg J* 100 1–14 (Jan 2, 1879), and "A Century of American Medicine 1776–1876,' *Amer J Med Sci* 72 439–80 (1876), to mention two of Billings' most notable articles

[116] Letter, Collins to Billings, Feb 20, 1872 MS/C/81 For other examples of bibliographical information sent to Billings see letters, Fenwick to Billings, Dec 12, 1871, Eve to Billings, Apr 6, 1872, Chaillé to Billings, Nov 29, 1872 MS/C/81

[117] Letter, Billings to C T Collins, Feb 21, 1872 MS/C/81

[118] Statistics given by Billings on p 177 of his chapter, "Medical libraries in the United States," in Bureau of Education, Special Report, *Public Libraries in the United States* , Part 1, 1876

Titles of the journals purchased by the Library, 1869–1872, 1874–1909, are in manuscript volumes in NLM

V

Gathering Books and Other Literature for the National Medical Library

Acquiring Books

BILLINGS' appetite for books was always greater than his means, and he tried in every way possible to obtain the most for his money. He purchased European imprints from or through Continental book agents because their prices were cheaper than American dealers charged.[1] He did not buy second or later editions of recent works unless there was an imperative reason for doing so.[2] He bawled booksellers out when, in his opinion, they asked higher prices than he thought publications were worth. On one occasion he wrote to bookseller L. W. Schmidt, New York: "I must remark that I think your prices a little high. From most booksellers I get a discount. . . . If you continue to invoice me at full retail price I shall have to purchase elsewhere."[3] At times he offered less than catalog prices, hoping that if publications were not sold to other buyers the bookseller would be willing to accept Billings' terms.[4]

Billings also bought volumes from physicians, advertising in journals for works that were difficult to obtain.[5] Having a fairly accurate idea of the current market value of secondhand medical works, owing to his constant perusal of catalogs, he sometimes disappointed sellers by low offers. Richard J. Dunglison refused Billings' offer of $135 for 165 volumes of dictionaries from the estate of his father, Robley, and auctioned them in Philadelphia.[6] F. Peyre Porcher, Charleston, South Carolina, offered to sell eleven 16th century books (Galen, Celsus, Hippocrates, etc.) that he had bought in Florence, Italy, many years earlier for $250. He sent them to Washington for Billings to examine. Billings replied with a check for $175, telling Porcher to accept or return the check. Porcher, needing money "in these times of hardship" agreed "with a pang of regret."[7]

Billings browsed through bookstores when he visited Philadelphia, Baltimore, New York, Boston, and other cities on official business or to attend meetings of medical societies. While in Philadelphia in early 1871 he stopped at Peter Doyle's shop and purchased a volume which, unknown to him, was wanted by Samuel Gross, a noted surgeon and biographer. When Gross learned

that Billings had beat him to the book his grief was so great that sympathetic Doyle wrote Billings:[8]

> Your venerable friend Dr. Gross is in great tribulation about one of the books you bought on Saturday. The book 'Schroder's Dispensatory' he had inquired for some time since. Upon receiving it about two weeks ago, I immediately wrote to the doctor mentioning the fact and the price. Not having heard from him I inferred that he did not want the book, or did not care to pay my price for it. On Monday Dr. Gross called and was very much disappointed to find the book sold. This afternoon the doctor called again, and so lamented the loss of that treasure of Med'l Science that I promised to write and state the facts of the case to you, though I did not think that he could fairly claim the book

Billings felt so sorry for Gross that he surrendered the folio; at least there is no evidence in the Library's invoices and register that it received a copy at this time. A year later Billings managed to obtain another copy of "The Dispensatory of that most famous, &c, chemist, J. Schroder" for $20, and it now rests in the History of Medicine Division.[9]

Billings wrote interesting, readable, sincere letters, and through his correspondence he became friendly with physicians who lived states away and who never met him. He encouraged them to donate publications to, or exchange with, the National Medical Library by appealing to their patriotism and pride in their profession. One physician who became infected with Billings' love for the Library was Adams Jewett of Dayton, Ohio, who began scouting for books in 1872. Jewett searched through the libraries of dozens of physicians in Dayton and other towns, sent Billings lists of desirable works they owned, and brought about donations and exchanges. He talked with widows of physicians and arranged sales of their books to the Library. Sometimes the widows had already disposed of the books, as Jewett reported:[10]

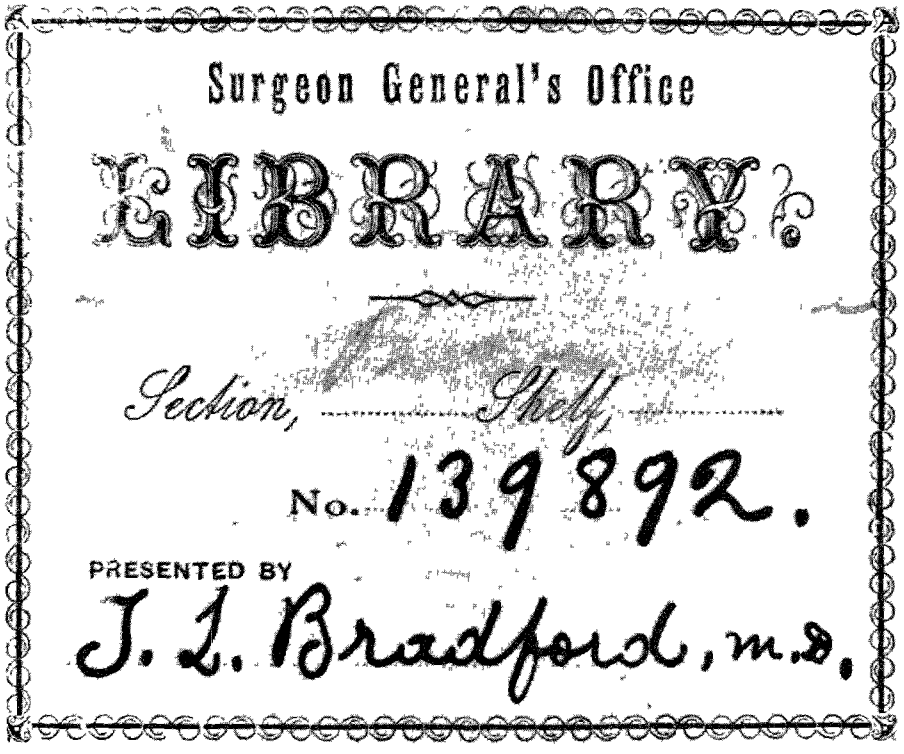
> Dr. Blodgett a very respectable practitioner died a good many years ago having a large number of med. books wh came into the hands of a daughter who kept them for years out of reg[d] to her father, & doubtless dusted them regularly twice a year at housecleaning time, but finding them at last too much in the way she sent them to the papermill this season. I went in pursuit hop'g to find something for you, but too late.

Embarking on a steamboat trip on the Ohio and Mississippi rivers with his wife, Jewett carried along Billings' want-lists and went to book stores when the vessel tied up at St. Louis, Davenport, and Denmark. Traveling to Troy, Ohio, to attend a funeral he also hunted books and he talked with physicians whose names he sent to Billings as potential donors or exchangers. On a visit to Davenport, Iowa, he looked over libraries of physicians, and sent donated pamphlets and lists of the libraries' contents to Billings. He continued to assist until he died in 1874.

A compilation of those persons from whom Billings received books reads like a Who's Who in American Medicine.[11] Among them were:

Edmund Andrews, a founder of Chicago Academy of Sciences and Northwestern University Medical School

James Armsby, a founder of Albany Medical College
Richard Arnold, president of Georgia State Medical Association
John Ashhurst, Jr., president of College of Physicians, Philadelphia
Robert Battey, president of American Gynecological Society
Agrippa Bell, editor and leader in the American public health movement
Henry I. Bowditch, a founder of Boston Medical Library Association and chairman of the Massachusetts Board of Health
William Brodie, editor and president of American Medical Association
Francis Brown, compiler of medical directories of New England
Charles Brown-Séquard, international physiologist then living in New York City
Gurdon Buck, president of New York Pathological Society
Charles Burnett, president of American Otological Society
Swan Burnett, president of Medical Society of the District of Columbia
James Chadwick, a founder of American Gynecological Society and Boston Medical Library



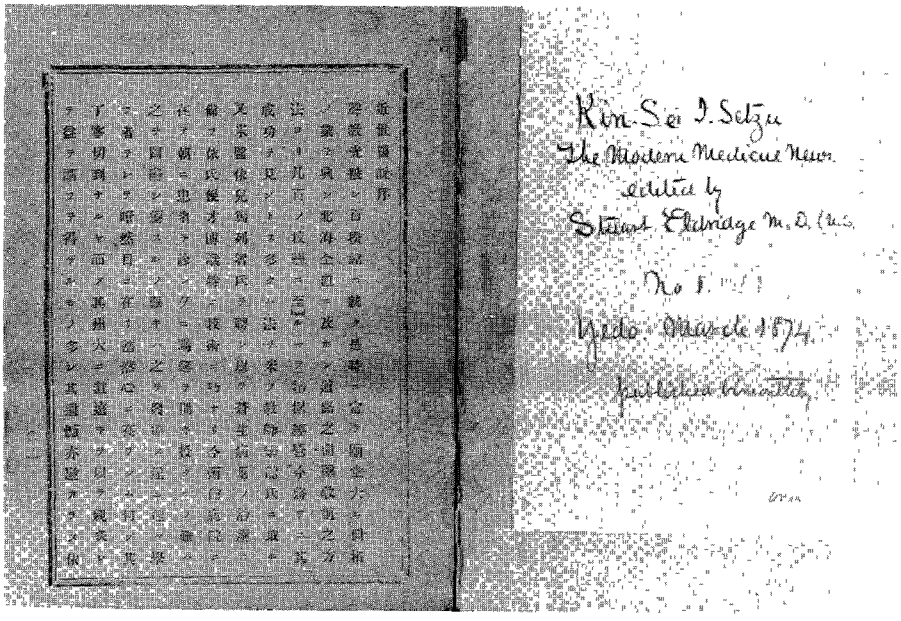
An early bookplate designed to display the donor's name. On the bookplate was also recorded the accession number and location of the volume in the stacks.

Stanford Chaillé, member of the National Board of Health and dean of the medical department of Tulane University
Julian Chisholm, teacher and Confederate Army surgeon
Meredith Clymer, president of the Neurological Society of New York
Granville Conn, president of New Hampshire Medical Society
Elliott Coues, noted ornithologist
Jacob Da Costa, president of College of Physicians of Philadelphia and Association of American Physicians
John Dalton, president of College of Physicians and Surgeons, New York
William Dawson, president of American Medical Association
Dorothea Dix, reformer in the treatment of the insane
Pliny Earle, president of American Medico-Psychological Association
George J. Engelmann, president of Southern Surgical and Gynecological Society and of American Gynecology Society
John Gray, president, New York State Medical Association
Samuel Green, notable collector of medical books and medals and president of American Numismatic Society
Samuel Gross, president of American Surgical Association and of the International Medical Congress of 1876
Allan Hamilton, alienist and leader in the study of mental disorders
Isaac Hays, editor and one of the three great medical journal collectors of his day
Morris Henry, editor and organizer of the New York City Ambulance Service
John Hodgen, president of American Medical Association
Edward Holmes, president of Rush Medical College
James Hutchinson, president of Philadelphia Pathological Society
John Jackson, vice-president of American Medical Association
Abraham Jacobi, often referred to as the father of American pediatrics
Thomas Kirkbride, president of Association of Medical Superintendents of American Institutions for the Insane
William McPheeters, president of the Medical Association of the State of Missouri
S. Weir Mitchell, neurologist and widely read author of historical novels
William Mussey, donor of the Mussey Medical and Scientific Library to the city of Cincinnati
Robert Newton, president of the State Eclectic Medical Society of New York
William Osler, writer, book collector, one of the original faculty of Johns Hopkins Medical School, and Regius Professor of Medicine at Oxford
Joseph Parrish, president of the American Association for the Cure of Inebriates
John Peters, president of the Medical Society of the County of New York and of New York Neurological Society
F. Peyre Porcher, president of the Medical Society of South Carolina
Samuel Purple, one of the foremost medical book collectors of his day and president of New York Academy of Medicine

John Rauch, president of the American Public Health Association
James Reeves, president of the American Public Health Association
John Riley, teacher and textbook writer of Washington, D.C.
Thomas Rochester, president of New York State Medical Society
Lewis Sayre, president of American Medical Association
Moritz Schuppert, the surgeon who introduced antiseptic surgery into the South
John Scudder, noted eclectic physician of Ohio
Nicholas Senn, president of American Medical Association
George Shrady, prominent medical journalist of New York
Andrew H. Smith, president of New York Academy of Medicine
Nathan R. Smith, president of Medical and Chirurgical Faculty of Maryland
Stephen Smith, first president of the American Public Health Association
Edward R. Squibb, founder of the pharmaceutical firm that bears his name
Lewis Steiner, president of American Academy of Medicine
Edward Stevens, editor, teacher, and president of Ohio State Medical Society
Francis Stribling, a founder of the Association of Medical Superintendents of American Institutions for the Insane
Joseph Toner
John Vattier, president of the Academy of Medicine, Cincinnati
Edward Warren of Baltimore, teacher, editor, and surgeon in the Confederate and Egyptian Armies
William Henry Welch, famous pathologist
James P. White, president of Medical Society of the State of New York
Horatio Wood, editor, and president of Philadelphia Neurological Society
Thomas F. Wood, editor and a founder of the American Public Health Association
John Woodworth, Surgeon General of the Marine Hospital Service (later, Public Health Service)
David Yandell, president of American Medical Association

Billings not only obtained donations through correspondence and scouts, he charmed persons whom he visited into surrendering their treasures. Henry Crècy Yarrow, an Army surgeon, had "occasion to mourn the loss of quite a number of valuable books which, when shown to Doctor Billings as curiosities, nothing would do but they must be presented at once to the Surgeon General's Library."[12] And Oliver Wendell Holmes, recalling a visit by the Librarian, remarked, "Dr. Billings is a bibliophile of such eminence that I regard him as a positive danger to the owner of a library, if he is ever let loose in it alone."[13]

By no means every physician in the country rushed to the Library's aid. When one compares the seemingly large number with whom Billings corresponded to the approximately 64,000 physicians recorded in the census of 1870 (and more in later decades) it is evident that only a small proportion concerned themselves with the Library. Yet, those who contributed publications, and



First page of Kinsei isetsu *(Modern Medicine News), started by Stuart Eldridge in Japan, 1874. Eldridge sent this copy, with his handwritten title page, to Billings.*

their influence when it was needed, included a large proportion of leaders in American medicine.

In addition to attracting gifts from physicians of national prominence, the Library over the years received donations from or made exchanges with physicians of whom we know scarcely more than their names because they published little or nothing and were not active in societies. The Library also received gifts from physicians of other countries, the most generous of whom may have been Thomas Windsor of Manchester, England, who began presenting books in 1874, and continued to do so all his life.[14]

In an effort to obtain publications from countries that did not have a well-developed book trade, Billings sought help from travelers, emigrant physicians, anyone who could serve his purpose. Receiving a request from Reverend Tillman C. Trowbridge, an American missionary, for Medical Department publications to be sent to Central Turkey College, Billings took the opportunity to ask Trowbridge to keep an eye open for Arabic and Turkish works for the Library.[15] Learning of the existence of the American Baptist Mission Press in Rangoon, Burma, Billings asked F. D. Phinney, the superintendent, to obtain native medical writings.[16] When Stuart Eldridge, a former Civil War officer, librarian of the Department of Agriculture, and teacher of anatomy at Georgetown, settled in Japan where he helped establish medical schools, hospitals, a

medical journal, and practiced medicine, Billings corresponded with him and obtained a mannequin, skulls, and other items for the museum, and hundreds of books, journals, and manuscripts for the Library.[17] Getting a plea for a copy of the *Medical and Surgical History* from B. W. Green, a former Confederate naval surgeon who had settled in Argentina after the War, Billings sent one of the few remaining volumes, hoping to induce Green to assist the Library. Because of a revolution and the indolence of shippers in the southern hemisphere it took 2 years for the books to reach Green. As Billings foresaw, Green felt obligated to send South American literature.[18]

Reports of Health Agencies

Billings desired reports of asylums, hospitals, sanitariums, quarantine stations, boards of health, voluntary sanitary associations, and other bodies concerned with personal and public health, particularly for the statistics and other special information which they contained and which did not find its way into journals, texts, or reference works. Learning that booksellers could not supply him, he wrote to physicians connected with or residing near health organizations. He proceeded blindly at first because there was no bibliography of health reports. He had no way of knowing what institutions issued reports, other than by hearing or reading about certain publications.

One of the first physicians Billings contacted was Horatio C. Wood, Jr., a prominent teacher whom he had met in Philadelphia military hospitals during the war. He mentioned that the Library was "considerably deficient in respect to reports on prisons" and asked Wood to obtain reports of Pennsylvania jails for him.[19] Other correspondents in the early 1870's included Edward H. Van Deusen, superintendent of the Michigan Asylum for the Insane, who sent literature on his institution, and Edwin M. Snow, superintendent of health, Providence, who promised to supply reports.[20]

Billings also turned to his brother officers for help. He wrote to Assistant Surgeon M. J. Asch, Chicago; Surgeon Bernard J. D. Irwin, Fort Wayne, Michigan; Assistant Surgeon J E. Semple, Fort Porter, Buffalo; Surgeon John F. Randolph, New Orleans; former Surgeon Joshua Simpson, Baltimore, and others asking them to visit nearby health officials and obtain reports for the Library. Asch managed to obtain a single volume containing reports of the Chicago Board of Health for 1867, '68, and '69, with a history of sanitation in Chicago from 1833 to 1870. "This is the only thing in the way of this sort of literature that I can get track of in Chicago," he told Billings. Randolph mailed a volume of pamphlets and stated that the New Orleans Board of Health, Charity Hospital, Howard Association, and medical colleges "have nothing." Irwin sent only a report on the Detroit House of Correction, telling Billings that the city "never had a Board of Health until a month ago, consequently there has been no publication on the sanitary condition of the city." Semple could not obtain anything in Buffalo. Simpson visited the city controller of Baltimore and received promises but apparently no pamphlets.[21]

United States Government Despatch Agency.

4, Trafalgar Square,
London, 187

Sir,

I am instructed by the Librarian of the Surgeon-General's Office, U.S. Army, Washington, D.C., to furnish that Library with as nearly complete sets as I can obtain of the Reports, Catalogues, Announcements, and other Publications of the Medical and Sanitary Societies and Institutions of Great Britain.

The Library of the Surgeon-General's Office, comprising nearly 50,000 volumes, is the largest Medical Library in the United States, and as a Government Institution forms a suitable depository for the permanent preservation of such documents as are now asked for.

If you will be so good as to send me any of your publications that you can spare, I shall be happy to forward them to the Library, and due acknowledgment will be sent to you from Washington. If the Library can, from its duplicates, or otherwise, furnish any vacancies in your collection in exchange for your publications, I shall be glad to hear from you on the subject.

I am, Sir,

Your obedient Servant,

B. F. Stevens.

To the Secretary of the

B. F. Stevens sent 350 copies of this letter to medical institutions in Great Britain.

Obtaining reports of European health agencies was equally difficult. Billings did not yet know European physicians (he would know many later) and he did not have any regular correspondents other than his few book agents. He requested his agents to obtain reports from local institutions, and to advdertise for reports issued in other areas. Accordingly Gustave Bossange asked Parisian authorities for reports, and had a circular printed and distributed throughout French provinces.[22] Trübner & Company and B. F. Stevens mailed form letters to institutions in Great Britain.[23]

Another means by which Billings sought to obtain reports issued in foreign countries was through the assistance of United States consular officials. He first attempted to employ a consul as a book scout in March 1871 when he sent Medical Department publications to William Thomson, consul in Southampton, England, and took the opportunity to ask Thomson for assistance:[24]

> We desire to obtain for the library of this Office, all pamphlets or reports relating to Insane, Asylums for Blind, Deaf & Dumb, Idiots &c, Quarantine Officers, Board of Health, and reports on Prisons, and of Prison Inspectors, and find some difficulty in procuring such from England as they are not sold and do not come in the way of Book sellers. Any assistance which you may be able to render in this respect will be gladly received and fully appreciated by this office.

Billings did not call on consuls often at first, but later he came to depend on them for assistance in countries, among them Spain, Mexico, Russia, and Venezuela, from which he had difficulty obtaining publications. He also asked consuls to obtain and deliver exchanges, provide information on publishers and publications, and help him find reliable foreign booksellers.

The collecting of pamphlets gained momentum rapidly. Within a few years the existence of the Library was known to most of the medical profession in the United States, Canada, and even Europe, and Billings began to receive reports voluntarily. But during his term in the Library he never stopped prodding officials in charge of health agencies, hospitals, and institutions to send their publications.

Dissertations

Among the nonmonographic, nonperiodical literature that came to Billings, like flotsam and jetsam on the current of books and journals, were health laws and ordinances, hospital plans, diplomas, newspaper clippings, almanacs, and blank forms issued by health departments and other government agencies. Billings accumulated but did not purchase these unless there was need for a specific item. One unusual publication that he did seek was the student dissertation or thesis required of candidates for the medical degree.

Billings felt that dissertations had four uses: they were sources for history of medicine, particularly for the light they shone on schools and teachers; they contained accounts of cases or investigations; they were useful in biography, especially German theses which often contained an account of the student; and

the early programs for theses often contained an introduction, in the nature of an article, by a professor.[25]

It is doubtful that many librarians agreed with Billings' high estimate of the usefulness of dissertations. Billings said that their value was "usually underestimated," which was another way of stating that other librarians and physicians considered them "for the greatest part not very important publications."[26]

Acquiring a complete collection of dissertations was difficult because tens of thousands had already been published, hundreds were printed every year in Europe, only a small edition of each was printed, they were not intended for the book-trade market, and secondhand booksellers generally ignored them.

Billings began to accumulate dissertations at least as early as 1868 when he asked Gustave Bossange to try to obtain for him a large number of volumes of theses of the Medical Faculty of Paris.[27] Thereafter he obtained American and European dissertations by gift, exchange, purchase, and deposit from Library of Congress[28] and Smithsonian Institution—the latter on one occasion deposited 3,000 dissertations it had received through its book agents in Europe and probably was relieved to be rid of them.

Billings accelerated his buying of dissertations in 1872. L W. Schmidt, a New York bookdealer with transatlantic connections, located several large lots in Europe. He offered one group of 450 dissertations for $100, or 30¢ each if bought individually; additional groups of 3,600 and 1,000, and a gigantic group of 48,113 at 5¢ each if all were taken.[29]

By mid-1873 Billings had many American theses, all the Paris theses, a large proportion from the schools of Strassburg, Montpellier, and Berlin, and smaller holdings from other European universities.[30] He urged his European agents to search for them. In May 1873 he told Felix Flügel, "from this date on I wish arrangements to be made to secure for this library one copy of each medical dissertation of all the German universities."[31] A short time later he reiterated to Flügel, "I want to get all that appear in [the] future, for I mean to make this library as complete as I can."[32]

On Billings' instructions Flugel corresponded with German universities to try to obtain a copy of every dissertation, but he was unsuccessful because students paid for the printing of their dissertations and therefore owned them. An official of the University of Berlin informed him: "a regular donation of one copy of each medical dissertation can neither be ordered by the faculty nor by the academical senate."[33] Billings even tried to persuade a janitor at the University of Berlin to act as his agent in collecting theses for the Library for the sum of 20 marks a year, but the arrangement failed.[34]

Billings was moderately successful in obtaining dissertations through exchange, including 202 from University of Zurich,[35] 110 from University of Groningen,[36] 79 from University of Greifswald,[37] 917 from University of Munich,[38] 124 from University of Würzburg,[39] and copies from the universities of Rostock, Freiburg, and Halle.[40]

Despite his efforts Billings was not able to obtain all the medical dissertations

LIST OF

JOURNALS, TRANSACTIONS, AND BOOKS

WANTED TO COMPLETE THE FILES OF THE

NATIONAL MEDICAL LIBRARY,

UNDER THE DIRECTION OF THE

SURGEON-GENERAL, U. S. ARMY,

WASHINGTON, D. C.,

For which a fair price will be paid, or valuable exchanges furnished

JOURNALS.

British-American Medical and Physical Journal Montreal Want No. 10, vol. vi; No 10, vol vii. (1850–52)

Canada Lancet Montreal (1863–65) Want Nos 11, 23, and all after No 23 of vol i

Monthly Journal of Medicine. Hartford, Conn. Want vols. v and vi (1825)

Southern Medical and Surgical Journal. Augusta, Ga. Want vol iii (1838–39); No. 1, vol. iii., new series (1847); Nos 1, 2, 3, 4, vol. vi, No 1, vol viii, Nos 11 and 12, vol. xvii., vol xviii.

Western Medico-Chirurgical Journal Keokuk, Iowa Want No. 1, vol. i. (1850–51), Nos 7 and 8, vol. ii.

New Orleans Monthly Medical Register By Axson Want Nos. 2, 4, 5, 6, 8, 12, vol i. (1851–52), Nos. 2, 3, 7, 8, 10, vol ii

Union Médicale de la Louisiane New Orleans. Want Nos 2, 4, 5, 8, 10, 11, vol i. (1852)

Medical Bulletin Baltimore Want No 24, vol i. (1869), Nos 21, 22, 23 and 24, vol ii.

Vaccine Inquirer Baltimore Want Nos 2, 3 6 7 (1822–24)

Saint Joseph Journal of Medicine and Surgery Bi monthly St Joseph Missouri Want Nos 1 2 3, 6 vol i (1858–59); Nos 1 3, 6 vol ii, and all after No. 4, vol iii (Jan 1861)

Saint Louis Medical and Surgical Journal Want No 10 vol i (Jan 1844) vol ii (1844–4) No 6 vol xi.

Saint Louis Probe Want Nos. 1, [illegible] 6 9 10 vol i. (1870)

New York Lancet By Houston Want Nos 2 4 [illegible] vol iii (1842–43)

Northern Lancet Plattsburg N Y Want No 1 [illegible] (1850 No 1 vol ii No 1 vol iii vol xi

[illegible] Medical Repository By M[illegible] Want No 1, 4 [illegible] 7, vol i (1825) and all after No [illegible] if any

JOURNALS.

American Lancet. By Beattie. Phila Want Nos 5, 6 and all after No 7, vol. i (1833)

Philadelphia Medical and Surgical Journal By Bryan Want vols. i., ii (1852–53), No 3, vol iii.; No. 2, vol. v

Carolina Journal of Medicine, Surgery, and Agriculture Charleston, 1825. Want all or any part

TRANSACTIONS OF

Medical Association of the State of Alabama Want 1st (1847?), 2d, 3d, 9th, and all subsequent to reorganization in 1868 and year 1872.

Connecticut State Medical Society, Proceedings of. Want all prior to 1818, 27th session, 1820–23 1825–29

Medical Society of the State of Georgia, Want 1st (meeting 1850), 1855 and all subsequent to the 19th (1868), inclusive

Illinois State Medical Society Want 1st (1851), 1853, 1854, 1865–1866, 1874, and 1875

State Medical Society of Indiana Want 1865 (15th session)

Iowa State Medical Society Want 1st (session 1850), 1854, 1855, 1860 to 1866, inclusive, and 1872 to date

Medical Society of State of Kansas Want 1st and 2d (1865–66?) 4th (1868), and subsequent

Kentucky State Medical Society Want 2d (1852), 3d (1853), 4th (1854), 6th (1857?) to 12th

Medical Society of the State of Missouri Want 1855 and all subsequent to 1866, inclusive Also 1870 and 1871

New Hampshire Medical Society Want all prior to 1854, also 1860 (70th session)

Medical Society of the State of North Carolina Want 2d (1851) 5th (1854), 12th (1861?)

44

Richard J Dunglison of Philadelphia assisted Billings by placing this two-page advertisement free in Dunglison's Ready Reference List for Physicians *(1876) Note that Billings called the collection the "National Medical Library"*

TRANSACTIONS OF

South Carolina Medical Association. Want 1851-52-53, and 1857-58-59.

Tennessee State Medical Society. Want 1831 (2d), 1833-34-36-37-39, 1841, 1845-47-49, 1852-54-55-57, and all subsequent, excepting 1809.

Medical Society of Virginia, Proceedings of. Want 1st-28th (1851), 31st (1854), and all subsequent to time of reorganization in 1870.

Medical and Chirurgical Faculty of the State of Maryland. Want all prior to 1854; 1855, 1857, 1858, 1860 to 1872, inclusive.

THESIS OF

Agnew, James. On Perspiration. 1800.

Baldwin, William. Dis. of Amer. Seamen at Wampoa. 1807.

Ball, Thomas. Causes and Effects of Sleep. 1796.

Ballard, B. Phthisis Pulmonalis. 1811.

Barton, William P. On Nitrous Oxide Gas. 1808.

Blundell, James. On Dysentery. 1791.

Butts, E. de. On the Eye, and Vision. 1805.

Carter, Robert. On Opium. 1803.

Chisolm, Robert. On Hydrocephalus Internus. 1796.

Clark, Micajah. On Lithotomy. 1811.

Colesbury, H. De Epilepsia. 1792.

Condict, L. On Effects of Contagion, etc. 1794.

Conover, S. F. On Sleep, Dreams, etc. 1791.

Dorsey, J. S. Gastric Liquor. 1802.

Drayton, Charles. De Inversione Uteri, etc. 1809.

Drysdale, Thomas. Varia de Hepate Proferens. 1794.

Duval, Grafton. On Mellis Acedarach of Linnæus. 1802.

Foisin, Peter. De Stimulorum. 1802.

Fort, Tomlinson. On Practice of Medicine. 1849 or 1850?

Foushee, John H. On Stricture in Urethra. 1799.

Gibbons, William. On Hypochondriasis. 1805.

Gray, H. M. On Cynanche Trach. (Croup). 1805.

THESIS OF

Handy, H. On Opium. 1791.

Huger, Francis K. Gangrene and Mort. 1797.

Jones, Edward. On Pneumonia. 1796.

Laws, John. On Opium. 1797.

McDonald, Thompson. On Cynanche Trachealis (Croup). 1802.

Madison, J. C. On Med. Prop. of Iron. 1805.

Magruder, N. On Smallpox. 1792.

Meredith, C. On Phthisis Pulm. 1802.

Mifflin, Charles. On Injuries of Head. 1826.

Moore, David. On Ophthalmia. 1807.

Otto, John. De Epilepsia. 1797.

Parrish, Joseph. Influence of Passions, etc. 1805.

Pendergast, G. E. Top. Sketch of Miss., La., and W. Fla. 1803.

Perkins, E. On Universal Dropsy. 1791.

Pfeiffer, G. On Gout. 1791.

Proudfit, Jac. De Pleuritide Vera. 1790.

Ribb, W. W. On Lymphatics. 1811.

Rogers, R. K. On Liriodendron Tulipifera (Poplar Tree). 1802.

Rose, Henry. On Effects of Passions. 1794.

Rossel, A. J. de. De Febribus Intermit. 1790.

Rowan, Thomas. On Hydro. State of Fever. 1802.

Rush, James. On Use of Omentum. 1809.

Sawyer, M. E. Causes of Animal Life. 1793.

Stevens, A. H. On Inflammations. 1811.

Stock, J. E. On Effects of Cold. 1797.

Stokes, W. Quædam de Asphyxia, etc. 1793.

Thomas, G. G. On Kalmia Latifolia. 1802.

Thompson, Hedge. On Spigelia Marilandica. 1802.

Thornton, Geo. A. On State of Med. Science, etc. 1807.

Triplett, Thomas. On Apoplexy. 1798.

Wallace, J. W. On Catamenia. 1793.

Washington, Wm. On Diabetes. 1802.

Cases and Observations by the Medical Society of New Haven Co., State of Connecticut. 8vo. New Haven, 1788.

Address,

DR. J. S. BILLINGS, U. S. A.,

LIBRARIAN SURGEON-GENERAL'S OFFICE,

WASHINGTON, D. C.

that had been published in America and Europe before he began collecting, or those that were published each year thereafter. Nevertheless, during his long tenure as Librarian he accumulated a vast number, increasing from approximately 40,000 theses in 1875, to 40,524 plus 1,385 volumes each containing many theses in 1885, to 57,187 plus 1,762 volumes in 1895. This was the largest such specialized collection of any library in the United States, perhaps in the world.[41]

Mutual Aid Through Exchanges

To conserve funds for purchases Billings did his best to obtain books, pamphlets and journals by exchange with organizations and individuals. At first he did not have many commercial publications to exchange (later the storage areas would overflow with duplicates and triplicates) but he did have Medical Department publications. From 1870 onward there were copies of the monumental, multivolume *Medical and Surgical History of the War of the Rebellion*, eagerly sought by medical libraries here and abroad, and by thousands of regular army, volunteer, and contract Civil War physicians. There was a supply of authoritative, highly regarded "circulars" or monographs on aspects of military medicine written by Woodward, Otis, Billings, and other officers, among them *A Report on Amputations at the Hip-joint in Military Surgery, Report on Epidemic Cholera in the Army of the United States During the Year 1866, Plan for a Post Hospital of Twenty-four Beds, Report on Barracks and Hospitals with Descriptions of Military Posts*, and *Report of Surgical Cases Treated in the Army of the United States from 1865 to 1871*. There were copies of research pamphlets and articles written by scientists in the museum—in 1872 museum workers published at least 20 pamphlets and articles. He had reproductions of photographs and photomicrographs taken in the museum. After 1872 there was the *Catalogue of the Library of the Surgeon General's Office*, and after 1873–74 a three-volume catalog, the largest American medical catalog of its time, greatly desired by American and foreign medical libraries, medical schools, and university libraries.

In proposing an exchange Billings customarily made a favorable impression by offering a gift of the Library's latest catalog and perhaps another recent Medical Department publication. Illustrative of his approach is the letter he sent to Alfred Purdy, president of a medical group named the New York Journal Association:[42]

> I send you this day for the Library of the Journal Association a copy of the catalogue of our Library and a paper on cancer. The Library now contains nearly or quite 18,000 vols and may be considered as a good foundation for a National Medical Library. This being the case we are specially desirous of making it complete in American medical literature, and I call your attention to it in the hope that you will assist us to carry out this purpose, the importance of which I need not enlarge upon. What we especially desire is to get old medical pamphlets, addresses, theses, medical college announcements &c and to complete our files of American medical journals. I send a list of Journals showing what

> we have. I presume the journal association must have many duplicates, as we have, and hope that an exchange can be arranged with mutual benefit. Any package may be sent to the Chief Med'l Purveyor 126 Wooster St, or to Wm Wood & Co to be sent to us. All duplicates will be returned and proper returns made as soon as the nature of your wants are known.

The demand for the *Medical and Surgical History* and the large catalogs far exceeded the supply, and Billings doled them out in a miserly fashion. To a request from T. Apoleon Cheney for the *History*, Billings replied: ". . . the work will be issued from this office only in exchange for other works for the Lib, and to those who can furnish most of such jours &c required will the most liberal exchanges be made."[43] When Sewell Green asked for a copy of the 1872 catalog, Billings drew up a form letter to be used thereafter in answering all such requests:[44]

> Yours of _____recd. In reply I have to say that but a limited edition of the C. has been printed & that it is designed only for working purposes, & to procure exchanges from Libs etc, and that none can be spared to individuals unless for the purpose of procuring donations of rare books etc.

It is probable that Billings wrote to every medical and large public, state, and society library in the country in search of exchanges. The remains of his correspondence show he communicated with the libraries of New York Hospital, College of Physicians of Philadelphia, Pennsylvania Hospital, Medical College of Ohio, Starling Medical College, Johns Hopkins, Massachusetts Medical Society, Hahnemann Medical College, Medical and Chirurgical Faculty of Maryland, American Antiquarian Society, Boston Athenaeum, Boston Public Library, Boston Medical Library, Buffalo's Grosvenor Library, Massachusetts Historical Society, New York Historical Society, Harvard University, Brown University, and the state libraries of New York, Wisconsin, South Carolina, Michigan, and New Hampshire.[45]

Billings arranged exchanges with European organizations, libraries, and persons through correspondence and during his trips abroad. His procedure was to ship a crate of publications, along with a list of names of recipients and packet of letters addressed to the recipients, to one of his agents, who distributed the volumes and letters. Upon sending a case of catalogs and other publications to Gustav Bossange, Paris, Billings instructed him [46]

> The catalogues and pamphlets are put up in packages, addressed, and accompanied by letters to parties for whom they are intended. The letters should be sealed by you after having read them. You will observe from the letters referred to that it is my object and desire to procure for the Library such old pamphlets, reports, lectures, etc, as cannot be obtained in any other way, and especially to complete our files of medical journals published in France, Belgium, etc. I have requested that anything of the kind to be forwarded in pursuance to the letter may be sent through you, and in this connection I ask that you will urge the matter and endeavor to procure from the parties addressed everything that you know will be of value to such a Library as this is designed to be.

Sending a case of books to Felix Flügel, Leipzig, Billings admonished him thus:[47]

> The Medical and Surgical History of the War of which I have sent you 24 copies for distribution is an expensive book and the number printed being limited I shall be able to send you but few copies. . . . I wish them so employed as to produce the best exchanges for our Library which is now the largest medical collection in this country and which I am trying to make as complete as possible.

Among the medical societies to which Billings sent publications, and which reciprocated, were those of Edinburgh, London, Marseilles, Aachen, Lille, Bologna, Modena, Berlin, Frankfurt am Main, Cologne, and Cracow.[48]

Billings considered exchanges as a means of assisting other libraries. Arranging a trade with Achille Chéreau, librarian of the Faculty of Medicine, Paris, Billings wrote: "This office will be most happy not only to forward its own publications but to render assistance in making the Library of the Faculty complete in American medical literature. . . . personally I shall be glad to be of service to you by collecting and forwarding American medical books and periodicals."[49] Among the libraries that Billings aided were Parkes Hygiene Museum, University College, London, which requested American reports on hygienic subjects;[50] the Philadelphia College of Pharmacy and Science, whch wanted to fill gaps in its file of journals;[51] the Medico-Legal Society of the City of New York;[52] and the German department of health, which desired reports of U.S. state boards of health.[53] Not having all the publications desired by the library of the Faculty of Physicians and Surgeons, University of Glasgow, Billings wrote to the Boston Medical Library to see if it had the works among its duplicates.[54]

Billings also helped by giving advice on bibliography, classification,[55] booksellers,[56] design of libraries,[57] and the content of libraries.[58] To Norman Bridge, librarian of the recently formed Chicago Medical Press Association, he sent instructions for indexing, samples of index cards, names of suppliers of storage boxes for pamphlets, and a list of journals.[59] To the librarian of Worcester, Massachusetts, Medical Society, which had 500 volumes and $700, Billings suggested additions to the library.[60] To the Waterbury, Connecticut, Medical Association, ready to spend approximately $1,000 to add a medical section to the local public library, he gave advice.[61] To the Massachusetts Medical-Legal Society, which asked what journals it should subscribe to, Billings sent a list.[62]

Exchanges helped Billings develop every area of the Library's holdings. He received transactions, proceedings, journals, dissertations, books, and reports from American and foreign libraries. He obtained many of the rare 17th century and early 18th century medical pamphlets and theses now in the Library. But he was not always successful; although he obtained 56 pamphlets, 1771–1832, and medical theses of University of Pennsylvania graduates, 1792–1807, plus 9 books, 1773–1838, from Pennsylvania Hospital, he failed to pry loose the hospital's only copy of James Tilton's *Economical Observations of Military Hospitals*, Wilmington, Delaware, 1813, from the cagey trustees.[63]

BEGINNING THE PORTRAIT COLLECTION

It is not known when the Library acquired its first engraving, etching, lithograph, caricature, drawing, painting, or photograph of a medical subject, but Billings was collecting portraits routinely by the early 1870's.[64] "I am endeavoring to make this library as complete as possible," he wrote Henry March in 1874, "I also wish to collect portraits . . . of American physicians."[65]

Billings obtained photos of many of the prominent physicians of his time by asking for them, sometimes sending his own photograph in exchange.[66] Occasionally the Library received portraits as a gift; Alfred E. M. Purdy, editor of *The Medical Register of New York and Its Vicinity*, contributed a bundle of portraits in 1874.[67] But generally Billings purchased portraits from collectors and booksellers in small or large lots at prices of 10, 15, or 20 cents each. G. W. Foster, Sing Sing, New York, apparently a collector for at least a portion of his career, offered to sell or exchange for duplicate publications a lot of between 800 and 900 portraits.[68] J. H. Pooley, Columbus, Ohio, sent 160 portraits, for whatever price Billings was willing to pay, apparently 20¢ apiece.[69]

The largest collection that Billings bought was that of Cornelius Wilhelm Hendrik van Kaathoven, auctioned in Amsterdam on December 1 and 2, 1879. Billings obtained approximately 6,000 of Kaathoven's portraits for about 15¢ each. But in his eagerness to acquire this splendid collection Billings momentarily forgot that it would wipe out about one-tenth of his year's funds. "This purchase . . . so crippled me in the purchase of books," he recalled, "that I made up my mind I would not spend any more of the library funds in that direction except in a very small way."[70]

But in 1885 the magnificent collection of 12,000 portraits, mainly of physicians and naturalists, gathered by Heinrich Wolff of Bonn, Germany, was placed on the market and Billings forgot his resolution. He sought desperately to acquire the collection. He considered advancing $1,000 out of his own pocket toward the purchase.[71] He tried, through S. Weir Mitchell, to persuade the College of Physicians in Philadelphia to agree to buy at 25¢ each the 3,000 duplicate portraits the Library would own if it acquired Wolff's collection, thus replenishing part of the Library's expenditure.[72] He attempted to buy only a portion of the collection.[73] But other persons were interested in these portraits, whose artists included Dürer, Holbein, and Rembrandt, and the collection was acquired by the Leavenworth family of Syracuse, New York, by whom it was presented to Syracuse University, in whose Rare Book Collection it now reposes.[74]

A few years later Billings was offered 1,120 portraits of physicians, ancient and modern, American and European, by the firm of G. E. Stechert for $400, or about 35¢ apiece, but again the Library could not afford it.[75] "It is my purpose to make this collection as complete as the means which are at my disposal will permit,"[76] wrote Billings in 1886 referring to the Library's portraits, but his means were never sufficient.

The first photograph believed to have been presented to the Library, 1867. Sir William Fergusson, 1808–1877.

Allied to portraits and pictures on paper were medical scenes and likenesses of physicians on medals. The Library acquired its first medals as gifts. In 1886 when Billings requested permission to buy medals at an auction, the Secretary of War wanted to know why medals should be in a library and asked what appropriation would be used to pay for them. Billings defended medals by pointing out their relationship to medical history, but apparently he decided to forestall any further criticism by transferring the medal collection to the museum.[77]

Manuscripts and Letters

Although there is no evidence that Billings was interested in history of medicine during his early years, either he had a latent feeling for the subject or he acquired a taste for it. One of his initial decisions was to collect source materials of history: "Mss and letters bearing on the history of American medicine and physicians are of course valuable and there is no more appropriate place to file them," he wrote to A. W. Woodhull, a prospective donor in 1872.[78]

Letters of prominent physicians and manuscripts of medical interest, including student lecture notes, texts, speeches, and collections of recipes, did not come Billings' way very often, but he obtained what he could. His friend William Lee of Washington presented manuscript lectures and speeches on medical subjects delivered by Joseph Roby at Dartmouth and University of

Head Qrs Septr 9th 1780

Dear Sir,

I have heard that a new arrangement is about to take place in the Medical Department and that it is likely, it will be a good deal curtailed with respect to its present appointments.

Who will be the persons generally employed I am not informed, nor do I wish to know; — but I can but mention to you, that I think Doctrs Craik & Cochran from their services, abilities & experience — and their close attention, have the strictest claim to their Country's notice, and to be among the first Officers in the Establishment —

There are many other deserving characters in the Medical line of the army, but the reasons for my mentioning the above Gentlemen are, that I have the highest opinion of them — and have had it hinted to me that the new arrangement might possibly be influenced by a spirit of party out of Doors, which would not operate in their favor. — I will add no more than that I am

With the most perfect respt

Dear Sir

Yr most Obedt Servt

G Washington

Letter in the History of Medicine Collection. Addressed to "The Honorable Joseph Jones, Esq. of Congress at Philadelphia," the letter reads:

Head Quarters Sep. 9th, 1780

Dear Sir:

I have heard that a new arrangement is about to take place in the Medical Department, and that it is likely, it will be a good deal curtailed with respect to its present appointments.

Who will be the persons generally employed I am not informed, nor do I wish to know; however I will mention to you, that I think Doctors Craik and Cochran from their services, abilities and experience, and their close attention, have the strictest claims to their country's notice, and to be among the first officers in the establishment.

There are many other deserving characters in the medical line of the army, but the reasons for my mentioning the above gentlemen are, that I have the highest opinion of them, and have had it hinted to me that the new arrangement might possibly be influenced by a spirit of party out of doors [i.e. partisan politics], which would not operate in their favor. I will add no more than that I am

With the most perfect respect
Dear Sir
Your most obedient servant
G. Washington

Maryland medical schools, 1840 to 1856.[79] The Library received from friends other manuscripts, among them an account of the yellow fever epidemic at Wilmington, North Carolina, 1862, and case-books containing the medical papers of Frank H. Hamilton.[80]

On one occasion Billings tried to obtain some correspondence of John Morgan, founder of the University of Pennsylvania's medical school in 1765, the first medical school in British North America, but he was unsuccessful.[81] Nevertheless Billings picked up what he could, as he mentioned to Leon de Fort of Paris: "From time to time as I have met with them, I have secured and placed in this L[ibrary] autograph letters of distinguished physicians and surgeons."[82]

Eighteen seventy-one and seventy-two were exciting years in the Library's childhood. During that brief period Billings developed every method that he and his successors would use for obtaining books, journals, reports, dissertations, and other literary materials. Publications arrived at a rapid rate, and on

one of the days in the early 1870's the Library shipped into first place as the largest medical library in America The cataloging of publications in 1874 required three large volumes, a decade earlier it had been done in a small pamphlet. The Library had accumulated so many of the ordinary American medical books that Billings was finding it difficult to obtain those he did not have.[83] By 1875 the Library contained approximately 75 percent of all the periodical literature that had ever been published, it possessed by far the most voluminous collection of pamphlets, about 40,000, and was twice the size of the second largest medical library, that of the College of Physicians, Philadelphia [84] "Nothing is so remarkable in the development of medical libraries as the extraordinarily rapid growth of the Library of the Surgeon General's office," remarked an observer, "like Jonah's gourd it came up in a night "[85]

Notes

[1] Letter, Billings to Adams Jewett July 15, 1872, "I prefer as a rule not to purchase foreign books in this country, because I can get them easily and much more cheaply abroad ' MS/C/81

Invoices sent by Billings' agents listed the author, short title, price, and sometimes other information about publications he purchased The Medical Department's monthly abstracts of disbursements also contained this information The invoices and abstracts are in NLM A few examples of his purchases in the 1870's are Paracelsus, *De Cleyne Chirurgie*, 1568, $7 20, Hippocrates, *Prolegomena*, 1597, $1 95, Antonius Busennius, *In Cl Galeni Pergameni Librum De Inequali Intemperie Commentarii*, 1553, $9 30, Boyle, *Apparatus ad Historiam Naturalem*, 60¢, Thomas Sydenham, *Opera Medica*, 1735, $1 15, Thomas Bartholin, *Twee Hondert Getal*, 1657, $1 50, Johannes Mesue, *Opera Medicinalia*, 1471, $31 40

[2] Letter, Billings to Jewett, June 28, 1872, "as I must get all the new books + take all the M J 's [medical journals] I do not have a great amt to sp for exa editions" MS/C/81

[3] Letter, Billings to Schmidt, Dec 15, 1871 MS/C/81

Angry at Mackay Brothers, New York, Billings wrote "I regret that it should not have been thought proper to ask a reasonable price for the pamp[hlets] as probably 200 of them are not in this library and it would have saved me some trouble in procuring them I have no doubt however that I shall be able to procure all of them that I want at not to exceed 25 cents each" letter, Billings to Mackay Bros , Feb 15, 1872 MS/C/81 For another example see letter, Billings to E P Boon, Roxbury, Mass , June 23, 1884 MS/C81

[4] Letter, Billings to Baillière, Aug 14, 1882 MS/C/81

[5] Among the periodicals in which he advertised was New York *Medical Record*, 1872, *Canada Lancet* 1873, and *American Practitioner* 1873 Unfortunately advertisements were discarded when old journals were bound in NLM and most other medical libraries, and copies of Billings' ads are difficult to locate No records were kept of responses to the ads and there is no way of knowing how many publications they brought in, but at least they alterted readers to the existence and needs of the infant library and may have led persons to contribute

[6] Letters, Dunglison to Billings, Sept 23, Oct 3, 1872 MS/C/81

[7] Letters, Porcher to Billings, July 15, 21, Sept 27, Oct 5, 9, 12 Billings to Porcher, July 23, 1872 MS/C/81 Another example of Billings' offer of low prices was his dealing with H A Ford of Leonardtown Md , letters, Ford to Billings, July 10, Aug 2, 13, 14, Sept 19, Oct 5, Billings to Ford, Aug 7, 1872 MS/C/81

[8] Letter, Dovle to Billings, Jan 3, 1871 MS/C/81

[9] Johann Schroder, *Complete Chymical Dispensatory* London, 1669 The title in the text above is copied from the invoice The book was accessioned as no 14,845, sometime after Feb 15, 1872 (most volumes listed in the old registers do not have a date of acquisition) Voucher no 10, abstract of disbursements, museum and Library appropriation, shows that the book was sold to the Library on Mar 25, 1872

[10] Quote is from letter, Jewett to Billings, July 20, 1872 This and many other letters Jewett wrote to Billings between 1872 and 1874 are in MS/C/81

Dorothy M Schullian, "Adams Jewett and

John Shaw Billings, Partners in Acquisition," *Bull Med Lib Assoc* 49 443–9 (1961)

[11] Partial lists of donors and exchangers residing in the United States and other countries are in *Index-Catalogue*, 1 series, vol 16, 1895, pp iv–ix, and *Catalogue of the Library* vol 3, 1874, pp [iii]–vi Names of other donors may be found in Billings correspondence

[12] Yarrow, *Military Surgeon* 60 172 (1927)

[13] Garrison, *Billings*, 217–8

[14] Dorothy M Schullian, "Thomas Windsor, Benefactor of the Army Medical Library," *Bull Med Lib Assoc* 38 135–144 (1950)

[15] Letters, Trowbridge to the Surgeon General, June 23, 28, 1875 Trowbridge to Billings, June 23, 28, 30, July 6, 1875, Jan 29, 1877, Billings to Trowbridge, July 2 1875 MS/C/81

[16] Letter, Phinney to Billings, Nov 28 1884 MS/C/81

[17] Correspondence of Eldridge from 1871 to 1893 is in MS/C/81

[18] Letters, Green to Woodward, May 20, 1873, with attached reply by Billings, Green to Billings Sept 16, 1875, Feb 3, July 23, 1879 MS/C/81

[19] Letter, Billings to Wood, Jan 20, 1871 MS/C/81 This is the earliest letter in Billings' correspondence asking for help obtaining reports Wood obtained several reports, according to letter, Wood to Billings, Jan 30 MS/C/81

[20] Letters Van Deusen to Billings, Mar 1 1871, Snow to Billings, Mar 7, 1871 MS/C/81

[21] Letters, Simpson to Billings, Feb 9, Mar 28, Asch to Billings Feb 21, Irwin to Billings, Feb 26, Semple to Billings, Mar 18, June 13, Randolph to Billings, Mar 11, 1871 MS/C/81

[22] Letters, Bossange to Billings, Oct 31, Dec 12, 1871 NLM

[23] Letters, Billings to Trubner & Co , Sept 1, Trubner to Billings, Sept 23, Oct 5 (with list of institutions circularized), Oct 9 (with copy of form letter), 1871 NLM Letter, B F Stevens to Billings, Sept 24, 1878, with form letter attached MS/C/81

[24] Letter, Billings to Thomson, Mar 3, 1871 MS/C/81

[25] Billings opinions on dissertations are given in his chapter, "Medical Libraries in the United States," in the Bureau of Education special report, *Public Libraries in the United States of America*, part 1, 1876

[26] The latter quotation was the opinion of physician, philologist bookseller Felix Flugel letter, Flugel to Billings June 22, 1873 NLM

[27] Letter, Billings to Bossange, April 16, 1868 NA

[28] The Library received hundreds, or perhaps a few thousand, from Library of Congress, but it is not possible to ascertain the number because pamphlets and dissertations were totaled together Letters, T Gill to Billings, Mar (n d), Billings to Gill, Mar 12, 1872 MS/C/81 In the *Catalogue* of 1872, pamphlets and dissertations from Library of Congress may be identified by the letter C

[29] Letters, Schmidt to Billings, Mar 31, Apr 7, May 8, June 30, Sept 20, 27, Oct 9, Billings to Schmidt, Sept 19, 1872 MS/C/81

[30] At the time Billings published the *Catalogue* of 1872, the Library had 700 bound volumes of Paris, Montpellier, and Strasburg dissertations

[31] Letter, Billings to Flugel, May 2, 1873 NLM

[32] Letter, Billings to Flugel, July 10, 1873 NLM A Treichel, a philatelist of Berlin, Germany, heard of Billings' wants and sent him dissertations and pamphlets, requesting U S stamps in return letters, Treichel to Billings July 29, 1874, June 12, Dec 28, 1875 MS/C/81

[33] Letter, Flugel to Billings, transmitting letter from University of Berlin, Oct 18, 1873, accompanied by translation made in SGO NLM

[34] Letters, Billings to Flugel, June 15, 1878, June 29, Aug 2, 31, 1882 NLM Billings also asked Flugel to have copied from records of principal German universities, at the Library's expense, lists of names of medical graduates so that he would know of gaps in his collection, and be able to arrange and bind his copies Letters, Billings to Flugel, May 2, July 10, 1873 NLM

[35] Letter, Billings to librarian, University of Zurich, Oct 27, 1874 MS/C/81

[36] Letter, University of Groningen to Billings, Nov 30, 1874 MS/C/81

[37] Letter, University of Greifswald to Billings, Jan 25, 1874 MS/C/81

[38] Letter, librarian, University of Munich to Billings, June 20, 1876 MS/C/81

[39] Letter, Univesity of Wurzburg to Billings, Dec 1, 1877 MS/C/81

[40] Letters, University of Rostock to Billings, Oct 3, 1874, University of Freiburg to Billings, Sept 30, 1876, University of Halle to Billings, Dec 31, 1874 MS/C/81

[41] Figures are from the Billings chapter, "Medical libraries in the United States," published in 1876, and the annual reports of the Surgeon General for 1885 and 1895

[42] Letter, Billings to Purdy, May 16, 1872 MS/C/81

[43] Letter, Billings to Cheney, Apr 26, 1872 MS/C/81

[44] Letter, Billings to Green, May 16, 1872 MS/C/81 On this letter Billings wrote "In ans to all letters (official and other) "

[45] Names of some of the societies, universities, libraries, and organizations which contributed to the Library by exchanges of gifts are in *Catalogue of the Library*, vol 3, 1873, pp vi–x, and *Index-Catalogue*, first series, vol 16, 1895, pp ix–xiv Joseph E Garland, *The Centennial History of the Boston Medical Library, 1875 to 1975*, pp 30–32

[46] Letter, Billings to Bossange, Apr 11, 1874 NLM

[47] Letter, Billings to Flugel, May 2, 1873 NLM Lists of recipients of catalogues, histories, and other publications are in the correspondence of Billings and Flugel, NLM A careful record was kept of recipients of volumes of the *Index-Catalogue*, 1880 onward

[48] Some letters of acknowledgment from societies are in Billings' correspondence, MS/C/81

[49] Letter, Billings to Chéreau, May 24, 1884 MS/C/81 See also letter, Billings to Hahn of the Paris faculty, April 8, 1885

[50] Letters, G V Poore to Billings, Mar 27 Apr 27, 1877 MS/C/81

[51] Letter, Librarian PCP to Billings, June 1, 1875 MS/C/81

[52] Letters, M Eller to Billings, Feb 24, Mar 29, 1877 MS/C/81

[53] Letter, Struck to Billings, Feb 3, 1882 MS/C/81

[54] Letters, Librarian, Faculty of Physicians, to Billings, Aug 2, 1882, Billings to Bowditch, Boston Medical Library Association, Sept 9 MS/C/81

[55] Letters, Brigham to Billings, July 7, 19, Nov 14, 18, 1882 MS/C/81 John W Farlow, *History of the Boston Medical Library*, pp 204–205

[56] Letter, D W Cathell to Billings, Oct 6, 1887 MS/C/81

[57] Letter, J H Larned, Young Men's Library, Buffalo, to Billings, Feb 4, 1884 MS/C/81

[58] Letters, Billings to Melvil Dewey, Columbia University, Nov 13, 1886, Dewey to Billings, Nov 10 MS/C/81

[59] Letters, Bridge to Billings, May 5, June 12, July 3, 23, Sept 29, 1877 MS/C/81

[60] Letters, L Wheeler to Billings, Feb 3 17, 24, 1880 MS/C/81

[61] Letter, A North and E McDonald to Billings, Mar 19, 1880 MS/C/81

[62] Letter, F W Draper to Billings, Oct 17, 1883 MS/C/273

[63] Letters, J Turnpenny to Billings, Apr 3, 7, 10, 15, Billings to Turnpenny, Apr 4, 11, 1872 MS/C/81

[64] Alex Williamson presented a photo of Sir William Fergusson in 1867 (letter, Billings to Williamson, Nov 6, 1867 NA), but there seems to be no way of ascertaining whether or not this was the first

[65] Letter Billings to March, Oct 10, 1874 MS/C/81

[66] For example, photos were sent by Baron Felix-Hippolyte Larrey, Paris (letter, to Billings, Dec 28, 1874 NLM), T Lauder Brunton, London (letter, to Billings Jan 25, 1877 NLM) and C Muller, Budapest (letter, to Billings, Nov 3, 1894 NYPL) Billings sent a group of photos of himself to Felix Flugel, his agent in Leipzig, for distribution in 1877 (letter, to Flugel, Feb 24, 1877 NLM)

[67] Letter, Purdy to Billings, Sept 8, 1874 MS/C/81

[68] Letter, Foster to Billings, Nov 4, 1881 MS/C/81

[69] Letters, Pooley to Billings, Nov 4 24, 1881, Billings to Pooley, Nov 22, 1881 MS/C/81

[70] Letter, Billings to J H Pooley, Nov 22, 1881 MS/C/81

[71] Letters, Billings to E Wolff, Germany, Nov 13, Dec 27, 1886 MS/C/81

[72] Letter, Billings to Mitchell, Jan 13, 1887 MS/C/81

[73] Letter, Billings to E W Leavenworth Dec 10 1886 MS/C/81

[74] Lytt I Gardner, L G Wells, "The Wolff-Leavenworth Collection of Engraved Portraits at Syracuse University," *Bull Hist Med* 35 175–7 (1961)

[75] Letters, Stechert to Billings, Aug 18, 1894 Fletcher to Stechert, Aug 20, 1894 MS/C/81

[76] Letter, Billings to E W Leavenworth Dec 10, 1886 MS/C/81

[77] Letter, Billings to Surgeon General Murray, Feb 13, 1886, with endorsement by Secretary of War, letter, Billings to Surgeon General, Feb 26 MS/C/81 It is noteworthy that the military establishment was so small in 1886 that the Secretary of War became involved in such matters

Correspondence between Billings and two of his advisors on medals, William Lee and Horatio Storer, is in MS/C/81

A Allemann, "The Collection of Medical Medals in the Army Medical Museum," *Bull Med Lib Assoc* 7 5–7 (1917–18)

[78] Letter, Billings to Woodhull, May 13 1872 MS/C/81

[79] Letter, Lee to Billings, Dec 5, 1889 MS/C/81

[80] Letters, Harvey E Brown to Billings, June 30, July 25, 1872 MS/C/81 The manuscript on yellow fever is MS/fB/30

Letter, D A Davis to John B Hamilton, with endorsements and reply of Billings to J B

Hamilton, Apr. 1, 1888 MS/C/81. Hamilton's notes, case reports, correspondence, memoranda, and other documents are filed under MS/B/184.

[81] Letters, Surg. John Campbell to E. Sprague, filed under date Aug. 17, 1877: MS/C/81.

[82] Letter, Billings to de Fort, Apr. 4, 1893: MS/C/81.

[83] Letter, Billings to H. A. Ford Aug. 7, 1874: MS/C/81.

[84] Table of principal medical libraries on p. 182 of Billings' chapter, "Medical libraries in the United States," in Bureau of Education Special Report, *Public Libraries in the United States . . .*, Part 1, 1876.

[85] Archibald Malloch, in *Celebration of the Centennial of the Library of the Medical and Chirurgical Faculty of the State of Maryland, 1830–1930* (1931), p. 8.

VI

The Operation and Services of the Library

The Library in Operation

While Billings was gathering books, journals, reports, dissertations, and other literature, the Library had to be managed, publications had to be registered, classified, cataloged, and shelved, readers had to be assisted, and Congress had to be approached annually for funds.

For the first few years the shelves in Ford's were probably wood, constantly extended as Billings acquired more and more volumes. In 1871, around the time the decision was made to develop a national library, Billings began to order iron stacks.[1] Eventually the only space for expansion was upward, toward the high ceiling. A second level of stacks was erected atop the stacks against the walls, with an iron balcony reached by an iron stairway allowing access to the upper level.[2] Finally books had to be double shelved. A tall metal bookcase with glass doors for display and protection of rare books and incunabula was placed against the front wall between the windows.[3]

In the 1860's the clientele of the Library was exclusively military. In the seventies, when it was opened to the entire medical profession, civilians gradually outnumbered medical officers.[4] A visualization of the interior of the Library and the number of readers may be obtained from the furnishings in 1887: 51 chairs, 10 desks, 9 tables, 9 stools, 8 spittoons, 7 book and file cases, 5 ladders, 2 library tables, 2 manuscript cabinets, 2 water coolers, 1 case of book drawers, 1 card case, 1 negative case, 1 map chest, 1 umbrella stand, 1 marble top table, 1 washstand, 1 wash bowl and pitcher, and 1 clock.[5] Electric fans and air-conditioning were in the future, and during the hot Washington summers the only relief came from open windows and awnings.

Billings' office was in Riggs. Here publications were received, unpacked, and examined by clerks to make certain that no pages or plates were missing. The short title, author's name, size, date and place of publication were written in the Register.[6] The books were classified according to subject, as anatomy, surgery, and so on. The registration number and classification were written on a book plate pasted inside the front cover. They were then sent to Ford's and shelved.

In 1883 on being appointed head of the newly created Museum and Library

Division, Billings moved his office to a room in the house attached to Ford's. His office had a rug on the floor and awnings on the windows, contained 2 sofas, 2 desks, 2 tables, 1 small table, 12 chairs, 1 stool, 3 revolving book towers, 1 cabinet for engravings, 1 cabinet for letters, 17 book and file cases, 1 card case, 1 map holder, 1 fireproof safe, 1 typewriter, 2 clocks, 1 drop light, 2 mirrors, 1 wardrobe, 1 water cooler, 1 washstand, 2 marble top tables, 1 wash bowl and pitcher, and 2 spittoons.

A newspaper reporter who interviewed Billings in 1883 described his office thus: "At desks on each side of the librarian were two clerks, and in the opposite corner was Dr. Robert Fletcher, a colaborer with Dr. Billings in library work. Little heaps of pamphlets, periodicals and manuscripts covered the desks, while here and there were piles of books which were at intervals removed by messengers and their places supplied by others."[7]

The earliest arrangement of books on the shelves is not known. Presumably it was the same as in the catalog of 1865, and later of 1868; that is, there were about 10 classes, and in each class books were arranged alphabetically by author. From about 1871 to the late seventies books were classified and arranged as were the medical publications in the Library of Congress. Billings then developed a classification based on that of the Royal College of Physicians, London.[8] Within each class books were shelved alphabetically by author.

Unbound journals were shelved according to size, as folio and quarto, in order to use all available space. Within each size they were arranged alphabetically. Bound volumes of journals were arranged by country, then alphabetically within each country.[9]

Unbound pamphlets were first arranged in one alphabet in a series of boxes ("Woodruff's Patent File Boxes"). Because of the constant insertion of incoming pamphlets and of new boxes at various points in the series, this system took too much time. It was stopped, and thereafter incoming pamphlets were laid in a box until the box was full, the box was replaced by an empty box, the pamphlets of the full box were alphabetized, and the box placed on the shelf. Each box was numbered, and the number was placed beside the title of each pamphlet in the catalog. Volumes of bound pamphlets were shelved chronologically.

Some of the early binding of pamphlets, journals, and reports was done at the Government Printing Office and some by private bookbinders.[10] In 1872 Billings decided to try a variety of bindings and adopt one for the Library. He sent 150 volumes to Charles Sutherland, medical purveyor, New York, and asked him to have them bound, most in half turkey dark red, some in full calf, a few in half calf. "The style of binding desired is plain, neat, and strong, without fancy gilt tooling, edges of books speckled," he wrote, "I send this as an experimental lot to learn about styles and prices."[11] Billings chose half turkey, and some of the volumes of that time still bear that binding somewhat the worse for wear.[12]

Billings continued to send journals, pamphlets, and books in need of repair

to the Government Printing Office and to private firms until laws were passed requiring that all Federal agencies have their publications bound at the printing office. Unfortunately the latter did not have sufficient employees and storage space to accept, bind, and return publications rapidly. Volumes from the Library sat at the GPO for 6 months or longer before being returned. In Billings' opinion the most unsatisfactory aspect of library operations was the unavailability of works waiting to be bound.[13] He would have preferred that the organization control its own binding, but that did not come to pass for many years.

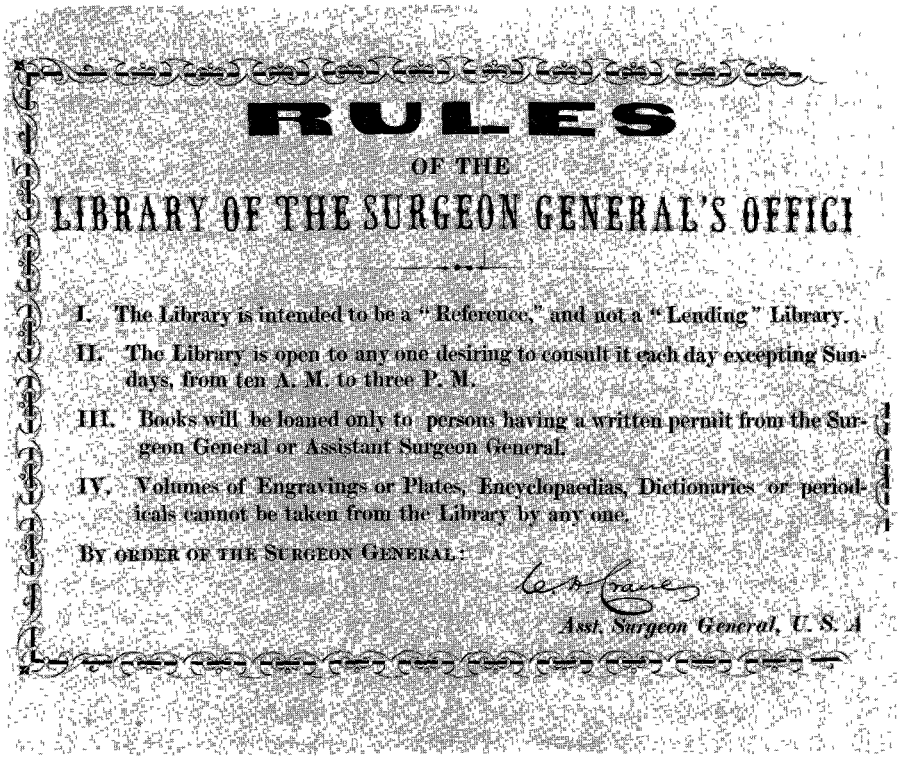
Billings had two immediate assistants, Edward Shaw, who was with him from 1867 onward, and Andrew Bischoff up to 1880, succeeded by Frederick W. Stone. Shaw, who was Billings' secretary much of the time, held a bachelor's degree from Yale and was the only college graduate in the Library, other than Billings.[14]

The Library was presided over by Acting Assistant Surgeon Thomas Washington Wise. Wise had begun to work for the Medical Department as a nurse and clerk at Armory Square Hospital in Washington when he was 16 years old during the Civil War. He studied medicine at Georgetown and received his M.D. degree after the war. He practiced in Kentucky for a few years then returned to Washington to work under contract for the department from July 1, 1874 onward. Officially he was to assist in the preparation of the *Medical and Surgical History of the War*. Billings construed this most broadly and placed him in immediate charge of the Library. Apparently he lived an unambitious, placid life for there is no record of his writing articles or engaging in other activities that would have perpetuated his name. But he was appreciated by Library users, one of whom wrote: "His genial and courtly manner made his acquaintance a pleasure, while his prompt and cheerful offers to render aid made a visit to these halls a double pleasure. His kindness and gentleness, mingled with true manliness, impressed themselves upon all who came in contact with him."[15]

Wise was assisted by clerks (most of the civilian employees of the Library in those days were designated as "clerks"), ex-soldiers who had come to work for the department after the Civil War and been assigned to the Library. They were a rough, uneducated group of men who knew nothing about medicine except what they had picked up from being among Army surgeons, but they were conscientious, and they learned what they needed to know to operate the institution and assist readers.[16]

The Library was open every day except Sunday from 10 a.m. until 3 p.m.[17] Readers included museum workers, compilers of the *Medical and Surgical History*, and military and civilian physicians of Washington. Books were not loaned ordinarily, and some publications (as reference works and current journals) never.

The early readers were aided by the interleaved catalog of 1865, the catalog of 1868, the first large catalog of 1872[18] and the *List of American Journals* also



RULES

OF THE

LIBRARY OF THE SURGEON GENERAL'S OFFICE

I. The Library is intended to be a "Reference," and not a "Lending" Library.

II. The Library is open to any one desiring to consult it each day excepting Sundays, from ten A. M. to three P. M.

III. Books will be loaned only to persons having a written permit from the Surgeon General or Assistant Surgeon General.

IV. Volumes of Engravings or Plates, Encyclopaedias, Dictionaries or periodicals cannot be taken from the Library by any one.

By order of the Surgeon General:

Asst. Surgeon General, U. S. A.

The earliest known rules, printed in the 1870's, governing the use of the Library.

issued in 1872. During the latter year the flood of books, reports, theses, and journals forced Billings to start an expandable card catalog for his own, his clerks', and his readers' use.[19] The "cards" were actually rectangles of thick white paper, about 5 × 7 inches in size, lined on one side.[20] On the top line clerks copied the author's name, followed below by the title, collation, size, place of publication, publisher, and date of publication of each book, thesis, and pamphlet. These cards were filed alphabetically in wooden drawers. Cards on anonymous works, periodicals, transactions, and reports were filed in separate drawers.

Billings sent these cards to the printer for use in preparing a three-volume catalog published in 1873–1874.[21] When the cards were returned Billings added subject headings and clerks filed the cards alphabetically by subject. Author cards were made for publications that arrived after the original cards had gone to the printer. The Library now had a printed author catalog, a supplementary card author catalog, and the nucleus of a card subject catalog.[22]

In the 1870's the stacks were open. After a reader had consulted Wise or

the catalog or card index, he selected the publications he wished to peruse and carried them to a table or desk. "The books are all out in full view," remarked a writer, "to be inspected and handled at your pleasure, and there is no envious looking through glass panes or wire screens at what you cannot reach without the aid of an assistant."[23] But readers misshelved books and disorganized the Library's operations in other ways, and slowly Billings lost his patience. He closed the stacks and required readers to apply to Wise or a clerk for publications. "We cannot let visitors rummage the shelves," he told a patron, "because the books must be kept in a certain order, and it wont do to let visitors out of sight. But Dr. Wise will go with you and take down as many books as you like and give you every facility to examine them in the reading room and will then replace them himself. . . . It wont do to make any exceptions to these rules as I have found by sad experience, for what I grant to one I must to all."[24]

For the convenience of physicians in Baltimore, Philadelphia, and other places who planned to visit Washington to research in the Library, Wise or the clerks would pull publications from the shelves and have them on a desk for the visitor when he arrived if the visitor would send a list of publications in advance.

Billings' pride in the Library led him to arrange exhibits of its treasures. A visitor in 1878 mentioned one of the displays:[25]

> Going into the library of the surgeon-general's office, the other day, to look up some works of reference, we could not help being struck with the thoroughness of the administration of that library, seeing spread out on the table before him, as an example, the whole of the collection of pamphlets, in bound volumes, which belonged to Claude Bernard. Here, then, was the material utilized by that distinguished physiologist to aid him in those researches which have done so much for medicine, and with which the whole medical world is so familiar.

Wise and his assistants serviced the readers promptly and well, so much so that is difficult to find a complaint about the Library in corespondence, editorials, or articles. Readers may have been disappointed occasionally by not finding information they sought but never by lack of cooperation from the staff. The following impression of the Library by a writer may be regarded as typical: "The situation of the library is peculiarly interesting in its associations, the readiness of access to the books, and the politeness of the attendants in charge. . . . The room is warm and comfortable, with every convenience for the visitor who wishes to make extensive notes, and the quiet which pervades shows a due regard for mental abstraction."[26]

Appropriations for Literature

One of Billings' periodic concerns was the amount of money that the Library would receive from Congress. The first appropriation had been granted in 1867, $10,000 for the fiscal year ending June 30, 1868. Much of this had been spent to furnish the second floor of Ford's for library use. The next year and thereafter

the appropriations had been reduced to a sum just sufficient to purchase publications:

Fiscal Year Ending June 30	Library	Museum	Library and Museum combined
1868	10,000	10,000	
1869	2,000	5,000	
1870	2,000	5,000	
1871	3,000	5,000	
1872			7,000
1873			10,000
1874			10,000

Two or three thousand dollars may seem insignificant to a major library in today's economy, but during the 1870's it possessed considerable purchasing power.

In 1874 ripples from the Panic of 1873, one of the worst business depressions in American history, reached the Library. Some congressmen proposed to reduce the Library-museum appropriation from $10,000 to $3,000. "This would be barely sufficient to care for the Museum . . . and would entirely stop the increase of the Library, and especially the completing of the files of serials, which is of the greatest importance," Billings noted. He sought help from editors and influential physicians, telling them:[27]

> I think it is unnecessary to explain to you in detail how desirable it is that this work should not be interrupted. Every year adds to the difficulty of procuring books and journals not of recent date, and if we are ever to have a medical collection in this country which shall approach in completeness and value those formed by European governments, and thus furnish our writers and teachers with the same facilities as those of the Old World, the small appropriation heretofore made should not be at all diminished.
>
> Congress in judging of the advisability of this expenditure must be guided by the expressed opinion of the medical profession as to the utility of the work, hence I venture to express the hope that you will take steps to have such opinion expressed to the Members and Senators of your State in the shape of resolutions by a Medical Society and by personal letters, to the effect that you are interested in the progress and completion of the Museum and Library, and begging that the appropriation be not reduced, but if possible increased.

When the spring of 1874 rolled around Congress appropriated $10,000. Whether or not it had been influenced by letters, petitions, and memorials from Billings' correspondents is not known, but Billings had learned that this manner of lobbying was effective, and he was to seek aid from the medical profession again and again in the future.

Evolution of the Loan System

It is not known when medical officers were first given the privilege of borrowing books and journals from the Surgeon General's office, but within a few years of the Civil War's end the practice was well established. For example,

in 1868 Surgeon Andrew K. Smith, Atlanta, Georgia, complained to Billings: "I don't get any medical or chemical journals here. I don't care about the trifling Philadelphia Surgical and Medical Reporter, but the Lancet, Chemical News, American Journal, and the semiannuals I wish exceedingly. Will you please see that they are sent to me." Billings passed this letter to his clerk with a penciled note, "The journals are to be sent to Dr. Smith."[28]

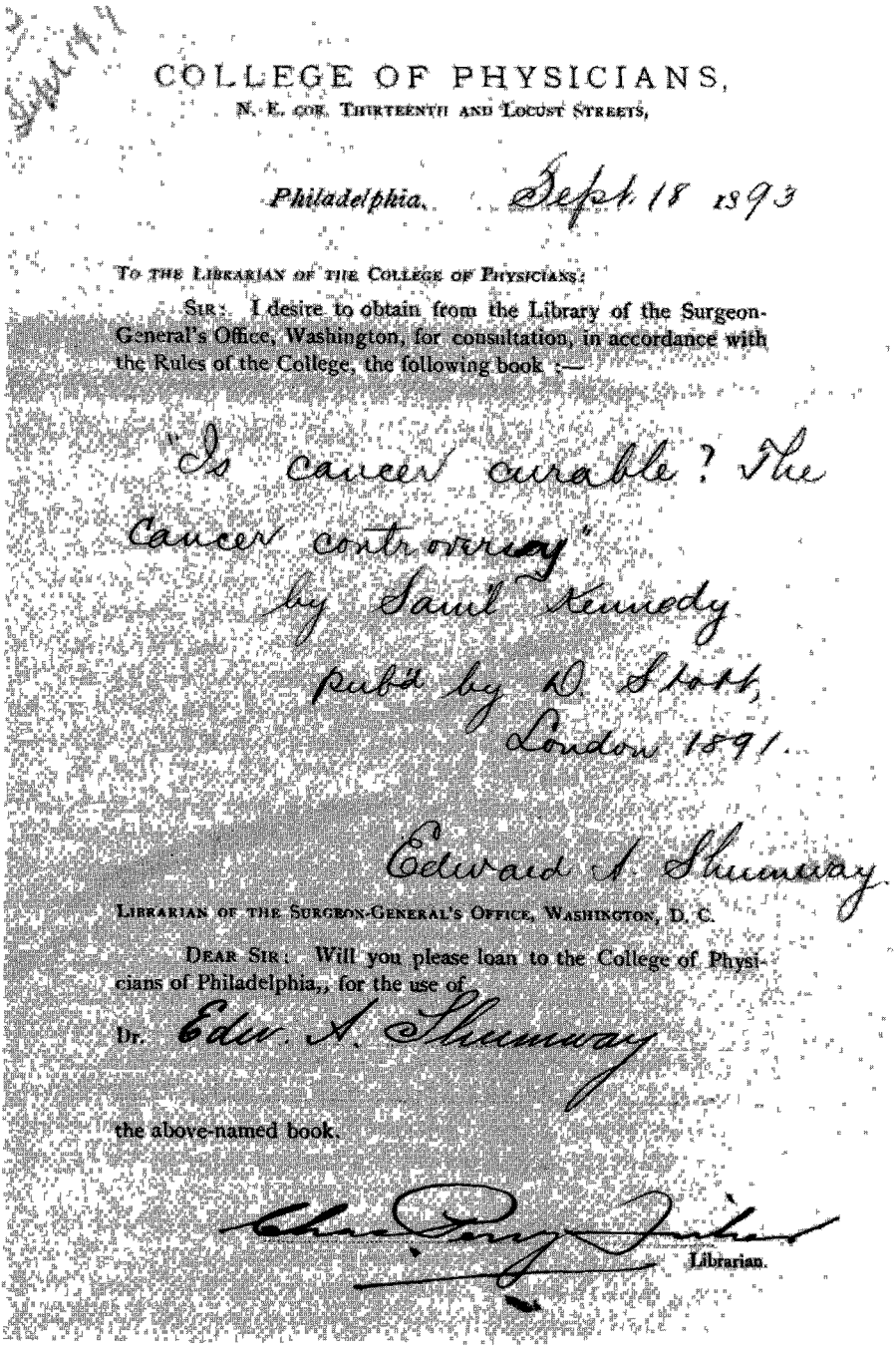
The lending of publications to civilian physicians was not begun until the 1870's. Then books could not be borrowed except by written permission of the Surgeon General or Assistant Surgeon General, and certain types of publications (journals, encyclopedias, dictionaries, volumes of plates) were not loaned under any circumstances. Rules were first drawn up by Billings in the spring of 1872 at the urging of Woodward, the custodian of Ford's, and were printed and placed in prominent places in the Library.[29]

Neither the hours of service, 10 a.m. to 3 p.m., nor the rule against borrowing were entirely satisfactory to private physicians. A Washington correspondent of the *Boston Medical and Surgical Journal* pointed out that most physicians were busiest in their offices during these hours and therefore had little chance of visiting the Library, and that the no-lending rule prevented physicians from studying books at home. "It is true," wrote the correspondent, "that the gentleman in charge, Dr. Billings, is remarkably courteous in relaxing the rules and giving every aid possible under suitable circumstances; but this is a personal favor and . . . one cannot help questioning what would be the effect of a change in the ordinary routine of army duty; perhaps the new librarian would not be so favorably disposed."[30]

Furthermore as time passed and the Library became ever larger, more publicized and better known, Billings began to receive requests from physicians living in other towns to borrow publications.[31] This placed him in an awkward position. On one hand he was urging physicians to give journals, books, reports, theses, and other publications to the Library, while on the other hand he was refusing to lend materials to those who needed them. Physicians who lived where there were no or poor medical libraries and who needed information for research or cases had to ride the train to or hire a copyist in Washington. Persons came from Baltimore, Philadelphia, and even as far as Chicago.[32]

By 1874 Billings had relaxed his no-loan policy somewhat. When Richard Dunglison, a teacher, editor, author, and compiler of a standard medical dictionary living in Philadelphia, asked to borrow a medical almanac, Billings told his clerk to let him have it.[33]

It appears that Billings began to develop his loan policy during 1874.[34] Perhaps he was encouraged to lend books because the small American Medical Association library, then housed in Washington, and the Smithsonian Institution both sent books on loan to physicians outside the town.[35] By 1875 Billings was lending books and journals to Horatio C. Wood and William Pepper by sending them to College of Physicians, Philadelphia.[36] Then, responding to a request for books from William W. Keen, Philadelphia, Billings wrote out the



COLLEGE OF PHYSICIANS,
N. E. COR. THIRTEENTH AND LOCUST STREETS,

Philadelphia, Sept 18 1893

TO THE LIBRARIAN OF THE COLLEGE OF PHYSICIANS:

SIR: I desire to obtain from the Library of the Surgeon-General's Office, Washington, for consultation, in accordance with the Rules of the College, the following book :—

"Is Cancer curable? The Cancer controversy"
by Saml Kennedy
Publd by D. Stott,
London 1891.

Edward A. Shumway

LIBRARIAN OF THE SURGEON-GENERAL'S OFFICE, WASHINGTON, D. C.

DEAR SIR: Will you please loan to the College of Physicians of Philadelphia,, for the use of

DR. Edw. A. Shumway

the above-named book.

Librarian.

Form employed by the College of Physicians, Philadelphia, for interlibrary loans.

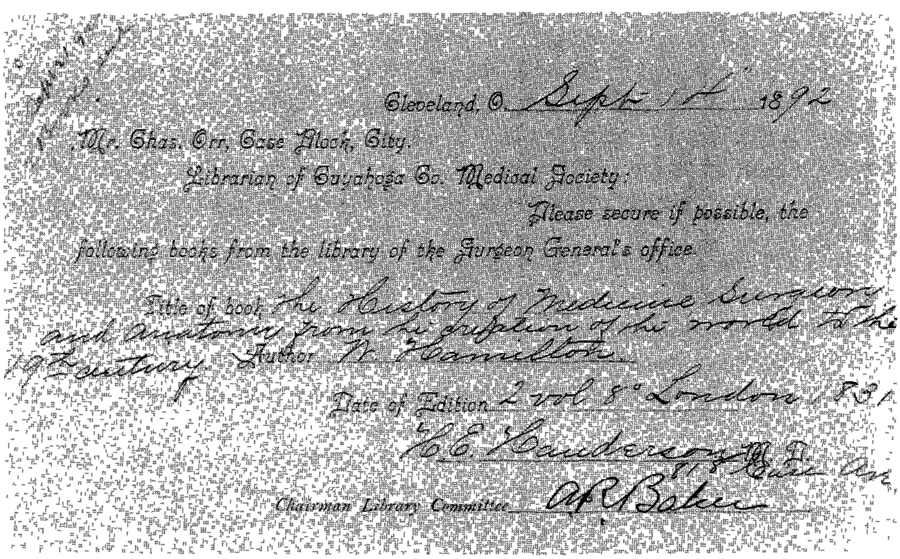
conditions given below and sent them to Robert Bridges, librarian of College of Physicians:[37]

> As things now are you are personally responsible for the books. This is not what is desired by this office. We only wish to loan books to a chartered, incorporated and responsible medical society. For this purpose it is desirable that the College should pass a resolution requesting the Surgeon General to loan it books from time to time as may be requested by the librarian, and declaring that it will be responsible for all books so loaned.

The College of Physicians was not willing to assume this responsibility, and for 2 years Billings would not lend books to Philadelphians.[38] Finally the two organizations reached an amicable agreement, and the Library resumed its loan privileges.[39] In the meantime Billings extended the loan system to Boston Medical Library Association, New York Hospital Library, Johns Hopkins University, and other libraries.[40]

By 1880, with experience to guide him, Billings had made the conditions for borrowing more specific. Replying to a request from the College of Pharmacy, New York, he agreed to send volumes if the authorities would assent to the following propositions:[41]

> I. That the College formally authorize some one person to make requests for the books and agrees to be responsible for the safe return of all books sent in accordance with requests made by this office.
> II. That books be sent and returned by express free of expense to this office.


Cleveland, O. Sept 1st 1892

Mr. Chas. Orr, Case Block, City.

Librarian of Cuyahoga Co. Medical Society:

Please secure if possible, the following books from the library of the Surgeon General's office.

Title of book The History of Medicine Surgery and Anatomy from the creation of the world to the 19th century. Author W. Hamilton.

Date of Edition 2 vol 8° London 1831

H. E. Handerson M.D.

Chairman Library Committee A R Baker

Form used by the Cuyahoga County Medical Society, Cleveland, Ohio, to borrow publications from the Library. Henry Ebenezer Handerson, who requested the book, was a well-known historian of medicine.

III. That all books sent be kept in the Library rooms of the College until their return.
IV. That all books loaned be returned in two weeks unless special permission to retain them longer be obtained from this office.
As a rule this library does not loan unbound numbers of current periodicals.

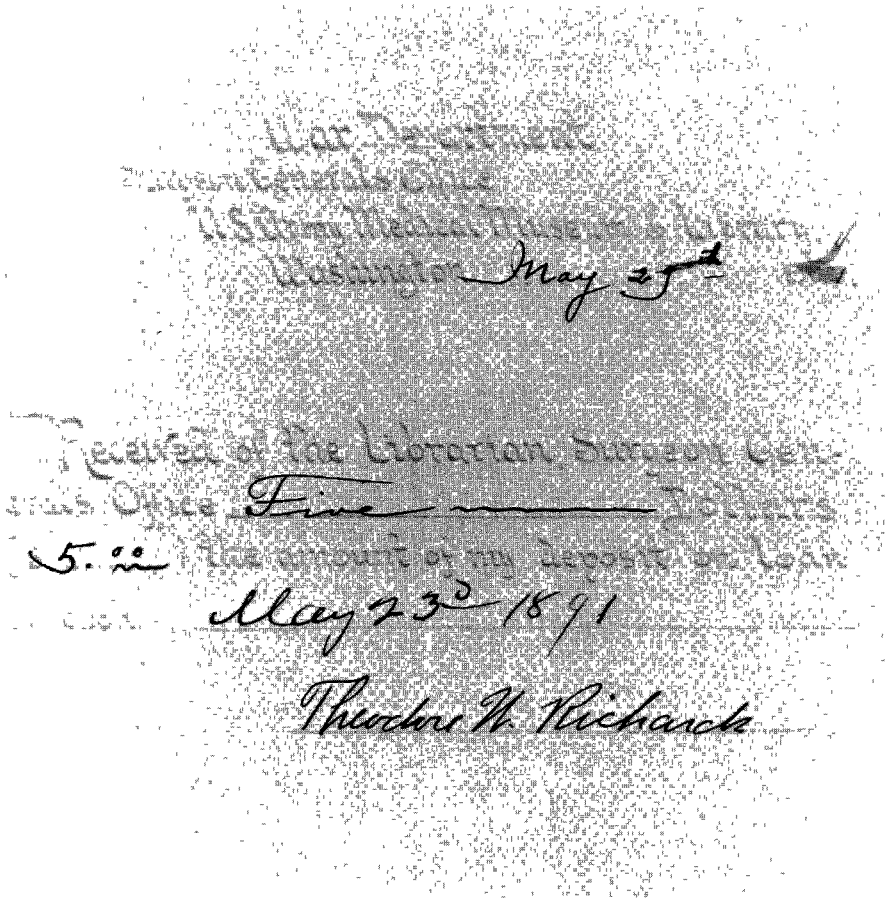
As the 1880's moved along and the Library's liberal loan policy became widely known through editorials, word-of-mouth, and Billings' publications and speeches,[42] the number of requests for loans increased greatly. Some librarians of medical societies received so many requests from members to borrow books from Washington that they had forms printed for the purpose. Occasionally an urgent request, perhaps resulting from an emergency, came by telegraph.[43] Requests even came from Canada and from Europe.[44]

In the meantime Billings had received requests for loans from physicians living in towns where there were no medical, public, or collegiate libraries—and in the 1870's libraries were not nearly as numerous as today. He was also approached by physicians residing in Washington for permission to borrow books. His answer was no. He told A. Ostertag, Okawville, Illinois, who asked to borrow two books, "Regret cannot comply with request as this is a reference not a lending library."[45] And when Jacob J. Delamater, a physician then working for the Pension Office in Washington, wished to borrow a printed introductory lecture written by himself, Billings told him to come and copy it, for "this is exclusively a reference and not a lending library."[46]

Some physicians who wrote were friends of Billings and had donated publications. Billings did not have the heart to refuse their requests, but he asked them not to publicize his loans. ". . . Please *do not* let anyone know that I have sent them to you," he told Theophilus Parvin of Indianapolis, "as it is contrary to rules to lend books to individuals."[47] Within a few years Billings changed his policy and began to lend books to individuals if the person would deposit a sum of money with the Library sufficient to replace books if they were lost. After the borrower returned the books the Library returned his deposit.

By 1885 the Library's loan policy was so widely known and utilized that borrowers outnumbered visiting readers. "While there are always some physicians reading & making notes in the L. & many come here from a distance for that purpose," reported Billings, "yet the library is most used by physicians in other cities who borrow books on the deposit of a sum of money sufficient to replace them."[48]

Billings bent the rules when he felt there was good reason to do so. Asked by John Stockton-Hough, a collector and student of medical incunabula, for a loan of 15th-century printings, Billings assisted him with his studies by sending some, not all, of the Library's holdings. "Am willing to lend you books for yr. purpose wh. I would not lend to anyone else," he wrote Stockton-Hough. This was very liberal: incunabula were not as expensive then as they are today, but it is doubtful that any other library would have sent them beyond its walls.

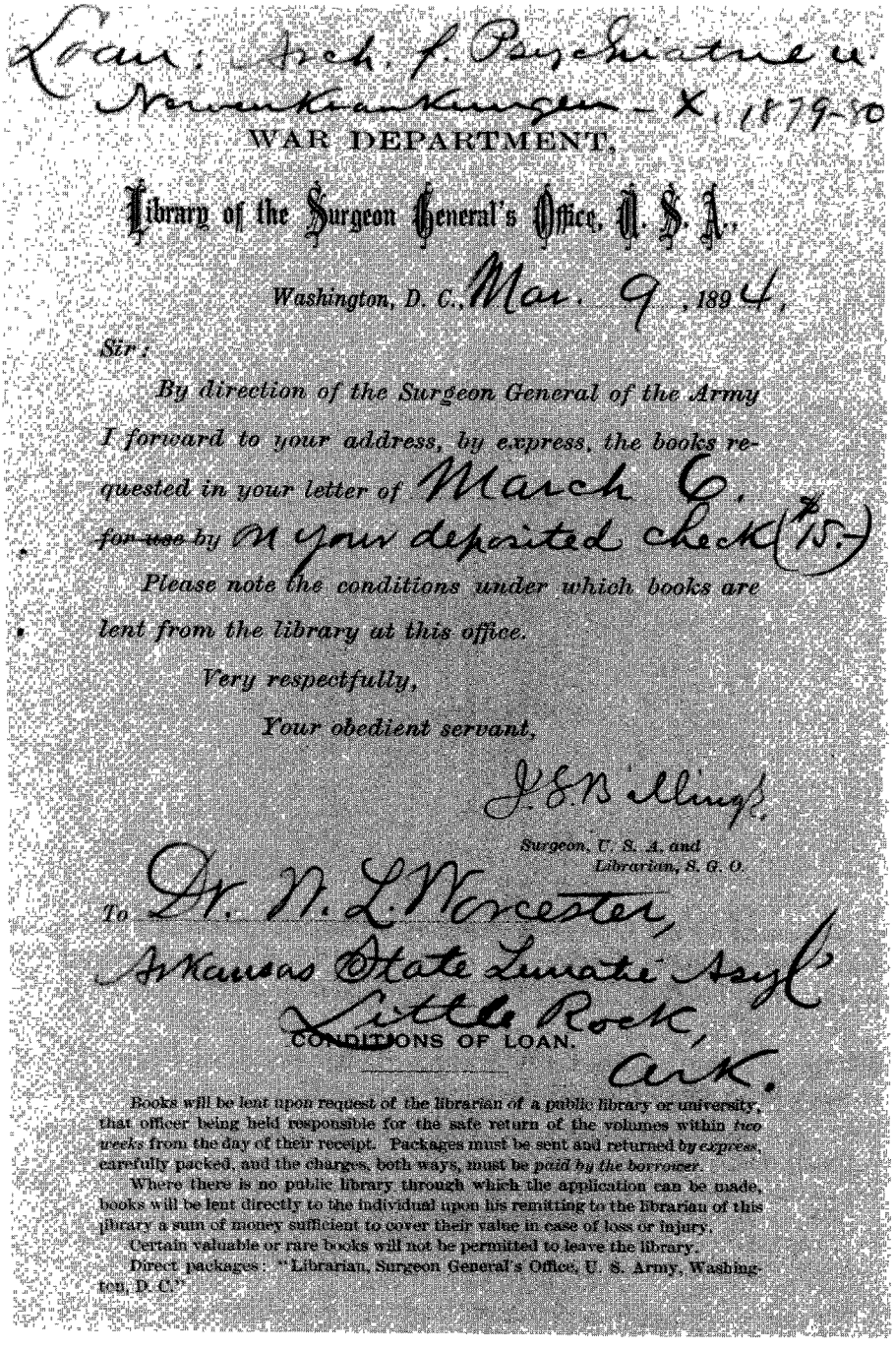


Form used by the Library in returning deposits to individual borrowers. This borrower was Theodore W. Richards, a noted Harvard chemist who received a Nobel Prize in 1914 for his determinations of atomic weights.

Billings apologized somewhat to Stockton-Hough for not lending every work in the Library, but explained the unreasonableness of some requests:[49]

> It is true that the Liby is not as useful to individuals as if I loaned books freely. I have had that urged upon me by men in Arkansas and in Minnesota—one of whom wanted me to send him every book ptd. in Venice prior to the 18th cent., but I tk. my regulations are quite as liberal as it is safe to make them—and more liberal than those of most libraries. . . . Send another list & I will do the best I can for you.

Physicians generally were careful with borrowed books and journals, and conscientious about returning them within the prescribed period of 2 weeks. If they needed the volumes longer they requested additional time and it was



Loan: Arch. f. Psychiatrie u. Nervenkrankheiten – X, 1879-80

WAR DEPARTMENT,

Library of the Surgeon General's Office, U. S. A.,

Washington, D. C., Mar. 9, 1894.

Sir:

By direction of the Surgeon General of the Army I forward to your address, by express, the books requested in your letter of March 6, for use by M your deposited check (75.)

Please note the conditions under which books are lent from the library at this office.

Very respectfully,

Your obedient servant,

J. S. Billings,

Surgeon, U. S. A. and Librarian, S. G. O.

To Dr. H. L. Worcester,
Arkansas State Lunatic Asyl
Little Rock,
Ark.

CONDITIONS OF LOAN.

Books will be lent upon request of the librarian of a public library or university, that officer being held responsible for the safe return of the volumes within two weeks from the day of their receipt. Packages must be sent and returned by express, carefully packed, and the charges, both ways, must be paid by the borrower.

Where there is no public library through which the application can be made, books will be lent directly to the individual upon his remitting to the librarian of this library a sum of money sufficient to cover their value in case of loss or injury.

Certain valuable or rare books will not be permitted to leave the library.

Direct packages: "Librarian, Surgeon General's Office, U. S. Army, Washington, D. C."

Form sent by the Library to borrowers of publications.

usually granted. Once in a while a mail handler, expressman, or physician damaged a binding, and then the borrower apologized and paid the cost of repair. Infrequently a patron lost a volume and then Billings adamantly charged him for it. William Osler, a frequent borrower, jokingly sent the following note to Billings after one of the Library's works disappeared somehow from his possession: "Bring a club with you in your next visit and pummel me well. What an aggravating devil I am! Yes do order the book and make me pay double for it, if possible."[50]

Reference Service

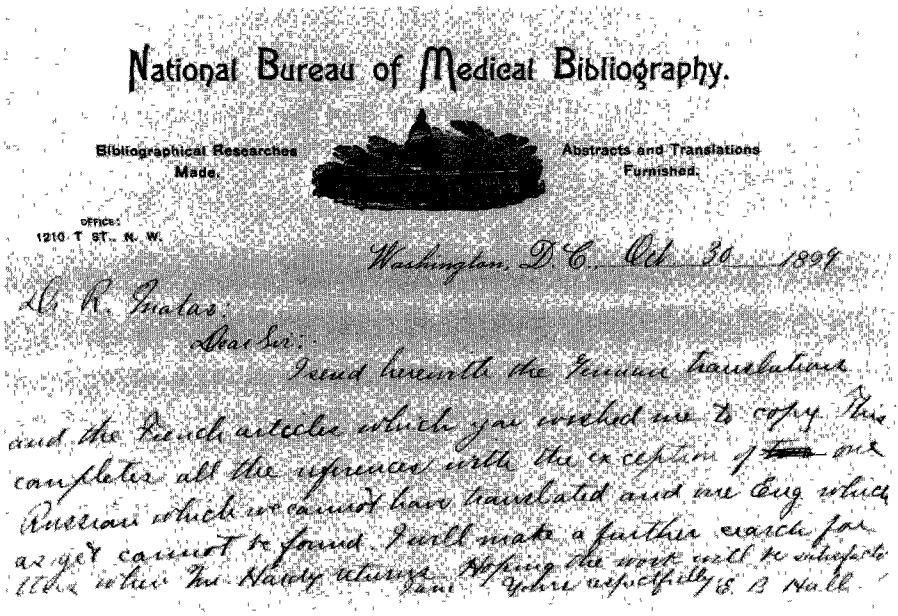
Billings encouraged the use of the Library by researchers. "It is the intention," he told Adams Jewett in 1872, "to make this an universal library of reference."[51] He wrote to another friend, L. A. James, that the Library would be "one place in the country where a physician desirous of consulting files of jour's can be sure of finding what he wants."[52] And as it became known through the American medical profession in the early 1870's that the Surgeon General's was the largest medical library in the country, was open to the public, and was a reference library, Billings began to receive requests for information from physicians residing outside of Washington.

The earliest inquiries of which records survive arrived in 1874. Slowly at first but with increasing frequency in 1875 and '76, Billings received letters asking for references, abstracts, extracts, transcriptions, and translations. In 1882, less than a decade after the initial requests were received, the Library received more than 300 pleas for information, necessitating the sending of a thousand letters.[53]

Physicians sought information on diseases, operations, cases, remedies, and history of medicine; medical writers and editors on biographies, bibliographies, references, and illustrations; architects on planning, construction, and arrangement of hospitals; insurance companies on statistics; lawyers on matters relating to public health; and librarians on names of book sellers, classification, arrangement, and library furnishings. Letters came from every section of the United States, from Canada, France, England, Scotland, Russia, and other countries.[54]

Billings, Thomas Wise, or library clerks answered the requests if the copying or researching could be done within a reasonable length of time, but if a correspondent wanted too much Billings suggested that he come or send someone to the Library or commission a Washingtonian to do the work.[55]

A number of persons served as copyists, abstractors, researchers, and translators for out-of-town patrons. Several of the Library's staff, among them Frederick W. Stone, C. P. Clark, C. J. Myers, and Beruch Israeli, did this in the evenings or on Sundays when they were off duty. Their rates for transcribing and abstracting are not known, but they charged 2¢ per card for copying references from the Library's subject and author index cards.[56] Israeli provided translations from Russian, German, and other languages at a cost of $1.50 an hour.[57]



National Bureau of Medical Bibliography.

Bibliographical Researches Made.

Abstracts and Translations Furnished.

Office: 1210 F ST., N. W.

Washington, D. C. Oct 30 1899

Dr R. Matas.

Dear Sir:

I send herewith the German translation and the French articles which you wished me to copy. This completes all the references with the exception of one Russian which we cannot have translated and one Eng which as yet cannot be found. I will make a further search for it & when the Navy returns. Hoping the work will be satisfactory I am Yours respectfully E B Hall

Letter from Ethylwyn B. Hall, one of several persons who carried out library research for physicians living outside the Washington area. The work mentioned in the letter was done for Rudolph Matas of New Orleans.

A few physicians of Washington, perhaps those building their practices and thus having free time, acted as researchers, translators, and copyists, as did some persons who apparently were professional clerks or literary researchers. A Miss Morrill carried out research for Timothy F. Allen of New York City, editor of *Encyclopedia of Pure Materia Medica*.[58] William Lee, a physician and for a time librarian of the American Medical Association library; Kate H. Duvall of 2133 F Street, who offered to copy in her spare time; Dr. R. R. Gurley, who sent out circulars advertising his availability for library jobs; Dr. R. Lorini, who charged $1 an hour for preparing abstracts and doing other library work; and Dr. Henry Liddell, who translated (except from German and Russian), provided services.[59]

Transcribing, abstracting, excerpting, copying, and other services decreased as more and more medical and public libraries came into existence, and knowledge of the Surgeon General's library's willingness to lend publications spread through the medical profession. It was much more satisfactory for physicians to borrow and read original works than to depend on copies, abstracts, or excerpts. And the interlibrary loans may have been just as fast or faster in providing information.

Billings and the Library Develop Each Other

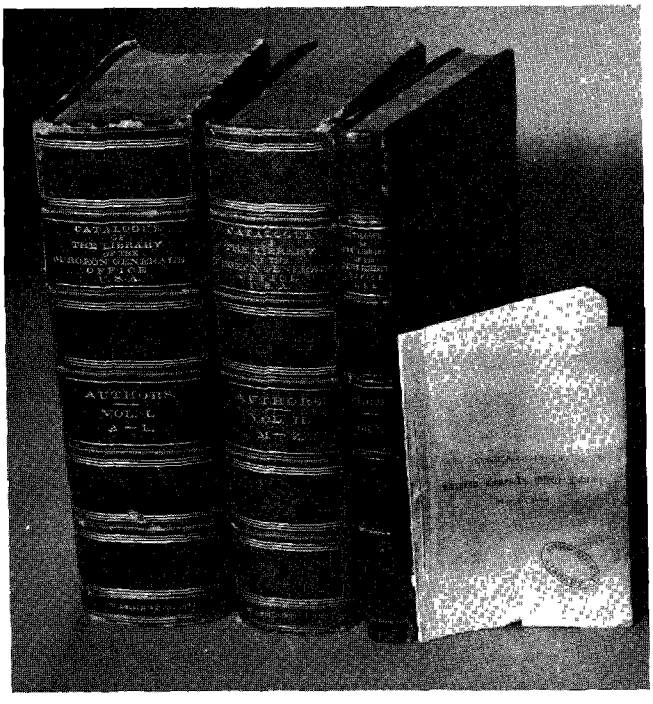
Billings' development of the Library during the early 1870's was all the more remarkable because he could not devote full time to it. From 1870 to 1877 he was in charge of the Disbursing Division and had the responsibility for overseeing the expenditure of funds for the museum, the *Medical and Surgical History*, trusses and artificial limbs for veterans, and other accounts.[60] For a period in 1874 he was acting medical storekeeper. He had to serve on various boards, including those for examining candidates for admission into the Medical Department, for recommending changes in the plans of post hospitals, for examining applicants for the jobs of superintendents of national cemeteries, for examining "Howes Patten Spring Pad Belt Truss," and reporting on a new "field packet case" devised by a medical officer.[61] He was sent to Fort Washington on the Potomac River in 1872 to select the site for a temporary hospital,[62] and in 1873 was told to plan Barnes Hospital at the Soldiers' Home in Washington.[63] In 1875 he edited the 567-page *Report on the Hygiene of the United States Army* issued by the Surgeon General's office.

Off duty he had all the responsibilities, worries, and problems of a breadwinner and father. He and his wife, Katherine, were the parents of five children born between 1863 and 1872. They owned a home in the Georgetown section of the District of Columbia. His mother and father were living in Ohio, and he corresponded with and visited them. In 1872 he considered resigning from the Army. His reasons are not known, but he may have thought of going into private practice to increase his income for his young family, or he may have been faced with a possible transfer to a frontier post and separation from his family.[64]

Billings' vigorous development of the Library brought opportunities for Billings to develop himself. In 1870 he was scarcely known outside of the Medical Department, but his outpouring of letters in 1871, '72 and '73 plus favorable editorials regarding the Library placed his name before the leaders of the profession and led to friendships that were advantageous to Billings and the Library. He was publicizing the Library, and in a way the Library was publicizing him. Invitations to speak, requests for articles, and medical society recognition began to come his way. He was offered chairmanships in the American Medical Association and the American Public Health Association. He was invited into the American Library Association and for a time was an associate editor of *The American Library Journal*, started in 1876.

In March 1875 the trustees of Johns Hopkins University asked Billings and four other physicians to submit plans for the proposed university hospital. Billings knew much about the advantages and disadvantages of hospitals of various designs, having worked in and administered hospitals during the war, planned military hospitals in the 1870's, edited Medical Department circulars on the subject, and investigated marine hospitals of the Treasury Department.

The trustees selected Billings' conception as being the best and passed it



The first printed catalog indicates the small size of the collection in 1864. A comparison with the large three-volume catalog, published in 1873–1874, shows the astronomical growth of the Library in a decade.

to an architect for fulfillment.[65] In June 1876 the trustees requested Billings to be their advisor in medical affairs. Billings thought it over, obtained permission from Surgeon General Barnes to act as a consultant, and on September 18 he accepted.

For years he had been accumulating reports on American and foreign hospitals,[66] until by this time the Library had probably the country's largest collection of literature upon that subject. But now he had reason to inspect the best and most modern European hospitals. Obtaining permission from the Surgeon General, he sailed for Europe in October to visit libraries and book agents, but "mainly to examine hospitals & medical schools."[67] He toured Great Britain, France, Germany, Austria, and Italy, and returned in December.[68] Thenceforth with Billings as one of the guides the construction of Johns Hopkins Hospital proceeded slowly, funds being scarce, until the building opened many years later.[69]

Thus within a decade Billings had raised the Surgeon General's Library to the first rank in the United States and the world, and in doing so had been

given and seized the opportunity to raise himself to prominence in his profession.

Notes

[1] Correspondence of Billings with firms who furnished the stacks and metal bookcase include letters, Billings to Bartlett, Robins & Co., Mar. 17, 29, Aug. 26, 31, 1871; to F. & A. Schneider, Aug. 31, 1871: NA. Woodward to Billings, July 18, 1872; Bartlett, Robins & Co., to Billings, Aug. 1, 1872; Billings to Bartlett, Robins & Co., Aug. 2, 1872: MS/C/81. Medical Department, vouchers and abstracts of disbursements, Oct. 1875: NLM.

[2] The iron book stack along the wall may be seen in a photo of the interior of Ford's, taken in 1893, p. 76 of Olszewski, *Restoration of Ford's Theatre*.

[3] Garrison gave the impression that rare books were not protected until around the turn of the century. The letters cited in footnote 1, above, show that Billings protected books while displaying them at least as early as 1872. A note on the margin of p. 49, vol. 3 of the *Catalogue* of 1873–74, shows that *Incipit Perutilis Tractatus de Pestilentia*, Augsburg, ca. 1475, was in the "rare case."

[4] In 1892 the 52d Congress passed Joint Resolution 8 stating that all government libraries would be open to the public (joint resolution to encourage the establishment and endowment of institutions of learning at the national capital by defining the policy of the government with reference to the use of its literary and scientific collections by students: April 12, 1892). In 1901 Congress reiterated the right of the public to use Federal libraries (31 Stat. 1039, March 3, 1901). This is mentioned here as a matter of interest, for the Surgeon General's Library had been opened to the public in the early 1870's.

[5] Inventory of property in Museum and Library Division at Army Medical Museum, Tenth Street, June 30, 1887: MS/C/307.

[6] These registers are in NLM.

[7] Washington *Evening Star*, May 5, 1883.

[8] He developed this classification for *Index Medicus*, discussed later.

[9] Letter, R. Fletcher to C. Fisher, librarian, College of Physicians, Phila., Oct. 18, 1907: MS/C/116. Fletcher stated that unbound and bound journals had been arranged thus for perhaps 30 years.

[10] Letter, J. H. Roberts, GPO, to Billings, Dec. 28, 1867: MS/C/81. Medical Department vouchers to W. C. Lycett for binding, 1870: NLM.

[11] Letter, Billings to Sutherland, Jan. 18, 1872: MS/C/81.

[12] In a half turkey binding the corners and back are bound in Turkey leather, a kind of oil-tawed leather stained a distinctive shade of red.

[13] Rogers, *Selected Papers of John Shaw Billings*, pp. 230–231.

[14] Shaw, B.A. Yale 1847, entered the SGO as a hospital steward, Oct. 22, 1867, and was assigned to Billings. In 1870 he was designated a clerk. Letters, C. H. Crane to Shaw, Oct. 22, 1867; J. Barnes to Secretary of War, May 28, 1878: NA.

[15] *National Med. Rev.* 1: 7–8 (1892–3). Wise was born in Washington, Feb. 22, 1846. His salary when he became a contract surgeon in 1874 was $125 a month plus rations. He died Feb. 17, 1891. Brief sketches of Wise are in *History of the Medical Society of the District of Columbia, 1817–1909*, p. 279, port. facing p. 88; W. Thornton Parker, *Records of the Association of Acting Assistant Surgeons of the United States Army*, p. 103. See also letter, Surg. Gen. Barnes to Secretary of War, Feb. 6, 1878: NA.

[16] Many of these ex-soldiers continued to work in the Library for 30 or 40 years, until they died or old age forced them to retire. The names of some of them will be found later in the text or footnotes. One of them, James W. Allison, was also an early professional baseball player. Allison died Dec. 30, 1911, still employed at the Library.

[17] This was in the early 1870's. Later, hours were extended to 4 p.m., and then to 4:30.

[18] The catalog of 1872 contained 454 pages. The first 431 pages comprised an alphabetical list of authors and, where appropriate, of titles. The pages from 433 to 454 listed the subjects. There were about 13,300 volumes. It was compiled and printed in 1871, and published in 1872. After the catalog was placed in the Library, it was kept up to date, to some degree, by writing titles on interleaves. A copy in NLM is interleaved and contains some corrections and location symbols written on the margins by attendants.

[19] Archibald Malloch, New York Academy of Medicine, said this about cards: "I cannot tell you when such cards were used for the first time in medical libraries, but at the Surgeon General's Library about 1865, they were employed in the author catalogue, the subject catalogue

being added just before 1880 Both were started at the Boston Medical Library in 1875 At the New York Academy of Medicine Mr John S Brownne made an author card catalogue in 1880, but the subject catalogue was not begun until 1901" (*Celebration of the Centennial of the Library of the Medical and Chirurgical Faculty of the State of Maryland, 1830–1930* p 6) I have not seen any evidence that a card catalog existed in the Library in 1865 There were so few books that the preparation and maintenance of a card catalog would have been a waste of time Furthermore the Library had printed catalogs I imagine that Malloch guessed the date "about 1865 '

[20] Index cards of this period attached to a War Dept , SGO Record and Pension letter, July 9, 1875, and to a letter, Billings to Bridges, Dec 1, 1875, measure 4⅜ by 6⅞inches MS/ C/81 Billings mentioned the card catalog on p 176 of his chapter "Medical Libraries in the United States," in *Public Libraries in the United States* He stated here that the card catalog was used in printing the 3-volume catalog of 1873–74 The card catalog may have been started earlier, but I have not seen any reference that would place it before 1872

[21] The letter of transmittal in volume 1 of the 1873–74 catalog was dated Aug 15 1873 Volumes 1 and 2 listed authors alphabetically Volume 3 contained a list of anonymous works one of transactions, one of reports, and one of periodicals The Library at the date of transmittal contained about 25,000 volumes and 15,000 pamphlets (theses, reports, etc) About 700 of the volumes contained collections of theses, and about 700 other volumes held groups of pamphlets The catalog listed about 50,000 titles, exclusive of cross references In the transmittal letter and at the beginning of volume 3 are lists of donors of publications In NLM are copies of these catalogs, some volumes of which are interleaved and contain marginal additions and corrections

[22] Printed library catalogs were considered superior to card catalogs at that time Indeed, card catalogs had a long way to go before they would become as standardized and as universal in libraries as they are today See, for example, the section "Printed or Manuscript," pp 552–560, the answers to questionnaires on the desirability of printing catalogs, pp 567–573, and the list of printed catalogs, pp 576–622, in C A Cutter's chapter, "Library Catalogues," in *Public Libraries in the United States of America, their History, Condition, and Management,* U S Dept of Interior, Bureau of Education, Part 1, Washington, 1876

[23] W L [William Lee], "Letter from Washington," *Boston Med Surg J* , 99 709 (1878)

[24] Letter, Billings to Mrs Celeste Willard, Oct 25, 1885 MS/C/81 See also memo by Billings, May 2, 1890 MS/C/81

[25] *Boston Med Surg J* 99 707–8 (1878)

[26] *Boston Med Surg J* 99 709 (1878)

[27] Letter, Billings to "Dear Doctor," Jan 10, 1874 MS/C/81 This was a form letter that clerks copied and sent to editors and physicians For examples of responses see letters, J C Peters to Billings, no date, Jan 15, 1874 NYPL Editorial, *Buffalo Med Surg J* Feb , 1874

[28] Letter, Smith to Billings, July 29, 1868, with note by Billings MS/C/81

[29] Letter, Woodward to Billings, April 26, 1872 MS/C/81

[30] *Boston Med Surg J* 94 138–142 (1876)

[31] For example H C Wood, Philadelphia, Sept 26, 1871, asked if the Library had a certain German publication he was "very desirous" to see E Andrews, Chicago, Nov 21, Dec 19, 1871, asked if the Library had reports of European hospitals and if he could send someone to examine reports William Pepper, Philadelphia, Feb 17, 1874, asked if books were sent to reliable persons MS/C/81

[32] "Prior to this time [1883] no large collection of books and periodicals was freely available to the doctor [in Chicago] except in university medical schools Dr Bayard Holmes recalled that many were forced to make a journey to Washington to complete a subject under investigation " Thomas N Bonner, *Medicine in Chicago 1850–1950,* p 82

[33] Letter, Dunglison to Billings, Sept 28, 1874 MS/C/81

[34] Letter, William Pepper to Billings, Feb 20, 1874 MS/C/81

[35] The AMA librarian reported in 1873 that he made loans to members by mail or express, while the Surgeon General's library was "strictly for reference within its proper precincts" *Trans A M A* 24 99–109 (1873) As far as I have been able to ascertain the librarian loaned books only to members of the AMA A brief account of this library may be found in M H Moore, "The Library of the American Medical Association," in M Fishbein, ed , *History of the American Medical Association, 1847 to 1947,* pp 1071–84 See also W J Wilson, "Early Plans for a National Medical Library," *Bull Med Lib Assoc* 42 426–34 (1954)

Letter, M Michel, Charleston S C , to Billings, July 22, 1876, "The Smithsonian Institute has occasionally forwarded [books to] me by express & I have returned [them] immediately ", Billings to Michel, July 28 MS/C/81

[36] Letters, Wood to Billings, Mar 16, Mar 21, 1875, Billings to Wood, Mar 18, Pepper to Billings, July 2 MS/C/81

[37] Letters, Billings to W W Keen, Oct 2, 1875, Billings to Bridges, Dec 1, 1875 MS/C/81

[38] Letters, L A Duhring to Billings, Mar 2, 19, 1877, H Allen to Billings, Apr 9, 1877 MS/C/81

[39] Letter, Billings to H C Wood, Oct 11, 1878, sending books to College of Physicians for Wood NLM

[40] Letters, Billings to J R Chadwick, librarian, Oct 30, 1876, sending 12 publications, E H Brigham, asst librarian, to Billings, Nov 4, returning volumes, E H Bradford to Billings, Mar 25, 1877, requesting loan of books to N Y Hospital Library, A W Tyler, librarian, Johns Hopkins, Oct 12, 1877, returning 22 volumes MS/C/81 The letter from Tyler shows that the SG library kept a list of accession numbers as well as titles of books it loaned

[41] Letters, C R Rice to Billings, Dec 20, 1880, Billings to Rice, Dec 22 MS/C/81 Billings forgot to add one rule to the letter, "For most part diss[ertations] not permitted to be taken out", letter, L Hektoen, Chicago, to Billings, May 29, 1889, with Billings' endorsement MS/C/81

[42] For example, editorial, "Library of the Surgeon General's Office," *St Louis Courier Med* 9 43–45 (Jan 1883), Billings' letter stating conditions for loan in *Med News* 43 140 (Aug 4, 1883), remarks by Alexander Hutchins, *Trans Med Soc State N Y*, 1884, p 11

[43] Example telegram, R F Weir to Billings, April 19, 1893, "Kindly send immediately [Gustav] Schneider [Ueber] traumatische gangran inaugural dissertation Freiburg 1892 to New York Hospital librarian important legally" MS/C/81

[44] Letter, J T W Ross, librarian, Ontario Medical Library Association, Toronto, to Billings, June 29, 1893, sending check for $100 which Billings made the association deposit as security Letter, librarian, Pathological Anatomical Institute, Basel, Switzerland, to Billings, Sept 22, 1886, requesting four U S and British publications MS/C/81

[45] Letter, Ostertag to Billings, Sept 1, 1876, with Billings' endorsement MS/C/81

[46] Letter, Delamater to Billings, Sept 13, 1876, Billings to Delamater, Sept 15, in Billings' abbreviated style which I expanded into the quote MS/C/81

[47] Letter, Billings to Parvin, Apr 17, 1878 MS/C/81 I have deciphered Billings' scrawl into the quote

[48] Letter, Billings to L H Petit, Paris, April 8, 1885 MS/C/81

[49] Letters, Stockton-Hough to Billings, Aug 29, 1889, Billings to Stockton-Hough, Aug 30, 1889 MS/C/81

[50] Letter, Osler to Billings, Feb 18, 1890, with Billings' endorsement that a replacement copy of the book had been ordered from Trubner, the Library's agent in Germany MS/C/81

[51] Letter, Billings to Jewett, May 13, 1872 MS/C/81

[52] Letter, Billings to James, Feb 19, 1872 MS/C/81

[53] *Annual Report of the Surgeon General, 1882*, pp 16–17 Unfortunately, this seems to be the only year for which such statistics were kept

[54] Examples A Duceau, Académie de Médecine, Paris, asked for information on three American physicians, letter, Duceau to Billings, Dec 6, 1882 The Medical Board of New South Wales, Australia, requested information on the American Eclectic College of Ohio, letter, to Billings, Dec 7, 1882, with answer, Feb 3, 1883 MS/C/81

[55] After the *Index-Catalogue* began to be published, if a physician requested references to a subject covered in a volume of *Index-Catalogue* being readied for publication Billings loaned the correspondent page proofs from the *Index* Examples letters, J O Roe to Billings, July 13, 1888, S T Armstrong to Billings, Feb 19, Mar 3, 1892, L Hektoen to Billings, Mar 7, 1892, J P Tuttle to Billings, Mar 10, 1892 all asking or thanking for proof sheets MS/C/81

[56] Letters, E A Brigham, Boston, to Billings, April 4, 9, 1878, re an unnamed clerk who charged $2 75 for copying 75 index cards (higher than the usual charge) under the heading 'Women as physicians", E T Reichert, University of Pennsylvania, to Stone, Sept 30, 1878, requesting translations and Billings to Reichert, Oct 5, 9, explaining that clerks were not medical men and could not read foreign languages, Austin Flint, Jr, to Billings, July 6, 1880, requesting a copy of an article, and July 15, sending $6 to Stone for making the copy, Billings to R F Fletcher, Rochester, N Y, Sept 27, 1881, and to J B Fuller, Pawtucket, R I, Dec 22, 1881 stating that clerks charged $2 per 100 cards for copying references, E H Brigham to Billings, Oct 15, 1885, requesting all titles on "iron" be copied at usual rates, with attached note stating that Clark copied 190 cards for $3 80, W W Keen, Phila, to Billings, May 28, 1886, asking for refs on "stumps," with note that 150 had been provided for $3, Billings to Brigham, Dec

24, 1886, naming Myers as an abstractor MS/C/81

[57] Memo, E B Fullerton to B Israeli, Feb 10, 1893, paying $4 00 for translating MS/C/81

[58] Letter, Allen to Billings, Nov 19, 1875, presenting a volume of his *Encyclopedia* and thanking Billings for courtesy to Miss Morrill MS/C/81

[59] Letter, J J Putnam, Boston, to Billings, May 18, 26, 1876, regarding a literature search by Lee for Putnam on cases of poisoning from medicinal doses, Duvall to Billings, Sept 18, 1883, E H Brigham, Boston, to Billings, Nov 19, 1886, Billings to Brigham, Nov 23, and L A Stimson, New York, to Billings, Dec 13, re Gurley, Billings to E J Beall, Mar 25, 1887, memo on P C Knapp, Boston, Jan 21, Feb 8, 1889, and Brigham to Billings, Feb 8, 1893, regarding Lorini, E B Fullerton, Columbus, Ohio, to Billings, Feb 1, 6, 1893, S Loving to H Liddell, April 10, 1893 sending $25 for translations, and Liddell to Billings, April 11, 1893 MS/C/81

The Library provided patrons with the names of translators until the 1960 s Handcopying of articles ceased after World War I when the museum obtained equipment and personnel to provide photographs and photostats

[60] The monthly accounts, vouchers, and other financial records that Billings kept as disbursing officer, 1870–1877, are in NLM Full title of the Disbursing Division was Library and Disbursing Division

[61] Orders to Billings are in SGO records, NA Copies of some orders are in MS/C/273

[62] Letter, Asst Surg Gen Crane to Billings, July 10, 1872 NA

[63] Plans of Barnes Hospital and Billings comments thereon are in War Dept , Surgeon-General's Office, Circular No 8, *A Report on the Hygiene of the United States Army, with Descriptions of Military Posts*, edited by Billings, Washington, G P O , 1875, pp liv–lvi This circular was reprinted with introduction by Col Herbert M Hart, N Y , 1974

[64] Letter, W Wesley to Billings, June 18, 1872, "I am very much pleased to hear that the resignation does not take place" NLM

[65] The plans submitted by Billings and the other physicians were published under the title *Hospital Plans Five Essays Relating to the Construction, Organization, & Management of Hospitals, Contributed by their Authors for the use of Johns Hopkins Hospital Baltimore* (New York, 1875)

[66] Example letter, Billings to F Flugel, bookseller, April 17, 1875, asking Flugel to procure working drawings of Saint Joseph Hospital, Leipzig Flugel sent them, letter, Flugel to Billings, Feb 23, 1876 NLM

[67] Letter, Billings to L W Schmidt, bookseller, Sept 26, 1876 MS/C/81

[68] Garrison, *Billings*, pp 191–196, reprints portions of Billings' letters from Europe to his wife

[69] Billings was asked on a number of occasions to plan, or give his opinion of the plans for, hospitals In 1877–78 he drew up plans for the central, or administrative, building and east wing of Children's Hospital The buildings were erected under contract See 69 Cong , 2 Sess , Senate Doc 207, Charitable and Reformatory Institutions in the District of Columbia, by George M Kober

In 1878 Billings advised James R Chadwick, librarian of the Boston Medical Library Association, about the ventilating and heating system of the new Boston Medical Library See Joseph E Garland, *The Centennial History of the Boston Medical Library, 1875 to 1975*, p 40

VII

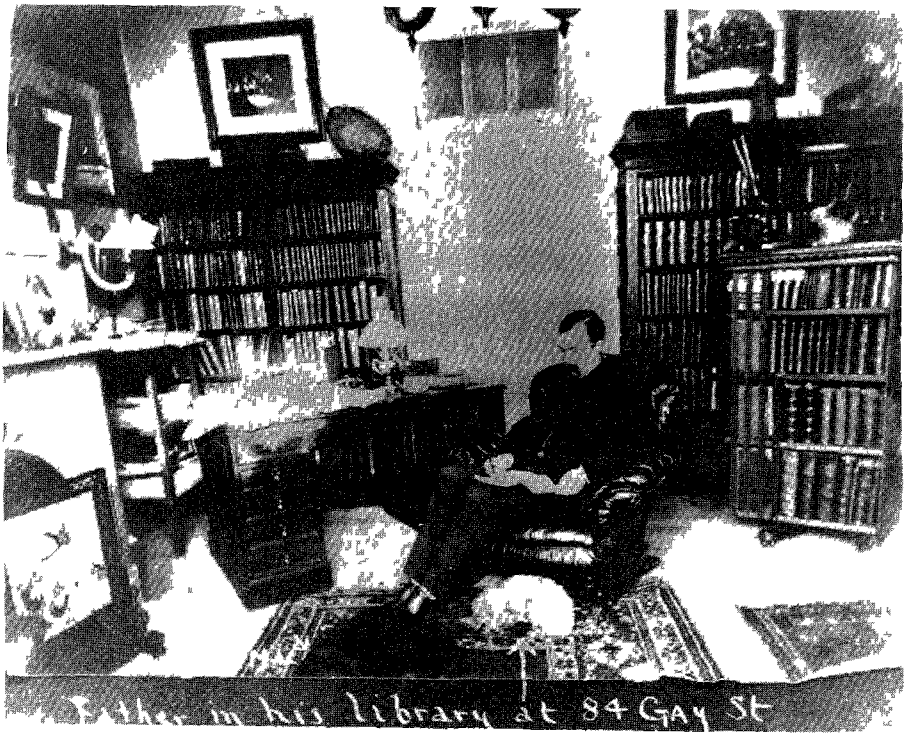
The Beginning of Indexing in the Library

Billings Starts to Index Journals

By 1873 the Library had an author catalog in book form, a supplementary author catalog on index cards, and the nucleus of a subject catalog on cards. Those finding aids helped readers locate information in the tens of thousands of books, pamphlets, theses, and reports in the Library, but not in articles in the myriads of issues of journals. Billings now turned to the indexing of periodicals. This would be a monumental task, and presumably he thought about it long and hard before going ahead. He had to consider the length of time it would take, and the number of assistants that would be available. Undoubtedly he considered the alternative of directing readers to the annual indexes provided by many journal publishers. But having concluded that an index should be prepared, he had to consider the alternatives of author and/or subject and/or title indexes, and of printed or card catalogs.

In considering the indexing of journals Billings was not exploring new territory. In 1867 the Royal Society of London had begun to publish its *Catalogue of Scientific Papers*, a multivolume bibliography of articles that had appeared in American and European journals from 1800 to 1863, arranged alphabetically by author. The Library had obtained the first three volumes of the set in 1870, and it appears that the catalogue may have provided Billings with a model and perhaps stimulation.[1] Billings, however, felt that a subject index would be preferable to an author index (the Royal Society had considered compiling a subject index but had abandoned the idea because it would have been too expensive).[2]

Billings' preference for a *subject* index may have had roots in a time-consuming, disappointing literature search he had undertaken back in 1859 and '60 while preparing his thesis on the surgical treatment of epilepsy. He had discovered that it required "a vast amount of time and labour to search through a thousand volumes of medical books and journals for items on a particular subject. . . ." It was the memory of this experience that, according to Billings, led him to prepare "a comprehensive catalogue and index which should spare medical teachers and writers the drudgery of consulting ten thousand or more



Billings working in his home in the Georgetown section of Washington The caption was written by one of his children Number 84 Gay Street later became 3027 N Street

different indexes, or of turning over the leaves of as many volumes to find the dozen or so references of which they might be in search "[3]

Billings started to prepare the index on New Year's Day, 1874 [4] One would assume that at the beginning he indexed several volumes to obtain an estimate of the time that it would take to index every volume of every journal Probably during the indexing he made the decision to include original articles only, not reprinted articles, editorials, news of medical events, book reviews, letters to the editor, and other material (occasionally in the future Billings was to violate this rule and select editorials and items of interest to him)

He decided to follow this method, he would scan journals and check, in pencil, the title of each article he wanted indexed His clerks would copy on a card a complete reference to each article checked, leaving the top line of the card blank for Billings to add a subject heading [5] Recent journals would be indexed before old journals, current journals would be indexed within 24 hours of arrival [6]

Once started, Billings scanned journals in his office and at home "Almost

every day," said his future associate, Fielding Garrison, "a government van would leave a wagon load of bound periodicals at his residence in Georgetown and the next morning would find their principal articles, cases, and essays carefully checked, by lead-pencil markings, for the copyists in the office. This night work continued until the gigantic task of indexing all the bound periodicals was accomplished, but even in the later days, when he had only the current unbound periodicals to deal with, Billings still continued to take some of these home in his overcoat pocket, or to have them sent up in baskets, for checking."[7] A visitor recalled seeing Billings " 'resting' in the evening after a long and arduous official day. He was lying on a couch, almost hidden by two mountains of medical periodicals in every language, one on either side of him. He was slowly, but without pause, steadily working through the mountain on his right, marking the items to be indexed, and transferring each journal, as finished, to the mountain on his left."[8]

The division of labor between Billings, medically trained, and his copyists, most of whom had no more than an elementary school education, worked well and continued into the future. The assistants learned to copy references carefully and legibly, leaving Billings free to concentrate on choosing subject headings.

Joseph Toner had been preparing an index to American medical journals, and Billings, seeing no reason to duplicate Toner's work, at first planned to index foreign journals only.[9] Then Billings learned that Toner's method was different in that he included reprinted articles (Billings limited his index to original articles) and he abbreviated titles of articles (Billings used complete titles). Billings thereupon decided to index American journals as well as foreign.[10]

The trial indexing of several volumes at the start would have shown Billings that he needed more copyists if he hoped to prepare an index within a reasonable length of time. So Billings did again as he had done before when he needed assistance: he turned to his brother officers, who had garnered so many publications for the Library, and some of whom were still scouting for periodicals on Billings' want-lists. He wrote letters to Surgeon Blencowe Fryer, Fort Wood, New York Harbor; Surgeon Bernard Irwin and Assistant Surgeon Alfred C. Girard, West Point; Assistant Surgeon Robert H. White, Fort Porter, Buffalo; Surgeon Joseph Smith, Fort Wayne, Detroit; Surgeon William Spencer, Chicago; Surgeon Dallas Bache, Fort McHenry, and others, explaining his plan and asking for help.[11]

Apparently he first asked his helpers to index the periodicals at their hospitals—some Army hospitals had runs of journals that extended back several years. When these were completed, he mailed volumes from Washington. To officers at posts sufficiently large to have hospital stewards, he suggested that the stewards be pressed into service as copyists. He sent instructions, index cards, and specimen cards; and officers replied, asking questions to clarify his guidelines.

Billings does not seem to have asked help from surgeons on the frontier, perhaps because of the uncertain communications, primitive conditions, and hard life. But Charles Smart, now at Fort Bridger, Wyoming Territory, learned of the undertaking and volunteered to assist. He told Billings:[12]

> I have just looked over the files of Phila. Med. Times to ascertain completeness & find one or two numbers of 1st vol missing, but will index in manner you mention all I have, and notify you of absentees when I send on the finished packet. If you send me cards I shall have all finished in scroll by time they arrive and can return them with no delay but that of copying. I could have cards ruled & cut of size of samples but have not such nice paper as the S.G.O. makes use of.

Starting his index, Smart found himself puzzled and he wrote to Billings for instructions:[13]

> I am getting along with your Phila Med Times, and expect packet of tickets or cards in a day or two from you. In making out scroll while waiting for cards I have taken note of all cases reported in hospital service or clinics, although many of these cases present nothing unusual, being in fact brought before the class to illustrate the characteristic type or usual operation. I have put them down as I am indexing the *original articles* & *cases* in the paper. I have also taken note of the cases, specimens & discussions in Trans. Path. Soc. Phila. but I am doubtful whether you want these or no. I am under the impression that the Society publishes its Trans in book form & if so it would remove these items from the indexing. *Please let me know if you want them indexed.* All these included will make about 1500 cards.
>
> If you send me a slip of paper with a hint as to method of classification of subjects I would arrange them more satisfactorily to myself and might save you much trouble in changing the penciled headings. The two model cards you sent me gave me no clue as in one the subject runs "Kidney" and the other "Hernia," the one arranging by regions or organs and the other by the lesion.

A few days later Smart wrote again:[14]

> Yours of 30 ult recd together with cards for Am. Journal of Medl Sciences. The files at this fort run from July 1863 (including it) to date. One number is missing however viz, that for Octr 1866. I shall fill the cards with great pleasure, regretting only that I cannot begin farther back. Anything else you may think of which I can do I will take pleasure in doing in the plenty of spare time I have here.

There is no other record of the titles and quantities of journals handled by Smart, but he cooperated with Billings on several occasions during his life in the Army, and he probably continued to index in the wilderness of Wyoming until Billings had no more periodicals to send.

Assistant Surgeon William R. Steinmetz began to index *Medicinische Annalen* while stationed at Fort McHenry, Baltimore. He took 13 volumes of the periodical along with him when he was transferred to the Cheyenne and Arapahoe Agency, Indian Territory. He wrote Billings:[15]

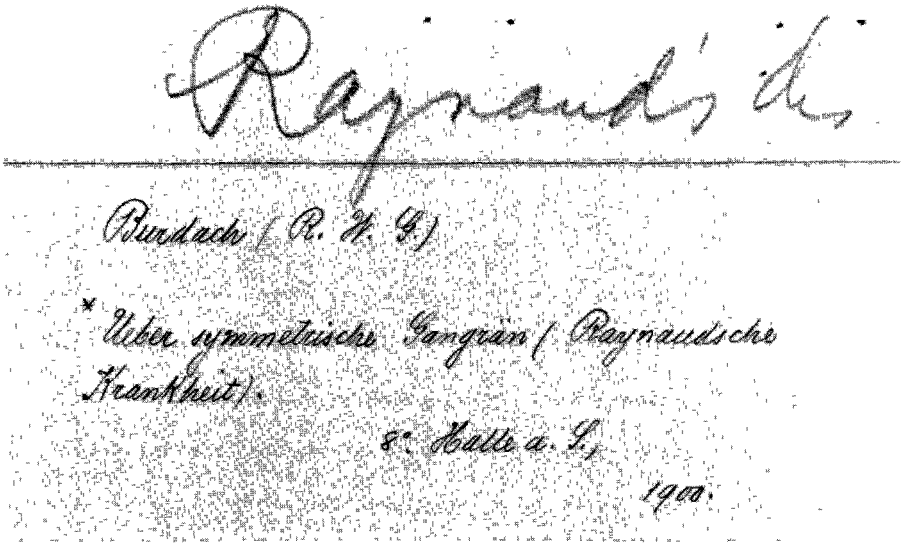
> We are right amongst the Cheyennes & Arapahoes. The first tribe was very troublesome last year and this spring, giving our troops a skirmish about a mile

from our camp on the 6th of April—they are quiet at present, but we can expect them to break out again at any moment on the slighest occasion.

Our command consists of three Cos. of Calvary and two of Infantry; all in tents on the south bank of the north fork of the Canadian river.

When Steinmetz completed the *Annalen*, he returned the journal and cards to Billings, along with the following letter:[16]

I return to you today per express the thirteen books, you sent me sometime ago, and hope that the indexing is done to your satisfaction. If there is anything you like to have done differently please let me know, so that I may avoid the error in the next lot. I got through with the indexing some two weeks ago, but hesitated to send the box off, as long as the rivers were as high as they have been between here and the nearest rail-road station, Wichita Kas, (distant 160 miles) for some time past. During the last six weeks, our mail which together with the express, is brought to our post by the Stage Co., frequently arrived here in a fearful condition, & thoroughly soaked owing to the high water and heavy rains, and I was under apprehension, that the books might share the same fate. One of the severest thunder showers & storms, I ever witnessed, passed over this section of the country last Monday night, the 9th inst. The wind was so strong, that within a few minutes, all the hospital tents and large Q. M.'s & Commissary tents, which were not framed, were blown down or torn to pieces. Several of my patients, sick in hospital with malarial fever, as also a large portion of my hospital property, were suddenly deprived of their shelter and exposed to a heavy rain and hail shower. No tents can withstand such fearful winds, as


Raynaud's dis.

Burdach (R. H. G.)

* Ueber symmetrische Gangrän (Raynaudsche Krankheit).

8°. Halle a. S., 1900.

A file card prepared for the Index-Catalogue. *The citation was copied by a clerk, the heading was added by Robert Fletcher or Fielding Garrison. The citation was listed under Raynaud's Disease in* Index-Catalogue, *2 series, volume 14, 1904, p. 317.*

frequently prevail in this country, unless they are well framed and otherwise secured. Although this camp has been in existence for more than a year, the most of the hospital tents are not floored, although several applications for the necessary lumber have been forwarded to Hd Qrs. of the Dept. During last winter, in order to keep from freezing to death, this Command dug holes in the bank of the river, and I suppose, we will have to do the same thing, unless something is done before the cold season sets in.

During the early months of indexing, with thousands of cards being produced by his clerks and friends, Billings had to develop his system of classification in detail. Writing to Irwin at West Point in the summer of 1874 he explained it rather fully:[17]

I forward this day a box by express containing the journals & transactions shown on the enclosed list, also some more blank cards. Of these I would like the transactions of the Society of Biology indexed first, and returned separate. From a hasty examination of the cards made by yourself and Dr. Girard, I think they are nearly right. It is very rarely desirable to make two cards for one article for the reason that it would make the work so immense that it never could be completed. I have about 8000 volumes of journals and transactions to index which will average at least 50 cards per volume. You will readily see that I must abbreviate labor and space as much as possible. The classification for diseases which I shall use is mainly Anatomical. For instance,— Brain, Anatomy of:— Physiology of:— Inflammation of:—Abscess of:— Cancer of:— Hydatids in:— Tumours in, etc. Uterus,— Polypus of:— Cancer of: Prolapsus of: &c. Then under the head of Polypus,— I shall give a general reference "See"— Larynx, Heart, Intestine, rectum, Uterus, bladder, etc. Polypus of:—.

The exceptions to this rule are as follows, Addison's disease, Bright's disease, Phthisis, fractures & dislocations. Cancer of a single organ is put under that organ, if of several organs, is put under Cancer. The majority of tumours are put under Tumours,— exceptions, Brain, Ovary, Uterus, tumours of. I use the English name of the disease, e.g. Pleurisy, Mumps, Scarlet Fever, Hooping Cough. An article on the effect of a certain remedy in a certain disease, goes under the disease, e.g. On the use of Perchloride of Iron in post-partum haemorrhage, is indexed, Haemorrhage, post-partum, Perchloride of Iron in. Obituary notices which contain anything of a sketch of the life of a physician—*who has ever written anything Medical*—should be carded thus; Smith, John. Obituary of, or, Sketch of life of. An article on complications or sequelae of a disease should be indexed under that disease thus;— Fever Typhoid, Sequelae of, or, complicated. Labour— difficult, from tumour from contracted pelvis; from malposition, &c. Cases of poisoning are indexed under the head of the Poison, e.g. Arsenic Poisoning. When it is probable that an article must come under two headings, it should be put under the first one in alphabetical order thus: Experiments on the effects of Salts of Soda & Potash, should go under Potassium-Salts of. When I come to print it will then be easy for me to transfer the same card forward to soda. When there are two authors it is not necessary to make two cards—The title of the journal must be given a little more fully than you have done, thus; instead of U. M. it should be Un. Méd. Tell Dr. Girard that it is not necessary to give the weekly number,—the number of the volume and year is [all] that is desired. I shall go over the cards made by yourself and Dr. Girard carefully within the next two or three days and may then write again. These cards will be sent to the printer, hence, they must be written plainly

enough for him to decipher them Would Dr. Girard like to have the Annales d'hygiéne sent to him for indexing?

Medical officers assisted Billings for at least 2 years, 1874 and 1875. There is no record of the number of articles and journals they indexed, but judging from existing letters they contributed much. On occasions Irwin asked for 2,000 or 3,000 index cards, Assistant Surgeon Frank Meacham, Fortress Monroe, 300, and Smart 750. Irwin and Girard indexed all or parts of *Berliner Klinische Wochenschrift* and *Univers Médicale;* Assistant Surgeon Alfred A. Woodhull, McPherson Barracks, Atlanta, *Atlanta Medical and Surgical Journal* and *Philadelphia Medical Times;* White, *New York Medical Record;* Charles Smart, *Philadelphia Medical Times* and *American Journal of the Medical Sciences;* Fryer, *Edinburgh Medical Journal* and *Medical Gazette;* Surgeon William C. Spencer, Chicago, *Edinburgh Medical Journal,* assistant surgeon Daniel Weisel, Fort Johnston, North Carolina, *American Medical Recorder, Western Lancet* and the Philadelphia *Medical and Surgical Reporter.*[18]

Over the span of succeeding years Billings had other assistants, volunteers and paid. We know little about those outside the Library with the exception of one whom Billings treated kindly and helped pass the tedious, boring hours of invalidism. "I recall," wrote Fielding Garrison, "an old Confederate general who had to live supine in bed for years from spinal paralysis, a sequel of heatstroke on service with Gordon in the Soudan, and to whom Billings charitably sent basket fulls of library work daily, which came back next day with never a blunder."[19]

The Library's First Major Bibliography, on Cholera

The first major test of the utility of Billings' subject index came in 1875 when he was asked to prepare a bibliography on cholera. Cholera was one of the most feared epidemic diseases in 19th century America. It killed, within a short time, a sizable proportion of persons whom it infected. Major epidemics had occurred in the United States during the periods from 1832 to 1834, 1848 to 1849, and 1865 to 1866, and minor outbreaks had happened in 1850, '51, '52, '53, '54 and perhaps other years.

The disease was not native to America, but came across the Atlantic from Europe after traveling all the way from India, where it smoldered perpetually. Presumably quarantine could have prevented cholera from entering the United States, but the country did not have a national quarantine system. Instead, a tug-of-war between States Rights and Federal Rights had caused quarantine to be left under the control of state and municipal governments. As a result the Atlantic, gulf, and Pacific coasts were dotted with quarantines controlled by local officials concerned only with the welfare of their own ports, not the welfare of the Nation.

In the spring of 1874, following a year in which cholera invaded at least 18 states, Congress resolved that the recent epidemic be studied by an Army

medical officer and the Supervising Surgeon General of the Marine Hospital Service (the agency which developed into the Public Health Service).[20] Officials hoped that this study would provide information for local, state, and national officials to use in preventing or containing future outbreaks.

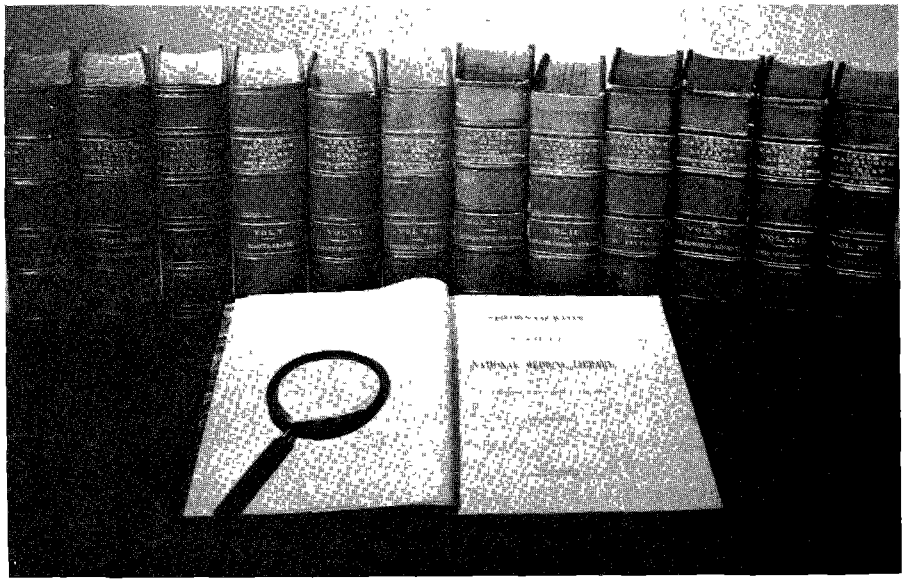
Surgeon General Joseph K. Barnes detailed Assistant Surgeon Ely McClellan to prepare the Army's report. Starting in May 1874 McClellan traveled through 14 states and 2 territories, visiting localities where cholera had been and talking with survivors, laymen, and physicians. Unable to visit every cholera site during the 9-month period allowed for the study, he sent blank forms to physicians in the neighborhood of known cholera cases, asking for detailed information. He had his voluminous report ready for the Surgeon General on January 1, 1875.

Within the Surgeon General's office a decision was made that a history of cholera epidemics and a bibliography of writings on the disease would be added to McClellan's report. McClellan collaborated with John C. Peters, a physician of New York City who had studied cholera, in writing the history and he asked Billings to provide a list of books, pamphlets, and articles on the disease.

McClellan's investigation of cholera was made during the period when medical officers at Army posts throughout the country were assisting Billings prepare a subject index of articles in medical journals. Billings wrote to his helpers, asking them to send index cards on cholera.[21] At the Library he and his clerks wrote out cards for every book, report, thesis, and article dealing with the disease.

At this time there were many gaps in the Library's collection of periodicals, and Billings was unable to check cholera articles that he learned existed in at least one missing journal, *Gazette Médicale de Paris;* but John L. Vandervoort, New York Hospital library, offered to lend the hospital's set for indexing, and Fred B. Perkins, Boston Public Library, offered to prepare index cards for Billings from his set.[22] Presumably the absence of certain journals required in compiling the bibliography of a disease underlined the need for a complete collection of periodicals, and reinforced Billings' determination to make the Library's holdings as full as possible.

All the reports were brought together and published during the summer of 1875 under the general title, *The Cholera Epidemic of 1873 in the United States*.[23] Billings' bibliography required 316 pages of the 1,025-page Medical Department report, and included more than 18,000 titles. It was the most voluminous bibliography on cholera produced up to that time and, to the best of my knowledge, the longest bibliography on a single disease made in the country up to that time. If any physician who had heard or read of the Library had doubts of its usefulness, this bibliography would have dispelled them. And the bibliography must certainly have convinced influential physicians that the Library was worth supporting—an extremely important consideration as periodic economy drives in Congress threatened the institution's appropriations and existence.



The Specimen Fasciculus, Billings' model of his proposed bibliography of medicine. At this time he was referring to the collection as the "National Medical Library," but when the Index-Catalogue appeared in 1880 the title page bore the name the collection carried for the next three-fourths of a century, "Surgeon General's Library." Behind the Specimen are early volumes of the Index-Catalogue, which continued to be published until 1961.

SPECIMEN OF THE *Index-Catalogue*

By the summer of 1875 Billings had accumulated tens of thousands of index cards. He estimated that the references, when printed, would fill at least five volumes each of 1,000 pages.[24] Billings wondered how he and Surgeon General Barnes could persuade Congress to provide funds for printing and binding the catalog. He decided to publish a sample showing how the index would look in print and mail copies to librarians, editors, and influential physicians. He would use the testimonials, which he expected would be favorable, to impress legislators and persuade them to appropriate funds for publication of the entire work.

During the summer and autumn of 1875 he alphabetized his cards and sent to the Public Printer those beginning with the subject Aabec and ending with Air. He lured a first-rate printer, Harry O. Hall, from the Government Printing Office to aid him in preparing and proofreading the work.[25] The product was a book which Billings titled, *Specimen Fasciculus of a Catalogue of the National Medical Library,* containing 72 pages of text and listing more than 4,000 references. Twelve hundred copies were printed, fifty of which Billings

had bound in half turkey for special presentation, the remainder in paper covers.[26]

Billings began sending out copies of the *Specimen Fasciculus* in March 1876, reminding the recipients that the Library needed its customary $10,000 appropriation from Congress as well as authorization to print the *Index-Catalogue*.[27] Among the persons who received volumes were Henry C. Lea, medical publisher; Abraham Jacobi of the College of Physicians and Surgeons, New York, and Mary Jacobi; Robert S. Newton, Eclectic Medical College, New York; Ezra M. Hunt, former president, New Jersey Medical Society; Hunter McGuire, Medical College of Virginia; Henry I. Bowditch, Harvard University; Henry Baker, Michigan Board of Health; Jerome Cochran, Medical College of Alabama; Jacob M. Da Costa, Jefferson Medical College; D. B. St. John Roosa, medical department of New York University; Galusha B. Balch, St. John's Riverside Hospital, New York; Francis H. Brown, former editor of *Boston Medical and Surgical Journal;* William H. Mussey, Miami Medical College; and Oliver Wendell Holmes.[28]

Readers praised Billings' *Specimen Fasciculus* wholeheartedly. A few noted errors of one kind or another or suggested slight changes, but the response was overwhelmingly in favor of publication of the entire work. Oliver Wendell Holmes told Billings he was "helping to raise the whole standard of American scholarship by providing it with implements and a model."[29]

Editorials applauding the proposed catalog soon appeared in periodicals. The *Boston Medical and Surgical Journal* reported:[30]

> A sample of the proposed work, entitled a Specimen Fasciculus of a Catalogue of the National Medical Library, under the direction of the Surgeon General U.S.A., at Washington, D.C., is now before us. It is but a specimen of what has already been done in manuscript, and which only awaits the proper appropriations to be put in print and placed in the hands of the medical men of the country.
>
> Medical bibliography, we fear, can hardly be said to have made such gigantic strides in the past century as have been witnessed in the other branches of science and literature; but we have evidences all around us, in Germany, in England, and in our own country that it is taking a more important and honorable stand, and that writers and earnest, thorough students of medical lore are every year becoming more numerous and more persevering. Such men, and all who seek the true advance of medicine, must welcome the publication of a work which will lay open the field of medicine and the investigations which have already been made. It now becomes the duty of all medical men, the country over, to strengthen the hands of the surgeon-general and the librarian by assuring members of Congress, who will shortly be called on to make the appropriations, of the great value of the work which has already been done, and of the great advantage of opening more freely to the medical profession the stores of wealth which so important a collection as the National Medical Library offers.

The Medical Record of New York told its readers:[31]

> With a laudable desire for receiving suggestions in regard to the arrangement of this prospective catalogue, Dr. Billings has issued the fasiculus in question.

> . . . We have said enough of the value of this great library to make it unnecessary to urge upon our medical brethren every effort to increase its usefulness and perpetuate its aims. The publication of the catalogue being one of the means to that end, it behooves the profession of the country to give its hearty endorsement to the project, and to use its influence, individually and collectively, to secure the necessary sanction from Congress for its publication.

Horatio C. Wood, Jr. was so pleased that he persuaded the American Medical Association to appoint a committee to petition Congress to appropriate funds to print the work.[32]

Billings sent several copies of the *Specimen Fasciculus* to the Conference of Librarians held in Philadelphia as part of the 1876 Centennial Celebration. Unable to be there because he was obligated to attend a concurrent meeting of the American Public Health Association, Billings asked John Ashhurst, Jr., to take his place and answer all questions, particularly about medical subject headings. If there was any criticism it was not recorded. Charles A. Cutter placed his stamp of approval on the venture, telling his colleagues:[33]

> The physicians are the proper judges of this question [a single catalog vs. separate author and subject catalogs] those, that is, who are in the habit of consulting bibliographical works. There must be some such, although they have not had many medical catalogues to consult. It would be interesting to hear their experience. . . .
>
> As to the nomenclature, I am sure every cataloguer will welcome with delight the prospect of having his choice of subject headings made for him by one who is thoroughly competent. Nothing is so puzzling in our work as this choice, in that matter at least I shall be gald to resign the right of private judgment, and pay the most abject deference to authority.

Justin Winsor of the great Boston Public Library told the meeting that he thought that Billings' work was "the most satisfactory effort at indexing medical knowledge which has yet been attempted, and quite worthy of the largest medical library in the country."[34] James L. Whitney, also of Boston Public, declared he was:[35]

> impressed with the excellence of its method, and with the important aid which it will render to the medical profession and to librarians . . . it is difficult to estimate the treasures it will unlock to the student of medicine. The cataloguer who, in books of all ages and languages, has wrestled with the nomenclature of diseases, will find a great burden lifted from his shoulders in being able to fall back upon work so thoroughly done by specialists.

Meanwhile in Boston Billings was persuading the American Public Health Association to appoint a committee to send a memorial to Congress requesting publication of the *Catalogue*.[36] The College of Physicians, Philadelphia, also sent a resolution on the subject to Representative Samuel Randall.[37]

Another sponsorship that Billings sought was that of the International Medical Congress, meeting in Philadelphia as part of the Centennial. He explained to Samuel Gross, president of the congress, that the *Catalogue* would be useful to physicians everywhere:[38]

> While the object in view in forming this Library has been to make a collection of sufficient extent and completeness to meet the wants of the physicians of the United States, an attempt is being made to prepare a catalogue and index of its contents whose practical usefulness shall not be confined to this country but shall be, so far as the material available will permit, international and cosmopolitan
>
> The manuscript of the entire work is so nearly completed that the printing can be commenced next Spring, if Congress shall see fit to give the necessary authority.

After examining the copy that Gross showed them, the members of the Congress passed and sent to the President of the United States the following resolutions:[39]

> That the members of this International Congress regard with great interest the contribution of a national medical library, in the city of Washington, and respectfully petition the Congress of the United States to provide for additions to the number of volumes and periodical publications, until the library is made as complete as possible.
>
> That in veiw of the necessity of what is known as a *catalogue raissoné* in order to render the library properly available for reference, this International Medical Congress urge the importance of an early completion and publication of such a catalogue.
>
> That the Specimen Fasciculus of the catalogue, which is stated to be nearly ready for the press, affords evidence of great labor and care, and the arrangements for convenience of reference is believed will prove in all respects satisfactory.
>
> That those of the delegates of this International Medical Congress who are citizens of the United States, and other members of the medical profession in this country, are urged individually to exert their influence to secure the enlargement of the library and the speedy publication of the catalogue.

Robert Fletcher Joins the Staff

During the period in 1875 and '76 when the *Specimen Fasciculus* was being printed and distributed, Billings continued to check journals, develop his system of classification, and insert headings on cards produced by his helpers. Cards were filed in trays kept in his crowded office. He permitted scholars to refer to cards, but only for brief periods of time so as not to interfere with his work.[40] He told Stanford Chaillé, a prominent New Orleans physician, "I average 14 hours work a day over books."[41]

Billings requested Assistant Surgeon General Crane to provide him with a helper. Crane asked Acting Assistant Surgeon Henry Crècy Yarrow if he would like to work in the Library. Yarrow went to Billings' office and inquired what his duties would be. Billings replied: "First of all you must move to Georgetown so as to be as near as possible. You must be willing to work week-ends and Sundays and even late into the night if it becomes necessary."[42] Yarrow was a conscientious officer but this was too much. He went back and told Crane he preferred a different post. Crane had a good laugh and assigned him elsewhere.

Another person to whom Billings offered the job was George M. Kober, a

young German immigrant medical student who would later become dean of Georgetown University School of Medicine. Hired as a hospital steward in 1870, Kober worked in the Surgeon General's office for 4 years. During most of this time he indexed the department's old manuscript letterbooks, which earned him the nickname "Index" from the clerks. Other times he copied titles of articles in German journals for Billings. After graduating from Georgetown, Kober stepped up to the rank of Acting Assistant Surgeon and was given the choice of helping Billings or going into the field. Apparently what he had seen of Billings' labors convinced him that service in the western wilderness was preferable and off he went.[43]

Eventually there came to Billings a first-class aide. On September 1, 1876, Crane sent Acting Assistant Surgeon Robert Fletcher who accepted the job—although he did not move to Georgetown.[44] Fletcher, a tall, slender, well-groomed courtly man whose dignified appearance belied his friendliness, had emigrated from Great Britain to the United States in 1847 and settled in Ohio. When the Civil War began he joined the Ohio Volunteers as a surgeon. Subsequently he managed an Army hospital, was a medical purveyor, and performed other duties.

Billings made Fletcher his assistant in checking articles, classifying subject index cards,[45] and managing the Library. Fletcher was perfect for these tasks. He was scholarly and conscientious, he worked long hours, and he got along well with Billings, his other associates, and with readers. William Osler never forgot his first visit to the Library and his reception by Fletcher, "an elderly gentleman, who very quickly put at my disposal the resources of the library, and for two days did everything in his power to further my wishes."

The assignment of Fletcher to the Library was one of the most fortunate events that happened to Billings. Without Fletcher, or an associate of similar ability, personality, and character, Billings would have had to spend much more of his time on library affairs and not have been free to engage in the many other activities that helped bring him fame.

The Department Requests Funds to Publish the *Index-Catalogue*

During the absence of Billings in Europe in 1876 clerks continued to prepare subject cards for books and articles, and Fletcher continued to classify and file the cards.[46] After Billings returned the two men labored over the index. By mid-January 1877 so many cards had been inserted into the files that the estimated number of volumes required to print the entire catalog had increased from five to eight.[47] Surgeon General Barnes asked Senator Henry B. Anthony of the Committee on Printing to use his influence in persuading Congress to appropriate funds for publication. Barnes and Billings first hoped that Congress would authorize an edition of 5,000 copies of each volume, sufficient to supply every library and physician here and abroad who might desire a copy. But when the Government Printing Office estimated the cost to be $6 a volume, or $30,000 for an edition of 5,000 copies, they quickly lowered their request

to 3,000 copies, suggesting that the books be stereotyped so that additional volumes could be printed if required The printing of the eight volumes would take 4 years, since only two volumes could be produced each year, the bottleneck being the slow, careful proofreading that would be necessary for maximum accuracy [48]

On January 22 Representative Morton Sayler (a graduate of Miami University, Billings' alma mater) introduced into the House a joint resolution authorizing the printing of the catalog of the "National Medical Library "[49] A few days later Senator Anthony introduced a bill for the same purpose [50] These pieces of legislation had practically no chance of being considered, for Congress was close to adjournment and more important bills were waiting to be debated

On February 23 Representative Henry Pierce sought to enact legislation by means of a parliamentary maneuver he offered an amendment to the Civil Appropriation Bill to provide funds for the catalog Another Representative protested that the amendment was out of order because there was no law authorizing the catalog, and after a brief argument the Speaker agreed [51] Billings' opportunity for obtaining an appropriation during this Congress expired and he had to wait until the next Congress convened in December 1877 In the meantime he expressed his feelings about the debate in this statement [52]

> The question for Congress to decide is whether the result would be worth the expenditure What is the value of such an index to the people of the United States as compared with an expedition to the North Pole, five miles of subsidized railroad, one company of cavalry, or a small post-office building?

Notes

[1] The accession numbers 9726, 9727 9728, of volumes 1, 2 3, of the Royal Society s catalog show that they were received during 1870 Vocher No 17 abstracts of disbursements, Medical and Hospital Appropriation SGO show they arrived in September 1870

Billings said of his partly completed catalog in 1875 'This mode of indexing is on the plan pursued in the Catalogue of Scientific Papers by the Royal Society of London Billings 'Medical Libraries in the United States' in *Public Libraries in the United States* , p 177

[2] The value of subject catalogs was apparent to anyone who had undertaken scholarly research Bookseller James Campbell of Boston one of the Library s suppliers, wrote to Billings on Aug 22 1872, [I] would suggest that at the time when you print your new catalogue that some arrangement be adopted to make a classified *Index* which would make it exceeding valuable to the medical profession as a ready book of reference to find authorities of special subjects " Letter, Campbell to Billings MS/C/81

[3] Billings, "The Medical College of Ohio before the War Address to the Society of Alumni of the Ohio Medical College ' *Cincinnati Lancet-Clinic* 20 297–305 (1888)

[4] Billings, 'Medical Libraries in the United States, ' p 176 Letter, Billings to John Ashhurst, Jr , Mar 11 1874 CPP

[5] These cards were slips of tough, white paper, approximately 5" × 7", the same apparently, as were used for the catalog of 1873–74 (see chap 6)

[6] Letter, Billings to J Ashhurst, Jr , Mar 11, 1874 CPP

[7] Garrison, *Billings*, p 221

[8] J Y W MacAlister, Royal Soc Med , quoted by Garrison, *Billings*, p 334

[9] Letter, Billings to John Ashhurst Jr , Mar 11, 1874 CPP

[10] Billings, "Medical Libraries in the United States," p 177 There may have been other reasons why Billings decided to parallel Toner s index Perhaps Toner's index being private, might not have been as accessible to readers as

the Library's Perhaps Toner was not looking forward to publishing his index, whereas Billings apparently was

[11] Letters, Fryer to Billings, Jan 20, 1874 Billings to Girard, June 20, 1874, White to Billings, July 20, 1874 MS/C/81 Billings acknowledged the assistance of these officers on p iv of the foreward to vol 16 of the *Index-Catalogue of the Library of the Surgeon-General's Office*, 1895

[12] Letter, Smart to Billings, July 23, 1874 MS/C/81

[13] Letter, Smart to Billings, Aug 2, 1874 MS/C/81

[14] Letter, Smart to Billings, Aug 4, 1874 MS/C/81

[15] Letter, Steinmetz to Billings, July 5, 1875 MS/C/81

[16] Letter, Steinmetz to Billings, Aug 14, 1875 MS/C/81

[17] Letter, Billings to Irwin, Aug 13, 1874 MS/C/81

[18] The earliest letter referring to indexing in Billings' correspondence is a letter from Surg Fryer, Fort Wood, Jan 20, 1874 MS/C/81 Letters, Irwin to Billings, July 8, 14, Aug 10, Sept 7, Oct 26, 1874, Feb 3, 1875, Billings to Irwin, Aug 13, 1874, Meacham to Billings, June 15, 1875, Smart to Billings, July 23, Aug 19, 1874, Woodhull to Billings, July 16, Sept 23, Oct 3, 1874, White to Billings, July 20, Aug 17, 1874, Mar 16, 1875, Fryer to Billings, May 14, July 14 1874, Mar 3, July 17, Sept 1, Nov 1875, Billings to Weisel, June 30, 1875, Weisel to Billings, Aug 16, Sept 11, 1875 MS/C/81 Smart to Billings, Apr 13, May 9, 1875, Spencer to Billings, Feb 11, June 22, 1874 NYPL

[19] Letter, Garrison to W Welch, Aug 14 1932 JH

[20] 43 Cong , 1st sess , Joint Resolution authorizing the Secretary of War to detail a medical officer of the Army to inquire into and report upon the epidemic cholera, approved Mar 25, 1874

[21] Letter, Fryer to Billings, Jan 27 1875 MS/C/81

[22] Letters, Perkins to Billings, Jan 25, Vandervoort to Billings, Jan 29, 1875 MS/C/81

[23] 43 Cong , 2d sess , H R Ex Doc 95 The Army and Marine Hospital Service reports were printed separately but bound and issued in one volume Supervising Surgeon General Woodworth's report covered only 28 pages, whereas the Army report comprised 1,025 pages Because the M H S report was placed first, and Woodworth's name was on that report's title page, he is often listed in catalogs as the author of the complete volume, whereas he was responsible for only a minuscule portion of the work

[24] Billings estimated five volumes in 1875 As the years went by and he indexed more and more periodicals, his estimates grew larger

[25] Hall was the first person hired by Billings to assist with the *Catalogue* He transferred from the GPO on July 1, 1875 "The entire work of preparing the author bibliographies, verification of titles and authors, supplying the dates of birth and death, selection of type, establishing rules and precedents, alphabetical order, etc , was in my charge as a practical printer and proof-reader under the approval and decisions of doctors Billings and Fletcher," he recalled (memo, Hall to Col C C McCulloch, Sept 2, 1916 MS/C/137) He was such a superior assistant that Billings had him promoted to the highest grade, and in 1891 placed him in charge of the reading room Hall remained with the Library 46 years, retiring in 1921 when he was in his seventies

[26] Letter, Billings to Congressional Printer, Apr 19, 1876 NA

[27] The United States was still in the depression following the Panic of 1873 Billings feared that the "rage for economy" might cause the House to reduce the Library and museum appropriation, and he asked editors and physicians to influence Congress See letters, Billings to S Chaillé, Dec 13, 1875, to E McClellan, Jan 3, 1876, to L Waterman, Mar 24, 1876 MS/C/89 H C Lea to Billings, Mar 15, 1876 MS/C/1 *Boston Med Sur J* 94 407, 509 (1876)

A disagreement between the Senate and House committees delayed passage of the appropriation bill, and for a time Billings could not order books Letter, Billings to Flugel, July 3, 1876 NLM

[28] Letters, Billings to Lea, Mar 16, 1876, to Jacobi, Apr 16, to Newton, Apr 21, to McGuire, Apr 21, to Bowditch, Apr 21, to Baker, Apr 21, to Cochran, Apr 25, to Da Costa, May, to Balch, May 12, to Brown, May 17, to Mussey, June 2 MS/C/81 Holmes to Billings, May 12, 1876 MS/C/1

[29] Letter, Holmes to Billings, May 12, 1876 MS/C/1

[30] *Boston Med Surg J* , 94 547–9 (May 11, 1876) The editorial was probably written by Francis H Brown, a former editor of the journal and one of Billings' book scouts see postal card, Brown to Billings, May 13, 1876 MS/C/81

[31] New York *Med Rec* , 11 447–8 (July 8, 1876) Letter, George H Shrady, editor *Med Rec* , to Billings, June 1876 NYPL Among other favorable editorials were those in *Philadelphia Med Times*, 6 373–4, 422 (1876), *Atlanta Med*

Surg J, 14 184–5 (1876), and *Nation*, May 18, 1876

[32] *Trans A M A*, 27 49 (1876), 28 35 (1877), 30 41 (1879) The committee comprised Joseph Toner, H C Wood, and J R Chadwick

[33] *Amer Lib J*, 1 121-2 (1876) Letter, Billings to Winsor, advising Winsor that Ashhurst would substitute for Billings, Sept 13, 1876 MS/C/81

[34] *Amer Lib J* 1 122 (1876)

[35] *Amer Lib J*, 1 122 (1876)

[36] *Public Health Reports and Papers, American Public Health Association* 3 239 (1877) Joseph Toner, Lewis H Steiner, and J Foster Jenkins were on the committee

[37] Letter, J Ashhurst to Billings, Mar 24, 1876 MS/C/1

[38] Letter, Billings to Gross, July 31 1876 MS/C/81

[39] Copy of resolutions attached to letter of transmittal from Gross to the President, Dec 14, 1876 MS/C/81

Clipping from Philadelphia newspaper in scrapbook, International Medical Congress W3/ In737/1876 NLM

William W Keen, Philadelphia, offered to present a resolution at the Congress if Billings would send him a draft letter Keen to Billings, July 22, 1876 MS/C/81

[40] Letter, T B Allen to Billings, Mar 21, 1876, with reply, Billings to Allen, attached MS/C/81

[41] Letter, Billings to Chaillé, Apr 3, 1876 MS/C/81

[42] Yarrow, "Personal Recollections of Some Old Medical Officers," *Military Surgeon* 60 173 (1927) Later Yarrow accepted an assignment to act as a proofreader for Billings A biography of Yarrow is in Edgar E Hume, *Ornithologists of the United States Army Medical Corps*, pp 530–49

[43] Page proof 140, vol 2, part 13, unpublished reminiscences of Kober MS/C/315 F A Tondorf, *Anniversary Tribute to George Martin Kober in Celebration of his 70th Birthday* (Washington, 1920), pp 6–7 copy in MS/ C/315

[44] Order, Crane to Fletcher, Sept 1, 1876 NA

Fletcher was at this time a contract surgeon Later, when Congress abolished the Medical Department's practice of contracting with physicians, he became a civil servant

[45] Billings wrote a brief memorandum of instructions for indexers The rule for heading index cards was, "Titles on author cards to be full On subject cards brief, but the briefing will be done by Dr Billings + Dr Fletcher" undated memo MS/C/81

[46] Letter, Fletcher to Chadwick, Nov 14, 1876 MS/C/81

[47] Letter, Surgeon General Barnes to Sen H B Anthony, Jan 17, 1877 NA

[48] Letter, Barnes to Sen H B Anthony, Jan 17, 1877 NA

[49] 44th Cong, 2d sess, H R Joint Resolution 185, introduced Jan 22, 1877

[50] 44th Cong, 2d sess, Bill S 1198, introduced Jan 29, 1877

[51] *Congressional Record*, Feb 23, 1877 p 1876

[52] Billings, "National Catalogue of Medical Literature," *Lib J* 3 107–8 (1878)

VIII

The *Index-Catalogue* and *Index Medicus*

Congress Appropriates Funds for *Index-Catalogue*

THE estimate of the cost of publishing 3,000 copies of each volume of an eight-volume bibliography at $6 a volume amounted to $144,000, a very large sum of money in 1877. This was probably the cause of the resistance in Congress to publication of the *Index-Catalogue.* By comparison, Congress would only appropriate $200,000 for construction of the entire Medical Museum-Library building a few years later. Hoping for a lower cost Surgeon General Barnes and Billings sought a more precise estimate from the Public Printer. This turned out to be $25,000 for 3,000 copies of volumes 1 and 2, or about $100,000 for 3,000 copies of all eight volumes.[1]

This estimate was used during the winter of 1877–78 and the following spring as Billings and his friends continued to exert pressure on Congress. George F. Shrady wrote about the need for an appropriation for the catalog in his *Medical Record* and urged physicians to influence legislators.[2] A committee of the Medical Society of the County of New York sent a memorial to the Senate and House.[3] Horatio C. Wood of Philadelphia, chairman of the American Medical Association committee on the catalog, took the train to Washington and talked to members of the House Committee on Appropriations.[4]

But the amount of money involved was still too large. Representative Sayler thought it best to reduce the number of copies to 2,000 and ask at first for funds to print volume one. This he did in a bill in May 1878.[5] The reduction did not satisfy all opponents. Within the Committee on Printing there was resistance that kept Sayler's bill from being released to the House.

Billings, disappointed, increased his lobbying activities. Among his correspondents was Abraham Jacobi, to whom he wrote the following letter:[6]

> Congress has adjourned without authorizing the printing the catalogue. This is not Mr. Eickhoffs fault for he did what he could but he was defeated by Mr. Singleton of Mississippi who made the most exaggerated statements as to its cost.
>
> I saw Mr. Hewitt who said that next session he thought it could be done. Now during the summer and fall I want to have the profession talk to the Members and Senators, and then in November have some formal resolutions

&c sent in, and I think it will go through. I shall put in an estimate for $25000 for the first two vols.

Will you not consider your committee as still existing and have messrs Hewitt, Eickhoff, and other New York members impressed with the part that their medical constituents *really* want this thing, and that their request is not merely pro forma to oblige the Surgeon General or myself but is for their own pleasure and profit.

I am writing all over the country about this. . . .

Billings sent a longer plea for assistance to William T. Briggs of Nashville, editor, teacher, and former vice president of the American Medical Association:[7]

Congress having adjourned without authorizing the publication of the Index Catalogue of the Library of this Office, it is very desirable that members of the medical profession who desire its publication should do what they can to convince Members and Senators of its utility and of their desire for its publication that they may obtain copies.

I believe you are familiar with the character of the collection and of the proposed catalogue, and I will only say that the catalogue will contain about 400,000 titles, that it will make from 7 to 10 volumes and that it will cost for an edition of 2000 copies of each volume less than $11,000 per vol or about $100,000 for the entire work. This estimate may be relied on.

The Surgeon General will again apply next winter for the necessary authority to print the catalogue, asking for a sufficient appropriation to print the first two volumes. The entire mss is ready for the press, but not more than two volumes a year can be printed consistent with that accuracy which such a work demands. (The Members from Tennessee will be very powerful in this matter, especially Mr. Atkins and Blount who is chairman of the Committee on Appropriations.)

I venture to call your attention to this matter and to suggest that during this summer and fall, steps should be taken by the physicians of Tennessee to get Mr. Atkins and others interested in the matter.

It will be a great pity if the authority to print is not given next winter, and it will surely be given if the physicians of the country take hold of the matter in earnest. I am aware that I am suggesting some troublesome work for you, for it will involve correspondence etc., but I hope you will excuse me in consideration of the importance of the object, and in view of the fact that my acquaintance with physicians in Tennessee is very limited and I do not know whom to apply to.

Presumably Billings sent similar letters to influential physicians in the states of other key congressmen.

With the Committee on Printing opposed to any bill favoring the *Index-Catalogue*, Billings' friends in Congress changed their strategy. Instead of trying to pass a specific bill they decided to include funds for publication in an appropriation bill. Billings informed Edward Ely Van de Warker, a prominent physician of Syracuse and a freiend of Representative Frank Hiscock, of the plan:[8]

The matter of printing the catalogue will not come up as a separate bill, but will be on the estimates before the appropriation committee. The Surg. Gen'l. has estimated for $25,000 to print and bind the first two volumes of the catalogue and to stereotype the same, and will urge this in his annual report.

> The *first* thing to be tried therefore is to induce the Appropriation Committee of the House to rept this item on one of the appropriations bills. If they do there will be no further trouble in the matter. The principal opposition in the appropriation committee will probably come from Mr. Singleton of Miss. and Mr. Atkins of Tenn. If the committee will not pass this item, then we want some one to see that our amendment is introduced to put the item on the Appropriation Bill. If this amendment is presented in a five minute speech so as to make the points, it will almost surely pass, and if the yeas and nays are insisted on it will pass beyond doubt. I shall be very glad to give Mr. Hiscock all the information I can about it when he comes here and I have no doubt that he can do much towards obtaining the necessary authority.

The strategy worked. In February 1879 appropriation legislation containing many items moved through the House and Senate without any comment about a sum of $20,000 for printing volumes 1 and 2 of the *Index-Catalogue*.[9] The President approved the bill on March 3. The next day Billings thanked Jacobi, who had influenced a key representative:[10]

> The catalogue appropriation *has passed* and we are authorized to print the first two vols. This is largely due to a letter which you wrote to Mr. Eickhoff—a letter which kept the printing committee from being hostile actively although they would not report favorably—probably on account of homeopathic opposition.

The Surgeon General received $5,000 less than was needed and he had to return to Congress later for additional money,[11] but Billings was now able to make arrangements with the Government Printing Office for production of the *Index-Catalogue*.

The Appearance and Reception of *Index-Catalogue*

In July 1880 reporters in Washington on their daily quest for news learned that the *Index-Catalogue* was ready to be issued. Papers mentioned the coming event and the Medical Department began to receive requests for copies.[12] When volume 1 appeared it contained 888 pages of text, preceeded by a 6-page preface and a 126-page list of journals indexed by Billings and his helpers. In the text were 9,090 author-titles, representing 8,031 volumes and 6,398 pamphlets; 9,000 subject titles of books and pamphlets, and 34,604 titles of articles. The first entry was "A. (E.E.), Ozonized cod-liver oil . . .," and the final entry was "Berliński (Marcus), De nascentium morientiumque numero ex lege naturae diversis diei temporibus diverso."

Billings' clerks began to mail volumes during the summer, and letters of praise started to reach the Library in September. "It is a monument of useful labor, a time saving directory to medical literature, a delight and a blessing to the medical scholar. May the Lord save Dr. Billings to finish it," wrote George J. Fisher of Sing Sing, New York. "I am filled with admiration at your ability with however much help to bring out so vast a work & I am also filled with dispair that there should be such a mighty mass of medical literature," said Henry D. Noyes, New York. "Such a work, so full of research & of patient

labor, reflects immortal credit upon the office from which it emanates," stated Samuel Gross, Philadelphia.[13]

Alfred S. Purdy told Billings: "The profession can never repay you for the exhausting labor you have spent upon the library and catalogue." Austin Flint, Jr., echoed the same thought: "The medical profession at the present and in all future time should feel under great obligation to you." Charles Rice wrote: "I must say that I hardly ever opened and examined a work which is more carefully prepared and more beautifully gotten up than this masterpiece of printing. To bestow words of praise upon the immense labor devoted to making the catalogue, is entirely unnecessary on my part, for it is impossible to do justice to the work by mere words. *This* work, if no other ever before, will be sought for everywhere, and its publication will put to shame many wealthy and otherwise well-governed libraries abroad, none of which can show anything of equal value and usefulness."[14] From his farm Oliver Wendell Holmes sent this message: "You are raising a monument to science . . . more enduring than brass, and a great deal more valuable to mankind than palace or pyramid."[15]

Reviews in journals in every section of the United States and in Europe were equally flattering. *Cincinnati Lancet-Clinic* called the catalog "an additional honor to the name of one of the youngest, most industrious and distinguished medical men in America."[16]

Billings was a happy person when the medical profession heaped praise on the catalog upon which he had worked for 6 years. "Dr. Billings is in every sense the author of the Index, is very proud of his work, as he has reason to be, and appreciates the approbation and encouragement of the profession," wrote William Lee of Washington, a frequent visitor to the Library.[17]

The *Index-Catalogue* made the Surgeon General's Library universally useful. Without the giant catalog the huge collection of medical writings would have been consulted almost solely by physicians who lived in and near Washington. With it and through the courtesy of interlibrary loans, books and journals were available to physicians throughout the United States and Canada. Libraries in the Americas and on other continents used it as a subject index to their journals. It stimulated the growth of other medical libraries.

A goodly portion of the medical literature of the world was opened to the physician who had access to the catalog. It saved the time of every researcher and directed him to writings he might not have found otherwise. William Osler regarded it as "one of the most stupendous bibliographical works ever undertaken . . . of incalculable value to any one interested in books . . . a monument to the Army Medical Department, to the enterprise, energy and care of Dr. Billings, and to the scholarship of his associate, Dr. Robert Fletcher."[18]

THE SELECTION OF ARTICLES FOR THE *Catalogue*

Each year after the *Index-Catalogue* first appeared another volume came from Billings' assembly line. Each year Billings and Fletcher checked off more and more articles resulting from increasing research in new scientific schools,

hospitals, research institutions, and government agencies. His original estimate of five volumes proved a very bad guess; it doubled and then tripled. It might have doubled again had Billings not become more selective. He omitted trite public addresses, insignificant, duplicate, repetitious and worthless material, and some clinical cases. He passed by almost all editorials and letters to the editor. He picked all the articles in first-rate journals but only important articles in second-rate journals, and he ignored most of the contents of inferior journals.[19] "I do not index everything in med. journals," Billings explained to a researcher, "not even all those wh. come under the head of original communications and are of some length, but I do try to include everything wh. contains either a new fact, a new idea, or a new way of stating old ones."[20] On the other hand Billings' desire to appear unbiased in his selection may have resulted occasionally in some trash being included. Fielding Garrison recalled: "In two instances, I knew Dr. Billings and Dr. Fletcher to deliberately collect, card and catalogue full lists of the writings of avowed and bitter enemies, as showing that a private and personal opinion of these men and the specific worth of the products of their brains were different and disparate things, and in neither cases were the 'products' worth very much."[21] Thus the *Index-Catalogue*, contrary to what most persons believed, became not the index to *all* the medical literature of the world, but only to the important literature. Perhaps as much was omitted as was included.

THE *Index-Catalogue* AS A MODEL OF THE PRINTER'S ART

Billings was as particular about the final appearance of his *Index-Catalogue* as he was about the content. His foresight in bringing printer Hall from the GPO to the Library and placing him in the assembly line resulted in great care being taken with the typography and proofreading. A tradition of error-free printing was started and maintained throughout the long life of the work. This, even though the printing was said to be "the most difficult piece of typography attempted in the United States."[22]

Billings had the aid of Acting Assistant Surgeon Henry C. Yarrow as a proofreader. Yarrow examined proof sheets carefully from 1879 to 1888, until his eyes could no longer stand the strain of reading fine print.[23] Billings was also assisted by two volunteer proofreaders, Charles Rice and James R. Chadwick. Rice, a pharmaceutical chemist and linguist of New York City, after perusing volume 1, suggested that Billings obtain a new font of Greek type, and offered to read proof in languages except Slavic, Hungarian and English. He was particularly helpful with Greek and some Oriental languages. Although very busy with his own professional affairs, he read galleys for two decades.[24] Chadwick, a founder and librarian of the Boston Medical Library, read proof for many years.[25]

Because of careful work from beginning to end, only occasionally did a reader find an error. Norman E. Harding, a British medical officer, reported that a check of 800 entries revealed only one mistake, the misprint of an r for

an n.[26] William W. Keen sent a glowing testimonial: "The proof reading of both [*Index-Catalogue* and *Index Medicus*] is as good as the proof reading of the Bible, and praise could go no further."[27]

The Influence of the *Index-Catalogue* on the Development of the Library

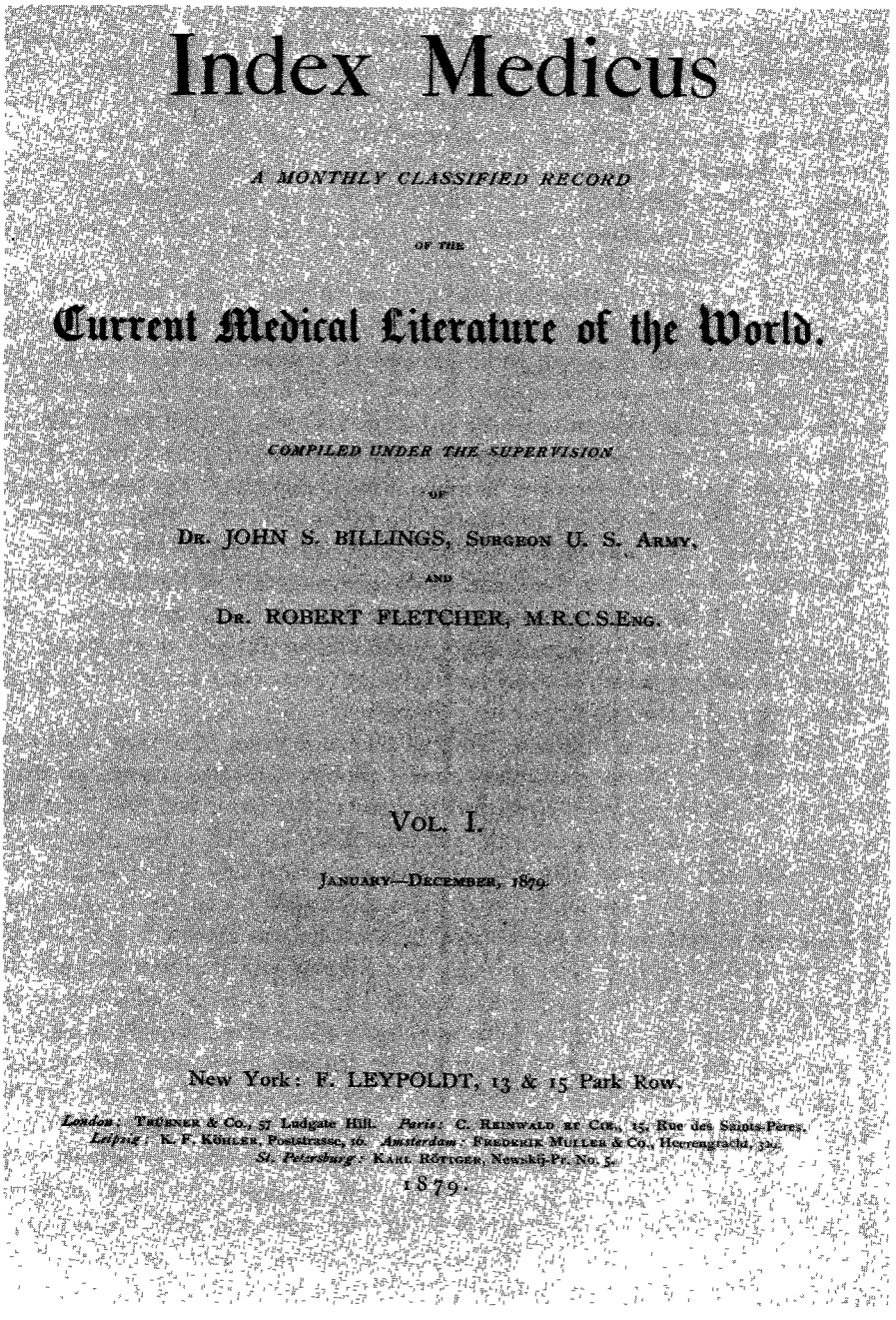
The *Index-Catalogue* proved good for medicine, but, in a way, bad for the Library. When Billings started the bibliography, he bequeathed to his followers their major task for generations into the future. Henceforth, the Library became preoccupied with the job of grinding out a volume each year. All operations were geared to the production of the *Catalogue*. One-third of the clerks worked full time indexing, preparing copy, and proofreading. Others proofread part time, packaged and sent out hundreds of copies, kept records, and handled the miscellany of odd jobs involved in the production of a monumental reference book every year. The usefulness of a person to the *Index-Catalogue* team became the chief criterion in hiring clerks. The most important qualifications of an employee were, in order of importance: "legibility of handwriting, accuracy in copying and in collation of books, rapidity of copying, knowledge of foreign languages, especially of Russian, Polish, Hungarian, Swedish, Dutch, Portuguese, Spanish, Italian, French, and German; knowledge of proofreading and methods of correcting proof, knowledge of medicine and medical terms."[28] The Library contributed much to the advancement of medicine by producing the *Index-Catalogue* (William Welch considered it America's greatest contribution to medical knowledge)[29] but in so doing, it funneled so much of its resources into the publication that it retarded its development in other areas.[30]

The Founding of *Index Medicus*

While preparing the *Index-Catalogue* Billings conceived the idea of a periodical that would list the titles of current medical articles, books, reports, and other literature. He found a publisher, Frederick Leypoldt, willing to take a financial gamble in publishing it, and he persuaded a number of physicians to share the financial burden by subsidizing the journal until it would become self-sustaining. Fletcher suggested the title *Index Medicus, a Monthly Classified Record of the Current Medical Literature of the World.*[31]

Billings obtained permission of the Surgeon General to have the Library's *Index-Catalogue* cards copied to provide the text for *Index Medicus*.[32] Library clerks made duplicate cards when they were off duty in the evenings and on weekends, and were paid by the publisher for their work.[33] The clerks' wives and daughters assisted with the copying.[34] Billings conceived, planned, and started the journal and then turned the editorship over to Fletcher—the title page carried the names "Dr. John S. Billings, Surgeon U.S. Army, and Dr. Robert Fletcher, M.R.C.S. Eng.," but Fletcher was the active partner and Billings always acknowledged this.

The first number appeared in January 1879. Thereafter titles of articles from



Index Medicus

A MONTHLY CLASSIFIED RECORD

OF THE

Current Medical Literature of the World.

COMPILED UNDER THE SUPERVISION

OF

DR. JOHN S. BILLINGS, SURGEON U. S. ARMY,

AND

DR. ROBERT FLETCHER, M.R.C.S.ENG.

VOL. I.

JANUARY—DECEMBER, 1879.

New York: F. LEYPOLDT, 13 & 15 Park Row.

London: TRÜBNER & Co., 57 Ludgate Hill. *Paris*: C. REINWALD ET CIE., 15, Rue des Saints-Pères. *Leipzig*: K. F. KÖHLER, Poststrasse, 16. *Amsterdam*: FREDERIK MULLER & Co., Heerengracht, 332. *St. Petersburg*: KARL RÖTTGER, Newsky-Pr. No. 5.

1879.

Title page of volume one of Index Medicus. *Originally a by-product of the* Index-Catalogue, Index Medicus *outlasted its parent, and is the longest lived, most widely used medical bibliography that ever existed.*

hundreds of journals were at the fingertips of readers, arranged in a system that Billings derived from the classification used by the Royal College of Physicians of London.[35] The classification system was used later for arranging publications in the Library[36] and was adopted for the purpose by other medical libraries. James Chadwick and Edwin Brigham remodeled the classification system of Boston Medical Library along the lines of *Index Medicus*,[37] as did the College of Physicians in Philadelphia and the Library of Congress for its schedule R, Medicine.[38]

Billings requested publishers and authors to send books, pamphlets, and other writings to Washington so that the titles could be listed in *Index Medicus*. His agreement with Leypoldt provided that all publications sent would, after being indexed, be deposited in the Library.[39] "The hope that the contributions to the Library from this source will be large, and thus permit the application of the limited funds provided by the government for its support to the purchase of the many works still required to make it fairly complete, has been my main inducement for undertaking to furnish the necessary data," Billings stated in the prospectus, "Beyond the satisfaction in thus contributing to the convenience of medical writers and teachers, and to the completeness of the Library under my charge, I have no personal or pecuniary interest in the enterprise." Over the years the Library received many publications through this channel, including duplicates which it used for exchange, and some foreign periodicals, which it would have had to pay for otherwise.[40]

Although the price of *Index Medicus* was moderate, $3 a year, and competitive with that of other journals, almost all American physicians ignored it. Leypoldt and his sponsors struggled to lure subscribers, but they had little success.[41] Leypoldt had to raise the price to $6 in the second year, but he still lost $1,000, and his total deficit for the first 2 years was $5,000, a large sum of money in the 1880's. He might have given up had not a number of subscribers guaranteed to pay part of the deficit. In 1884 he was forced to increase the price to $10. Later that year he died, and Billings and Fletcher thought that the periodical was doomed. But George S. Davis, a medical publisher in Detroit, took over. By that time there were only about 250 subscribers, many of whom took the journal out of friendship for Billings or because they thought the profession needed such a periodical.[42] The sale increased slowly; by 1891 there were only 482 subscribers, 90 of whom were medical officers, 224 were U.S. civilian physicians and libraries, and 168 were from other countries.[43] The inability of the journal to find more than a few hundred physicians (out of the 80,000 to 100,000 in the United States between 1880 and 1890) willing to pay for its services indicates the lack of interest of physicians in research and continuing education at that time.[44]

Hard times during the Depression of 1893 caused some subscribers to drop off. The publisher's deficit increased further in 1894. By the spring of 1895 Davis felt that he could no longer bear the financial loss and he decided to stop publishing the periodical. Apparently some of Billings' friends suggested they

were willing to pay $25 a year for the *Index Medicus* if it could be continued. Billings sent out a circular letter soliciting subscriptions at that price. Editorials in medical journals urged physicians to support the undertaking. More than 200 patrons responded, not an overwhelming number but sufficient to rescue the publication. In the meantime a disagreement caused Davis to withdraw permanently, leaving Billings and Fletcher with the full responsibility of preparing, publishing, and selling the journal.[45]

Index Medicus was a companion to *Index-Catalogue*. A complete series of the *Index-Catalogue* took many years to complete, and in the intervals between comparable volumes in each series *Index Medicus* provided up-to-date references to the current literature. Through the journal physicians could keep abreast of almost all medical articles in the world within 1 to 3 months of their appearance. If they wished to read an article cited in *Index Medicus*, they could, if they resided in one of the larger cities, perhaps obtain the journal in their local medical library. Otherwise they could borrow the journal from the Surgeon General's Library through an interlibrary loan or pay a clerk in Washington to write out a manuscript copy.

Without the Surgeon General's Library with its never ending stream of journals arriving from American and foreign publishers, and without the Library's indexing operations, *Index Medicus* could not have existed. No publisher could have afforded to subscribe to the 600 journals received by the library[46] or pay the salaries of a group of indexers.

Billings' Reward

Billings' bibliographic labors established his reputation internationally and brought him many honors. In 1881 he was invited to give the general address before the International Medical Congress, the first time an American was chosen to give this important speech. Thereafter he was frequently asked to give addresses, here and in Europe.[47] He was elected to honorary memberships in many organizations, among them the Medical Society of the County of New York (1879), Medical Society of the State of New York (1880), Medical and Chirurgical Faculty of Maryland (1880), Medical Society of London (1881), Clinical Society of London (1881), Society of Medical Officers of Health, London (1881), National Academy of Sciences (1883), College of Physicians of Philadelphia (1883), and others. He was invited to be a member of the Board of Visitors of Baltimore Medical College.[48] He was sought after for testimonials.[49] He was offered a professorship at Johns Hopkins[50] and invited to lecture at Columbia[51] and in Boston.[52] He was offered the editorship of *Louisville Medical News*.[53] In 1884 he was presented with the first of eight honorary degrees that he would receive from European and American universities.

A few years later 259 physicians of the United States and Great Britain contributed a gift of $10,000 to Billings, to thank him in some measure for his arduous work developing the Library, the *Index-Catalogue* and *Index Medicus*. A check for the sum was placed in a silver box and handed to a surprised Billings

John Shaw Billings, Librarian from 1865 to 1895. This photo was taken, it is believed, in the 1870's when Billings was founding Index-Catalogue *and* Index Medicus.

during a banquet held in his honor at the Bellevue Hotel in Philadelphia. The physicians also commissioned artist Cecilia Beaux to paint a full-length portrait of Billings. This colorful painting showing Billings in his uniform and academic gown hangs in the reading room of the Library.[54]

In the eyes of his contemporaries Billings was one of the world's great bibliographers, and it is chiefly as this that his reputation has lasted. His few attempts at investigation of fungi and crania did not produce significant results. The course into which he steered the National Board of Health may have helped wreck that agency. His work on vital statistics, and on the design of libraries, Johns Hopkins Hospital and other hospitals were noteworthy but did not have the universal importance of the *Index-Catalogue* or *Index Medicus*. "Years after the iniquity of oblivion has covered Dr. Billings' work in the army, as an organizer in connection with hospitals, and even his relation to the great Library," said Osler, "the great Index will remain an enduring monument to his fame."[55]

Notes

[1] Letter, Barnes to Sen. H. B. Anthony, Oct. 31, 1877: NA.

[2] New York *Med. Rec.* 13: 211–212 (1878).

[3] New York *Med. Rec.* 13: 220 (1878).

[4] *Trans. A.M.A.* 29: 45 (1878). The committee also issued a circular appealing to Congress to finance the *Catalogue*.

[5] 45th Cong. 2d sess. Bill H.R. 4727, May 6, 1878, "A bill authorizing the printing, binding, and stereotyping of an index-catalogue of the Library of the Surgeon General's Office." Around this time for reasons not now known the expression "National Medical Library" used by Billings for several years was dropped, and the title "Library of the Surgeon General's Office" was used thereafter.

[6] Letter, Billings to Jacobi, June 20, 1878: MS/C/1. The committee mentioned by Billings was probably the committee of the Medical Society of the County of New York. A Memorial to Congress by this committee, signed by Jacobi and other prominent physicians, is in New York *Med. Rec.* 13: 220 (1878).

[7] Letter, Billings to Briggs, June 28, 1878,

marked "personal" MS/C/81 Billings sent the same letter to Theophilus Parvin, editor and teacher, Kentucky, probably substituting the name of a Kentucky congressman in place of Rep Atkins of Tennessee MS/C/81 He wrote to Lewis Steiner, an influential physician of Frederick, Md , who wrote to Sen George R Dennis, Md , regarding the catalog, see letter, Steiner to Billings, Dec 20, 1878 NYPL

[8] Letter, Billings to Van de Warker, Oct 30, 1878 MS/C/81

[9] On Feb 24 the portion of the bill referring to the catalog was read in the House and passed see *Congressional Record,* p 1867 The bill passed the Senate on Feb 28

[10] Letter, Billings to Jacobi, Mar 4, 1879 MS/C/1

[11] 46th Cong , 2d sess , Senate Ex Doc 62, Feb 2, 1880, contains letter of Surg Gen Barnes requesting $6,500 more for printing and binding volumes 1 and 2

[12] Letters from J D Keller, Glenville, Pa , July 5, 1880, A G Smythe, Baldwyn, Miss , July 10, J E Wharton, Portsmouth, Ohio, Public Library, July 12, Charles Jewett, editor, *Annals of the Anatomical and Surgical Society,* Brooklyn, N Y , July 12, Thomas Ryerson, Dennis Library, Newton, N J , July 14, Charles Rice, Librarian, College of Pharmacy, N Y , July 22 MS/C/81

[13] Letters and receipts, Fisher to Billings, Sept 9, Noyes to Billings, Sept 11, Gross to Billings, Sept 20, 1880 MS/C/1

Names of persons, societies, and libraries, here and abroad, who received copies of the *Catalogue,* are in notebooks, NLM

[14] Letters and receipts, Purdy to Billings, Sept 10, Flint to Billings, Oct 1, Rice to Billings, Sept 21, 1880 MS/C/1

[15] Holmes to Billings, Sept 12, 1880 copied in scrapbook MS/C/81, original letter is missing Billings had one of his clerks compile a large scrapbook of reviews and letters praising volume 1 and subsequent volumes of the *Catalogue* MS/C/81

[16] *Cincinnati Lancet-Clinic* 44 286 (1880)

[17] Letter, Lee to N Senn, Oct 26, 1880 MS/C/81

[18] W Osler, "Some Aspects of American Medical Bibliography," *Bull Assoc Med Librarians* 1 22–23 (1909)

[19] Memo, Garrison for the Surgeon General and Librarian, Aug 5, 1929, MS/C/166, contains a long exposition about the selectivity of Billings and Fletcher on the *Index-Catalogue* and *Index Medicus*

[20] Letter, Billings to H Leffmann, Oct 20, 1883 MS/C/81

[21] Letter, Garrison to G Simmons, Aug 2, 1916 copy at JH

[22] *Index-Catalogue,* 4s v 1, 1936, pp iv–v "The printing of the Index Catalogue is probably the most difficult piece of technical work done at the printing office, a great many varieties of type being used and many languages The correctness and beauty of the printed page in a work of this nature is of the utmost importance, and so far it has been carried on in a way that has provoked the admiration of the learned men who use the catalogue in this country and in Europe", 3 indorsement, Library to the Surgeon General, Jan 31, 1913, on memo, Public Printer to Asst Chief Clerk, War Dept , Jan 29, 1913 MS/C/116

[23] Sketch of Yarrow in W T Parker, *Records Acting Assistant Surgeons,* pp 103–106

[24] Correspondence of Rice in MS/C/81, particularly to Billings, Sept 21, 25, and Billings to Rice, Sept 25, 1880 Rice did not wish to read proof of titles in English because he knew the Library was proficient in this language A sketch of Rice may be found in *Dictionary of American Biography*

[25] *Index-Catalogue,* v 16, 1895, p v A sketch of Chadwick is in *Dictionary of American Biography*

[26] Letter, Harding to Librarian, Sept 4, 1909 MS/C/116

[27] Letter, Keen to Maj Walter D McCaw, Dec 28, 1908 MS/C/116

[28] Letter, Billings to Surgeon General, May 27, 1887 MS/C/81 Typewriters were not yet widely used, thus the importance of legible handwriting

[29] E E Hume, "The Centennial of the World's Largest Medical Library The Army Medical Library of Washington, founded 1836," *Military Surgeon* 78 241–2 (1936) Welch, in *Memorial Meeting in Honor of the Late Dr John Shaw Billings, April 25, 1913,* p 10

[30] The cost of printing the first series of the *Catalogue* was $192,000 This was a large sum during the period 1880–1895, in comparison, it was approximately the cost of the building erected in 1886–1887

[31] In 1898 Adolf Growoll, managing editor of *Publishers' Weekly,* wrote *Book-Trade Bibliography in the United States in the XIXth Century,* in which he placed, pp lxvii–lxxvii, a biography of Leypoldt, 1835–1884 Growoll said (p lxxvi) "In 1879 Leypoldt, desiring to carry his bibliographical enterprise into fresh fields, projected the *Index Medicus,* a monthly key to medical books and periodicals, which should be a periodical supplement to the great 'Index Catalog of the Library of the Surgeon-General's Office United States Army', by Dr John S Billings, now of the New York Public Library, Astor, Lenox, and Tilden Foundations Fearing

that his friends and associates would be inclined to persuade him from new ventures, he kept his plans quiet until they were nearly ready for the launch " Growoll wrote essentially the same in *Frederick Leypoldt, Biographical and Bibliographical Sketch* (1899), a 15-page pamphlet I have not seen any other attributing the conception of *Index Medicus* to Leypoldt Growoll was associated with Leypoldt and it can be argued that he knew whereof he spoke

Fielding Garrison said this "One year before the publication of the first volume of the *Index Catalogue,* Dr Billings and Dr Fletcher hit upon another bibliographical expedient This was the *Index Medicus*" (*John Shaw Billings,* p 225)

I have not seen any statement, except Growoll's, that disagrees with Garrison's Garrison was associated with Billings for 5 years, with Fletcher for 22 years, and it can be argued that he was closer to them than Growoll was to Leypoldt My personal feeling is that Garrison was correct It seems to me less reasonable that Leypoldt, who worked in the literature of the book trade and in general bibliography, would have singled medicine out of all sciences and other endeavors as a field in which to publish a bibliographical journal, than would Billings, who had specialized in medical bibliography for a decade

"Dr Fletcher very deeply resented the use of that term [Index Medicus] as a title for other medical bibliographies, because it was a Latin expression devised by himself which he ragarded as his personal property More than one medical journal has employed it in this way and he always denounced it to the editors in virgorous terms", letter, Garrison to George H Simmons, Aug 8, 1914 JH

[32] Letter, Fletcher to James Tyson, Aug 13, 1909 MS/C/116

[33] *Index Medicus* paid a total of about $50 a month to clerks for copying in the early 1880's, $80 a month by 1899, letter, Fletcher to Billings, April 30, 1899 NYPL

[34] " the work of copying the library cards for redaction having been parceled out among the wives and daughters of the office force, as private work" Fielding H Garrison, "In Memoriam Dr John Shaw Billings," *Index Medicus* 2S, vol 11, Mar 1913

[35] The classification, or table of contents, may be found at the beginning of occasional numbers of *Index Medicus,* and particularly in the editorial at the beginning of the first number, January 1884, vol 6

[36] Fielding Garrison, "Report of Committee on Library Classification," *Bull M Lib Assoc* 7 28 (1917–18), "Subject Bibliography and Shelf Classification," *Ibid* , 10 29–37 (1920–21)

[37] Letters, E Brigham to Billings, July 19, 1882, Billings to Brigham, July 22 MS/C/81 See also Joseph E Garland, *The Centennial History of the Boston Medical Library, 1875–1975,* pp 34–35

[38] C Martel, "Remarks on Cataloguing and Classification," *Bull Med Lib Assoc* n s 5 43–45 (1915/16)

[39] Prospectus, dated Nov 1, 1878, bound at the beginning of vol 1, *Index Medicus,* HMD, NLM

[40] Billings, preface to *Index-Catalogue,* vol 16, 1895, p iv

[41] In NLM are several letters to and from Leypoldt in which the publisher mentioned the lack of support for *Index Medicus* See, for example, Billings to Leypoldt, Oct 25, 1882, MS/C/81, and Leypoldt to A Jacobi, Oct 10, 1881, MS/C/1

See also letter, Billings to A Van Derveer, May 5, 1884 MS/C/81

[42] "As to the Index Medicus the deficiency was about $1000 00 Five hundred copies of it cost about $5000, and it does not seem possible to cheapen it in any way The simple truth is that there are only about 250 persons who want it—quite a number took it not because they had any use for it, but for the general good or from friendly feelings to me ,", letter, Billings to C R Agnew, Jan 27, 1885 MS/C/272

[43] Billings, "The Conditions and Prospects of the Library of the Surgeon-General's Office and of its Index Catalogue," *Trans Assoc Amer Phys* 6 251–7 (1891) In this article Billings lists the number of subscribers from each foreign country, as Australia 5, Belgium 2, Brazil 1, and so on

"The number of subscribers to the Index Medicus is hardly sufficient to pay Mr Davis for the expense of printing it, and I have for two or three years feared that he would soon be unwilling to go on with its publication", letter, Billings to A Mosso, Turin, Italy, Mar 7 1892 MS/C/81

In an effort to attract more subscribers Davis published excerpts from scores of European and American reviews and from letters of physicians in a pamphlet, *An Explanation, by the Publisher, of the Nature, Scope, Form and Method of Preparation of the Index Medicus* [1886?] Arch Coll , NLM

[44] "I believe it [*Index Medicus*] will be a success among the scholars in the profession Unfortunately, however, that class is much too small", letter, G F Schrady, ed New York *Med Rec* , to Billings, Mar 5, 1879 NYPL, copy in NLM

[45] A scrapbook containing letters and clippings relating to *Index Medicus* is in NLM Letters, Fletcher to Billings, Nov 16, 18, 20, 1895,

has information and a list of American subscribers NYPL, copy in MS/C/276

[46] A list of journals being received is in *Index Medicus*, vol 1, Jan 1879, pp 4–28

[47] Example Billings' invitation, May 22, 1882, from the British Medical Association to speak at its 50th anniversary meeting is in MS/C/81

[48] Letter, Billings to H Byrd, June 5, 1882 MS/C/81

[49] Letter, John Chiene, Edinburgh, to Billings, June 8, 1882 MS/C/81 Chiene, applying for the professorship of surgery, told Billings, "Your name is now well known here "

[50] Letter, Billings to D C Gilman, June 18, 1883 JH

[51] Letters, Billings to F A P Barnard, Dec 4, 1883, May 26, 1886 MS/C/81

[52] Letter, Billings to B Cotting, Sept 29, 1884 MS/C/81

[53] Letters, Billings to T Parvin, and to N S Davis, Jan 25, 1883 MS/C/81

[54] The banquet was held November 30, 1895 The silver box that contained the check is in HMD, NLM Garrison, *Billings*, pp 282–7, gives excerpts from speeches at the banquet

[55] *Memorial Meeting in Honor of the Late Dr John Shaw Billings, April 25, 1913*, p 10

As late as the 1930's mail from foreign countries was received at the Library addressed to John Shaw Billings

IX

Billings Seeks a Building for the Library and Museum

PLANNING THE BUILDING

As soon as Billings won his battle to publish the *Index-Catalogue*, he began a campaign to persuade Congress to provide the Library and museum with a building of their own. He had gathered so much printed material that he had run out of space in Ford's Theatre. Volumes were double and triple shelved. "There came to be no room for even the storage of books and specimens," wrote Charles Smart, "not to speak of facility of reference or advantageous display."[1] Billings considered placing books in the attic but decided that the weight there might cave in the building, or that if a fire ever broke out the volumes would be burned or ruined by water from fire hoses. Assistant Surgeon David Huntington relieved a bit of the pressure by storing books and undistributed volumes of *Index-Catalogue* at Soldier's Home about 4 miles away on the outskirts of Washington.[2]

The ex-theater was undesirable in other respects for its present uses. The Museum, crowded into the third floor, was visited by approximately 36,000 persons a year and was being enlarged by about 500 specimens annually. The lower floor, where clerks searched Civil War records for pension applicants, was dim, illuminated only by gas lamps, and had no ventilation. The Inspector General of the War Department had protested strongly that three times as many clerks were jammed into the space as ought to be.[3]

The theater had been erected hurriedly in a few months and was poorly constructed. The east wall was more than a foot out of plumb. The southwest corner had given way until there was a large crack in the wall. The weight of books, specimens, furniture, files, and people placed stresses on the floors and walls that the building had not been designed to bear. Officers were apprehensive that the continual addition of weight would cause the building to collapse.

Finally, the building, although the walls were of brick and the floors of concrete, was not fireproof. In 1875 a small frame building adjacent to the south side caught fire. Daniel Lamb, pathologist of the museum, discovered the blaze before it had time to spread widely, but before it was extinguished

it damaged the photograph room.[4] The staff always feared that a fire might start in a neighboring house or shed, jump to Ford's and destroy all their work.

It seems that Billings had four choices: to recommend to Surgeon General Barnes that the Library stop collecting (which he would not have done if humanly possible, and which would have ended publication of *Index-Catalogue*), to suggest or agree to a merger with Library of Congress (which he did not want to do), to find storage spaces here and there in government buildings (which would have fragmented the Library), or to persuade the Surgeon General to ask Congress for permission and funds to construct a special library-museum building. Apparently, he had no difficulty with the last alternative, for medical officers, from the Surgeon General to the most recent assistant surgeon, were proud of their Library and museum.

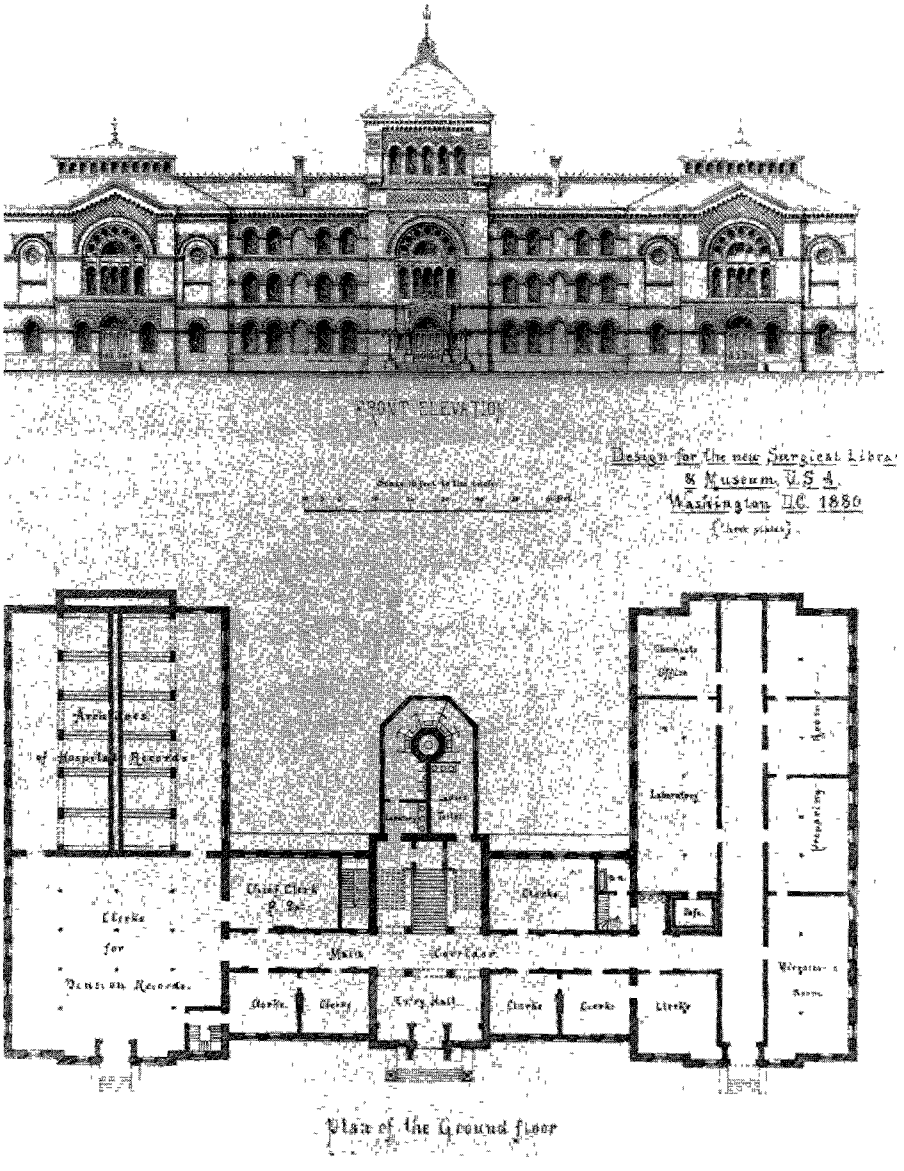
Billings had learned something about the functional design of buildings years before when he compiled and edited Circular No. 4 of the Surgeon General's office, *A report on Barracks and Hospitals, with Descriptions of Military Posts*. And he had learned more while consulting with officials of Johns Hopkins about the design of its hospital. He discussed his ideas for a building with Adolph Cluss of the architectural firm of Cluss and Schulze and sketched a floor plan of a building that Cluss translated into a design. Undoubtedly Cluss contributed to the plan; several years earlier he had won third place among 28 entries in a competition for a design for the proposed Library of Congress building.

The building was to be ⊔-shaped, four stories high. The center segment and the first floor of the wings were to contain offices, workshops, laboratories, and space for records. The upper portions of the wings were to be halls, one for the Library, the other for the museum.

The strategy that Barnes and Billings decided upon to gain Congressional support was to emphasize the unsafe condition of Ford's, rather than the lack of space for books and specimens, or the crowded condition of records and clerks. "In the building . . .," the general reported to his superiors, "these collections are continually exposed to the danger of destruction by fire. This building is surrounded by inflammable houses and sheds . . . destruction by fire of the roof would not only involve the whole Museum Collection in the third story, but, by the fall of at least a portion of the walls, the destruction of the contents of the lower stories, including the Library and the Records, would result."[5]

Barnes convinced Secretary of War Alexander Ramsay that a new, sturdy, plain, fireproof building, costing a quarter of a million dollars on a site costing about $50,000, was needed for the Library, museum, and records. Ramsay gave President Rutherford B. Hayes information about the building and its contents, and the President was impressed.[6] He recommended, in his annual message, that Congress appropriate money for a new structure, stating that[7]

> the Army Medical Museum and Library are of national importance. . . . Their destruction would be an irreparable loss, not only to the United States, but to



First plans for the Library-Museum building, 1880, drawn by the architectural firm of Cluss & Schulze, following instructions of Billings. The Library wing is on the left, Museum wing on the right.

the world. . . . There are filed in the Record and Pension Division, over sixteen thousand (16,000) bound volumes of hospital records. . . . Aside from their historical value, these records are daily searched for evidence needed in the settlement of large numbers of pension and other claims, for the protection of

> the Government against attempted frauds, as well as for the benefit of honest claimants These valuable collections are now in a building which is peculiarly exposed to the danger of destruction by fire. . .

Perhaps because the Hayes administration and the 46th Congress were both nearing their end no further action was taken, but Barnes and Billings had succeeded in opening the door.

The following year, with a new President in office and a new Congress soon to convene, Surgeon General Barnes repeated his request for a building. Secretary of War Robert T. Lincoln agreed that Barnes had a good case, and forwarded the proposal to President Chester A. Arthur, who approved and transmitted the communications to the Senate and House on January 19, 1882. Both houses printed pertinent documents on the proposed building.[8]

Barnes, Billings, and other officers now had to persuade Congress to agree. The general offered to guide Representative James Singleton and other members of the House Committee on Public Buildings and Grounds (the committee that would decide whether or not a new building should be constructed) through Ford's, and show them the condition of the structure.[9] At least one congressman, Representative Strother Stockslager, toured Ford's with the Surgeon General and later emphasized its unsafe state during debate.[10] Barnes also went to Capitol Hill and talked to the House Committee on Public Buildings and Grounds.[11]

Without detracting from the importance of General Barnes' (and his successors, General Charles Crane's and Robert Murray's) talks and correspondence with members of Congress, it appears that almost all of the lobbying for the proposed building was directed by Billings. When the Senate and House referred the President's message to committees on public buildings, Billings made a list of the names and home towns of each member of the House committee.[12] He then wrote to prominent physicians in the home states of these congressmen, explained the necessity for a library-museum building, and asked them to influence their legislators. Thus he began a letter writing campaign that would last more than 3 years to encourage American physicians to persuade representatives and senators to vote for the building.

Owing to his voluminous correspondence in search of books, journals, and other medical literature; his founding of *Index Medicus;* his manifold activities in the American Public Health Association, American Medical Association, and National Board of Health; and the publication of *Index-Catalogue;* Billings was known to and respected by medical editors and leaders in state and national medical societies. Therefore when he asked physicians to help obtain a new building for the national medical Library and museum, many of them responded enthusiastically. William Pepper, professor at the University of Pennsylvania medical school, and Horatio C. Wood, professor in the same school and editor of *Philadelphia Medical Times,* contacted Representative Shallenberger. James G. Thomas, past president of the Georgia State Medical Association, wrote to Representative Philip Cook, and also asked a Dr. Cooper of Cook's home town

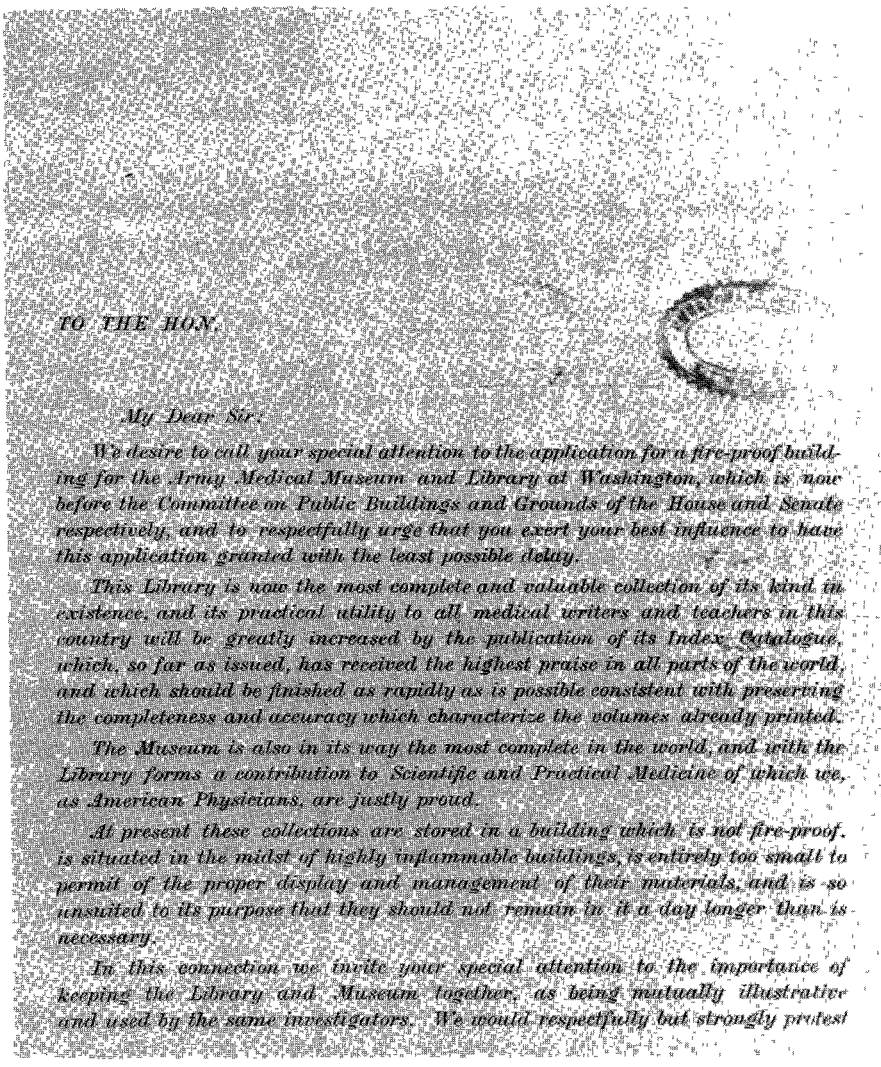
to influence the congressman. Professor Austin Flint, Jr. of Bellevue Hospital Medical College wrote to Frank Hiscock, a powerful member of the House Committee on Appropriations. A physician whose identity we do not know of Scranton, Pennsylvania, persuaded a score of his colleagues to send a petition to Representative Joseph Scranton. Jerome Cochran, professor at Medical College of Alabama; William W. Dawson, professor at Medical College of Ohio and a future president of the American Medical Association; David W. Yandell, editor of *American Practitioner* in Louisville, Kentucky; Thomas Wood, editor of *North Carolina Medical Journal;* and James F. Hibberd, past president of the Medical Society of Indiana, promised to help.[13]

Billings, his associates or his friends, had petitions printed for physicians to sign and send to congressmen. Billings kept a supply at hand to pass out on request.[14] Christopher Johnson, professor at University of Maryland Medical School and former president of the Medical and Chirurgical Faculty of Maryland, obtained the signatures of 32 physicians on a petition and presented it to Representative Robert McLane. Robert A. Kinloch, professor at Medical College of South Carolina and former editor of *Charleston Medical Journal,* circularized petitions and also talked with a Carolina senator. Claudius H. Mastin, a future president of the American Surgical Association, passed around a petition which he presented to Representative Hilary Herbert and also chatted with his friend Senator John Morgan, who agreed to back the building. Granville P. Conn, secretary of New Hampshire Medical Society, James R. Chadwick, founder of Boston Medical Library, and William Pepper circulated petitions.[15] Representative Perry Belmont received a petition signed by Fordyce Barker, Austin Flint, Cornelius R. Agnew, and other physicians; Representative Will Aldrich received a petition from 22 physicians and surgeons of Chicago; Representative Leopold Morse heard from physicians of Boston and Representative Stanton Peelle from Theophilus Parvin, Allison Maxwell, and other physicians of Indianapolis.[16]

Several editors publicized the campaign for a building through editorials, published letters, and new items. John V. Shoemaker of *Medical Bulletin,* Philadelphia, told Billings to send a memo of the facts that he would like to have emphasized and Shoemaker would write an editorial. The first editorial, "A new building wanted," appeared in the March 1882 issue. It noted the size and usefulness of the museum, Library, and Civil War record collection, the crowded, unsafe state of the building, and ended with this appeal:

> Let every physician consider the cause his own, and work earnestly for its success. Speak at once to your senators and representatives, telling them how important it is that this subject should receive favorable consideration and prompt action. Write to them when the bill is introduced and get your friends to do likewise, and we are certain that the present Congress will perform its duty and provide a suitable edifice for the treasures of the Surgeon General's Office.

Thereafter as the occasion demanded Shoemaker ran news items about the Library, museum, building, and *Index-Catalogue.*[17]



TO THE HON.

My Dear Sir:

We desire to call your special attention to the application for a fire-proof building for the Army Medical Museum and Library at Washington, which is now before the Committee on Public Buildings and Grounds of the House and Senate respectively, and to respectfully urge that you exert your best influence to have this application granted with the least possible delay.

This Library is now the most complete and valuable collection of its kind in existence, and its practical utility to all medical writers and teachers in this country will be greatly increased by the publication of its Index Catalogue, which, so far as issued, has received the highest praise in all parts of the world, and which should be finished as rapidly as is possible consistent with preserving the completeness and accuracy which characterize the volumes already printed.

The Museum is also in its way the most complete in the world, and with the Library forms a contribution to Scientific and Practical Medicine of which we, as American Physicians, are justly proud.

At present these collections are stored in a building which is not fire-proof, is situated in the midst of highly inflammable buildings, is entirely too small to permit of the proper display and management of their materials, and is so unsuited to its purpose that they should not remain in it a day longer than is necessary.

In this connection we invite your special attention to the importance of keeping the Library and Museum together, as being mutually illustrative and used by the same investigators. We would respectfully but strongly protest

One of several petitions drawn up by Billings or one of his friends, to be signed by physicians and presented to Congress.

Thomas Minor, a prolific contributor to *Cincinnati Lancet-Clinic*, informed Billings that he would write about the institutions and he did. *Lancet-Clinic* gave the proposed building some of its earliest publicity, a long published letter by William Dawson in January 1882.[18] Henry C. Lea published editorials and items in his weekly *Medical News*. After Congress failed to take up legislation for the building in 1882, Lea told his readers:[19]

against the proposal, which we understand has been made, to have this Library transferred to the building which is to be provided for the National Library, and thus to separate it from the Museum and remove it from the management which has made it so successful.

It is our opinion that special Scientific Libraries should be in the same buildings with the Museums, Laboratories, Observatories, etc., which pertain to their special subjects, and should be under the direction of men specially familiar with them—who will thus have the strongest inducement to do good work, and who will have the cordial co-operation of all those specially interested in the matter.

The Library of the Surgeon General's Office is practically the Medical Section of the National Library, but it should not be merged with the latter nor be in the same building with it.

The completeness and prosperity of this Library is a matter of great interest to the medical profession of this country; it is the one thing by which the National Government can give powerful aid to scientific medicine and a higher medical education, and we sincerely hope that this Congress will not adjourn without having granted the request for a new building or having made the necessary appropriations for continuing the Index Catalogue, and for obtaining every new medical book and journal as soon as published.

Begging you to give this matter your special attention and favorable consideration, we are

Yours, very respectfully,

It is the clear duty as well as interest of the profession to bestir itself in this matter. Let every physician who can, either in person or by letter, convey his views to a senator or congressman, urge upon him the importance of providing a fireproof building for the library and museum (which ought never to be separated), of keeping the library under the control of the Surgeon General, and of providing for the completion of its index catalogue, the usefulness of which can hardly be overestimated.

And Lea listed the names and states of representatives on the committee in charge of library legislation.

Other journals that helped included *Philadelphia Medical Times*, *Medical Register*, and *The Nation*. The latter was a top-notch magazine of general circulation; and whereas medical journals were probably never seen by politicians, *The Nation* was a magazine they would have kept their eye on. In March 1882 it published an account of the Library and museum, explained the inadequacies of Ford's Theatre, and hoped that Congress would provide a new building.[20] In the autumn, in an article discussing the proposed structure for the Library of Congress, it again talked about the Surgeon General's Library and supported the campaign for a new building.[21]

Billings also suggested to his correspondents that they initiate discussions of the Library and museum at medical society meetings. The Medico-Legal Society of New York passed resolutions favoring the building, and sent them to Representative J. Warren Keifer. The St. Louis Medical Society adopted a resolution which it had printed and sent to Missouri senators and representatives. The Philadelphia County Medical Society, Medical Society of the County of Kings (New York), Centre District Medical Society (New Hampshire), Alabama State Medical Association, Hudson County Medical Society (New Jersey), and Chester County Medical Society (Pennsylvania) drew up memorials to Congress.[22]

The Library's Appropriation

While Billings was directing the lobbying activities of an influential segment of the medical profession, he had to marshall his friends to oppose another attempt to decrease the Library-museum appropriation. The appropriation bill for fiscal year 1882–1883 proposed to give the Library and museum $5,000 rather than the $10,000 they had been receiving since 1872. This would not only have hurt both organizations for a 12-month period but might have established a precedent for low appropriations in the future. One can be certain that Billings spoke to those legislators whom he had come to know in Washington and that David Huntington, curator of the museum, and other medical officers did the same. Billings' friends who were writing, talking and petitioning in favor of a new building also stressed the necessity of keeping the appropriation at the $10,000 level. During the spring sympathetic congressmen increased the sum to $7,500, and when the appropriation came before the House in April Benjamin Butterworth raised it to $10,000.[23]

Then Billings learned that the Senate Committee on Appropriations had recommended only $5,000. He took his pen again and began scrawling notes to his friends. "I write in great haste," he told Abraham Jacobi, "I must get off *many* letters today & tomorrow."[24] Billings and his friends persuaded the senators to reconsider and not halve the usual amount.[25] But he and Huntington did not know how much money they would have for the Library and museum until June 30 when the law was finally enacted and they received $10,000.

During the 1870's and early 1880's the quantity and prices of new medical works had continually increased, with the result that Billings had fallen behind

in his purchase of current literature. In 1883 the Surgeon General appealed for a larger appropriation, stating in his *Annual Report*: "It is often necessary to reply [to readers] that the desired book or pamphlet is not in the library, even though it may be new and readily obtainable by purchase. The amount heretofore appropriated for the library is not sufficient to purchase all new books and journals, and therefore a selection must be made, which of course cannot meet the wants of everyone."[26] Congress agreed, and the following year it separated the Library's appropriation from the museum's and increased it to $10,000. Within a short time Billings made arrangements to have "every new medical work from every country sent promptly to the Library."[27] The annual appropriation remained $10,000 into the 1890's:

Fiscal Year ending June 30	Library	Museum	Both
1884			10,000
1885	10,000	5,000	
1886	10,000	5,000	
1887	10,000	5,000	
1888	10,000	5,000	
1889	10,000	5,000	
1890	10,000	5,000	
1891	10,000	5,000	
1892	10,000	5,000	

Billings, Vice President of the National Board of Health

During 1882 Billings had another reason to be concerned over appropriations. In 1879, after several years of discussion, Congress had created an agency called the National Board of Health, which the government, sanitarians, and citizens hoped would draw up a practical plan for keeping yellow fever and other epidemic diseases out of the United States. The Army appointed Billings as its representative on the Board. The Board elected Billings its vice president, and because he lived in Washington where the Board's office was located, while the president resided in Charlottesville, Virginia, Billings generally presided at meetings of the Board's executive committee and slowly gained the reputation of running the Board, which was largely true. The Board moved along well for a year, but slowly it began to meet opposition in Congress from economy-minded and States Rights legislators and in the Treasury Department from the Marine Hospital Service, ambitious to become the Nation's public health agency. By 1882 the National Board of Health's appropriation was being threatened seriously, and Billings was being criticized. Finally in the summer of 1882 he asked to be relieved from duty on the Board.

Criticism and lack of appreciation of his labors may have been sufficient to cause Billings to resign, yet it seems unlike him to have left the Board because of these reasons. Perhaps he was working too hard enlarging the Library, campaigning for a building, delivering speeches at meetings of organizations, participating in activities of library and medical societies, directing compilation of the *Index-Catalogue*, consulting with the architects of Johns Hopkins medical

school, and doing other things; yet if overwork was the cause, he could have dropped tasks less important than the National Board. Fielding H. Garrison, Billings' associate, gave the bald reason that "Billings was not the sort of man to remain long in an environment which did not suit him or in which little could be accomplished. Living up to the device, 'environment wins,' he resigned his vice-presidency in 1882."[28] Yet, this statement does not really explain the reasons for the resignation.

It seems to me probable that Billings resigned because he feared that antagonism toward the Board in the committees on appropriations (the committees finally stopped the Boards' appropriation and literally killed it) would be transferred through him to the Library and museum; and that if he wanted to remain on good or at least neutral terms with key legislators throughout the remainder of his career in the Library and continue to obtain sufficient funds along with a new building, he had better leave the controversial Board before it was too late.

Campaign for a Building, 1883

Shortly after Congress convened in December 1882, several congressmen visited the theater to confirm the crowded, unsafe conditions. They questioned Thomas Wise in the Library and Henry C. Yarrow in the museum. After they left, Wise and Yarrow asked Billings for a résumé of his arguments for a new building, to make certain that they were providing all possible reasons to inquisitors.[29] Billings must have been a bit on edge waiting for one of his sympathizers to act, but finally on February 28, 1883, Representative Shallenberger introduced Bill H.R. 7681 to authorize construction of a building costing $200,000 on ground owned by the government near the National Museum and Smithsonian Institution.[30] The original estimate of $250,000, made in 1880, had been cut to $200,000 by modifying the design—for instance, by reducing the number of front entrances from three to one.

The bill appeared only a few days before the session was scheduled to end on March 3, and Surgeon General Crane, Librarian Billings, and Curator Huntington knew that Congress would probably not have time to pass legislation before adjournment. Nevertheless they tried to obtain passage of legislation in a roundabout way. Billings drafted an amendment to the Sundry Civil Bill to authorize $200,000 for the building, and Crane asked Senator Joseph R. Hawley to introduce it. Crane told Hawley that "assurances have been given that it [the amendment] will be also accepted by the House," and he emphasized that money would be saved by moving pension clerks from rented buildings into the Library-Museum Building.[31]

For reasons not known the strategy failed. There was no hope for action on the bill until a new Congress convened in December. But in the meantime Billings renewed his efforts to obtain support from the medical profession. During the winter, spring and autumn of 1883 he wrote to editors and to leaders of state and national medical societies and distributed blank petitions.

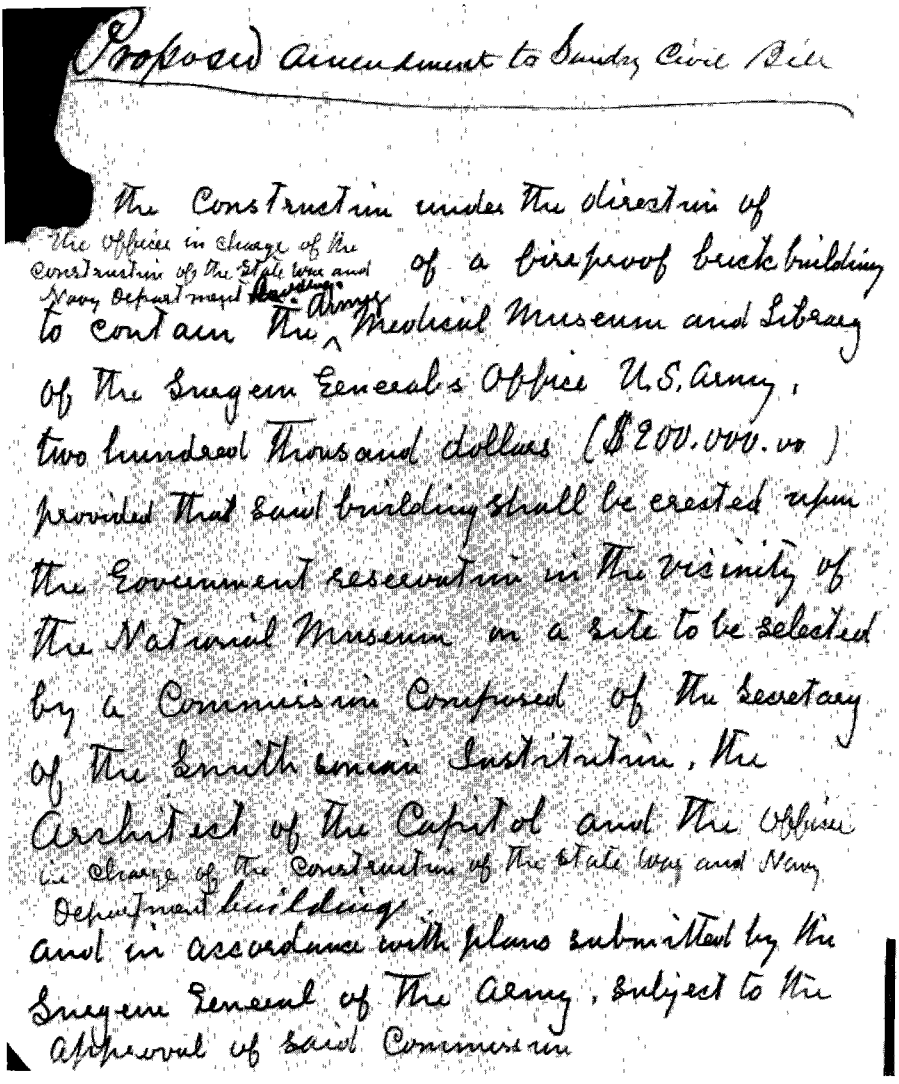
Hosmer Johnson, one of the founders of Northwestern University Medical School and a former editor of *Northwestern Medical and Surgical Journal,* replied: "I have your letters suggesting methods of reaching the members of Congress upon the question of the medical library. I will secure the signatures of a dozen or so of our leading physicians and as many more as you think will be useful. I am quite sure that there would be no difficulty in getting the names of every doctor in Illinois."[32]

Charles O'Leary, Providence, Rhode Island, promised to talk to Representative Henry Spooner, and he also circulated a petition and presented it to the congressman. Claudius Mastin spoke to Alabama legislators who congregated in Mobile to attend a funeral. Jerome Cochran approached several Alabama congressmen. Richard Wyckoff, Brooklyn, New York, influenced Representatives Henry Slocum and Darwin James. Tobias Richardson, New Orleans, circulated a petition and urged Senator Randall Gibson, a guest in his home, to favor the Library. S. Weir Mitchell talked to Senator Morgan. Theophilus Parvin, Indianapolis, buttonholed Senator Daniel Voorhees.[33]

James Reeves, secretary of the West Virginia Board of Health, had resolutions drafted by Billings passed by his medical society and also obtained a promise of aid from Representative Nathan Goff. William Robertson, president of the Iowa Board of Health, persuaded his state medical society to pass resolutions and also obtained a petition signed by the leading physicians of Iowa. Samuel Gross influenced the Pennsylvania Medical Society to pass resolutions. Henry Bowditch persuaded the Massachusetts Medical Society to act. The societies of Connecticut, New Jersey, New Hampshire, Vermont, and Minnesota drew up resolutions which they sent to all senators and representatives of their states, and published in medical journals.[34]

Philadelphia County Medical Society, Medical Society of the County of Kings (New York), and New Hampshire Central Medical Society sent petitions to Congress, as did groups of physicians in Beaver County, Pennsylvania; Augusta, Georgia; Rhode Island; Louisiana; South Carolina; and New York.[35] *Louisville Medical News, St. Louis Courier of Medicine, Medical News* (Philadelphia), *Nation, Boston Medical and Surgical Journal,* and other journals ran editorials.[36]

The American Surgical Association, American Laryngological Association, and American Library Association enacted resolutions, but the most powerful national group to support Billings was the American Medical Association. Apparently Billings conceived the plan of having physicians of national stature prevail upon the AMA to pass resolutions. Those he asked were Samuel Gross, Austin Flint, Sr., and Oliver Wendell Holmes. Gross had been president of the association in 1868, Flint would be president in 1884, and Holmes was universally known through his writings. These three signed a petition (Holmes insisting that his two cosigners have the honor of signing first) drafted or planned by Billings urging the organization to memorialize Congress. Gross read this petition at the meeting. The AMA appointed five members to prepare a mem-

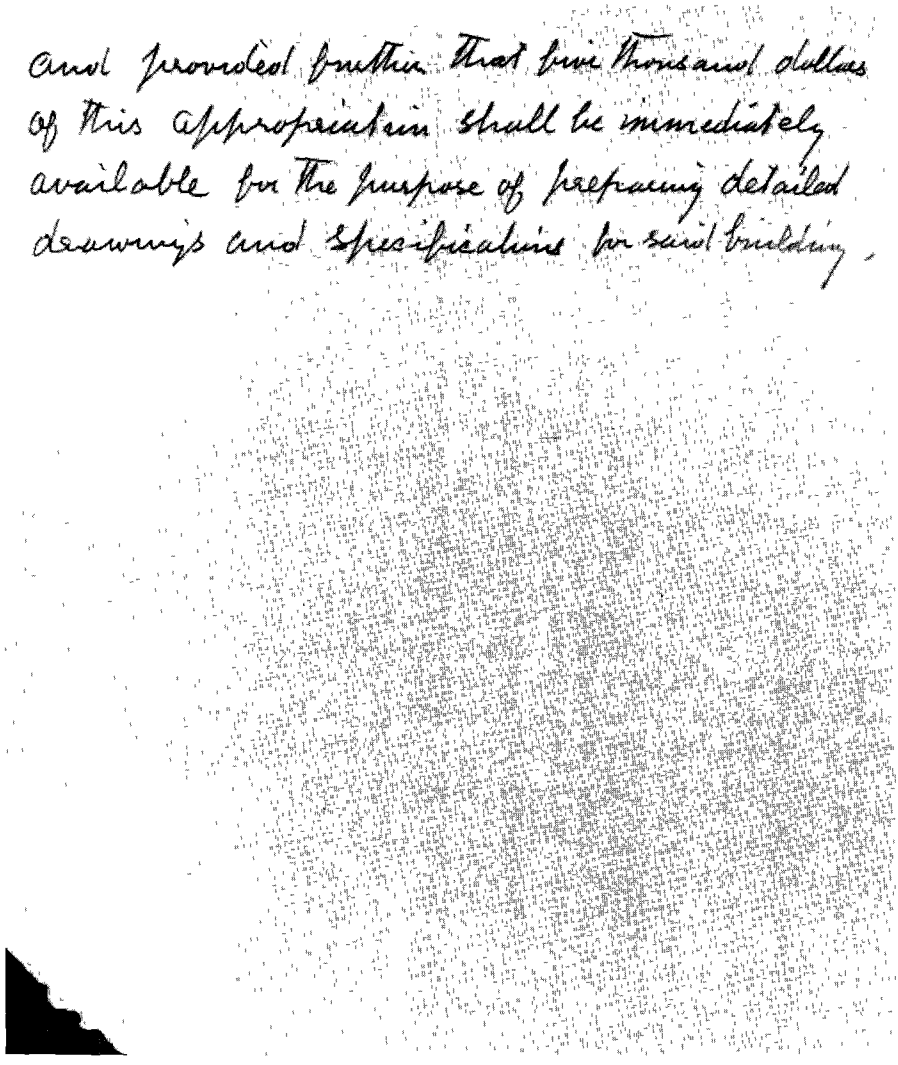


Proposed Amendment to Sundry Civil Bill

The Construction under the direction of the Officers in charge of the Construction of the State War and Navy Department Buildings Army of a fireproof brick building to contain the Medical Museum and Library of the Surgeon General's Office U.S. Army, two hundred Thousand dollars ($200.000.00) provided that said building shall be erected upon the Government reservation in the vicinity of the National Museum on a site to be selected by a Commission Composed of the Secretary of the Smithsonian Institution, the Architect of the Capitol and the Officer in charge of the Construction of the State War and Navy Department buildings and in accordance with plans submitted by the Surgeon General of the Army, subject to the approval of said Commission

Billings' hand-written proposal for legislation to authorize construction of, and appropriate funds for, a Library-Museum building, 1883.

orial; Gross, Flint, Tobias Richardson (a former AMA president), David Yandell (another ex-president), and Henry Campbell (a future president). Their memorial carried considerable weight; it was quoted in debate and was printed in journals and in Senate and House documents dealing with construction of the Library-Museum Building.[37]


and provided further that five thousand dollars of this appropriation shall be immediately available for the purpose of preparing detailed drawings and specifications for said building,

Civil War Pension Records

During the years that had elapsed since the end of the Civil War the Medical Department had been receiving more and more requests for information from veterans seeking pensions. By 1882 the backlog of applications had become so large that Congress ordered the employment of more clerks. There was no room for additional workers in the Pension and Record Division on the first floor of Ford's, and the government rented buildings number 935, 937, and

939 F Street, on the northeast corner of Tenth and F, for use as file rooms and offices for the new employees.

There was now another argument in favor of constructing the Library-Museum Building. The government could transfer the clerks and files from the F Street building to the first floor of the new structure and save the money it was paying in rent. At the rate pension applications were arriving, the F Street buildings would be needed for many years; therefore savings would amount to a considerable sum if the clerks could be moved. From 1883 to 1885 the Surgeon Generals emphasized the potential savings, and undoubtedly this was taken into account by economy-minded senators and representatives.[38]

Attempt to Reduce the Appropriation

In early 1883, Billings had to concentrate on blocking another attempt to cut in half the Library-Museum appropriation from $10,000 to $5,000. S. Weir Mitchell talked to Senator Thomas Bayard and learned that Senators John Logan and Preston Plumb were responsible. These two had been among the chief congressional critics of the National Board of Health, and one wonders if they were not trying to scuttle Billings. Senators Bayard and John Mitchell promised S. Weir Mitchell that they would help the Library-Museum obtain its usual amount. Representative McLane told Christopher Johnson that he would assist in the House. Virgil Cubney, New York Academy of Medicine, marshaled physicians to put pressure on Senators Logan and Elbridge Lapham. Undoubtedly, other senators were asked to help by officers and Billings' friends; and before the Army Appropriation Bill went to the President for approval, it granted the Library and museum the regular amount of $10,000.[39]

Suggested Merger With the Library of Congress

As a coincidence, during the same period in which Billings was seeking a building for the medical library, Congress was discussing the construction of a building for its own library. The Library of Congress, then located in the Capitol, was so crowded from continual purchases, gifts of books, and deposits of copyrighted publications that Librarian Ainsworth Spofford had gloomily forecasted that it would become "the greatest chaos in America."[40]

Congress had decided that the Library building would be located on Capitol Hill, and for several years legislators, architects, and librarians had been debating about the design, size, and interior arrangement of the structure. A question that had to be answered before the final plans could be drawn was this: should all government libraries (Agriculture, Patent Office, Geological Survey, State Department and so on) be merged into the Library of Congress and placed in the new building? There were logical arguments for (convenience of all books in one place instead of dispersed, prevention of duplication, economy) and against (inconvenience to the departments, preference of users) doing this.

The debate over this matter was of utmost importance to Billings If those legislators who favored consolidation of government libraries won, the Surgeon General's Library would be split eventually from the medical museum and moved into the Library of Congress building, where it might be kept intact, but lose some, most or all of its independence To counter the reasons for merging libraries, Billings used several arguments that he repeated over and over, persuasively, in letters to and in talks before societies He pointed out that the museum, which was by now the most famous medical museum in the Americas and Europe, needed the Library adjacent to it for ready reference by scientists working on a variety of subjects He maintained that medical libraries served physicians best, were preferred by the profession, and flourished when kept apart from general libraries Writing to William Poole, head of Chicago's Public Library and an influential leader in the expanding library profession, he expressed his views concisely [41]

> Mr Spofford thinks that it should be merged with the general national collection as soon as he has secured a building large enough to receive it, his idea being that the National Library should absorb all the special collections in Washington Now putting aside all personal feeling in the matter, which I am quite willing to do for the general good, it seems to me that this is a mistake and that it is better to keep such special collections, medical and scientific, as the library of the Surgeon General's Office, of the Geological Survey, of the Astronomical Observatory, of the Patent Office, and all natural history pertaining to the National Museum, under separate and distinct management, and for them to receive distinct appropriations, as at present The scientific and medical department of great national libraries, such as those of England, France and Germany, are very little used by scientific and medical men who prefer to resort to special libraries, under the direction of special librarians for the works which they need The very rapid progress and comparative completeness of this library is largely due to the great interest which has been taken in it by the medical profession of the whole country, who contribute largely to its files and take care to see that it is supplied with that large mass of miscellaneous, current medical matter, which does not come into the book trade, is not copy-righted, is very ephemeral, and to secure which is one of the greatest difficulties of such a library [42]

Billings advanced the same reasoning, with more detail, to impress physicians attending the 85th annual session of the Medical and Chirurgical Faculty of Maryland,[43]

> Why then is it that they [British Museum and Bibliothèque Nationale] do not contain all medical books which have ever been printed, and that your medical library in Washington, which is only about twenty years old and has never had in any one year funds sufficient to purchase more than two-thirds of the medical books printed in various parts of the world during that same year, should already be equal if not superior to them in practical value? It appears to me that it is very largely due to the fact that while the Washington library is the National collection, it has been kept separate from the general National library As a matter of fact, comparatively little use is made by medical writers of the collection in the British Museum or Bibliotheque Nationale They

> consult, in preference, the special medical libraries in London and Paris. . . . It is to such special libraries that physicians give their books and pamphlets; and the rapid growth of the Washington library is largely due to this cause. . . . Now, so long as the library can preserve and extend this feeling of interest in its completeness, so long it is sure to grow in value and usefulness, but if it be merged into a general National library this interest will rapidly diminish. It is not to be expected that the manager of a large miscellaneous library . . . should also be familiar with the various departments of scientific literature. . . . I think therefore that you will do well to see that a proper and commodious fire-proof building is provided for your Washington collection, that it is not merged into the Congressional Library, and that it is granted sufficient funds to enable it to secure all new medical books as they are published, and gradually to collect the best of the older literature.

In order to persuade senators and representatives to accept his viewpoint, Billings asked his small army of lobbyists to emphasize in memorials, petitions, and resolutions their desire that the museum and Library not be separated, and that the Library remain under the management of the Medical Department.

Although Spofford favored merging all government libraries into the Library of Congress, he did not push his views vigorously. If he had he probably would have won, for he mingled with representatives and senators every day at the Capitol. But an anonymous person, perhaps someone in the Library of Congress, who was not as gentlemanly as scholarly, book-loving Spofford, initiated a virulent attack against the independence of the medical Library in the *Washington Sunday Herald.*[44] The writer stated that Billings had earlier asked Spofford to help him get appropriations for the Surgeon General's Library, promising to keep publications only until the *Medical and Surgical History of the War* was completed when they would be given to Library of Congress. Spofford, believing he would receive the publications, stopped ordering medical books. The history was now completed but

> Dr. Billings and all of his associates are very indignant at even the idea of consolidating this medical library . . . with the Library of Congress. If the library were placed under Mr. Spofford's charge it would be accessible to the medical profession. As the affair now stands, the collection, which is one of the best in the United States, and one of the finest in the world, is held for the exclusive benefit of a few people in the Surgeon General's Office and their freinds. And even they make no use of the library which can in any way benefit the public. Aside from the Medical History of the Rebellion, which was a more compilation of other peoples' writings by Dr. Woodward and his associates, this library has published nothing. It is the clearest possible case of a very insignificant and surly dog in a richly-stuffed manger.

This article would have angered a saint had it been directed toward him, and it probably infuriated Billings temporarily, but he contacted the editor or a reporter and with his customary tact and diplomacy gave his account of the development of the Library. The result was that a longer, more detailed article appeared the following Sunday, praising the Surgeon General's Library and supporting Billings' campaign for a new museum-library building.[45]

Notes

[1] Smart, "The Army Medical Museum and the Library of the Surgeon General's Office," *JAMA*, 24 555 (1895)

[2] Letters, Huntington to Billings, June 17, 1881, Billings to Calvin DeWitt, Oct 5, 1882 MS/C/81

[3] 47th Cong , 2d sess , H Report 1995 to accompany bill HR 7681, Feb 28 1883

[4] Daniel S Lamb History of the United States Army Medical Museum, p 69

[5] *Annual Report of the Surgeon General, , 1880,* pp 17–18 The Surgeon General repeated his warning about the unsafe condition of Ford's for several years in annual reports until a new building was authorized

[6] Notation regarding letter, Barnes to Ramsay, Nov 15, 1880, and letter, Ramsay to the President, Nov 17 1880 NA Letter, Sec of War re fireproof building for library and museum, received in House, Feb 9, 1881, and referred to Committee on Public Buildings and Grounds NA

[7] The portion of the President's message referring to the need for a new building was reprinted in *Annual Report of the Surgeon General, , 1881,* pp 16–17

[8] Billings drafted the letter from Gen Barnes to Sec of War Lincoln, Nov 21, 1881, date crossed out and Dec 7 inserted NA Copy of letter, Gen Barnes to Sec of War Dec 7, 1881, submitting estimate and plans for building NA 47th Cong , 1st sess , Sen Exec Doc 65, containing letters of Barnes, Lincoln, and Arthur, extract from the Surgeon General's *Annual Report* of 1881, and three drawings and plans of the proposed building

[9] Copy, letter, Barnes to Singleton, Feb 2, 1882, NA

[10] *Congressional Record*, Feb 16, 1885, pp 1767–1770

[11] Letter, Rep William Shallenbarger to Barnes, Feb 15, 1882, MS/C/1, NLM, Barnes to Shallenbarger, Feb 17, NA

[12] Billings' list of names is attached to a copy of Senate Executive Document 65 AMM

[13] Letters, Shallenberger to Pepper, Feb 9 Oct 2, 1882, Shallenberger to H Wood, Feb 9, 1882, Thomas to Billings, Feb 20, 1882, Flint to Billings, Feb 20, 1882, Cochran to Billings, Dec 2, 1882, Dawson to Billings, Nov 20, 1882, Yandell to Billings, no date, postal card, Hibberd to Billings, Feb 13, 1882, T Wood to Billings, Oct 5, 1882, May 5, June 11, 1883, all in MS/C/1 Scranton petition, *Congressional Record*, Mar 27, 1882

[14] Copies of two different printed petitions are in NLM and AMM

[15] Letters, Johnson to Billings, Dec 9, 18, 20, 1882, Kinloch to Billings, Oct 6, Nov 18, 1883, Mastin to Billings, Sept 11, 21, 29, Oct 5, 20, Nov 15, Dec 14, 1882, Pepper to Billings, Dec 15, 1882, Conn to Billings, Sept 6, 1882, Chadwick to Billings, Dec 11, 1882, all in MS/C/1

[16] Petitions to Belmont in *Congressional Record*, Dec 5, to Aldrich, Dec 14, McLane, Dec 18, Morse, Dec 23, Peelle, Dec 27, 1882

[17] Letter, Shoemaker to Billings, Jan 30, 1882 MS/C/1 *Med Bull* 4 74 (1882)

[18] Letters, Minor to Billings, Feb 18, 1882, Dawson to Billings, Feb 7, 1882 MS/C/1 *Cincinnati Lancet-Clinic* 47 116–117 (Jan 28, 1882)

[19] *Med News* 41 577 (1882) Other items on the Library-Museum are in the same volume, pp 529, 699, and in vol 40, pp 137–138 (1882)

[20] *Nation*, Mar 2, 1882

[21] *Nation*, Oct 26 1882

[22] Meeting of the Medico-Legal Society as reported in the N Y *Tribune*, Mar 2, 1882, and reference to petition in *Congressional Record*, June 22, 1882 Letter, G F Dudley, Secy St Louis Med Soc , to Surg Gen Barnes, Feb 22, 1882, sending resolution of the society, MS/C/1 Copy of resolution of St Louis Medical Society, Feb 11, 1882, in Army Medical Museum, and reference to resolution in *Congressional Record*, Feb 28, 1882 Report of resolution of Philadelphia Co Med Soc in Philadelphia *Med Times*, p 144, Nov 18, 1882 Letter, R M Wyckoff to Billings, Nov 28, 1882, sending resolution of Medical Society County of Kings, MS/C/1 Reference to petitions of Centre District Medical Society, Alabama State Medical Association, Hudson County Medical Society, Chester County Medical Society, in *Congressional Record*, Dec 4, 11, 14, 19, 1882

[23] Resolution of American Surgical Association to the Senate requesting that the $5000 appropriation be increased to $10,000, Philadelphia *Evening Bulletin*, June 2, 1882, *Boston Med Sur J* , 106 566–7 (June 15, 1882) Letter, Richard Cleeman to Billings, June 7, 1882, sending copy of resolution of College of Physicians, Philadelphia, urging Senate to increase appropriation to $10,000 AMM Butterfield's amendment, *Congressional Record*, Apr 5, 1882, p 2632

[24] "This [reduction] has been done on the recommendation of Senator Logan and I am afraid

it will pass the Senate ", letter, Billings to Jacobi, June 3, 1882 MS/C/1

[25] "I am happy to say we have induced Senator Logan to have the appropriation restored to the amount usually given", letter, Billings to Jacobi, June 8, 1882 MS/C/1

[26] *Annual Report of the Surgeon General 1883*, pp 25–26

[27] *Annual Report of the Surgeon General 1884*, p 28

[28] Garrison, *Billings*, p 165

[29] Letter, Yarrow to Billings, Jan 15, 1883 MS/C/1

[30] 47th Cong , 2d sess , Bill HR 7861, and H Report 1995 to accompany the bill The bill and report were reprinted in 48th Cong , 1st sess , Senate Executive Doc 12, Dec 17, 1883

[31] Billings' draft of the amendment is in NLM Letter, Crane to Hawley, Mar 1, 1883, NA

[32] Letter, Johnson to Billings, Oct 11, 1883, MS/C/1

[33] Letters, O'Leary to Billings n d , 1883, Spooner to O'Leary, Jan 26, 1883, Mastin to Billings, April 1, 1883, Johnson to Billings, April 22, May 12, 1883, Cochran to Billings May 3, 1883, Wyckoff to Billings, Nov 16, 23, 1883, Richardson to A Flint, Sr , Nov 24, 1883, Parvin to Billings, May 28, 1883, all in MS/C/1 Mitchell to Billings, Dec 1, 1883 NYPL

[34] Letters, Reeves to Billings, May 4, 18, 1883, Robertson to Billings, May 12, 18, Nov 4, 1883 MS/C/1

Med News, v 42 (1883), resolutions of medical societies of Pa , p 563, Mass , p 702, Conn , p 634, N Y p 726, N H , pp 746–7, Minn , pp 748–9 Notice of these resolutions may be found in other medical journals Printed copy of resolutions of Iowa State Medical Association, dated Dec 13, 1883, typed copy of resolutions of N H Med Soc , dated Nov 25, 1883, extract from minutes of annual meeting N J Med Soc AMM

[35] *Congressional Record* 1883, Jan 5 re petition of Phila Co Med Soc , Jan 10, of Med Soc Kings Co , Jan 13, of N H Central Med Soc , Jan 22, of physicians of Beaver Co , Jan 26, of R I Letters, H F Campbell to Billings, Jan 17, 22, 24, 1883, Chaillé to Billings, Dec 29, 1883, W H Geddings to Billings, Nov 7, 1883, A Flint Jr to Billings, Nov 18, 1883 MS/C/1

[36] See, for example, *Louisville Med News* 15 40 (1883), *St Louis Courier Med* 9 43–45 (1883), *Med News* 42 419–20, 428–30 (1883), *Nation*, June 7, 1883, *Boston Med Surg J* 108 20 (Jan 4, 1883)

[37] Resolution of Amer Surg Assn , *Med News* 42 693 (June 16, 1883), *Boston Med Surg J* 108 561 (June 14, 1883) Copy of resolution of Amer Laryngological Assoc , Nov 27, 1883 AMM Resolutions of Amer Library Assn in *Med News* 43 222 (1883) and *Library J* 8 278 (1883)

Letter, Holmes to J R Chadwick, May 16, 1883, draft of petition, n d MS/C/1 Four drafts of the AMA resolution, with an attached note in Billings hand re the order of signatures, and an endorsement indicating that 600 copies were printed (undoubtedly for distribution where Billings thought it would do most good) is at AMM

The petition and AMA memorial were reprinted in 48th Cong , 1st sess , Sen Ex Doc 12, in 47th Cong , 2d sess House Report 1991 to accompany Bill H R 7681, in a pamphlet containing Bill H R 7681 and Report 1991 to accompany Bill H R 7681, and cited in later congressional debate over the building

Resolutions reported in *Med Times*, June 16, 1883, p 637, and *Med News*, June 9, 1883, p 657

[38] Letters, Surg Gen Crane to Sen J R Hawley, Mar 1, 1883, Surg Gen Murray to Rep S M Stockslager, Dec 28, 1883, Surg Gen Murray to Sen William Mahone, Dec 14, 1883, Surg Gen Murray to Rep S J Randall, chairman House Comm on Appropriations, Feb 9, 1885, NA 47th Cong , 2d sess , H Report to accompany Bill H R 7681, Feb 28, 1883

[39] Letters, Bayard to S W Mitchell, Feb 5, 1883, J Mitchell to S W Mitchell, Feb 8, 1883, Johnson to Billings, Dec 9, 1882, Gibney to Billings, Feb 2, 1883, MS/C/1 Debate in Senate on Amendment to Army Appropriation Bill H R 7077, for purpose of reducing Library-Museum appropriation, *Congressional Record*, Feb 22, 1883 *Boston Med Surg J* 108 278, 309 (1883)

[40] Lucy Salamanco, *Fortress of Freedom the Story of the Library of Congress*, (1942), p 217

[41] Letter, Billings to Poole, Sept 11, 1882 Poole in reply, Sept 14, promised to use his influence to keep the Library under control of the Medical Department Letters in MS/C/1

[42] Billings, to my knowledge, had no proof that "the scientific and medical departments of great national libraries, such as those of England, France, and Germany, are very little used by scientific and medical men " Of course physicians of Edinburgh, Lyons, Hamburg and other towns preferred the convenience of their local medical libraries rather than travel to London, Paris, or Berlin Furthermore the rapid growth of the SGL was mostly owing to Billings' exertions, not to the preference of American physicians who would have sent him books and journals whether he was housed in Ford's Theatre

or the Library of Congress. But Billings' arguments sounded reasonable, and he made the most of them.

[43] Address delivered April 1883, published in *Trans. Med. Chirurgical Faculty Maryland* 1883, pp. 58–80, and in *Med. News* 42: 507–511 (May 5, 1883), and reprinted in Rogers, *Selected papers on John Shaw Billings*, pp. 149–169. Billings devoted part of his speech, "Libraries in Washington," at the meeting of the American Library Association, Buffalo, August, 1883, to the same argument: *Library J.* 8: 199–200 (1883). Note that he told his audience that the Surgeon General's Library was "your medical library in Washington." Billings cleverly gained support of the medical profession for the Library on every possible occasion.

[44] Column entitled "Sunday Gossip," *Washington Sunday Herald*, Apr. 1, 1883.

[45] "The Medical Library," *Washington Sunday Herald*, Apr. 8, 1883. According to this account, Spofford, much earlier, had opposed the formation of other libraries in Washington, but Billings had appealed to him, pointing out that the Library of Congress was already overcrowded, that the museum needed medical books at hand for reference, and that if the Surgeon General's library was to be absorbed ultimately by LC, it would be preferable if the SGL was complete. Since that time the SGL had vastly increased, partially through congressional appropriations, but "very largely through the liberality of physicians in all countries."

X

The Library-Museum Building on the Mall

Billings Is Nominated as Surgeon General

BETWEEN 1881 and 1884 important persons in the Surgeon General's Office died. George Otis, curator of the museum since 1864, passed away in 1881. Surgeon General Barnes, head of the department for almost 20 years, retired on June 30, 1882. Charles Crane, Assistant Surgeon General from the Civil War until 1882 and then Surgeon General, died on October 10, 1883. Joseph J. Woodward, Otis' colleague in the museum, the department's best-known scientist, and president of the American Medical Association in 1882, was in very poor health and died in 1884. Billings alone remained of the officers who had developed the Library and museum from a few books and specimens into collections of national prominence.

When Barnes retired a number of physicians and scholars tried to have Billings elevated to the post of Surgeon General.[1] Billings felt that his friend Assistant Surgeon General Crane, a competent officer with 35 years service, deserved the promotion. "I did not wish my name to be urged against that of General Crane," he said later, "and wrote decidedly to that effect to my friends, though without much effect."[2] After Crane died physicians again pushed Billings' candidacy.[3] On this occasion he stated his views to Ezra Hunt, president of the American Public Health Association:[4]

> I have no objection to having my name presented to the President by those who think proper to do so, but I shall certainly not do it myself nor ask, or hint to, anyone else to do it.
>
> I presume that Dr. Baxter and Dr. Murray are urging their claims from what I see in the papers . . . Dr. Murray is the senior officer of the corps and has two years yet to serve before compulsory retirement. He is in every respect a most estimable gentleman. The difficulty is that if he is appointed the war will break out again two years hence, and the medical corps wants the thing settled once and for all. Moreover the practice of promotion in any medical corps by seniority gives bad results as you know.
>
> Now I do not consider that I have any *claims* to the office any more than any other officer who has done his duty. It is open to all.
>
> If I should be appointed I shall do my best for the interests of the Department and of the profession. I cannot say I am anxious for the place, it is a high honor, but it brings with it much responsibility and worry. I am content as I am. I

want to do what is right, and I take the duties nearest at hand. I have always found plenty of them.

Now I can only advise you to think the matter over + do what you consider best for the service and the profession. There are other comparatively young men in the corps who will fill the office well. I name Moore, Sutherland, + Huntington. Dr. Baxter you know.

Do not be swayed in the least by personal friendship in this matter—it is an important one—and I shall esteem you just as highly if you recommend someone else or if you do nothing. But if you have a decided opinion I think you ought to express it. I have written two or three letters similar to this to friends who have asked me what they should do. I cannot in the least tell them what they should do. I know absolutely nothing as to President Arthur's views nor whether he will make the appointment at once, or wait until Congress meets. To my other correspondents I have simply made one request, which I know is not necessary in your case, viz that they should not attempt to depreciate in any way the other gentlemen whose names are before the President.

On November 23, 1883 the President chose Robert Murray, who had joined the army before the Mexican War, when Billings was a boy. Perhaps it was just as well for the Library that Billings was not selected. As Joseph R. Smith, medical director, Department of Texas, told him, "You would make a good chief to our corps. I cannot but fear, however, that if you were appointed your duties as chief would much interfere with valuable bibliographic and scientific work."[5]

Murray was not a young man and his duties weighed heavily on him. He had to oversee a medical organization whose officers served at more than 150 Army posts and treated more than 40,000 cases a year. There were physical and mental illnesses, epidemics, accidents, suicides, and murders at barracks and forts. Cavalry and infantry fought Indians in the West from Montana to New Mexico—in 1880 there were at least 17 engagements in which soldiers were killed or wounded. All manner of administrative, financial, and professional problems came to rest on the desk of the chief medical officer.

Murray divested himself of some of his responsibilities by combining the museum and Library into a single entity called the Museum and Library Division, with Billings as director. This happened on December 28, 1883; thereafter Billings was curator as well as Librarian.[6] Billings now had more paper work and responsibility for larger funds. He could make or change policy for the museum, and he did this in at least one important direction, by ordering the collecting of microscopes of all styles. Known today as the Billings Microscope Collection, this is one of the finest historical collections of specialized scientific apparatus in existence.[7] The new position and title gave Billings more prestige in his attempts to gain a building, and it made easier the settling of decisions that arose later during construction.

Congress Provides a New Building

On December 3, 1883, the 48th Congress convened, and Surgeon General Murray started again on the same path that his predecessors had trod in 1880

and 1881 by requesting the Secretary of War to help obtain a new building.[8] Secretary Lincoln agreed and sent pertinent reports to the White House, where President Arthur approved and transmitted them to Congress.[9]

Two days after the session opened Senator Joseph Hawley introduced Bill S. 403, and five days later Representative William Rosecrans introduced a companion bill, H.R. 48, for construction of a building.[10] Surgeon General Murray urged Senator William Mahone and Representative Stockslager to vote for the building, but again most of the lobbying was directed by Billings. The latter thought that legislation had a good chance of passing during this session; he told Jerome Cochran, "most of the members [of Congress] appreciate the necessity for it and have evidently had some conversation with their medical constituents on the subject."[11] Nevertheless he did not slacken his efforts. He furnished Alexander Hutchins, Brooklyn, New York, information on H.R. 48 for Hutchins to incorporate into his inaugural address as president of the Medical Society of the State of New York. Hunter McGuire of Richmond, a prominent teacher and future president of the AMA, received a copy of Bill S. 403 from Billings, and wrote about it to Senator Mahone, whom he knew. Frank L. Sim, editor of *Mississippi Valley Medical Monthly*, convinced Representative Casey Young to favor legislation. Representative Theodore Lyman, who knew Billings, helped persuade Representative William Holman. Henry C. Lea wrote to Representative Samuel Randall. The St. Louis Medical Society prepared another memorial to Congress. Beriah A. Watson, influential surgeon and writer of Jersey City, induced the New Jersey Medical Society to pass resolutions favoring the building.[12]

At the end of April the American Surgical Association, and in May the American Medical Association, met in Washington. These conventions were attended by hundreds of physicians, a large proportion of them influential in their state and local medical organizations. Billings saw the opportunity for more lobbying. He was to be away at the time, so he gave the following instructions to Assistant Surgeon Washington Matthews, who had been assigned to the museum:[13]

> For about ten days . . . there will be a stream of medical men from all parts of the country visiting the Museum and Library to see everything that is noteworthy. We shall all have to act as showmen for the time being . . . It is . . . desirable that you should make yourself thoroughly familiar with the condition of the movement to provide a new Library and Museum for this department and with the arguments in favor of it. So far as the printed documents are concerned Dr. Huntington will give you all this and also tell you how the matter stands in the Committees and in Congress. Mr. Myers can show you some of the shocking defects and dangers in the present building which you may have occasion to point out to some visitors.

During the spring of 1884 Hawley's bill was reported back to the Senate, amended to increase the apropriation to $300,000 for the building and site and accepted without debate.[14] Rosecrans' bill was reported back to the House in July. The proposed building had cleared major hurdles.

But while the committees on public buildings had been looking over Library-Museum bills, other committees had been working on appropriations. Finally the estimated total of civil and military expenses became so large that members of the House Appropriations Committee were unwilling to add the cost of a new building. James F. Hibberd told Billings that Representative Stockslager had stated that the committee was sympathetic but would not recommend an appropriation. Andrew Nebinger, former president of the Medical Society of Pennsylvania, relayed a message to Billings that Representative Samuel Randall had reported that the building might have to be postponed a year or more because appropriations were high. As these legislators predicted, the bills of Hawley and Rosecrans were set aside, not to be reconsidered for many months.[15]

In January 1885, shortly after the second session of Congress convened, Representative Lyman informed Billings that he and his friends would try to have the rules of the House suspended so they could bring out the bill, and he asked Billings to send a memorandum of the most important arguments for a new building.[16]

As Lyman promised, Representative Stockslager rose in the House on February 16, had the rules suspended, and brought out Rosecrans' bill. Debate was brief, with proponents emphasizing the unsafe, crowded condition of Ford's, the desire of civilian physicians and medical societies for a new museum-library building, and the money that would be saved by transferring pension clerks from rented buildings. "The most magnificent medical museum and library in the world," said Representative John Follett, "is today exposed in a building where no private individual owning such a library would permit it to remain for twenty-four hours."

Opponents suggested that the Library be placed in the proposed Library of Congress building, the museum specimens in the Smithsonian Institution, and the records in the new Pension Building. Representative Orlando Potter prophesied that if the legislation passed, "I think it will end in a national library of medicine, a national collection of medical specimens, and finally in a national college of medicine here at the capital." The bill passed without difficulty by a vote of 121 to 23.[17]

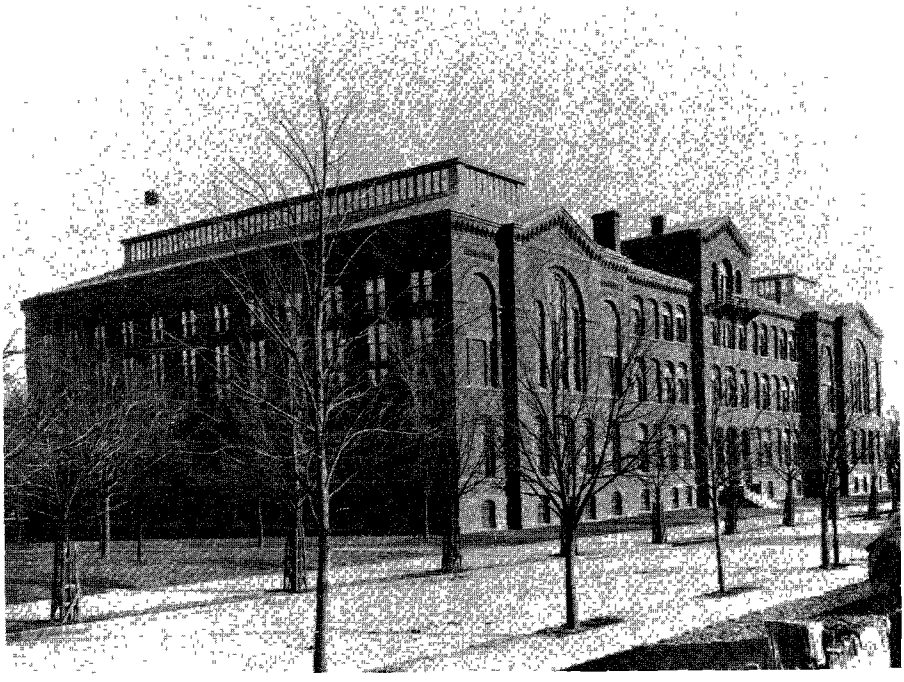
The Senate had shown by its vote on Hawley's bill that it favored the legislation. Nevertheless Billings' friends continued their pressure. S. Weir Mitchell induced Senator Thomas Bayard to talk to influential colleagues.[18] William P. Clarke, on behalf of Mitchell, visited Washington and talked to Senators Eugene Hale and George Hoar. Samuel W. Gross and Henry C. Lea obtained promises from Representative Randall of the House Appropriations Committee to aid if he could.[19] The Senate passed the bill quickly on Feb. 26, and it was signed by President Arthur on Mar. 2, two days before he left office.[20]

Construction of the Building on the Mall

The law appropriated $200,000 for a building whose design was to be approved and whose site was to be chosen by a commission consisting of the Secretary of War, Architect of the Capitol, and Secretary of the Smithsonian. Three weeks after the law was enacted, the commission selected a quadrangle of ground on the southeast corner of Seventh and B Streets, S.W., measuring 270 feet along B Street (now Independence Avenue) and 170 feet along Seventh Street.[21] During months that followed the commission approved the plans and the government advertised for bids for construction. The firm of Bright & Humphry received the contract on a low bid of $179,987.[22] Construction proceeded under the eyes of Colonel John Wilson and Lieutenant Colonel Thomas Lincoln Casey, who would become Chief of Engineers. As the work went along Billings was asked to decide such details as the color of the interior walls and concrete floor. He designed the heavy, 25-foot-high iron book stacks, which were fabricated in Trenton, New Jersey, and shipped to Washington.[23]

Construction was slower than expected because, in the opinion of the engineer officers, Bright & Humphrey subcontracted much of the work.[24] The building was not ready by the expected time, February 1, 1887, and the pension records and clerks had to remain in the F Street building, forcing the government to continue to pay rent. Finally the officers compelled the contractor to complete floors and rooms in a certain order so that the Pension and Record Division could move in, even though carpenters and laborers were still scampering around on scaffolds. Among the economies practiced by the builders was the use of secondhand brass knobs on the front doors. These knobs lettered "Public School City of New York" were still giving visitors a laugh three-quarters of a century later.

By the time the building was finished inside and out, Congress had appropriated $245,550; $200,000 in the original act, $38,050 on August 4, 1886, for iron stacks, museum cases, gas fixtures, and furniture, and $7,500 on March 3, 1887, for additional items. The completed structure consisted of a building 112 feet long and 55 feet wide, connected to two wings, each 60 feet along the front and 131 feet from front to back. The center was four stories high above the basement and was divided into offices and workrooms. The first floor of the museum wing contained rooms for scientific work. Above was Museum Hall, 47 feet high from floor to peak, with a gallery circling the hall. The first floor of the library wing was occupied by pension files—it was expected that as time went by and the use of Civil War records decreased, the files could be moved to storage and the first floor be taken over by the Library. Above was the large Library Hall with its bookstacks, desks, and chairs. Both wings could be sealed off from the center building in case of fire, although the entire structure with its brick walls, concrete floors, and ironwork was practically fireproof.[25]

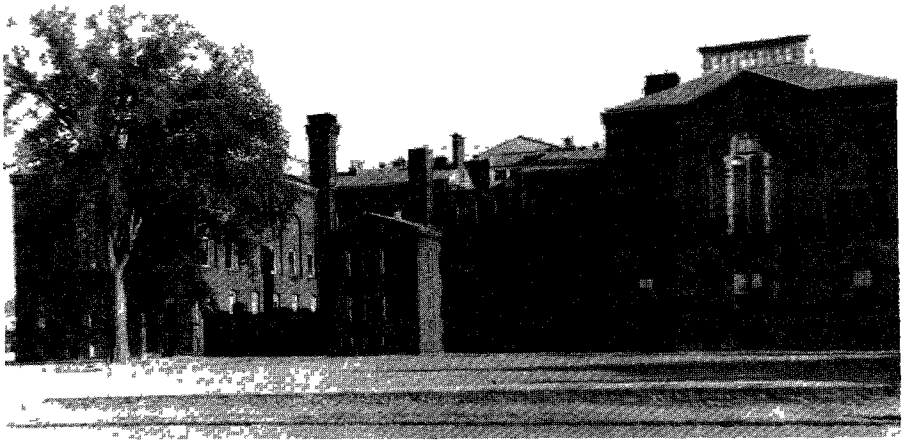


The Library-Museum building shortly after it was completed. Trees had recently been planted along B street, now Independence Avenue.

The Library had no artificial illumination. Light entered through 18 side windows, each 16 feet high and 5 feet wide, through large windows at the front and back, and a clerestory. Lighting proved to be adequate except on overcast, stormy days. There were gas lights in the rooms in the center section and in the large room under Library Hall. Later, in the early 1900's the building would be wired for electricity, but inadequately; in Library Hall only four droplights, consisting of incandescent bulbs with green metal shades over them, would be installed.

The building was heated by hot air flowing through ducts and registers from a coal-fired steam boiler. Rooms in the center section had fireplaces in which clerks could burn wood in the winter.[26] Library Hall was so cavernous that it proved impossible to warm adequately on extremely cold days.

The cast iron book stacks were three levels high, 7 feet 9 inches between levels. The cast iron floors were perforated to allow light to pass through so that messengers would be able to read titles on books. But the light was found to be so dim after the books were emplaced that messengers had difficulty deciphering titles; later, after flashlights were invented, they used these handy



Back of the building The Library wing is on the right, Museum on the left

appliances Shelves were oak The estimated capacity of the hall's 22 stacks was 150,000 volumes

Some of the furniture came from Ford's, the remainder was new It represented the standard office and library equipment of its time, including 11 revolving bookcases, 11 hatracks, 5 water coolers (filled with ice and water each morning), 11 washbowls and pitchers, 78 spittoons, 11 library tables, 42 office revolving chairs, 277 stationary chairs and 4 typewriters (typewriters were still primitive and were not in general use) [27]

In the original design a small one-story structure projected from the center rear of the main building to house the boiler, toilets, and lavatories Billings eliminated this structure when Congress reduced his estimate from $250,000 to $200,000 After Bright & Humphrey offered to erect the main building for $179,987, there remained $21,013 At Billings' request this was applied toward the cost of a small two-story annex, 52 feet long and 24 feet wide, in the rear courtyard, joined to the main building by a covered walkway In the basement of the annex were placed steam boilers, pumps and coal bins, on the first floor toilets and lavatories, and on the second a pathological and a biological laboratory [28]

Library buildings of the late 19th century were generally designed for classic beauty or in a style that agreed with the architectural taste of the day rather than as practical work places for readers and librarians Billings did not do this, he based the design of his building on its function How much, if any, he may have influenced later library builders is not known The Library-Museum Building had flaws not anticipated by Billings but revealed by time and use

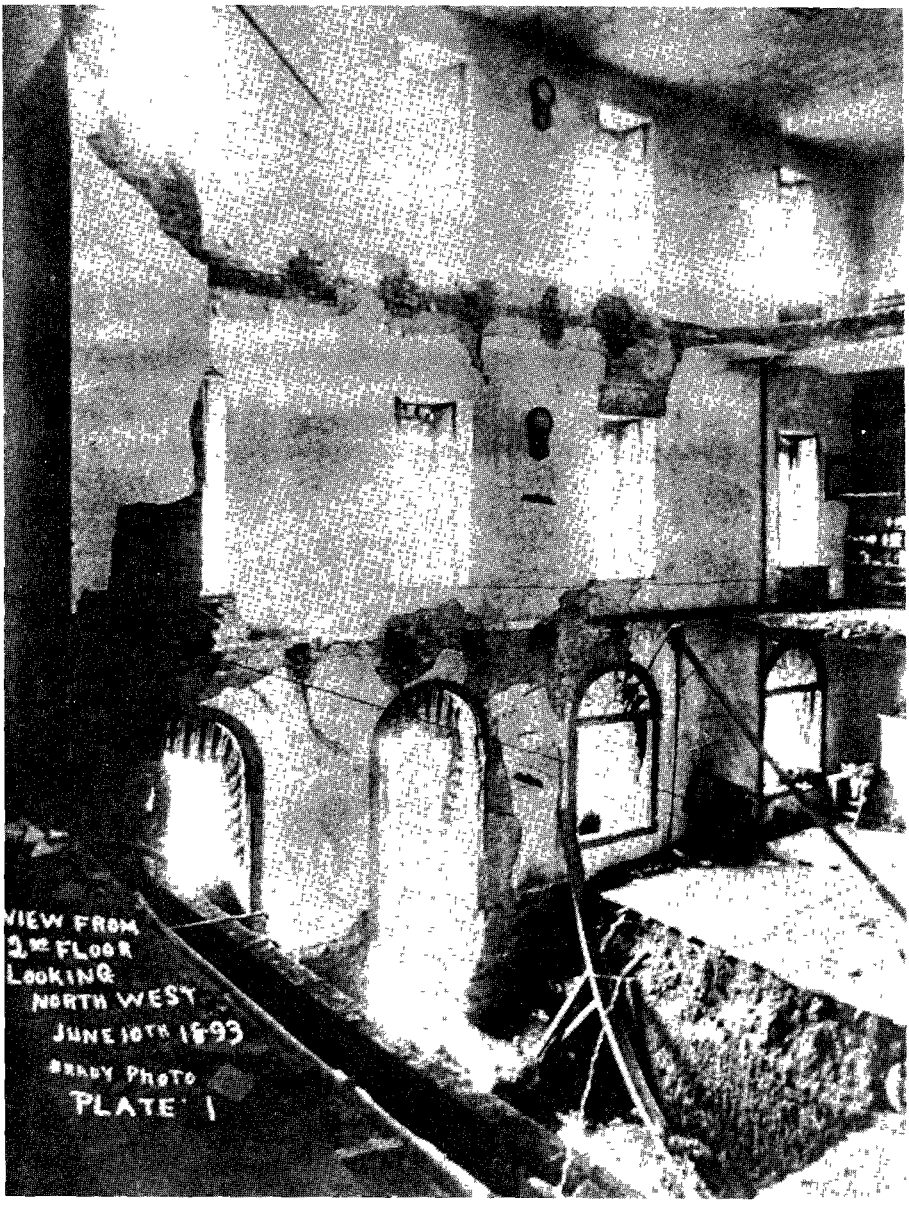
THE MOVE FROM FORD'S THEATRE

The transportation of books, journals, museum specimens, scientific apparatus, and other items from Ford's Theatre began in August 1887 and lasted for several months. On August 16 Billings packed up his papers in Ford's and moved to the new building.[29] The next day Library clerks began packing books into wooden boxes and lifting them onto a wooden chute which extended from a second story window of Ford's out over the sidewalk to the curb. The boxes slid down the chute to a waiting dray, were caught by draymen and stacked in order. For many days Washingtonians could see wagon loads of crated books being hauled by teams of horses down Tenth Street toward the building on the mall.[30] On August 31 the last of the books and staff left Ford's Theatre. In the afternoon a clerk opened the Register and wrote in the margin: "First entry in the new building." Then he accessioned Leon Buczwinski's *Poradnik Weterynaryjny* (Veterinary Advisor), assigned it number 119,109, and jotted this reminder: "In the new building. Aug. 31st 1887. (2 p.m.) cool + pleasant."[31]

After the Library and museum departed from Ford's Theatre the government did not close the building but moved in hundreds of clerks and continued to use it for the Record and Pension Division. It is a pity that Congress and the Administration did not heed the warnings of Billings and his associates that the structure was unsafe, for during renovations a few years later on June 9, 1893, the interior collapsed, crushing 22 persons to death and injuring 68 others. Had the Library and museum still been in Ford's they would have been badly damaged, and today there might not be a National Library of Medicine.[32]

The development of the Surgeon General's Library from a collection of a few hundred volumes whose existence was scarcely known outside the Army Medical Department into the largest, most diversified medical library in America, housed in its special fireproof building, known throughout the Western world through its *Index-Catalogue*, within a time span of a quarter of a century, was a remarkable achievement by Billings. But it was possible only because his superior officers, Surgeons General Barnes, Crane, and Murray, were good managers who delegated authority to him, allowed him to proceed in his own way, and backed him with their influence when he needed it. And perhaps it was possible only in the tightly knit profession of medicine, with its network of communications based on meetings, journals, and transactions, its members disseminated throughout the United States, and its influential personal relationship between physician and patient.

Billings' feat in obtaining a building from Congress within a period of 7 years is all the more remarkable because he was involved in so many other activities, among them the American Medical Association, the National Board of Health, the American Public Health Association, over which he presided in 1879–80, the international medical congresses of 1881 and 1884, the construction of Johns Hopkins Hospital, the design of an Army-Navy hospital at Hot Springs, Arkansas, in 1882, lecturing at Johns Hopkins and Columbia, and



Interior of Ford's Theatre after a portion of the interior collapsed. On the second floor, right, may be seen a balcony and shelves, probably left behind when the Library moved. The Library and Museum were fortunate; one may imagine how badly they would have been damaged had they remained in the building.

writing more than a score of articles. He even tried his hand at research, in collaboration with Washington Matthews, making composite photographs of skulls in the museum. And while he left the routine operation of the Library and museum to others, he had to concern himself with the finances, purchases of unusual items, and the adjudication of unusual matters that arose.

The Library in the New Building

In the new building books and bound periodicals were shelved in Library Hall, current and recent journals in an adjacent room in the center section called the reading room. While Billings was preparing to move from Ford's he devised a new classification for monographs. He divided medical literature into 30 groups, as anatomy, anthropology, biography, biology, and so on, and many of the groups into subgroups, as circulatory system into aneurysm, apoplexy, blood, hemorrhage, heart, pulse, and sphygmograph. Within each group books were placed alphabetically by author.[33]

When the library was moved, Billings had volumes arranged in the new stacks in a manner most convenient for the clerks and messengers, works used most often being placed on the ground level, those called for least often on the top level. On the ground, first, or A level were placed bound medical periodicals by countries, transactions of societies by localities, folios, bound French dissertations by universities, and miscellaneous literature. On the second or B level were placed monographs, unbound dissertations by universities, and bound chemistry, pharmacy, dentistry, and veterinary periodicals. On the third or C level were placed Japanese and Chinese books, incunabula, manuscript volumes, bound and unbound pamphlets, scientific periodicals, and documents.

Billings considered designating each monograph by a double number, the first part being the accession number, the second a number indicating the book's place in its subgroup.[34] Apparently he concluded that a double number was more than was needed, and instead he used a short combination of letters and numbers that told the book's location in the stacks. For example, A, 1, 3, 5 meant level A, range number 1, compartment or section number 3, shelf number 5 (from top).[35] Later the designation was modified somewhat, as $A^{27}/_{5\text{-}2}$ meant A level, 27 compartment, 5 shelf, 2 partition. The number was not painted on the spine but written on a label pasted inside the front cover.

Billings, Fletcher, and the clerks occupied rooms in the center section of the building. More than half the remaining rooms in the center were assigned to museum employees, officers in charge of pension records, and other officers of the Surgeon General's office.[36]

The staff now consisted of a Librarian, Billings; a principal assistant librarian, salary $2,250 a year, Fletcher; a contract surgeon, Wise; 18 clerks, and 1 or 2 messengers. The principal assistant librarian took charge when the Librarian was away, and had more or less general supervision of the preparation of the *Index-Catalogue* (depending upon the amount of responsibility the librarian,

the official editor, wished to delegate) In the 1890's an assistant librarian would replace the contract surgeon Of the clerks (class I, $1,200, class II, $1,400, class III, $1,600, class IV, $1,800), one had general charge of library operations, one handled accounts and correspondence, one was in charge of the reading room, one prepared volumes for binding, two (assisted by messengers) ran Library Hall, three accessioned and cataloged, four prepared copy for the *Index-Catalogue*, and five carded and indexed for the *Catalogue*

The number of readers each day or year is not known precisely Beginning in 1888 a register, in which visitors were asked to sign their names, lay open on a desk in Library Hall, but some visitors did not see it or ignored it [37] Army and Navy medical officers, of which there were many, were not required to sign Some reseachers and writers came to the Library every day for months but signed once or infrequently It was estimated that 5,000 readers used the collections each year

A visitor to the Library consulted the *Index-Catalogue* (and *Index Medicus* if need be) If absolutely necessary, with permission from the Librarian or principal assistant he could consult the card catalog into which indexers continually filed subject and author cards for the printing of future volumes of the *Index-Catalogue* [38] The editors were reluctant to allow patrons to handle the cards for fear they might withdraw or misfile one After the visitor chose the titles he filled out a form for each volume he desired and handed it to the clerk A messenger located the volumes in the stacks and carried them to the patron Upon leaving the Library the reader returned the volumes and received the form Few books were stolen

Thomas S Cullen of Johns Hopkins, who visited the Library frequently, remembered the institution thus [39]

> In January 1892 I became an intern in the Department of Gynaecology, under that wonderful surgeon, Howard Atwood Kelly Dr Kelly ran into many interesting and unusual cases and suggested that his assistants publish these
>
> We adopted his suggestion and before long some of us found out that much time could be saved by running over to the Surgeon General's Library in Washington to look up the literature on a given subject The university had made an arrangement with the Baltimore and Ohio Railroad whereby the members of the hospital staff who desired to visit the Washington library could buy round trip tickets for a $1 25 This was a great help to those of us who had little or no money Before the Washington Union Station was built, the B and O Station was about four squares further downtown and from there we easily reached the library which was then and still is at the corner of 7th and B In later years, many of us went by the Pennsylvania Railroad, got off at 6th street, left the station by the back way, walked across the lawn and in two or three minutes were at the library
>
> Frequently, before going to Washington, we would consult the *Index-Catalogue* and later the *Index Medicus*, to see what had been written on a given subject Upon reaching the library, we would go to the reading room and write out on separate cards the books that we desired
>
> Seated at a desk in the reading room was a frail looking man with curly white hair He had at one time edited a small paper in his home town and later came

to Washington and took charge of the reading room in the Surgeon General's Library Harry O Hall was one of the most accommodating men I have ever met and all of us who used the library had a very warm spot in our hearts for him

He would collect our cards, take them out and give them to the men in the stacks The majority of these men were old and rather feeble but they, too, rendered excellent service

We invariably went back to original sources, for example, if a man reported a case and then analyzed the records of twenty other cases, we just abstracted the case of the author in question and while doing this Mr Hall and his associates looked up the twenty articles referred to in the article we were studying In this way we were able to see the pictures accompanying each article and, at the same time, could draw our own conclusions as to the exact condition in each case

We of the medical profession owe much to those men who were so patient and who cooperated with us in every possible way

* * * * *

For years on one Saturday afternoon each year I would take over a Pennsylvania Railroad carload of fourth year students to the Surgeon General's Library Colonel John S Billings would then give us a clear picture of how the library started and of what it now contained, and would tell us how best to use the library No one else was better able to give us this information as it was Dr Billings himself who was largely responsible for this wonderful library

As in Ford's Theatre Billings would not permit patrons to roam the stacks of the new building His rules were posted for all to see [40]

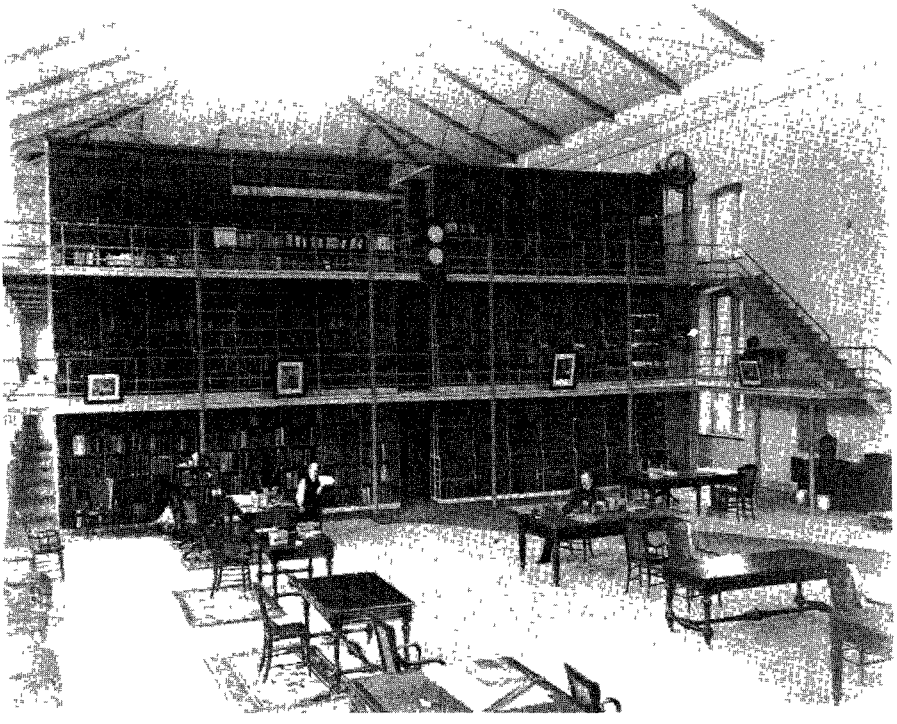
No persons, except the employes of the Library, will be permitted to take down books from, or replace them on, the shelves

Whenever a book is taken from a shelf and is not to be immediately returned, a card must be put in its place showing where it has gone

All persons other than Library employees wishing to examine books on the shelves must apply to Dr Wise for permission, and will be accompanied either by Dr Wise or by one of the employes of the Library Hall while they are in the alcoves Such permission will be granted only in special cases and for good reasons Experience has shown that the allowing persons other than the Library employes to enter the alcoves gives rise to disarrangement of the books and to possible loss

For local readers who wished to borrow books, Billings posted another set of rules [41]

The Library of the Surgeon General s Office, U S Army, is a reference, and not a lending Library To aid the researches of physicians residing at a distance, certain books are sometimes loaned for short periods, but, as a rule, it is expected that physicians residing in the District will consult the books which they wish to see at the Library itself, where every facility will be given them for that purpose Books will not be loaned to under-graduates in medicine Unbound books and pamphlets and common text books, manuals, and compends will not be loaned No book which cannot be readily replaced if lost or injured is to be loaned, and the Officer in charge of the Library is instructed to require in each case of loan a deposit of money amply sufficient to replace the book if lost or injured



Library Hall on a quiet afternoon shortly after the building opened. At the desk on the left is Thomas Washington Wise, in charge of library operations. Working at a table on the right is John Shaw Billings. At the right end of the stacks is a dumb waiter, used to move books up or down.

Library Hall and the rest of the building were kept neat and tidy in contrast to later years when it became crowded, dirty, and run down. It was swept and dusted every day, and floors were mopped once a week. Spitting on the floor was forbidden; signs on the wall prohibited it. But spittoons were distributed liberally about the building until at least the World War I era, and janitors had orders to "wash all spittons in very hot water" every morning. Readers were permitted to smoke, although the staff objected to the leaving of smoldering cigars or cigarettes on tables instead of in ashtrays.

Billings, Fletcher, Wise or others had arranged exhibits at least occasionally on the crowded second floor of Ford's. Now with more space available they set up exhibits frequently, sometimes for national medical or scientific meetings, for commemorative or historical purposes, or on special occasions, as the display of the publications by and about Florence Nightingale following her death in 1910.[42]

In Ford's Theatre the Library had been too crowded to be used as a hall for scientific and medical meetings, but the museum had served the purpose.

On the evening of a meeting clerks pushed the moveable museum cases to the side, leaving a large open area in which they placed rows of chairs facing a table for the speaker The Cosmos Club held its charter meeting there, the Chemical Society of Washington was organized in the building, and the Philosophical Society of Washington met there

The new building was much more spacious than Ford's Billings and his succesors regarded the use of their facilities by societies as another service to the public They were very liberal in granting permission for local and national groups to assemble there, among them the American Medical Association, Congress of American Physicians and Surgeons, Association of American Physicians, American Pediatric Society, and Medical Library Association

The inaugural meeting may have been the Congress of Physicians and Surgeons in 1888 Billings presided over this gathering His personal guest was an influential German physician Friedrich von Esmarch, whose wife was a princess During a reception the princess asked one of the old retired soldier clerks, assisting with the refreshments, for champagne The staff had only prepared nonalcoholic punch The clerk sidled up to Fletcher and asked nervously, "Doctor, what shall I do, the Princess asked for champagne!" Fletcher whispered calmly, "Give the lady what we have, she will understand " And so she did

The First Intruder in the Library-Museum Building
The Army Medical School

Billings expected that the new building would remain the uncluttered home of the Library and museum, with free space into which both units could expand in an orderly manner as time passed by This is the way events proceeded until 1893 Then George M Sternberg, one of the greatest and most productive American bacteriologists, was appointed Surgeon General One of Sternberg's first acts was to establish a graduate school for new officers

Aside from good reasons for instructing young officers in certain branches of medicine, Sternberg was probably permitted to set up this school because it did not cost the Army anything He placed the school in the Library-Museum Building, obtaining instructional materials from Medical Department supplies, and appointed older, experienced officers as teachers Two large rooms on the museum side of the building were converted into bacteriological and chemical laboratories, the museum specimens being placed in storerooms Office space for the faculty was set aside in adjacent rooms Instruction began in November 1893 The course was 4 months long Walter Reed, curator of the museum, lectured on clinical and sanitary microscopy, Sternberg on bacteriology, Billings on military hygiene, Fletcher on medical jurisprudence, and several other officers on different subjects This small, makeshift organization developed into an excellent school, the first school of public health and preventive medicine in the United States

If the intrusion of the Army Medical School into the building had been

temporary, the major tenants might not have suffered, but the school was to remain for a generation, eventually squeezing the Library and museum severely [43]

Billings' Last Days at the Library

In 1889 Henry C. Lea, a wealthy publisher and property owner of Philadelphia, listened to the persuasions of William Pepper, provost of the University of Pennsylvania, and promised to donate money for the erection of a laboratory of hygiene under certain conditions, these included the raising of an endowment by the university and the hiring of Billings to direct the laboratory. Pepper almost immediately rode the train to Washington and pressed Billings to accept the job, which Billings did under conditions [44]. The completion of the *Index-Catalogue* was one of Billings' goals and he would not leave Washington yet, but he agreed to resign from the Army, move to Philadelphia and join the university after it was finished. During the interval he would, if the Surgeon General permitted, plan the laboratory, direct the university hospital, and lecture on hygiene and vital statistics. The Surgeon General, almost always cooperative in the professional advancement of his colleagues, allowed Billings to assume these outside tasks.

The university appointed Billings director of the hospital as of January 1, 1890. Officers of the Army Medical Department and Public Health Service stationed in Washington occasionally taught in medical schools of the city, but Billings may have been unique in directing a hospital 125 miles away.

While Billings was being recruited by the University of Pennsylvania, the time approached when Surgeon General John Moore would reach the compulsory retirement age of 64. Prominent physicians urged President Harrison to appoint Billings to the post. Oliver Wendell Holmes told the President that Billings was "one of the very ablest men I have ever known in the medical profession," and S. Weir Mitchell called him "the most distinguished surgeon the Army medical corps has produced."[45]

But Billings' opponent was Jedediah Baxter, slightly higher on the seniority list and, more importantly, a personal friend of the Secretary of War and physician to the President. Billings never had much of a chance. Baxter was appointed on August 16, 1890, the day Moore retired.

Baxter was only 53 and expected to be Surgeon-General for a long time, but he was felled by a stroke only 4 months later and died on December 2, 1890 [46]. Billings' supporters again pushed his candidacy, but President Harrison looked at the seniority list and selected the ranking officer, Charles Sutherland [47]. This was the last time that Billings allowed physicians to mount a campaign to persuade a President to appoint him Surgeon General of the Army.

Billings began to lecture at the University of Pennsylvania in the autumn of 1891, and he planned the laboratory, which opened in February 1892 [48]. Busy as he was with the Library and museum, editing the *Index-Catalogue* and *Index Medicus*, and engaging in other matters (as assisting the Census

Bureau with the census of 1890), he found time to direct investigations in the new laboratory[49] and plan the William Pepper laboratory for research in clinical medicine, opened in 1895.[50]

In the spring of 1895 Billings finally finished his "labor of love," as he called the *Index-Catalogue*. Without the local fanfare or publicity that might be expected to accompany the departure of the department's most widely known officer, he relinquished control of the Library and Museum Division on August 20, 1895.[51] He moved to Philadelphia and into a house he had purchased in the center of town on October 1, 1895, the day he retired from the Army.

Not long afterwards, a survey of 120 medical literature collections in the United States showed that the Surgeon General's Library had leaped ahead of all other medical libraries. It contained approximately 124,000 volumes and 210,000 pamphlets compared with the closest, the library of the College of Physicians in Philadelphia, started in 1788, with 54,000 volumes and 34,000 pamphlets, and the library of the New York Academy of Medicine, 1847, with 50,000 volumes and 15,000 pamphlets. Newberry, a general library in Chicago followed with 30,000 volumes and 25,000 pamphlets. The size of lesser libraries dropped rapidly with more than 90 percent having fewer than 10,000 volumes and more than half fewer than 3,000 volumes.[52]

Before Billings arrived the Library had received an occasional gift or exchange. After 1871 gifts and exchanges had become commonplace. Statistics kept from 1886 onward show that from 5 percent to 50 percent of the books acquired annually were donated.[53] In 1895 it was estimated that one-sixth of the Library's books and pamphlets had been acquired by gift or exchange. By then the Library owned 73,475 books, 135,844 pamphlets, and 2,614 volumes of pamphlets, each volume containing several pamphlets;[54] Therefore, 11,912 books, 22,640 pamphlets, and 435 volumes of pamphlets had been acquired in these manners, assuming the same proportion of each. "There are few medical writers now living who have not sent to the library at least one pamphlet." Billings wrote in that year.[55]

In a quarter century Billings had developed the largest medical library on the continent, perhaps in the world; had made it the most widely used library, available to tens of thousands of physicians; and had furnished guides, the *Index-Catalogue* and the *Index Medicus*, to the world's good medical writings. The SGL was the largest special research collection in the United States in any branch of learning, with possible exception of two or three libraries devoted to history. Billings had not done this without help; officers of the Medical Department had supported him, his co-workers in the Library had followed where he led, and Congress had provided him with more funds, up to $10,000 a year for literature alone, than the trustees of any other medical library in the country gave their librarians. But Billings was the brain that directed the body, and without him the Library of the 1860's might have remained a small departmental collection used mainly by Army officers, and there might not have

been finding aids comparable to the *Index-Catalogue* or *Index Medicus* until a later era.

Expansion of the Library During the Billings Era
(Billings Became Librarian in the Fall of 1865)

Date	Volumes	Pamphlets
October 23, 1865	2,282	
June 12, 1868	6,984	
June 30, 1871	"about" 14,000	
June 30, 1872	"about" 19,000	7,000
June 30, 1873	"about" 25,000	15,000
June 30, 1878	"about" 46,000	50,000
June 30, 1879	"about" 49,000	53,500
June 30, 1880	"about" 51,500	57,000
June 30, 1881	"about" 54,000	60,200
June 30, 1882	"about" 57,000	63,700
June 30, 1883	"about" 60,900	68,700

Date	Bound Volumes				
June 30	Journals	Transactions	Theses	Pamphlets	Books
1884	22,050	3,229	1,385	1,149	37,925
1885	23,039	3,440	1,385	1,213	43,412
1886	24,116	3,532	1,385	1,331	46,368
1887	25,337	3,649	1,385	1,562	53,192
1888	26,891	3,766	1,385	1,768	55,602
1889	28,009	3,981	1,531	1,818	58,612
1890	29,017	4,156	1,574	1,925	61,214
1891	30,048	4,305	1,574	2,039	64,003
1892	31,212	4,504	1,663	2,073	67,748
1893	32,215	4,699	1,663	2,258	69,818
1894	33,297	4,913	1,663	2,604	72,090
1895	34,345	5,067	1,762	2,614	73,475

Date	Unbound Volumes		Total	Total
June 30	Theses	Other Pamphlets	Volumes	Pamphlets
1884	38,583	47,920	65,738	72,219
1885	40,524	55,399	72,719	95,923
1886	42,212	64,419	76,732	106,631
1887	45,279	74,374	85,165	119,653
1888	47,894	82,756	89,412	130,614
1889	49,785	91,199	93,951	140,984
1890	49,407	99,670	97,886	149,077
1891	50,801	104,520	101,969	155,321
1892	53,442	112,564	107,200	166,006
1893	53,693	119,137	110,653	173,100
1894	56,218	127,560	114,567	183,778
1895	57,187	135,844	117,263	193,031

Sources: Catalog of October 23, 1865, catalog of June 12, 1868; annual reports of the Surgeon General, 1872 to 1895.

BILLINGS DEVELOPS THE NEW YORK PUBLIC LIBRARY

As Billings' career in the Army was drawing to a close, the trustees of the recently founded John Crerar Library in Chicago were searching for a person to organize and develop an institution to be erected according to the provisions of Crerar's will Francis A Walker, president of Massachusetts Institute of Technology, recommended Billings as the[56]

> one man in the country who above all others has qualifications for the position easily the best medical bibliographer in the world one of our best men of science one of the most useful men living—practical, sensible, popular To have such a man as Billings at the head of any great public library would command at once success in the very highest degree

But Walker also stated that he assumed Billings was not available, and I doubt that Billings was made aware of the search being conducted for a librarian If the trustees had approached him instead of accepting Walker's conclusion and passing him by, it is conceivable that Billings might have accepted and spent the last years of his life in Chicago

As matters turned out, later that year 1895, Billings was offered and he accepted the directorship of the New York Public Library system The system had been created in the spring of 1895 through the merger of the Lenox and Astor libraries, and with funds from the Tilden Trust A trustee, John Cadwalader, was the brother-in-law of S Weir Mitchell, Billings' best friend Mitchell told Cadwalader about Billings' abilities and achievements In December 1895 the trustees listened to Cadwalader's recommendation of Billings and voted to hire him as director

Billings had now been associated with the University of Pennsylvania for 5 years, and even though he liked his duties, he found, when he was offered the opportunity to resume library work, that he liked the latter more He was embarrassed at leaving Philadelphia so soon after arriving, but he arranged with the university to remain until the end of the school year, June 1, 1896

Billings was 58, at an age when many persons consider retiring, when he undertook the management of the complex, fragmented, sprawling New York City library system As he had planned the building for the Medical Department's Library and Museum, so in 1897 he drew up a memorandum giving his conception of a central library building for New York, showing its dimensions, lighting, heating, ventilation, service facilities, rooms, book capacity, and estimate of cost He made a rough drawing of the floor plan Based on his ideas the present main building of the New York Public Library was erected between 1902 and 1911 And as he had done in the SGL, he devised a classification scheme to encompass the volumes in the reference department, formed by the union of the Astor and Lenox libraries, and had the volumes recataloged and rearranged on the shelves He began a card catalog to encompass the holdings of all the separate libraries As he had done in the SGL, he began the practice of indexing selected articles, taking home periodicals each night and checking articles for an indexer to catalog the next day These subject cards

were interspersed in the catalog and were very helpful to researchers in the humanities and social sciences, for at that time there were few published indexes to periodicals [57]

On visits to Washington Billings stopped at the Library to see his old associates He kept an eye out for publications the Library did not have,[58] he gave advice when asked for it, he initiated exchanges between the SGL and NYPL, and he used his influence on behalf of the Library when it was needed, as when there was talk of decreasing the congressional appropriation in 1901

As in Washington, be became active in matters outside the NYPL He was one of the incorporators of the Carnegie Institution in 1902 and was thereafter chairman of the board of trustees He was associated with the medical statistics of the census in 1900 and 1910 He planned the Peter Bent Brigham Hospital in Boston, and advised the city of Memphis, Tennessee, on a new hospital He wrote literary and professional articles He presided over the American Library Association in 1902 He gave advice to libraries, among them a library in Tokyo and one at Harvard He was one of the founders of the Charaka Club for history of medicine He was one of the Committee of Fifty, for the investigation of the physiological effects of liquor

One of the remarkable qualities of Billings is that he accomplished much of his work while in poor health His health began to deteriorate when he was in his forties He had neuritis in his right arm He was operated upon five times for cancer of the lip He had trouble with his teeth He suffered from gallstones and underwent operations [59] He never complained, not even his wife knew of some of his operations until he returned from the hospital Fielding Garrison never heard him mention any of his operations, only a casual remark about a rib that he broke when he fell in a jolting railroad car

On March 11, 1913, Billings died of pneumonia following an abdominal operation at New York Hospital Three days later he was buried in Arlington Cemetery, where lay several of his associates from the Library and museum, among them his old friend and collaborator Robert Fletcher Of all the good things said about Billings perhaps none was more accurate than the assessment by Garrison years later [60] "Billings was unique in the Surgeon General's Library, but then, he was virtually an all-around superman, who has certainly had no equal "

Notes

[1] Oliver Wendell Holmes, Harvard President Charles Eliot MIT President William B Rogers, William Pepper, George E Waring, Jr S Weir Mitchell, Justin Winsor, Henry Bowditch and other prominent persons urged President Arthur to appoint Billings to the post Their letters and printed petitions signed by the faculties of Johns Hopkins, University of Virginia, and other persons are in NA, copies in MS/C/273

[2] Draft letter Billings to Ezra M Hunt Oct 13, 1883 MS/C/81

[3] Some of Billings' friends had printed an eight-page pamphlet 'Brief upon the Surgeon Generalship of the Army," extolling Billings, and sent a copy to the White House A copy of this pamphlet and letters to the President and the Secretary of War from influential physicians are in NA, copies in MS/C/273

[4] Draft letter, Billings to Hunt, Oct 13, 1883 MS/C/81

[5] Letter, Smith to Billings, May 25, 1882 NYPL, copy in MS/C/276

[6] After Billings left the Medical Department in 1895 there were periods when the directorship of the Museum and Library Division was vested in one person and times when there were a curator and a librarian separately

[7] The museum already had microscopes purchased for use by Woodward and other scientists Billings began to purchase them for purposes of history

[8] Letter, Murray to Secretary of War Dec 3, 1883, sending estimate of funds needed for building and a copy of pamphlet containing resolutions of the AMA NA The letter and pamphlet were printed in Senate Exec Doc 12, 48th Cong 1st sess

[9] 48th Cong , 1st sess , Senate Exec Doc 12 This document contains letters of Murray, Lincoln, and the President, a reprint of Sen Exec Doc 65, 47th Cong , Bill H R 7681 and accompanying report 1995, 47th Cong , letter, from Gross Flint, and Holmes to the AMA, along with the AMA resolution and memorial, and three architects plans of the building

[10] 48th Cong 1st sess , Bill S 403 Dec 5 1883 Bill H R 48 Dec 10, 1883, introduced by Rosecrans A month later Rep Robert Davis introduced a similar bill, H R 2272, Jan 7 1884

[11] Letter, Billings to Cochran, Dec 22, 1883 MS/C/81

[12] Letters, Murray to Mahone, Dec 14, and to Stockslager Dec 28, 1883 NA Inaugural address of Hutchins Feb 5, 1883 *Trans Med Soc State of New York*, 1884, p 11 Letters McGuire to Billings, Jan 14, 1884, Young to Sim, Jan 18, and Sim to Billings, May 27, 1884 Lyman to Billings, Feb 7, 1884, J V Ingham to Billings, n d , re Randall W W Watkins, St Louis, to Billings, Jan 18, 1884, Watson to Billings, sending preamble and resolutions, Apr 24, 1884, Hutchings to Billings, Jan 8, 1884 MS/C/1

[13] Letter, Billings to Matthews, Mar 18, 1884 MS/C/81

[14] Hawley's Bill S 403 was reported to the Senate May 28, 1884, and was amended and passed June 3 (*Congressional Record*, p 4603, 4766)

[15] Letters, Hibberd to Billings, May 11, 1884, Henry C Lea to Billings, quoting Randall, June 7, 1884, Randall to Nebinger to H C Wood to Billings, June 14, 1884 MS/C/1

[16] Letter, Lyman to Billings, Jan 14 1885 MS/C/1

[17] Debate, *Congressional Record*, Feb 16, 1885, pp 1767–1770

[18] Letter, Bayard to Mitchell, Feb 25, 1885 Billings papers, NYPL, copy in MS/C/276

[19] Letters, Clarke to Mitchell, Feb 10, 1885, Randall to Gross, Feb 24, Randall to Lea, Feb 20 MS/C/1

[20] *Congressional Record*, Feb 26, 1885, p 2117, Mar 3, p 2569 48th Cong , 2d sess , Public Law 62, U S Statutes at Large, Ch 315

[21] Letter, Secretary of the Smithsonian to Surg Gen Murray, records SGO, letters received, file 4938/1880, NA Washington *Star*, Mar 26, 1885 This site had been recommended by Sen Morrill and other senators on the Committee on Public Buildings *Congressional Record*, Feb 25, 1885, p 2117

[22] Washington *Republican*, Aug 19, 1885

[23] Letter, Wilson to Surgeon General, June 18, 1887 with draft reply in Billings handwriting for the Surgeon General s signature NA The stacks were made by Phoenix Iron Works, with Billings supplying the blueprints It has been said that these were the third metal stacks in the United States, preceeded only by those in Boston Athenaeum and Harvard libraries

[24] There were at least 34 subcontracts according to a list in NA

[25] Details about the interior and exterior of the building, its dimensions and fixtures and uses of rooms may be found in "News Item," *Med News* 49 330–334 (Sept 18, 1886), with drawing of the building *Library J* 12 394 (1887) (information provided by Billings) "A Medical Palace," *New York Herald* June 30, 1889, copy in MS/C/47, Charles Smart, 'The Army Medical Museum and the Library of the Surgeon General's Office " *Military Service Institution United States* 19 277–279 (1896), and *JAMA* 24 577–580 (1895) Joanna R N Kyle, 'The Army Medical Library and Museum,' *Godey's Mag* 136 408–418 (1898) *Amer Architect* Jan 16, 1886 Robert S Henry, *The Armed Forces Institute of Pathology* Drawings and photographs are in MS/C/47 Three plates showing elevations and floor plans of the building are in 47th Cong , 1st sess , Sen Exec Doc 65, and in 48th Cong , 1st sess Sen Exec Doc 12, copies in MS/C/47

In the museum letterbook for this period in Otis Archives, AMM, are many letters from Billings to merchants and manufacturers, asking for bids to supply furnishings for the new building From the letters can be ascertained everything that was bought, from gas light fixtures to window shades

This was the first building in Washington designed specifically for library purposes

[26] These fireplaces were used at least into the 1920's

[27] *All* of the furnishings of the building from awnings (26) to linoleum (744½ yards) to wheelbarrows (2) to ladders (31) were inventoried each year, 1887 to 1915 Inventories are in MS/C/307

[28] Draft letter, Surgeon General to Secretary of War, Sept 29, 1885 NA The letter was written by a clerk and changes are in Billings' handwriting

[29] A clerk with a sense of history noted in the margin of the accession book, "Register Catalogue of Books," No 10, p 296, "Aug 16/87 Dr B Com[menced] to move to new B[uilding] " Details of the move of the Library, Museum, and Pension and Record Division may be found in correspondence in letterbooks in Otis Archives, AMM

[30] "Register Catalogue of Books," No 10, p 297 "Aug 17th, 1887 The Force down to museum helping pack books, etc Aug 17th, 18th, & 19th "

A reporter's view of the move is in *Washington Evening Star*, Aug 20

[31] "Register Catalogue of Books," No 10, p 306

[32] A photo by Brady of the interior of the building in July 1893, after the collapse, is on p 76 of Olszewski, *Restoration of Ford's Theatre* From this photo a person may visualize the damage that would have been done to the Library had it remained in the building

[33] Fielding Garrison listed all groups and subgroups in "Classification and Arrangement of Books in the Library of the Surgeon General's Office," *Bull Assoc Med Librarians* 1 70–84 (1902)

[34] Letter, Billings to P C Fisher, Coll Phys , Phila , Nov 13, 1886 MS/C/81

[35] The system of indicating the location of a volume by case, shelf, tier, and sequence was apparently used in a number of libraries during this period See section "Shelf Marks" in *Public Libraries in the United States* (1876), pp 493–4

This system was described by F Garrison, "Classification and Arrangement of Books in the Library of the Surgeon General's Office," *Bull Assoc Med Librarians* 1 84 (1902) By the 1920's three numbers were used, for example, Sterility 3-1-8 indicated that the subject began in range 3, section 1, shelf 8 (see letter, Robert Austin to W Miles, Dec 30, 1978, and notebooks in NLM)

[36] Lists of all the furniture in the offices and other rooms may be found in annual inventories of the Museum and Library Division, 1887–1915 MS/C/307 Charles Smart, 'The Army Medical Museum and Library of the Surgeon General s Office," *JAMA*, 24 577–80 (1895), has a somewhat detailed description of the building as of 1895

[37] The Library has few statistics on the number of readers before 1946 when the count began to be printed in annual reports The early registers are now in HMD Estimates may be found in questionnaires answered by the Librarian, such as questionnaire from Library University of Paris, Nov 1907 (MS/C/116) and answer, Nov 18 (MS/fB/101)

[38] The Library also had a file of author cards that had been printed in the *Index-Catalogue* Subject cards were thrown away when they were returned from the GPO as a precaution against their being inadvertently filed and printed again, but author cards were kept in one alphabetical file This file became quite large by 1916 it comprised 30 double drawers This file was a convenience for the editors, the public was expected to use the *Index-Catalogue*

[39] Thomas S Cullen, "Proposed New and Centrally located Surgeon General s Library Building," manuscript volume in NLM

[40] Rules dated May 2 1890, signed by Billings MS/C/81

[41] Order, Apr 15, 1892 signed by Billings MS/C/81

[42] A list of items in the Nightingale exhibit, Apr 16, 1910, is in MS/C/116

[43] An account of the development of the Army Medical School may be found in Henry *Armed Forces Institute of Pathology*

[44] Garrison, *Billings*, 278–9 Francis N Thorpe, *William Pepper* (1904) 132–140, 187, 295

[45] Letters, Holmes to President Harrison, July 24, 1890, Mitchell to C E Smith Mar 13, 1890 These and letters from other physicians, including one from retired Surg Gen Moore, are in the National Archives copies in MS/C/273

[46] A sketch of Baxter is in James E Pilcher, *The Surgeon Generals of the Army* (1905), p 74–78, and in James M Phalen, *Chiefs of the Medical Department* (1940) p 62–65

[47] A sketch of Sutherland is in Pilcher, p 79–82, and in Phalen, p 66–69 Letters sent by physicians recommending Billings for the post of Surgeon General are in the National Archives, copies in MS/C/273

[48] Billings, *The Objects, Plans, and Needs of the Laboratory of Hygiene*, an address, published as a pamphlet, delivered at the opening of the laboratory, Feb 22, 1892

[49] J H Wright, ' The Bacteria of River

Waters," *Mem Nat Acad Sci* 7 417–21 (1894) Billings and A W Peckham, "The Influence of Certain Agents in Destroying the Vitality of the Typhoid and Colon Bacillus," *Science*, n s 1 169–74 (1895) Billings, "The Influence of Light upon the Bacillus of Typhoid and the Colon Bacillus," *Mem Nat Acad Sci* 7 477–82 (1895) Billings, "On the Influence of Insolation upon Culture Media and of Desiccation upon the Vitality of the Bacillus of Typhoid, of the Colon Bacillus, and of the Staphylococcus Pyogenes Aureus," *Mem Nat Acad Sci* 7 483–4 (1894) Billings, S Weir Mitchell, D H Bergey, "The Composition of Expired Air and its Effects upon Animal Life," *Smithsonian Contributions to Knowledge*, 29 no 989, 1895

[50] Billings, *The William Pepper Laboratory of Clinical Medicine*, an address, published in a 15-page pamphlet, at the opening of the laboratory, Dec 4, 1895

[51] In Army language Billings was relieved from duty as officer in charge of the Division by David Lowe Huntington on Aug 20, 1895, letter, Billings to Surgeon General Aug 20, 1895 NA, copy in MS/C/273

[52] C D Spivak, "Medical Libraries of the United States," *Philadelphia Med J* 2 851–8 (1898)

[53] Annual reports of the Surgeon General The statistics also show that 75 percent of the pamphlets were donated, as well as many photographs and journals

[54] Statistics as of June 30, 1895, from *Annual Report of the Surgeon General*

[55] *Index-Catalogue*, vol 16, 1895, p [iii]–iv Billings said many times that donors would not be forgotten, and he had bookplates printed upon which the name of the benefactor could be written (a copy of the bookplate is in William Stokes "*Lectures on the Theory and Practice of Physic*," 1840, NLM call No WB/S874L/1840), but over the years many of the original bindings upon which the bookplates were pasted, and end papers upon which owners had written their names, were discarded during rebinding, and it is no longer possible to identify the names of many of the contributors

[56] Letter, Walker to trustees Crerar Lib , Feb 25, 1895, quoted in *The John Crerar Library 1895–1944*, by The Librarian [J Christian Bay], 1945, p 40

[57] Billings' contributions to the New York Public Library are just touched on here For details see the massive *History of the New York Public Library* by Harry M Lydenberg (1923), and *The New York Public Library*, Phyllis Dain (1972)

[58] "I transmit by this mail a package of medical dissertations which have just come to me from the University of Berne and which are intended for the Library of the Surgeon General's Office It is my impression that I made an arrangement, when in Berne with Prof Kronecker, to have the dissertations furnished to the Library ", letter, Billings to W D McCaw, Dec 7, 1912 MS/C/116

[59] 'It appeared that on one of his trips from Washington to Baltimore to attend a meeting at the Johns Hopkins Hospital he felt an attack of what is called gallstone colic coming on At once, to the great amusement of the people in the car, he walked into the aisle and stood on his head, hoping by this way that the gravity of the calculus would force it back from the mouth of the duct", Henry C Yarrow, *Military Surgeon* 60 173 (1927)

[60] Letter, Garrison to Klebs, June 26, 1926 MS/C/166

Fielding Garrison wrote the following concise outline of Billings' career in a letter to William S Thayer of Johns Hopkins in 1927

During the decades 1880–1900, he was undoubtedly the leading American physician of his time, in respect of character, achievement and versatility, recognized as such in Europe, and Dr Welch pointed out at the New York memorial meeting in April, 1913, 'The one most frequently sought for and chosen to represent this country in international medical congresses and occasions of importance His leadership was based upon intellectual power and above all upon strength and integrity of character He was a singularly wise man, combining with far-sighted vision critical judgment, the gift of persuasion and practical good sense' To this one might add a quite unexampled combination of physical, mental and moral courage

During his main period of activity (1865–95), he did more to elevate the status of American medicine than any other man of his time, by attacking the evil at the source, viz , the somewhat *mesquin* character of certain persons calling themselves physicians, who were permitted and authorized by law to pronounce upon causes of death and diagnoses of disease in reports of vital and medical statistics His constructive work in this direction was along the following lines

Building up of the Surgeon General's Library, Index Catalogue and (with Fletcher) Index Medicus

Management of the vital statistics of the 10th, 11th and 12th censuses of the United States, latter having been defined in Europe as 'worse than worthless' until Billings took hold of them

Reorganization of then Marine Hospital Service, at instance of Secretary of Treasury and with consent of Surgeon General and Adjutant General, during 1869–74 took it out of politics

and gave it military organization (accountability and responsibility) The present U S Public Health Service is of course far beyond anything Billings ever dreamed of in scope and achievement, but the old Marine Hospital Service up to 1874 was mainly politics

Activities in public health via National Board of Health, American Public Health Association, U S Census, work as a heating and ventilating engineer and constructor of hospitals, planning and execution of Laboratory of Hygiene of University of Pennsylvania (1892), reports on barracks, hospitals and military hygiene (1870–75), plan for triangulating the entire United States as to sanitary defects by areas with a view to 'corrective action' in the military sense (1875)—an actual questionnaire of over 400 items, innumerable public addresses and papers, etc

Leadership in hospital construction via planning and construction of Barnes Hospital, Soldiers' Home, D C (1873), Johns Hopkins Hospital (1875–89), Peter Bent Brigham Hospital (1913) Also Army Medical Museum (1887), Laboratory of Hygiene (1892), William Pepper Laboratory of Clinical Medicine (1895) and New York Public Library (1911) Was entirely self-taught in the business and profited by some blunders made in war period 1861–5

Work for advancement of medical education via organization of medical faculty of Johns Hopkins Hospital, caustic criticism of status of American medical literature in 1876 (a Century of American Medicine), professorship of hygiene in Univ of Penna 1895 (a tactical blunder on his part, however), lectures on history of medicine (J H U), military hygiene (Army Medical School), public hygiene (supra), vital statistics (Cartwright lectures 1889), etc

Recognition as leader in later period via librarianship of New York Public Library (1896–1913), as trustee of Carnegie Institution of Washington, as secretary National Academy of Sciences, D C L from Oxford and similar degrees No American physician had been so signally honored prior to this time, although Benj Rush directed the mint, etc Selection of Billings to represent United States at International Medical Congress at London in 1881, Brit Med Assoc 1886, and Internat Med Congress, Berlin, 1891, suggests how far American medicine had risen in European esteem since the Centennial Year (1876) and that Billings was recognized in Europe as the prime mover Prior to 1866, Billings had been recognized in the Army and in Europe as one of the best military surgeons in the country (first surgeon in war to excise ankle joint, 1862 [Lister's excision of wrist 1865]) Billings wrote best history of surgery in English in 1895 (Dennis's System of Surgery) He was also recognized as an able military administrator and was a medical Inspector of the Army of the Potomac at end of Civil War

XI

Leaders of the Library, 1895–1913.

DAVID LOWE HUNTINGTON, LIBRARIAN 1895–1897

FOLLOWING the departure of Billings from the Library and the death or retirement of the Civil War veterans from the Surgeon General's office, the post of Librarian began to be treated the same as other posts in the Medical Department, officers were detailed there for a time and then relieved and sent elsewhere. Between 1895 and 1913 four different officers served as Librarian, the first being David Lowe Huntington.

Huntington had been in the Medical Department for a third of a century and had associated with Billings off and on during that period. Born in Charleston, Massachusetts, in 1834, educated at Yale (B.A. 1855) and Pennsylvania (M.D., 1857), he had joined the Army at the beginning of the Civil War, been attached to General Grant's staff, was with General Sherman's Army on its march to the sea, and tended the wounded at Vicksburg, Missionary Ridge, Kennesaw Mountain, and other battles. After the war he was stationed at forts

David Lowe Huntington, Librarian, 1895 to 1897.

in the East and West until 1875 when he was brought to Washington as Surgeon of the Soldier's Home. From 1881 to 1883 he was curator of the museum, housed on the third floor of Ford's Theatre, and undoubtedly spent much time in the Library on the second floor editing part 3 of volume 2 of *The Medical and Surgical History of the War of the Rebellion.* At times he was Acting, Deputy, or Assistant Surgeon General and was a delegate to the International Medical Convention held at Moscow in 1897.

As head of the Museum and Library Division, Huntington had charge of both organizations. The museum, however, was under the active direction of Major Walter Reed, who had been curator since 1893. The Library was running smoothly with Robert Fletcher, principal assistant librarian. overseeing the operations.

Huntington remained Librarian until April 1, 1897. He seems to have left little imprint on the Library, not because he lacked talent but because there were no major problems for him to solve, nothing spectacular or newsworthy ocurring during the time. He retired from the Army on April 10, 1898, and thereafter lived in Europe with his family. He died in Rome, December 20, 1899.[1]

James Cushing Merrill, Librarian 1897–1902

Surgeon General Sternberg first offered Major Walter D. McCaw the opportunity to succeed Huntington.[2] But McCaw preferred another post and Sternberg turned to Major James Cushing Merrill. Merrill was a 44-year-old surgeon who had lived most of his Army life in the West. Born in Cambridge, Massachusetts, March 26, 1853, he had spent his boyhood there, gone to Germany for his collegiate education and to University of Pennsylvania for his medical education (M.D., 1874). Upon joining the Medical Department he had been assigned to posts in Texas, Oregon, Idaho, Montana, and Oklahoma. Interested in natural history, he had collected specimens of animals, birds, insects, and fishes, many of which he donated to the National Museum. He had become a competent ornithologist, publishing articles on the subject. Through his skill as a hunter of big game, including the grizzly bear, he became acquainted with Theodore Roosevelt.

In 1891 Merrill was brought to the Surgeon General's office and given responsibility for Medical Department supplies. In 1893 Surgeon General Sternberg organized the Army Medical School and appointed him lecturer on comparative anatomy. On April 1, 1897, he was placed in charge of the Library.

Unusual as it may seem for an outdoorsman, Merrill was also a scholar. He read 13 languages. In the Library he did not merely look over the shoulders of Fletcher and the other translators, he pitched in, helped compile citations for the *Index-Catalogue,* and edited volumes 3 to 7 of the second series. In this respect he was like Billings but perhaps more versatile because of his command of languages. And to add to his linguistic accomplishments he began to study Russian.

James Cushing Merrill, Librarian, 1897 to 1902.

In the summer of 1902 Merrill's health began to deteriorate. During the intervals when he was away from his office, resting and trying to strengthen himself, Calvin De Witt, head of the Museum and Library Division acted as Librarian.[3] Merrill died on October 27, 1902, at the age of 49.[4]

Walter Reed, Librarian November 1902

The most famous of the librarians during this period was Walter Reed. But his fame resulted from medical research, and few persons other than his biographers know that he headed the Library for a brief period. He was appointed on November 1, 1902, by Surgeon General Robert O'Reilly, 5 days after James Merrill died.[5]

Reed had been born in rural Gloucester County, Virginia, September 13, 1851. He had gone to University of Virginia at the age of 16 but switched to medicine before graduating. He received two medical degrees, one from Virginia in 1869 and the other from Bellevue Hospital Medical College, New York, in 1870. He remained in the New York area, attached to hospitals and boards of health, until 1875, then joined the Medical Department. For the next 15 years he served at various posts, mostly in the West. In 1890 he was brought east to Baltimore, and while there took the opportunity to study at Johns Hopkins. He wanted to try his hand at research and questioned Billings about the possibility of being assigned to the museum. Billings replied that Reed's assignment "would be agreeable" and promised to tell his superiors this, but he cautioned Reed that the decision lay with Surgeon General Charles Sutherland.[6] Sutherland sent Reed to Dakota in 1891, and he had to wait 2 more years before entering the museum.

Walter Reed, Librarian, November 1902

In 1893 George Sternberg became Surgeon General and immediately upgraded research in the department He established the Army Medical School with classrooms and laboratory in the Library-Museum Building This was a notable school—William Welch called it the "oldest school of preventive medicine in America"—and on its faculty were Billings, Fletcher, Sternberg, and several other officers Sternberg brought Reed to Washington and placed him on the school's faculty as professor of bacteriology and clinical microscopy On September 8, 1893, Billings relinquished the curatorship of the museum to Reed, retaining the Library From then on Reed devoted himself to teaching and research His demonstration that mosquitoes transmitted yellow fever opened the way for the control of that disease

On one occasion Reed told Fielding Garrison, who labored close by, who may have assisted him with literature searches, and who probably chatted with him about the history of typhoid and yellow fever, that the highest ambition of his life was to succeed Billings as Librarian [7] Yet when the opportunity arrived Reed seemed to be somewhat nostalgic at moving away from research "Now, upon the death of Dr Merrill," he told a friend, "I take up the duties of Librarian of the S G 's library, and shall get more and more out of touch with practical work "[8]

In the autumn of 1902 Reed s health began to fail He was sick when he was appointed Librarian (he was still curator) on November 1 Two weeks later he came down with appendicitis and died on November 23 Because of his

brief tenure, only 23 days, and ill health, Reed was Librarian largely in name rather than fact Colonel Calvin De Witt, chief of the Museum and Library Division, acted as administrative head of the Library much of November, while Robert Fletcher directed the operations [9] Reed left little trace of his presence in the Library, only four documents of a routine nature bear his typed name and title as Librarian [10]

Although Reed headed the Library for less than a month, he was a familiar sight to readers for he spent much time in the building between 1893 and 1902 as curator of the museum professor in the Army Medical School and researcher Those of his contemporaries who wrote biographical and historical pieces recalled their brushes with Reed One who saw him frequently was Thomas S Cullen who knew him from the time Reed studied at Johns Hopkins until his death [11]

> It was early in 1892 that I had the pleasure of meeting Walter Reed and James Carroll in Dr William H Welch s Laboratory in the Johns Hopkins Hospital
>
> A few years later I became a frequent visitor to the Surgeon General s Library and often met Walter Reed there Sometimes we would have a short chat at other times would stroll over to Harvey s Restaurant on the Avenue and have luncheon together
>
> I looked forward with a great deal of pleasure to having a short visit with Walter Reed on my trips to the Library
>
> * * * * *
>
> After making out the list of books I wished to consult it would frequently take fifteen or twenty minutes before they were on my desk During this time I would drop in to see Walter Reed or some of the other officers I knew
>
> * * * * *
>
> No one had a clearer view of the value of the Surgeon General s Library than did Walter Reed

Walter Drew McCaw Librarian 1903–1913

Robert O Reilly had been appointed Surgeon General in September 1902, at a time when the Army was being reorganized because of flaws that had been revealed in its structure during the Spanish-American War Improving the Medical Department was the most important task facing him, and he did not concern himself immediately with filling the vacancy in the Library Captain Carl R Darnall of the Army Medical School and Robert Fletcher were Acting Librarians at various times,[12] and Colonel Calvin DeWitt, head of the Museum and Library Division, signed the letter of transmittal of the current volume of the *Index-Catalogue* when it was published [13] Finally on October 3, 1903, almost 11 months after Reed died, O Reilly assigned Walter Drew McCaw to the Library

McCaw was a fifth generation physician, his father was a prominent teacher of medicine, Confederate medical officer and editor of the Confederacy's only medical periodical, *The Confederate States Medical and Surgical Journal* Born

Walter Drew McCaw, Librarian, 1903 to 1913.

in Richmond, Virginia, February 10, 1863, McCaw was an exceptional student who completed his courses at Medical School of Virginia at the age of 19 and then attended Columbia University's medical school for 2 years, receiving a second M.D. degree in 1884. Shortly after graduation he joined the Medical Corps and served at forts in the West and South until the Spanish-American War when he accompanied an infantry regiment to Cuba and participated in the Santiago Campaign. Surviving an attack of yellow fever he returned to the United States for a year before accompanying a volunteer regiment to the Philippine Islands. In 1902 the Surgeon General recalled him to the United States, and on Oct. 3, 1903, selected him to direct the Library.

McCaw was a fine choice for the position as Librarian. He was a voracious reader, a good conversationalist, and an engaging raconteur. A scholar, his learning was described by a fellow officer as encyclopedic but free from pedantry. Popular with women, nevertheless he remained a bachelor. Jefferson R. Kean, a medical officer who knew McCaw well characterized him thus:[14]

> McCaw had a photographic memory . . . He could read something and if you were to allude to it a year later he would not only remember it but also probably repeat it. He didn't forget anything and was a constant reader; so he got to be almost an encyclopedia. He was very popular at the Army and Navy Club. A group would pick out a topic that they thought he couldn't possibly know anything about, such as some phase of Buddhism in China, and read up on it and discuss it among themselves. They would then ask McCaw what he thought about it, and he would tell them they had it mostly wrong and tell them all about it. McCaw would have been the greatest man in the Medical Department if he had been willing to exercise those talents. I have gotten after him often, saying 'Why don't you do this or that; you really ought to.' He would reply: 'Don't say *ought* to me, Kean, for me to be sent a job and told to work it out and prepare an indorsement makes me sick.' He didn't like to undertake anything. One time a question arose about the relationship of the Red Cross to the Medical Department. I went to the Surgeon General and said I thought it should be turned over to McCaw—he was at the Library and had all the literature

> at hand So it was sent to McCaw, who didn't like the idea at all and told me that he saw my finger in it But he did the job and did it admirably He was interested in literature and art and didn't like to do anything that he didn't instinctively want to do Anything he had to do—was made to do—he did admirably If he had had insight into the importance of things and how to go after them, he would have been truly remarkable

Under McCaw Garrison flourished, he dedicated his classic *Introduction to the History of Medicine* to McCaw 'in acknowledgement of his encouragement and his many courtesies in aid of the completion of this book " He was solicitous for Robert Fletcher, now long past the age when most persons retire from their profession Osler, in his obituary of Fletcher, remarked, " [McCaw's] kindly interest and care of Dr Fletcher have been much appreciated by all his old friends ' [15]

The work of the Library was chiefly dry and businesslike, relating to interlibrary loans the compilation of the *Index-Catalogue*, purchase of publications, and providing service to readers, but at times there were queries in the answering of which McCaw's scholarly nature became evident On one occasion he transcribed parts of a Latin manuscript by John of Arderne for D'Arcy Power, a British historian of medicine, compared Power's translation with the Library's manuscript and when Power s article appeared, questioned him about the accuracy of the translation of a verb [16]

Oil portraits of physicians had been displayed discretely in Library Hall perhaps from the opening of the building But the overwhelming array of paintings and likenesses that hung there in later days began with McCaw, who collected autographed photos of old and tried friends of the Library"—Osler, Welch, S Weir Mitchell, and others—and crowded, some might say cluttered, the walls with them

McCaw like earlier and later librarians, sometimes wore two or more hats He was an instructor in the courses in military hygiene and military and tropical medicine at the Army Medical School, he served on the Advisory Board of the Public Health Service s Hygienic Laboratory and on boards that examined officers for promotion and boards that gave physical examinations During at least one summer he commanded the Field Hospital, Pine Camp (a militia camp) New York One receives the impression from McCaw's career that the Surgeons General believed that the Librarians did not have much to do in the Library and therefore could always be spared for other assignments

In 1912 the War Department issued the "Manchu" order stating that all officers who had been stationed in Washington for more than 4 years had to be rotated to other posts Surgeon General George Torney protested, pointing out that certain officers (laboratory workers for example) contributed more where they were than they would at some other spot Torney wanted to retain some officers in Washington, among them McCaw at the Library Leonard Wood, Army chief of staff, agreed to allow McCaw to remain as permanent Librarian on condition that he would be out of the line of selection for any

other duty or for assignment in case of war McCaw was unwilling to accept the condition, and Torney had to relieve him from duty in the Library in 1913, and send him to the Philippines in 1914 [17]

McCaw had charge of the Library for 12 years, longer than any other person except Billings during the Library's first century During World War I he became Chief Surgeon of the American Expeditionary Force in France, was promoted to the rank of brigadier general in 1919, and retired from the Army in 1927 He died July 7, 1939 One of the Army's large general hospitals was named in his honor [18]

Robert Fletcher Principal Assistant Librarian 1876–1912

The principal assistant librarian was an important person in the administration of the Library He provided continuity as Army officer librarians came and went, he acted as Librarian when that officer was absent because of illness, vacations, or Army business, and he helped new clerks learn what they needed to know about bibliography, indexing, and the preparation of the *Index-Catalogue* Robert Fletcher was the principal assistant when Billings retired and he remained in that post during the administrations of Huntington Merrill, Reed, and McCaw

Fletcher had assisted Billings in editing 16 volumes of the first series of the *Index-Catalogue*, and after Billings left the Library in 1895 Fletcher was principal editor of the second series, reading proofs of volume 17 to within a few weeks of his death He had coedited *Index Medicus* with Billings from the beginning of that periodical until the first series ended in 1899, he had edited the second series with Garrison from 1903 until the 1911 volume was completed when he informed his readers that "the state of my health warns me to withdraw from this engrossing medical work "[19]

During his almost half century of residence in Washington Fletcher had become well-known in the upper echelons of the town's university medical, literary, and scientific circles He was president of the Cosmos Club (he and Billings were two of the founders) and the Literary Society He was friendly, a learned and eloquent conversationalist, and William Osler considered it "a rare treat to dine with him quietly at his club in Washington He knew his Brillat-Savarin well, and could order a dinner that would have made the mouth of Coelius Apicius to water " Osler, who knew Fletcher for three decades, "always found him a friendly, wise and generous adviser in all matters relating to medical bibliography "[20]

One would think that editing *Index Medicus* the *Index-Catalogue*, and carrying out duties that arose in the Library would have been sufficient tasks for any one person, yet Fletcher still had the extra energy and mental agility to teach medical jurisprudence at George Washington University, write articles, and preside over the Anthropological Society of Washington in his sixties and to teach forensic medicine at Johns Hopkins, write articles, and preside over the Philosophical Society of Washington in his seventies

Robert Fletcher, Principal Assistant Librarian, 1876 to 1912. Drawing by P. Rénouard. The original appeared in Harper's Weekly, *p. 892, 1893.*

Over the years Fletcher's name became familiar to physicians in Europe, America, and on whatever other continents the *Index-Catalogue* and *Index Medicus* had found homes. As an expression of gratitude American physicians contributed money in 1903 and 1904 to pay for the painting of his portrait by Wilton Lockwood. Today the portrait showing Fletcher as a frail, scholarly gentleman of 80 overlooks the reading room of the National Library of Medicine.

In 1905 during a medical meeting in Washington a discussion started about the Library and then drifted to Fletcher's contributions. The men who were present "unanimously determined that Dr. Robert Fletcher should be especially recognized for the magnificent success he has achieved as the editor of the Index Catalogue of the Surgeon-General's Office, U. S. A. and Index Medicus, whereby the medical literature, not only of this country but of the whole medical world, is made easily available for use."[21] A committee appointed at the meeting sent out invitations to a testimonial dinner to honor Fletcher and on January 11, 1906, 97 of Baltimore's and Washington's leaders in medicine and science gathered at Rauscher's Restaurant, Connecticut Avenue and L Street. Billings, Osler, Harvey Wiley, William W. Keen, and several other men praised Fletcher in speech and poetry and presented him with a loving cup. Later, photos and letters from those who attended, newspaper clippings and other memorabilia of the banquet were bound in a beautiful volume and presented to Fletcher.[22]

Among the other commendations that Fletcher received during his life were honorary degrees from George Washington University in 1884 and University of Bristol in 1912, but the highest honor was the medal awarded to him in 1910 by the Royal College of Surgeons of England, a medal which had been given to only 11 physicians during the preceding 90 years.[23]

Toward the end of October 1912 Fletcher's health began to fail. One Saturday morning Garrison carried Fletcher's salary to The Portland, an apartment building where Fletcher resided, and found him "all alone, wandering in his mind."[24] Garrison summoned medical assistance, but Fletcher lived only a few days longer and died on November 8, 1912, at the age of 89. He was buried 3 days later in Arlington Cemetery, with William Welch and other prominent physicians acting as pallbearers.[25]

Fielding Hudson Garrison, Principal Assistant Librarian 1912–1930

Fletcher's assistant from 1892 to 1899 was Alonzo Frank Steigers, a one-armed former military surgeon.[26] Steigers had graduated from St. Louis Medical College in 1865 and then contracted to work for the Medical Department as an Acting Assistant Surgeon. He was stationed at military installations in the South until 1869 when he was transferred to Alcatraz Island, California, and later to Camp Verde, Arizona Territory.

In January 1871 a scouting party from Camp Verde fought a band of Apache Indians. Steigers was hit in the left shoulder by a bullet that tore along his arm and came out of his wrist. After the fight the party made its way back to Camp Verde where Steigers' mangled limb had to be amputated.

It would seem difficult for a one-armed man to be a practicing surgeon in the Army, yet Steigers wanted to continue his career and the Medical Department retained him. He served at several posts until 1892 when Congress abolished the contract surgeon system. Steigers was then a 27-year veteran, but he had none of the retirement benefits of a regular Army surgeon. He

Fielding Hudson Garrison, Principal Assistant Librarian, 1912 to 1917.

probably would have had difficulty setting up a successful civilian practice as a one-arm physician, but Billings brought him into the Library. Here he remained until he died on April 12, 1899, at the age of 55.

Following the death of Steigers, a 29-year-old clerk named Fielding Hudson Garrison applied to Merrill and the Secretary of War for the post of Assistant Librarian.[27] Garrison had been born in Washington on November 5, 1870, and graduated from Johns Hopkins in 1890. He had sought a job with the government, and after taking a competitive examination in several languages had been appointed a clerk in the Library on March 3, 1891. While working at the Library he had attended Georgetown University Medical School in the evenings and received his M.D. degree in 1893.[28] During the 8 years he had been in the Library he had impressed his superiors, and when the post of assistant librarian became vacant, he had no serious competition for the position. He was promoted on April 27 and thereafter was the right-hand man to Fletcher, indexing and classifying current medical literature for publication in the *Index-Catalogue*.

Fletcher was old enough to be Garrison's grandfather, and Garrison was probably very diffident at first. "It was a pretty cruel and trying ordeal for a youngster (as I then was) to be brought into constant close contact with a man old as Heberden and quite as stately and scholarly and dignified," Garrison wrote later, "I didn't get enough chance to kick up my heels when I wanted to . . . I have often regretted that the extreme disparity in our years made it

somewhat difficult for me to understand him at times in earlier years, when I myself had a good deal of flippancy and coltishness of youth and inexperience "[29]

Still, they were both basically hardworking, studious, intelligent men, and they got along very well In 1902 when Fletcher was given the opportunity to revive *Index Medicus*, he did so with the provision that Garrison be coeditor Over the years the two became close Garrison called Fletcher 'one of my very best and kindest friends" and "a fine dear old gentleman [0]

Garrison worked in the Library for 15 years before he began to publish and gradually become known outside of the circle of librarians and readers of *Index Medicus* He was 32 when his first article appeared in print, on the classification and arrangement of books in the Library [31] He started writing at night while sitting up with his own father, who was suffering from a long painful illness [32] He found writing a relief from the tedium of his daily bibliographic labors And finally he was still a bachelor (he married in 1910) and had free time and none of the distractions of family life Once he began to publish Garrison turned out several articles each year

In 1912 Fletcher, approaching his 90th birthday resigned the editorship of the *Index Medicus* He recommended Garrison as being in every respect absolutely competent to continue in charge of it "[33] Billings also recommended Garrison for the job Garrison thus became editor, Fletcher notifying the readers "It is with unalloyed satisfaction that I leave the *Index Medicus* in the charge of Dr Fielding H Garrison his experience and scholarship are guarantees that the journal will maintain its high reputation "[34]

Later that year Fletcher died Garrison applied for the post of principal assistant librarian In recommending Garrison to the Secretary of War who in those days had the final word on promotions, the Surgeon General wrote "There is no one else who has the slightest claim to the position in comparison with Dr Garrison "[35] Garrison was promoted on November 13

The year 1912 was momentous for Garrison in another respect it saw the publication of his list of classic medical publications The list was a by-product of an exhibit of books, pamphlets and articles that were milestones in the development of medicine from ancient times to the 20th century Garrison carried out the research necessary to identify the classics The exhibit was completed in 1910, and Garrison then wrote a 15,000-word account of the advancement of medicine as illustrated by the items [36] McCaw, who considered it "the best essay in brief in the history of medicine that has been written in America" queried the *Journal of the American Medical Association* about publishing it [37] The essay was too long for the *Journal*, but the editor ran the portion covering the period from the Greeks through the 16th century [38]

McCaw also had Garrison's list of items in the exhibit printed in the current volume of the *Index-Catalogue* and obtained permission from the Surgeon General to have 500 copies of the pages reprinted [39] A score of years later Garrison expanded, modified, and published his list in *Bulletin of the Institute of the History of Medicine* [40] Yet later the catalog was revised and enlarged by

TEXTS

ILLUSTRATING THE

HISTORY OF MEDICINE

IN THE

Library of the Surgeon General's Office, U. S. Army

Arranged in Chronological Order

REPRINT FROM VOLUME XVII, SECOND SERIES, INDEX-CATALOGUE
OF THE LIBRARY OF THE SURGEON GENERAL'S OFFICE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1913

The first separate edition of Garrison's Texts Illustrating the History of Medicine. *Its descendant, Leslie T. Morton's* Medical Bibliography, *still flourishes at the time of the writing of this history of the Library.*

Leslie T Morton, and now, as a standard work among librarians and historians, is usually referred to simply as "Garrison and Morton "[41]

The compilation of the list of classics dovetailed with a history of medicine that Garrison had been writing It is not known when he began to outline and to take notes for his history, but he must have started several years earlier, judging by its ultimate size He began to write in earnest in 1911, thinking, at first, of a little volume to be titled "A handbook of the history of medicine, based upon the historical collections in the Library of the Surgeon General's Office " to be published by the American Medical Association [42] After writing much of the manuscript he changed his mind and decided to seek a commercial publisher

He completed the book in 1912, and it appeared in December 1913 under the title, *An Introduction to the History of Medicine with Medical Chronology, Bibliographic Data and Test Questions* It was so popular that it was reprinted in May 1914, went through a second edition in 1917, a third in 1921, and a fourth in 1929 At the time of this writing it is still the most comprehensive and authoritative history of medicine in the English language [43]

Through his work in bibliography and history of medicine, Garrison was now the most prominent person, except Billings, who had been connected with the Library Eventually there were so many demands on his time from physicians interested in history of medicine that he had to "fight to keep people from turning a government office into a bureau of medical history ' [44]

In 1913 McCaw was sent from the Library to the Philippines He recommended to Surgeon General George H Torney that Garrison be appointed Librarian [45] Harvey Cushing, on his own initiative, also suggested Garrison for the post, telling Torney, " I cannot imagine a person more admirably fitted for it "[46] The Surgeon General agreed with Cushing about Garrison's abilities, but was "not prepared to say that [Garrison] is fitted to take the position made vacant by the detachment of Colonel McCaw "[47] Torney noted that it had "always been the policy of the Surgeon General's Office to place an officer of the Medical Corps in charge of the Library and I believe its success has been due to the management of that institution by the several officers who have been in charge, each being in his turn a man of high attainments and of executive ability " There appears to have been no insurmountable reason why Garrison should not have been elevated to the post of Librarian Apparently the Surgeon General was not ready to break tradition and appoint a civilian to a position that had always been held by an officer

Notes

[1] Albert Allemann an assistant librarian wrote a sketch of Huntington in Howard A Kelly *Cyclopedia of American Medical Biography* (1912, 1920, 1928) Brief obituaries of Huntington appeared in *JAMA* 34 61 (1900) New York *Med Rec* 56 969 (1899) and *Yale*

Alumni Weekly, Jan 31, 1900 See also G M Kober, *Reminiscences of George Martin Kober*, pp 212–215

[2] Letter, R Fletcher to Frederick W Stone, July 26, 1902, MS/C/115

[3] In MS/C/115 are file cards noting actions by De Witt in his capacity as acting librarian

[4] A short biography by Fielding Garrison, an associate of Merrill, is in Howard A Kelly, Walter L Burrage, *American Medical Biographies*, (1920, 1928) A chapter on Merrill, with portrait and several biographical references, is in Edgar E Hume's *Ornithologists of the United States Army Medical Corps*, pp 324–336

[5] Copy of order, O'Reilly to Reed, Nov 1, 1902, MS/C/115 Merrill died Oct 27, Reed was appointed Nov 1 During the interim Calvin De Witt acted as Librarian, according to file cards in MS/C/115 On a few occasions the Surgeons General did not appoint a new Librarian immediately upon the departure of the old Librarian During these short intervals Fletcher, Garrison, or an officer in the museum or Army Medical School was acting librarian

[6] Letter, Billings to Reed, Mav 17, 1891 NYPL

[7] Garrison, *John Shaw Billings*, p 179, fn Garrison also stated that Billings had selected Reed for the position If so, this would have been in 1895 when Billings retired, and the Surgeon General did not agree but appointed Huntington instead

Edgar E Hume in his book, *Ornithologists of the United States Army Medical Corps*, p 327, stated " Reed had said that at last he had been assigned to the duty which he most desired of any possible assignment in the United States Army " I have not located the source of Hume's statement It may have been a story that Hume, Librarian from 1932 to 1936, heard from old employees

[8] Letter, Reed to [Louis] Flexner Nov 3, 1902, copy through the courtesy of William Bean

[9] File cards and correspondence under date of November 1902, MS/C/115

[10] File card, Nov 3, 1902, Reed approving 6 days leave for Fielding Garrison Second indorsement by Reed, Nov 11, 1902, on letter, J M A Spottswood, G P O , to Surg Gen O'Reilly, Nov 8 Second indorsement by Reed, Nov 13, on letter, H S Boutell to Gen W H Forwood, Nov 8 File card, Nov 15, 1902, Reed approving 3 days leave for H O Hall All in MS/C/115

[11] Thomas Cullen, "Proposed New and Centrally Located Surgeon General's Library Building," manuscript in HMD

[12] That Fletcher and Darnall were acting librarians may be seen by the correspondence of the period in MS/C/115 Biographical information on Darnall, 1867–1941, is in MS/C/44

[13] Calvin De Witt, born in Harrisburg, Pa , May 26, 1840, served in the Army of the Potomac as captain of the 49th Pennsylvania Volunteers, 1861–1863 After receiving his M D degree from Jefferson in 1865 he practiced medicine, then joined the Army as Assistant Surgeon in 1867 He served in campaigns in the West and in Cuba, was professor in and president of the Army Medical School, and head of the Museum and Library Division from Apr 13, 1901 to July 20, 1903 He was promoted to the rank of brigadier general in 1903, retired on Aug 10, 1903, and died in 1908

[14] Taken, with slight changes, from an interview of Brig Gen J R Kean by Ethel M Chase, May 9, 1950 MS/C/14

[15] Osler, obit of Fletcher, *Bristol Medico-Chirurgical J* 30 289–294 (1912)

[16] Letters, McCaw to Power, Dec 8, 1909, Jan 7, July 22, 1910 MS/C/116 Power, "An Early English Surgeon and What he Knew John Arderne," *Med Mag* 19 406–414 (1910)

[17] Autobiography of Brig Gen Jefferson R Kean, pp 145–50, 163–64 MS/C/14 Leonard Wood was a physician

[18] For biographies and obituaries of McCaw see *Old Dominion J Med Surg* 3 492 (1904–05), *Amer J Clin Med* 29 859 (1922) port , F H Garrison, *Military Surgeon* 60 198–202 (1927), *JAMA* 113 437 (1939), J M Phalen, *Army Med Bull* No 64, 135–137 (1942), *N Y Times*, July 8, 1939, *National Cyclopedia of American Biography*, vol A, p 89

[19] Announcement preceeding the title page of the January 1912 issue of *Index Medicus*

[20] Osler, "In Memoriam Robert Fletcher," *Bristol Medico-Chirurgical J* 30 289–294 (1912)

[21] Printed proposal for testimonial dinner in honor of Fletcher dated Washington, Nov 25, 1905

[22] This volume is now in the History of Medicine Division, National Library of Medicine, MS/C/49

[23] Fletcher learned of his award of the medal through a cablegram sent by Osler, Apr 16, 1910, another indication of Osler's high regard for Fletcher MS/C/49 Fletcher did not feel well enough to travel to Great Britain, so the British Ambassador presented the medal to him The medal is now in NLM

[24] Letter, Garrison to Billings, Nov 8, 1912 MS/C/276

[25] Several biographies and obituaries of Fletcher may be found cited in *Index-Catalogue* In addition see obituary by Garrison in *Index Medicus* following the table of contents, Jan 1912 issue, memoir by E Brodman, *Bull*

Med Lib Assoc 49 251–290 (1961), and E E Hume, "Garrison and the Army Medical Library, 1891–1930," *Bull Inst Hist Med* 5 301–46 (1937), particularly pp 313–18 Memorabilia of Fletcher are in MS/C/49 A folder containing details of Fletcher's service is under date Jan – July 1895, MS/C/81

[26] As is the case with almost all of its early members, the Library has practically no information about Steigers Records concerning his military service as a contract surgeon are in the National Archives Among them is a copy of the *Weekly Arizona Miner*, Jan 14, 1871, containing an account of the fight in which Steigers was badly wounded *Annual Announcement of the St Louis Medical College, Session 1865–1866*, gives Steigers' name as Frank A brief obituary is in *JAMA* 32 955 (1899)

[27] Copy of letter, Garrison to Secretary of War, Apr 12, 1899, MS/C/115 In this letter Garrison stated his qualifications for the position

Biographical information on Garrison may be found in interesting articles in the Fielding H Garrison Memorial Number of *Bull Inst Hist Med* 5 299–403 (1937), particularly the article by Librarian E E Hume, "Garrison and the Army Medical Library" Solomon R Kagan, *Life and Letters of Fielding H Garrison* (1938), Kagan *Fielding H Garrison, a Biography* (1948)

[28] "Except in the wards of Providence Hospital as a student, I have never practiced medicine', letter, Garrison to G Simmons AMA Aug, 2, 1916 JH

[29] The first part of the quote is from letter, Garrison to Harvey Cushing, Nov 9, 1912 quoted in E E Hume, 'Garrison and the Army Medical Library, 1891–1930," *Bull Inst Hist Med* 5 316–317 (1937) The second part is from a letter, Garrison to Osler, Nov 11, 1912, quoted by Hume, p 317

[30] Letters to Osler and Cushing, cited above

[31] "Classification and Arrangement of Books in the Library of the Surgeon General's Office," *Bull Assoc Med Librarians* 1 70–84 (1902)

[32] In letter to Billings Nov 24, 1901 Garrison mentioned "a protracted illness in a member of my family, requiring me to sit up late of nights, so that I had to bend my mind to writing" NYPL, copy in MS/C/276

In letter to G Simmons, AMA, Aug 5 1914, Garrison recalled his "father's lingering and painful death, which occupied three years I began to write papers during those long nights, to keep from going crazy and I have continued to do so, simply to keep alive, mentally speaking, and not become entirely submerged in this bibliographical drudgery which puts out eyes and bores holes in the brains " JH

[33] Letter, Fletcher to Billings, Nov 16, 1911, quoted in Hume, *Bull Inst Hist Med* 5 316 (1937)

[34] Printed notice, "Withdrawal of Dr Robert Fletcher," in front of Jan 1912 issue of *Index Medicus*

Garrison received $1 200 a year from Carnegie Institution for editing *Index Medicus* In comparison, his salary as assistant librarian was $1,800 a year Later Garrison appointed Albert Allemann of the Library to assist with proofreading, etc , of *Index Medicus* at a salary of $1,200 a year, paid by Carnegie

[35] Kagan, *Garrison*, [p 90]

A letter from Garrison to Billings, Nov 8, 1912, asking Billings to recommend him for the post, is in NYPL, copy in MS/C/276

[36] That McCaw initiated the exhibit in 1909 is shown by the *Annual Report of the Surgeon General, 1909*, p 155

[37] Letter, McCaw to G H Simmons, Mar 29, 1911 MS/fB/101

[38] "The Historical Collection of Medical Classics in the Library of the Surgeon General's office," *JAMA*, 56 1785–1792 (1911)

[39] Letter, McCaw to Surgeon General, May 21, 1912 MS/fB/101 *Index-Catalogue*, series 2, v 17, pp 89–178 Reprints of the list, *Texts Illustrating the History of Medicine in the Library of the Surgeon General's Office, U S Army, Arranged in Chronological Order* (1912) are quite scarce

[40] "Revised Check-list of Texts Illustrating the History of Medicine,' 1 333–434 (1933)

[41] Leslie T Morton, *A Medical Bibliography (Garrison and Morton) an Annotated Check-list of Texts Illustrating the History of Medicine* (3 ed , 1970)

[42] Letter, Garrison to G H Simmons Apr 24, 1911, and correspondence between the two continuing through the year MS/C/166

[43] The third edition, 1921, was reprinted in 1924 The fourth edition 1929 was reprinted in March 1960 and August 1960 A Spanish translation was published in 1921–22

[44] Letter, Garrison to Welch, July 21 1933 JH

[45] Kagan, *Life and Letters of Garrison*, p 7, referring to a letter of McCaw in Garrison's correspondence

[46] Letter, Cushing to Torney quoted in Hume, p 309–310, also in the biographical file of Garrison, MS/C/44

[47] Letter, Torney to Cushing, quoted in Hume, p 310

XII

The Library in Operation, 1895–1913

Day-to-Day Operation of the Library

THROUGH the administration of four different librarians between 1895 and 1913 the Library moved along year after year, growing slowly.[1] During the hours of service, 9 to 4:30, there was a steady succession of readers, including local physicians, students from Washington medical schools, researchers, writers of texts and monographs, officers attending the Army Medical School, and employees of companies sent to the Library to research and abstract.[2] For the convenience of local physicians who were in their offices during the day, the librarians, from time to time, suggested that the building be kept open until 9 or 10 o'clock at night, but the Medical Department never had funds to pay the salaries of the additional clerks who would have been needed. Thomas Cullen recalled how useful the institution had been in providing him with literature on gynecology:[3]

> During the years I wrote five books and three volumes of short articles. The literature for all of the books and nearly all of the separate monographs was furnished me by the Surgeon General's Library.
>
> During the preparation of "Diseases of the Umbilicus," I spent approximately three afternoons a week for three years in the Library looking up the extensive literature in this field. Over a long period I was given one corner of the large room adjoining the stacks and kept this for months at a time, through the kindness of the late Charles G. Toepper, who had charge of that department.
>
> During the reading of the galleys of the umbilical book, I made fifty trips from Baltimore to Washington to check all the references.
>
> * * * * *
>
> There is no other man in the United States who is under a deeper debt of gratitude to the Surgeon General's Library than I am. For nearly fifty years its vast stores of medical information have been mine for the asking. From the beginning I have been treated royally; if I had been one of the most important personages in the country more consideration of me could not have been shown.

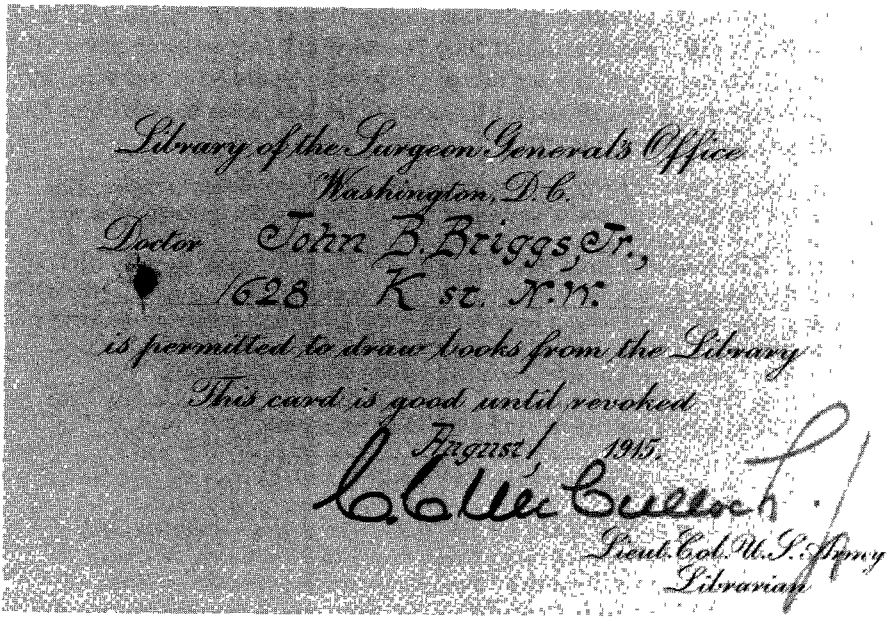
Garrison counseled persons writing lengthy pieces to come during the summer since it was "the most favorable period for study and work at the Library, because there is better light and because at that time, most of us have more

leisure to devote to visitors. In fact, most physicians who are doing historical work come here to work in our cubicles at that time."[4]

The routine went along as it had since the early 1880's, but the steadily increasing quantity of medical publications required that more and more of the Library's resources be spent producing the *Index-Catalogue*. Finally 9 months of the staff's time were needed to turn out the annual volumes. Whenever the work fell behind, clerks were shifted from their regular jobs to help somewhere along the assembly line. As a result other work in the Library lagged; for example the carding and handling of public documents was generally in arrears because the clerks in charge were frequently switched to the *Catalogue*.

The number of interlibrary and personal loans became quite large; there seems to have been no other medical library in the country at that time that sent books out on loan. In 1911, 7,500 volumes were sent by express to college, university, public, government, and medical libraries and to individuals who did not live in the neighborhood of a library.[5]

The Library became unbelievably liberal in lending rare and valuable books. Among the works it sent to borrowers through interlibrary or personal loan was an incunabulum (Bartolomeo Montagnana, *Consilia Medica*, Venice 1497),


Library of the Surgeon General's Office
Washington, D. C.
Doctor John B. Briggs, Jr.,
1628 K st. N.W.
is permitted to draw books from the Library
This card is good until revoked
August 1, 1915.
Lieut. Col. M. S. Army
Librarian

At first local physicians had to come to the Library to consult publications. About 1913 the Librarian relaxed the rules and permitted patrons to borrow books to read at home. The Library continued to lend locally for more than 40 years.

John of Gaddesden's *Praxis Medica* (1595), John Jones' *Briefe, Excellent, and Profitable Discourse* (1572–74), *Opuscules de Divers Autheurs Medecins* (1552), Galen's *Opera* (1585), *Philadelphia Medical Museum* (1804–05), *Philosophical Transactions of the Royal Society* (1700), and other 16th, 17th and 18th, and 19th century publications [6] On occasion it permitted borrowers to retain books for long periods—one patron kept John Hall's *Select Observations on English Bodies of Eminent Persons in Desperate Diseases* (1683), from 1913 to 1915 before returning it [7] It began to give local physicians the privilege of borrowing books upon presentation of a library card It stopped requiring individuals living at a distance to deposit a sum of money before borrowing books [8]

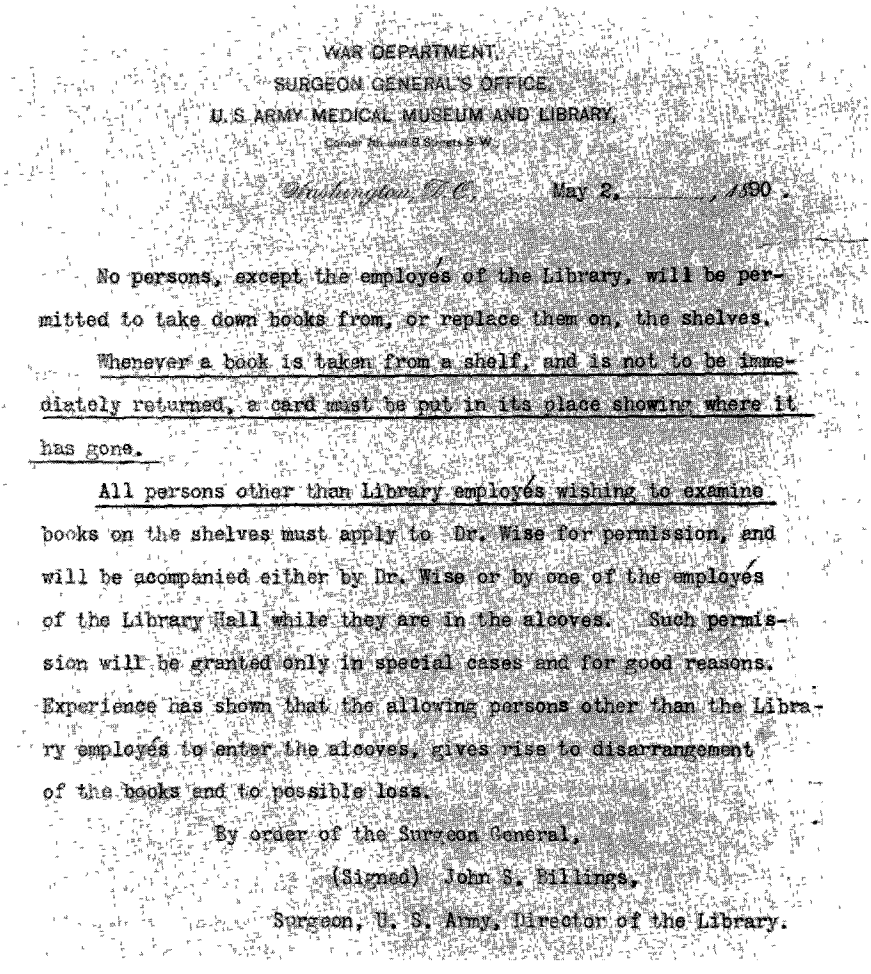
Books were shipped, often in wooden boxes in which the department received bottles of whiskey for medicinal purposes, to every state, to Canada, Germany, and perhaps other countries [9] Books were loaned to libraries for exhibition purposes [10]

Librarians did not begrudge the time and expense in lending volumes, the chief concern was the damage done to publications by the jostling of packages in transit [11] Some popular books were requested many times, exposed to much wear and tear, and gradually became unfit for lending Hundreds, at time thousands, of volumes lay waiting to be rebound Librarians were always conscious of the expense of binding, requisitions for which had to be approved by the Surgeon General Some volumes remained unbound for years because of lack of funds The Library hoped that by stimulating the growth of other medical libraries, these libraries would fill requests for local patrons and thus diminish the number of interlibrary loans sought from Washington [12]

The providing of information for the Surgeon General's office, for Army surgeons, and for patrons living outside of Washington became systematized Topics to be researched and questions to be answered were divided among members of the staff thus Garrison, general questions on medical research, physiology, history, and bibliography, Albert Allemann, general medical research requiring knowledge of various languages, and medical numismatics, Frank J Stockman general research in current medical literature, and preparation of select bibliographies of medical subjects for out-of-town physicians, Beruch Israeli, Russian and Polish medicine, and foreign medical legislation relating to army medical service, Felix Neumann, older medical literature, incunabula, and reference work from older bibliographical compilations, and Cary R Sage, portraits, engravings, letters, autographs, and checklists of incunabula Allemann, Israeli, and other clerks with medical training compiled bibliographies for researchers [13]

Queries came from physicians and laymen about topics listed in and not in the *Index-Catalogue* Were rays from colored lightbulbs harmful? Was there a connection between dandruff and hay fever? Were germs transmitted by postage stamps? What was known about the morbid fear of thunderstorms?

The reference service was international, staff members answered queries from Cuba, Germany, Chile, Greece, Canada, and other countries [14] And staff



WAR DEPARTMENT,
SURGEON GENERAL'S OFFICE,
U. S. ARMY MEDICAL MUSEUM AND LIBRARY,
Corner 7th and B Streets S.W.

Washington, D. C., May 2, 1890.

No persons, except the employés of the Library, will be permitted to take down books from, or replace them on, the shelves.

Whenever a book is taken from a shelf, and is not to be immediately returned, a card must be put in its place showing where it has gone.

All persons other than Library employés wishing to examine books on the shelves must apply to Dr. Wise for permission, and will be accompanied either by Dr. Wise or by one of the employés of the Library Hall while they are in the alcoves. Such permission will be granted only in special cases and for good reasons. Experience has shown that the allowing persons other than the Library employés to enter the alcoves, gives rise to disarrangement of the books and to possible loss.

By order of the Surgeon General,

(Signed) John S. Billings,
Surgeon, U. S. Army, Director of the Library.

Earlier, patrons had been allowed to browse freely among the books and journals. By 1890 the Library had grown so large and served so many readers that Billings was forced to restrict access to the stacks.

members went to considerable length to assist inquirers. On one occasion McCaw, endeavoring to aid a physician in Berlin, Germany, wrote to the health officials of several states to obtain copies of medical certificates required before marriage.[15] But if an inquiry demanded an unreasonable length of time, the Librarian suggested that a researcher be hired.[16]

The Library became the unofficial translating service for the Medical De-

partment Garrison translated French, German, Spanish, Italian, and Latin, Allemann all of the above plus Greek and Portuguese, Stockman, German French, Swedish, Dutch, and Danish, Israeli, Russian, Polish, Hungarian, Bohemian, German, and French, Neumann, Latin, German, and French The Library provided short abstracts or translations to civilian physicians, but if the amount requested was unreasonably long, the Librarian sent the patron a list of names of persons who would do the task for pay

During this period the Library received an appropriation of $10,000 almost every year for the purchase of books and journals Approximately half of this was spent on subscriptions for periodicals (for example, more than 1,300 journals in 1911), $4,000 for books from Europe, and $1,000 for books published in the United States Ten thousand dollars was a fairly satisfactory, though not ideal, sum for this purpose when it was first granted in 1896, but as time passed inflation slowly decreased the purchasing value of the dollar, the number of medical publications increased, and $10,000 bought less and less Since the policy of the Library was to obtain all the medical periodicals published throughout the world, the funds for buying books kept shrinking The Library had to become very choosy in selecting new monographs [17] This circumstance of shrinking funds was to continue for many years, and as a result the rate of growth of the Library, which had been the highest in the country during Billings' time, would slow down and be surpassed by other research libraries

Starting in 1911, through the cooperation of Herbert Putnam, the Library began to receive duplicates of books on medicine that the Library of Congress obtained under the copyright law and other duplicates that it accumulated [18] Later Putnam offered duplicates of foreign medical books sent to the congressional library for copyright in the United States, and duplicates of foreign journals [19] He also sent McCaw proof sheets of monthly accessions lists in related fields (as pharmacy, dentistry, psychology) so that the Library could select other works [20] The Library's delivery wagon brought the first lot of books from the Library of Congress on February 28, 1911 [21] The Library of Congress not only helped build the Library's collection but permitted it to save money which it could spend for other works

After the United States took the Philippines under its wing, the Army chief surgeon in Manila sent a circular to his officers asking them to obtain medical works that had been published in the islands and in Spain As their predecessors had done at home for Billings a generation earlier, the officers scouted around and acquired items that were welcomed in Washington [22]

The Library also obtained publications in exchange for the *Index-Catalogue*, and it received many gifts—about 5 percent of its new arrivals were donated by authors, publishers, and friends Old and new friends continued to donate books, among them William W Keen, William Disbrow, William Osler, the Georgia Medical Society and other organizations, Daniel Davis, who presented papers of Frank Hamilton, a physician who attended President Garfield, Abraham Jacobi, who donated autograph letters, Mortimer Frank, who gave pho-

tographs, Sir Thomas Lauder Brunton, who sent 200 bound volumes containing 7,000 articles on pharmacology and therapeutics, and Thomas Windsor, who died in 1910 and remembered the Library in his will [23] Gifts would continue to enhance the collections in the future, although it would become more and more difficult for friends to present a volume that the Library did not already possess William Beer, of the Howard Memorial Library, New Orleans, indicated this later when he sent an item, saying, "You have arrived at such perfection that it is a pleasure to contribute anything "[24]

The Library became more liberal with its duplicates It no longer demanded exchanges (except for rare books), instead it donated duplicates to libraries that requested them, provided the recipient send a representative to select the books and journals from the accumulation and pay shipping costs Indeed the Library came to regard its duplicate collection as a "seed bed" for young libraries and its aid to those libraries as an important service [25]

Expansion of the Library within the Building

The Library-Museum Building at the time of its completion in 1887 was thought to have sufficient unused shelf space to accommodate incoming books for a long, long time Yet within a decade librarians could see that all empty shelves would soon be filled In 1896 Librarian Huntington requested $6,000 for six new iron stacks with iron stairways, perforated iron flooring, and wooden shelves He did not receive it Later librarians repeated the request By 1904 inflation in the cost of materials and wages had more than doubled the estimated cost to $13,000 Finally in March 1905 Congress appropriated $8,000 for the work When completed by contractors, under the eye of Army engineers, in May 1906, the shelves provided space, it was hoped, for the next 10 years [26]

The Library—and museum—also suffered through lack of room Librarian Merrill noted that the duplicates were so crowded in the "duplicate room in the basement" as to be practically inaccessible [27] Storage space for duplicates became so scarce that Librarian McCaw turned potential donors away and finally had to sell several wagon loads of publications for waste paper [28]

The War Department's Record and Pension Division still filed hundreds of thousands of records of Civil War veterans in the large room under Library Hall, and its officers and clerks occupied offices on the first floor front of the building Librarians and Curators repeatedly asked that the record-pension group be moved out so that the Library could expand into the lower room and the museum into the rooms along the front [29]

The Record and Pension Division remained for a time, but fortunately the Army Medical School departed The school, housed in the building since its founding in 1893, had been so successful that it had expanded Eventually it had become cramped Officers on the faculty protested to the Surgeon General that the laboratories were makeshift, inadequate, crowded, and unsuitable, and that the school was encroaching on space "desperately needed" by the Library and museum [30]

The chemistry laboratory which, with a bacteriological laboratory, was installed in the center section of the building for use of students of the Army Medical School. The arrangement was satisfactory for a while, but later the laboratories and classrooms occupied space needed by the growing Library.

The Surgeon General finally obtained quarters for the school in a rented building at 462 Louisiana Avenue. The school moved during the spring of 1910. However, the Library and museum did not inherit all the vacated areas. The Surgeon General transferred the Medical Department's architect and chemist to the building and set aside two rooms for use of examining boards.[31]

Still, the Library and museum received space into which they immediately expanded. The Library shifted its unbound recent journals and some of its documents and pamphlets into a large room freeing space in the stacks in Library Hall for acquisitions. Librarian McCaw said that the move came just in time to save the Library "from being so choked with its own material that it was becoming impossible to keep track of or to find a paper wanted when it was a pamphlet or document or number of any unbound periodical."[32]

First Renovation of the Building

By 1910 the building was almost a quarter of a century old and was beginning to show signs of wear and tear. The roof leaked. The drain pipes within the

walls flooded at some point every year, ruining the adjacent interior wall area and threatening books and specimens The inside plaster walls had been calcimined originally to save money, but the calcimine surface became dirty and had to be recalcimined frequently so that the total cost was greater than if the walls had been painted The lavatories, toilets, and plumbing were becoming antiquated and in need of replacement The exterior was begrimed by Washington smoke and needed to be cleaned

The building was wired for electricity, but inadequately by later standards Only four droplights, consisting of incandescent bulbs with green metal shades over them, were installed in Library Hall Flashlights had to be used in the stacks Around this time the first pay telephone was installed for the use of users of the Library and museum

Routine repairs to the heating system, electrical system, plumbing, and woodwork were made by the mechanic, engineer or assistant engineer, but major renovations called for outside contractors McCaw estimated that necessary repairs, done in the most economical manner, would cost $25,000.[33] Congress appropriated $10,000 for the work With this sum not everything could be fixed, but starting on July 1, 1911, the Library was closed temporarily until the most essential repairs were made to the roof and heating system, the interior painted, and new plumbing installed

Botany Bay

Along with more space the Library could have used more and younger employees at higher salaries The workers hired by Billings when they were relatively young men had grown into middle age by the turn of the century In 1906 there was one youngster of 25 on the staff, but next in age were three men in their forties five in their fifties, seven in their sixties, two in their seventies, and one, Edward Shaw, who was 81 [34] The average age of the 19 clerks was approximately 59 years Fletcher, the principal assistant librarian, was 83 In comparison his assistant, Fielding Garrison, was a boy of 36

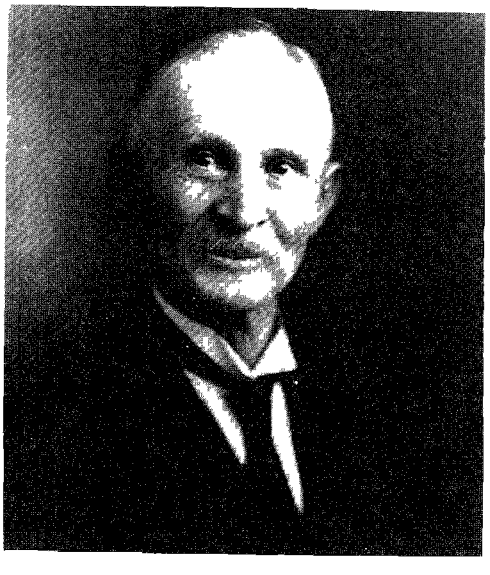
The assistant messenger (who did not count as a clerk) was an "old soldier with failing eyesight and infirmities of age" named John Fogarty, who had joined the United States Dragoons back in 1855 and been wounded during the Civil War After the conflict he had tried civilian life for a few years, rejoined the Army in 1871 and been assigned to the Surgeon General's office He left the Army in 1874 but remained in the Medical Department as a civilian employee On January 4, 1908, he tottered on the second floor near the main stairway, lost his balance, fell over the banister, fractured his skull and died January 7 [35]

The Library not only had its own veterans, it became the final haven for elderly clerks from the Surgeon General's office The Surgeon General and his assistants were considerate of their long-time employees and assigned those who had slowed down physically to the easiest jobs They believed that Library clerkships were the least demanding in the Medical Department, and when a

Library clerk died or resigned his place was liable to be filled by an old-timer sent from the SGO Finally in 1911 Librarian McCaw had to protest against the proposed transfer of a clerk, telling his superiors: "The Museum and Library Division is now much crippled from the fact that many of its old and faithful employees are practically disabled by age and the physical infirmities attendant thereto, and places as they fall vacant must of necessity be filled by young men in order to keep up the work. I sincerely hope this transfer will not be made."[36]

In the event that the organization was able to find a promising young recruit to fill a vacancy, it was not always able to hold him. The work was often repetitious, tedious, and dull. The copying of titles of books and articles, typing copy, translating, proofreading, day after day, drove many recent employees away McCaw lamented in 1910 that new men quit the Library for "better places" just "about as soon as they learn their business."[37]

Salaries were relatively low for the intelligent, competent, hardworking people that the Library sought. In 1905 the total salaries for the 21 persons working there amounted to $29,280.[38] In 1911 Robert Fletcher, M.D., the second in command, who had a worldwide reputation, received $2,080 as principal assistant librarian. Fielding Garrison, B.A. Johns Hopkins, M.D. Georgetown, third in command, received $1,800 as assistant librarian. Beruch Israeli, B.A. Yale, M.D. Georgetown, able to translate Russian, Polish, and Scandinavian languges, received $1,400 a year as a clerk, class 2.[39] Albert Allemann, A.B. Gymnasium of Soleure, Switzerland, M.D. George Washington, who indexed foreign journals and helped with the *Index-Catalogue*, also received $1,400 as a clerk.[40] In 1908 McCaw offered a clerkship at $900 a year to a Dr. Frank Disney.[41] In 1913 the Librarian offered a clerkship, $1,000 a year, to Arthur Eisenberg, M.D., who was earning $1,100 a year as physician



Albert Allemann, Principal Assistant Librarian, 1917 to 1932, coeditor of Index-Catalogue, *1912 to 1916, editor of series 3, 1918 to 1932.*

in the Indian Service, Lower Brule Agency, South Dakota. Eisenberg accepted the job, apparently in order to return from the frontier to civilization, but he remained in the Library less than a year before resigning to become anatomist of the museum at a higher salary.[42] The Librarian frequently asked for permission to pay higher salaries, but only occasionally were increases granted.[43] On at least two occasions McCaw would not approve a clerk's application for transfer to a better-paying job elsewhere because he felt the clerk was too valuable to the Library.[44]

It was this combination of the Library being the final berth before retirement for many employees, the low salaries in comparison with salaries elsewhere in the Surgeon General's office, and the difficulity of escape for some employees to other branches of the Medical Department, that caused men in the SGO to begin referring to the Library as "Botany Bay."[45]

The Library had other problems besides those associated with an aging staff, difficulty of retaining new recruits, and inequalities in salaries. Other branches of the Surgeon General's office, feeling that the Library's mission was the least important in the Medical Department, borrowed clerks and sometimes kept them for months, despite protests of the Librarian.[46]

Perhaps the Library's recruitment and retention of top-notch persons would have been eased if it had begun to accept women on the staff. In 1903 Kate Levy, M.D. Northwestern, who was experienced in medical library work and "anxious to make a specialty" of it, inquired about a job.[47] But the Army Medical Library was not ready to break with tradition, and if Dr. Levy ever entered the medical library field it was elsewhere.

THE *Index-Catalogue* IS CONTINUED BUT THE NUMBER OF COPIES IS REDUCED

When Billings planned the *Index-Catalogue* in the 1870's he did not foresee a second or third or fourth series. He told his German friend and book agent Felix Flügel, "I shall never print but one giant catalog and I want that to be as complete as possible."[48] But by the 1890's the mechanism and team for producing the *Catalogue* was running along smoothly, the medical profession had adopted it as an indispensable standard reference tool, and officers of the Medical Department were loath to see it stopped. Long before the final volume, W–Zythus, came from the GPO in 1895, the decision had been made to continue indexing literature that had accumulated and to publish the citations in a second series. Volume one of series two appeared without interruption in 1896. Without any intention on Billings' part the Library had metamorphosed into a publishing house.

As an aside it is interesting to conjecture about the future of the Library if the Surgeon General had halted the *Catalogue* in 1895. If indexing, translating, carding, proofreading, publishing, and distributing had ceased, half of the staff would have had nothing to do and would have been discharged. The *Index Medicus*, a by-product, would have stopped publication. The flow of free pe-

riodicals and books sent for mention in *Index Medicus* would have ended, forcing the Library to redistribute its funds, and perhaps forcing it to cancel subscriptions. The Library might have received less support from the medical profession, the Army, and Congress. The Library could have developed in possible ways, and it would certainly have been radically different.

While volume 1 of the second series was being prepared, Congress in January 1895 passed a law stating that no more than 1,000 copies of any government document could be printed. The legislators did this because they were concerned over the ever-increasing number and cost of Federal publications. The Library received its usual appropriation covering the printing costs of 1,500 copies of the *Catalogue*, but this was 500 more copies than the law allowed.

Librarian Huntington asked Surgeon General Sternberg to request the Secretary of War to persuade the House and Senate committees on printing to exempt the *Index-Catalogue* from the 1,000-copy rule. Sternberg tried to help but to no avail.[49] The *Catalogue* was limited officially thereafter to 1,000 copies of each volume. The Government Printing Office, however, was liberal and provided between 1,000 and 1,500 copies annually, a fortunate circumstance for libraries of the future.[50]

THE FALL AND RISE OF *Index Medicus*

During this period the fortunes of *Index Medicus*, the by-product of the *Index-Catalogue*, fell and rose. After Billings left Washington in 1895 and moved to Philadelphia and later New York, the burden of publishing *Index Medicus* fell on Robert Fletcher. He received subscriptions, handled finances, made arrangements with the printer, directed the indexers, kept the work organized, read proof, and saw that copies were mailed to subscribers. Billings' name appeared on the title page as coeditor, but he was busy in New York City developing the public library system and could not assist.

Fletcher had a slightly different opinion about selecting material for citation in *Index Medicus* than had Billings. After Billings left, Fletcher tended to choose some articles for *Index Medicus* that had not been selected for the *Index-Catalogue*. He did this "on the ground that current articles of any kind are apt to be of current interest to current readers, some of whom may find in [the articles] just the stimulating or factual statement they are after." The *Index Medicus* was, therefore, a more complete bibliography, at least during part of its existence, than the *Index-Catalogue*, "which Billings aimed to make a repository of the very best and most select material, but of no other."[51]

Fletcher continued to oversee the production of *Index Medicus* through 1896, '97 and '98, but then he had to give up. In the spring of 1899 he wrote Billings that he was "getting on in years," the steady increase in articles to be indexed was "really appalling," and every expense had increased except the editor's stipend. "If I go on," he said, "the chances are that I should lose both time and money."[52] He felt that there was no one else available to take over

the job. With reluctance the two editors let the journal lapse after the appearance of the April 1899 issue.[53]

Index Medicus might have disappeared forever had not the Carnegie Institution of Washington been established in 1902, with Billings as one of the trustees. One purpose of the Institution was to assist research by granting expense money for worthy scientific undertakings. Urged by Billings, the institution agreed to allot $10,000 for publication of *Index Medicus*, with Fletcher as editor.[54] Fletcher might still have declined the proposal had not Fielding Garrison proved himself to be an excellent assistant librarian. Fletcher agreed to resurrect *Index Medicus* if Garrison could join him as coeditor. The institute agreed and also made the editors' task easier by assuming the business management.

Fletcher and Garrison brought out the first issue of the new series in the spring of 1903. Because of funds provided by the Carnegie Institution, the price was lowered to $5. Still the periodical never attracted sufficient subscribers to cover the cost, and the institution continued to subsidize it for many years.[55]

In the spring of 1911 Fletcher, now 88 years old, came down with a severe case of pneumonia. He recovered but never regained his vigor. At the end of the year he resigned as editor, leaving Fielding Garrison the responsibility for *Index Medicus*.[56]

Proposals to Remove the Library From the Medical Department

On a number of occasions Congressmen suggested that the Library be removed from the Medical Department, either for reasons of economy or because the writings would be more convenient to the public if they were in a different location. In early 1897 Congressman Joseph Cannon, chairman of the House Committee on Appropriations, conceived or adopted a plan to move the Library (but not the museum) into the new District of Columbia public library building and give the vacated space in the Army Medical Building to one of the expanding governmental agencies, perhaps the National Museum or Geological Survey. Fletcher first heard of this from Ainsworth Spofford, Librarian of Congress, who would have gained control of the Surgeon General's Library if it were moved to the public library building. Fletcher tried to learn more about Cannon's plans, talking to Representative Henry H. Bingham, to the editor of the newspaper *Washington Post*, and to other persons, but to no avail because, as he told Billings, "Cannon keeps his plan to himself." Billings, in New York, asked George Shattuck, Horatio Wood, William Osler and other prominent physicians to influence their legislators to permit the Library to remain in the Medical Department.[57]

Cannon was serious: he requested information as to the number of square feet of space that would be freed if the Library moved, and he came down from Capitol Hill accompanied by two members of his committee and went through the building. Then suddenly he dropped the idea. The reason or

combination of reasons that dissuaded him is not known It may have been Spofford's defense of the Surgeon General's Library, or the National Museum's resistance to being given only half the Army building instead of a new building, or some other circumstance But it was fortunate for the Library's independence that Cannon changed his mind, for he was the most powerful person in Congress and could have had his way had he desired

In early 1905 the Medical Department began to hear rumors of a proposal to merge the Library with the Library of Congress [58] The LC building on Capitol Hill was new and uncrowded, and the thought occurred to some legislators that operating expenses (mainly salaries) of the medical library could be reduced by moving it into the congressional library Nothing happened at the time, but the idea recurred later

The department s concern for its library may have been heightened in 1906 by a survey, taken by the Executive Branch, of the organization and use of all Federal libraries [59] But other than a reduction in the appropriation from the usual $10,000 to $9,000, nothing untoward occurred The reduction lasted only 1 year, the appropriation returned to $10 000 in fiscal year 1907

Notes

[1] During this period the librarians answered a number of questionnaires concerning the Library These contain all manner of information See Organization and Use of Libraries (questionnaire of Keep Commission) and answers May 22 1906 MS/C/116 Questionnaire from Library Univ of Paris Nov 1907 MS/C/116 with answers Nov 18 MS/fB/101 Data on the Library S G O prepared for the Bureau of Education May 20 1908 MS/C/116 Letter McCaw to Surgeon General report for the President s Inquiry on Economy and Efficiency Dec 8 1910 MS/C/116 Report on the Library in accordance with Circular No 16 President s Commission on Economy and Efficiency June 30 1911 MS/C/116 Letter McCulloch to R Meeker July 7 1915 MS/fB/101 See also McCulloch The Surgeon General s Library *Bull Med Lib Assoc* n s 6 25–39 (1916–17)

[2] Annual reports of the Surgeon General from 1928 to 1933 noted the number of company representatives for example there are nine persons permanently engaged in research and abstracting 1931 p 323

It was perhaps to some of these persons that Victor C Vaughan referred when he wrote There are now certain organizations which for a definite price offer to supply an author with literature of reference These organizations employ men and women to go through great libraries such as those in Washington Philadelphia New York and Chicago and make out the lists (Vaughan *A Doctor s Memories* (1926) p 208)

[3] The quotation is from Cullen s scrapbook Proposed New and Centrally Located Surgeon General s Library Building copy in HMD Cullen also wrote

Some years ago Dr George Gardner then my Resident and now a prominent surgeon in Chicago and I went motoring over to Washington He was driving rather fast and I said George aren t you afraid of being arrested? He replied I have never been pinched in my life A few moments later as we neared Washington I noticed three motor cycle policemen and they noticed us As we came into the suburbs of Washington there were several toots Two motor cycle men came up beside us and one was directly in front of us One officer in a gruff voice said to George Show us your card He did so and I pulled out my visiting card and handed it to him explaining that we were on the way to the Surgeon General s Library to do some work All three officers started to laugh and one said Well we all make mistakes some times We thought you two fellows were bootleggers

[4] Letter Garrison to V Robinson Mar 16 1920 MS/C/28

[5] Report on the Library of the Surgeon General s Office June 30 1911 MS/C/116

Loans went directly or through libraries to many persons who became famous among them

Harvey Cushing, William Osler, William Halsted, William A White, Howard A Kelly, Frederick L Hoffman, William Welch, F Peyton Rous, John J Abel, Graham Lusk, S Weir Mitchell, Maude E Abbott, George W Crile, Solomon Solis-Cohen, Mazyck P Ravenel, Thomas J Burrill, Christian A Herter, R Tait McKenzie, and Karl Pearson Names of many borrowers may be found in correspondence in MS/fB/101

J Tyson, visiting Washington, phoned McCaw for the loan of a book McCaw sent it to the Willard Hotel for Tyson It was returned by the Library's delivery wagon May 11 1908 MS/fB/101

Victor C Vaughan, dean of University of Michigan medical school, 1891–1921, recalled the service provided from Washington "As dean I was able to help the superior student, hungry for more than the routine course offered him I saw that he had special privileges in the library and could linger among the book shelves at his own sweet will If the books he wanted were not in our library (though it is one of the best in the country) they could be obtained from the Surgeon General's Library in a few days' (Vaughan, *A Doctor's Memories* (1926), p 248)

[6] See letterpress book 1915 MS/fB/101

[7] Letter, McCulloch to James J Walsh, Jan 18 1915 MS/fB/101

[8] Letter, McCulloch to E C Ellett, Memphis, Tenn Feb 24, 1916, "Deposits are not required from reputable physicians" MS/fB/101

[9] Lest it be thought that the use of wooden boxes to ship books seems over-protective, on Aug 15, 1912, the surgeon at Ft Apache, Arizona, reported that a book for him had arrived soaked by water on the stagecoach MS/C/116

[10] Example, in December 1914 steel engravings of physicians, and books of the 16th, 17th, and 18th centuries were loaned to the St Louis Medical History Club for an exhibit, see correspondence under date Jan 1, 1915 MS/C/137 In 1912 books were loaned to Harvard for an exhibit during the Ninth International Otological Congress, June 12, 1912 MS/C/137

[11] "Most of our losses and all of our mutilations come from the very liberal way in which we lend and send books to physicians and libraries at great distances from this city The damage from boxing and the general shaking up of express travel is considerable" letter, Garrison to C Frankenberger Librarian, Med Soc County of Kings May 6, 1919 MS/C/166

[12] Garrison stated this very well "The ideal has been to gradually build up the medical library collections in the larger cities by interlibrary gifts or exchanges of duplicates and to stimulate the growth of these collections until they are in position to relieve the pressure of this central loan service in their own localities", memo, Garrison to P F Straub, Feb 7, 1919 file Historical Information, MS/C/309

[13] For example, queries from E R Wiese, Allegheny Co (Pa) Med Soc , Feb 23, 1915, MS/fB/101, M L Boyd, Fulton Co (Ga) Med Soc , Mar 5, 13, 1915, MS/C/137, W A Jayme, Medical Society of the City and County of Denver, July 7, 1914, MS/C/137, Royal Society of Medicine, London, July 23, 1914, MS/C/137, Jasper Co (Mo) Med Assn Feb 2, 1911, MS/fB/101 C Hitchcock, Wayne Co (Mich) Med Soc , May 13 1913, MS/C/116

Copies of a number of bibliographies compiled for physicians, 1922–1926, are in MS/C/151

[14] Letters, McCaw to I Adad, Chile, Jan 10, 1913, to B Golemy, Greece, Jan 13, 1913, to J Guiteras, Cuba, Mar 26, 1912, to W Schmidt, Ontario, Oct 2, 1915 MS/fB/101

[15] Letters, McCaw to J Schwalbe, ed *Deutsche Medizinische Wochenschrift*, Aug 27, Sept 8, 1913 MS/fB/101

[16] Several staff members supplemented their incomes by researching for patrons in the evening or on weekends, among them Sage, Neumann, Israeli, Allemann, Charles G Toepper, Homer J Councilor, and Eisenberg Several Washingtonians also acted as Library researchers, among them Dr Audrey G Morgan, Dr George J Lochboehler, and Dr Charles A Pfender

[17] See, for example, letters, McCaw to H Kimpton, June 1, 1908, and McCaw to Kegan Paul, Trench, Tuebner & Co , July 29, 1912, MS/fB/101, in which the Librarian mentioned a shortage of money for publications

[18] Letter, Putnam to McCaw, Feb 13, 1911 second indorsement by McCaw to Surgeon General, July 18, 1913 [regarding F Neumann] MS/C/116

There were suggestions, from time to time, that one volume of each copyrighted book on medicine and allied subjects be deposited in the Surgeon General's Library In the 65th Congress, 2d session, Bill S 4423, designed to accomplish this, passed the Senate but was not acted upon by the House

[19] Letters, F Ashley, LC, to McCaw, June 19, 28, 1911 MS/C/116

[20] Letters, McCaw to Putnam, Feb 15, 24, 1911 MS/fB/101 C H Hastings, LC, to McCaw, Mar 2, 1911 MS/C/116

[21] Letter, McCaw to Putnam, Feb 28, 1911 MS/fB/101 Record of Copyright transfers (of books) from Library of Congress NLM

[22] Letter, Huntington to Col Greenleaf, Manila, May 7, 1900 MS/C/115

[23] For Davis, see correspondence, Mar 23, 1915, MS/C/137 For Brunton see letters, Nov 21, 1908, MS/C/81, Nov 11, 1908, Jan 8, 1909, MS/C/116, and *Annual Report of the Surgeon General, 1909*, pp 155–156 Dorothy M Schullian, "Thomas Windsor, Benefactor of the Army Medical Library," *Bull Med Lib Assoc* 38, 135–144 (1950) See also *Index-Catalogue*, 2nd series, v 21, preface

Among the notable physicians who would donate in the future would be Harvey Cushing, Arnold Klebs, Howard A Kelly, William S Disbrow, and George W Crile In 1922 the Library received its largest gift, 50,000 volumes and bound papers from Prudential Life Insurance Prudential, under the direction of its top-notch statistician, Frederick L Hoffmann, had systematically collected annual reports and other publications of every state and local board of health in the United States and of health agencies in many foreign countries These reports contained a wealth of vital statistics and data on public health The Library already had some of the reports, but it had never had sufficient manpower to procure all of them year after year Stimulated by the gift the Library began to write to national and foreign health agencies periodically to obtain new reports as they were issued

[24] Letter, Beer to Librarian, Jan 20, 1921 MS/C/151 Readers should not construe this to mean that the Library is complete, it lacks many books of this and earlier centuries, and gifts are welcome

[25] "We are a sort of seed-plant for helping other medical libraries to build themselves up", letter, Garrison to Col C L Heizmann, Oct 24, 1917 MS/C/137

Among the libraries invited to send representatives to pick duplicates were the Cleveland Medical Library, University of Illinois Medical School, New Hampshire State Library, University of Michigan, Boston Medical Library, Texas Christian University, Medical Society of the City and County of Denver, and New York State Library

[26] *Report of the Surgeon General 1899* p 13–14, *1904*, p 133 *1905*, p 153 *1906* p 129 Copy letter Surgeon General to Secretary of War, Apr 5, 1905 letter, Col C S Bromwell to McCaw, May 12, 1906 MS/C/116

[27] *Report of the Surgeon General, 1901*, p 13

[28] Letter, McCaw to J T Johnson, June 19, 1908 (McCaw suggested duplicates be given to Public Health Service Library), McCaw to M C Noyes, Nov 4, 1910, McCaw to G Lake, Mar 30, 1912, McCaw to R L Sutton, July 21, 1913 MS/fB/101

[29] *Report of the Surgeon General, 1899*, pp 13–14, *1900*, p 13, *1901*, p 13 The move of the School is described in Henry, *Armed Forces Institute of Pathology*, pp 147–149

[30] Memo, Office of the Surgeon General, Mar 31, 1909 AMM

[31] Memo, McCaw to Surgeon General Nov 21, 1913, quoted in Lamb, "History of the United States Army Medical Museum," pp 140–142

[32] The location of books in Library Hall in 1902 is given in Fielding H Garrison, "Classification and Arrangement of Books in the Library for the Surgeon General's Office," *Bull Assoc Med Librarians* 1 70–84 (1902) For a later arrangement see Champe McCulloch, "Classification and Arrangement of Books in the Library of the Surgeon General's Library," *Bull Med Lib Assoc* n s 6 60–70 (1917–18) See also, Memorandum for Colonel Owen on library classification and arrangement of books in the alcoves, Sept 11, 1917 MS/C/137

[33] Letter, McCaw to Surgeon General, July 18, 1910 MS/C/116

[34] Shaw resigned July 15, 1908 when he was 83, file card, July 10, 1908, MS/C/116 On the card McCaw noted "His services for many years have been exacting and responsible, and the library loses one of its most valued assistants "

[35] Letter, McCaw to Surgeon General, Jan 8, 1908 MS/fB/101 Memo, McCaw to Surgeon General, Feb 13, 1904 MS/C/116

[36] Second indorsement by McCaw, Apr 25, 1911, to 1st ind by Surgeon General Torney, Apr 24 MS/C/116

[37] Memo, McCaw to Surgeon General, May 3, 1910 MS/C/116

[38] List of salaries Sept 1905 MS/C/116 The above total does not include the Librarian who received the pay accorded his rank in the Army

List of names of employees with their duties and salaries may be found in MS/C/116 under the dates Aug 24, 1907, Sept 15, Nov 13, 1909, May 3, Nov 21, Dec 10, 1910, Sept 26, 27, 1911, n d , probably 1912 in MS/C/137 under dates n d 1914, Sept 17, 1914 See also *Index-Catalogue*, 2nd series, v 21, preface

[39] Israeli immigrated from Russia when he was 18 and worked his way through Yale Continuing to work he supported his sister and brother through college He began to study medicine at University of Pennsylvania under a scholarship but resigned to accept a job in the Library at $1,000 a year on Aug 26, 1890 with responsibility for translating Slavic languages He studied medicine at Georgetown in the evenings and on weekends, receiving his M D degree in 1897 He died Oct 16, 1920 Letters, Israeli to Billings, Feb 20, Mar 18, 1890, C Smart to Billings MS/C/81 Copy letter, Israeli to Surgeon General, June 24, 1904 MS/C/116

[40] Allemann, born in Soleure, Switzerland, Feb 28, 1860, attended the universities of Berne and Munich He came to the United States in 1884 and taught ancient and modern languages in colleges for 16 years He began to work at the Library on Feb 12, 1900, and concurrently attended George Washington University Medical School, receiving his M D degree in 1904 He rose through the ranks to become editor of the third series of *Index-Catalogue* He retired on Feb 28, 1932, and died in December 1942

Robert Austin remembered him this way "Dr Allemann was a frail looking little man but he had unlimited energy, an alert mind, and fully aware of what was going on about him He had two assistants, Mr Patton and Mrs Deborah Hannon, who were long time, faithful, and devoted workers for him and both of them had great respect and the highest regard of Dr Allemann's knowledge and ability in carrying out his responsibilities in publishing the Index-Catalogue Dr Allemann very seldom left his office during the day He was not a sociable person but library staff members respected him as he was always pleasant, polite, and very much the gentleman at all times " Letter, Austin to W Miles, Sept 29, 1979

Garrison discussed Allemann occasionally in his correspondence MS/C/166 Memo, Ashburn to Chief, Division Professional Service, SGO, Aug 8, 1931, subject, rerating of Dr Allemann's position MS/C/151 Clipping, with portrait, Washington *Sunday Star*, Feb 1932

[41] Letter, McCaw to Disney, Dec 28, 1908 MS/C/101

[42] Memo, McCaw to Surgeon General, Jan 18, 1913 MS/C/116 Orders, Mar 17, 1913, attached to resignation, Feb 26, 1914 MS/C/137

Eisenberg was hired to fill the vacancy that occurred after clerk Lewis H Rose was killed by a trolley car, 10 o'clock at night, Dec 21 1912

[43] *Report of the Surgeon General, 1913*, p 195, *1914*, p 180, *1915*, p 177

Some members of the staff supplemented their incomes by assisting in the preparation of *Index Medicus* in the evening or on weekends, for example, Allemann received $120 a year for compiling and proofreading Some carried out literature research for patrons who lived too far away from Washington to visit the Library, for instance, Israeli made abstracts for clients, Allemann provided translations from the French, Charles Toepper furnished literature references, etc

[44] Edgar A Tibbetts, clerk, was able to speak 10 languages and to translate German, French, Spanish, Italian, Portuguese, Dutch, Danish, Norwegian, Finnish, Swedish, Russian, Hungarian, Bohemian, Roumanian, Greek, Arabic, Turkish, Chinese, Japanese, and other languages In 1904 he desired to transfer to the Bureau of Military Information, where translators were paid several hundred dollars more than his $1,400 a year salary McCaw wrote to the Surgeon General "The services of Mr Tibbetts are considered indispensable to the library of the Surgeon General's Office, because of his ability to translate from certain languages His loss would certainly cripple the work of indexing If he were transferred his place would have to be supplied here by a man of special knowledge of these languages, and this would undoubtedly be exceedingly difficult For this reason his transfer is disapproved " Letter, Tibbetts to Secretary of War, Feb 6, 1904, with 2nd indorsement by McCaw, Feb 15 MS/C/116 One cannot help but feel that Tibbetts was treated unfairly in having a promotion denied him on the ground that he was too valuable to the Library

Tibbetts came to the Library in 1893 He was killed by a collision with a horse and wagon while riding his bicycle home, Jan 30, 1908 MS/fB/101

In 1904 Albert Allemann desired to transfer to the position of anatomist in the museum McCaw noted that Allemann was a "very valuable clerk," and would not recommend his transfer, letter, Allemann to Surgeon General, July 28, 1904, with 1st indorsement by McCaw, July 28 MS/C/116 Allemann was promoted later and therefore possibly did not lose through McCaw's refusal

[45] The museum was jokingly called the "Pickle Factory " The expression "Botany Bay" may be found in memo, probably by Champe McCulloch, July 17, 1917 MS/C/137, in memo, William Owen to Surgeon General, Dec 10, 1918 MS/C/151, and elsewhere

[46] Memo, McCaw to Surgeon General, May 3, 1910 MS/C/116

[47] Letters, Levy to Billings, Dec 1903, Billings to Levy, Dec 14, 1903 MS/C/115 Kate Levy was the first woman, to my knowledge, to ask for a job in the Library The first woman to be hired may have been Miss Harriette B Blackwell, appointed clerk, class 1, Sept 25, 1905 (see file card, MS/C/116) Miss Blackwell later worked for the museum

[48] Letter, Billings to Flugel, Dec 7, 1875 NLM

[49] Copy of letter, Sternberg to Secretary of War, Feb 28, 1896, letter, Sternberg to Huntington, Feb 29 MS/C/115

[50] An interesting "Memorandum on subject of issues of Index-Catalogue," 1908?, is in MS/C/116

[51] Memo, Garrison to the Surgeon General and Librarian, Aug 5, 1929 MS/C/166

[52] Letter, Fletcher to Billings, Apr 30, 1899 NYPL

[53] When *Index Medicus* suspended publication, the French and Austrians carried on for a time with the *Bibliographia Medica (Index Medicus)* (Paris, 1900–1902) and *Index Medicus Novus* (Vienna, June 1889–Feb 1900)

[54] Letter, Fletcher to C Walcott, Carnegie Institution, Jan 3, 1903, gave the cost of publication of the final volume in 1898 and estimated the cost of the first volume under auspices of Carnegie MS/C/115

Correspondence regarding the *Index Medicus* is in the records of the Carnegie Institution

[55] A few letters concerning the yearly grants of $10,000 provided by the Institution to Fletcher are in MS/C/116, as letter of Dec 21, 1904 Reports of the yearly grant were printed in the Institution's *Year Book* The amount of the grants varied from $10,000 to $17,500 per volume, depending upon the size of the volume

The first notification of the revival of *Index Medicus* attracted less than 300 subscribers, clippings from unidentified journal, Apr 25, 1903, MS/C/115

[56] Fletcher's resignation became effective Dec 31, 1911, according to letter, R S Woodward to Fletcher, Jan 4, 1912 MS/C/49

[57] Letters, Fletcher to Billings, Jan 26, Feb 2, 5, 9, 1897, NYPL, Billings to Fletcher, Jan 27, 1897, MS/C/115, Rep Henry H Bingham to H C Yarrow, Feb 8, Billings to Fletcher, Jan 28, 1897 MS/C/1 Memo, Objections to removing the Army Medical Library from its present location, 1897 MS/C/115

There were rumors at this time that the Army Medical Library might be removed from the Medical Department and placed in the Library of Congress In a discussion following a talk entitled "The Army Medical Library and Museum" by David Huntington before the Medical Society of the District of Columbia, Mar 17, 1897, members of the audience spoke of the importance of keeping the AML where it was, and the society adopted a motion to do everything in its power to prevent removal of the Library to Library of Congress, see *National Med Rev* 7 66–72 (1897–98)

[58] Memo for Surgeon General, "Reasons why the Library of the Surgeon General's Office should not become a part of the Library of Congress," Jan 13, 1905 MS/C/116

[59] Printed questionnaire, "Organization and Use of Libraries," and separate handwritten draft of replies, 1906 MS/C/116

XIII

The Library During World War I

CHAMPE CARTER MCCULLOCH, LIBRARIAN 1913–1919

LIEUTENANT Colonel Champe Carter McCulloch* was born in Texas, September 10, 1869. He earned an A.B. degree from Baylor University, a civil engineer degree from Texas A & M, an M D. degree from Virginia in 1891 and another M.D. from Columbia in 1892. Later he acquired an M.S. degree from Columbia. With these five degrees he was looked upon as somewhat of a student by his fellow officers after he entered the Army Medical Department in 1892.

McCulloch's career for the next two decades was typical of that of the medical officers of his time. He was stationed at a succession of posts, served with the Army in the Philippines during the insurrection and spent 2 years in the Panama Canal Zone. On July 3, 1913, he was assigned to the Library. While he was Librarian he was on the faculty of the Army Medical School as professor of military and tropical medicine and later professor of military hygiene, and from August 1915 to June 1916 he was also curator of the museum.

McCulloch revived the old practice of collecting photographs of prominent physicians, a custom that had declined since Billings departed a generation earlier. He went about it systematically, writing many letters requesting photos each year.[1] He had the photos mounted and placed in portfolios, perhaps the first time this was done.[2] He also began to purchase photographs from commercial studios.[3]

McCulloch seems not to have a uniform policy in lending. He declined to send out pamphlets by Jenner because they were "very old and rare and can never be taken from the Library,"[4] and a book by Purkyne because it was in the Exhibition & Historical Collection and "we don't lend it outside the Library."[5] On the other hand he loaned incunabula and rare books of the 16th, 17th, 18th, and 19th centuries.

During the first half of his term the institution moved along normally, McCulloch overseeing administration, Garrison editing the *Index-Catalogue* and directing Library operations. McCulloch had more than a passing interest

*His name was Champe Carter McCulloch, Jr , but he seldom appended Jr to his signature

Champe Carter McCulloch, Librarian, 1913 to 1919.

in the organization he headed; he joined the Medical Library Association and presided over it from 1914 to 1916. Then ripples from the World War grew into waves, and the Library became a busy, crowded establishment. McCulloch and Garrison acquired additional duties, one of which was laying the foundation for the official history of the Medical Department's activities during the conflict. McCulloch, who had wanted to go to Cuba with the Army in 1898 and had to remain in Florida, who had wanted to go to France with the AEF and had to remain in Washington, finally went to France in July 1918 as a planner of the history. Soon after he returned from Europe in December 1918 he was transferred from the Library. Garrison, with whom he remained on friendly terms all his life, remembered him as "a kindly, yet a very strange man, with the sombre contrariness of the Scotch, crossed by some ply that yearned to function as a play-boy, yet not really jolly in the English sense but rather saturnine and sardonic."[6] McCulloch retired from the Army on November 30, 1922. Thereafter he was deputy state health officer of Maryland until he died at Walter Reed on October 14, 1928.[7]

Influence of the Library of Congress

McCulloch, like other officers during the period of the Army trusteeship of the Library, did not know anything about, or presumably have any thoughts about, running a library before he was sent there by the Surgeon General. But after he arrived he set about to learn the fundamentals of library science and

to try to improve the organization's way of doing things. He was impressed by some of the practices followed by the Library of Congress and decided to adopt them.

One of McCulloch's innovations was a card catalog for the use of the public. Earlier, when Billings had begun cataloging, printed catalogs had been the usual form. Billings had published catalogs in 1868, 1872, 1873–74, and finally the *Index-Catalogue* from 1880 onward. But the lower cost and other advantages of card catalogs had caused many libraries to swing from printed to card, and McCulloch decided that it was time for his organization to do so.

In 1916 McCulloch made arrangements to receive from the Library of Congress printed author cards for books.[8] These cards began to arrive July 1, 1916. The Library also purchased a quantity of lined index cards, identical in size and quality to the Library of Congress printed cards, with the intention of preparing author cards for volumes in the Library, for which LC cards would not be available.[9] The preparation of cards was not carried very far at the time because clerks were too busy with other tasks, and the war soon disrupted normal operations. After the armistice the Surgeon General assigned six hospital corpsmen temporarily to the organization. One of the jobs given these men was to cut author entries from pages of the *Index-Catalogue* and paste them on blank filing cards.[10] These were interspersed among the LC printed cards and handwritten cards in the filing cabinet. Thus came into existence the motley array of typed, handwritten, pasted, and LC printed filing cards that constituted the main public card catalog of the Library for a third of a century, from the 1920's through the 1950's.

McCulloch was impressed by other things at the Library of Congress. He pointed out to Surgeon General Gorgas that the salaries at LC and elsewhere in the government were higher than those in the medical library and that "this was due, perhaps, principally to the fact that the employees here have been designated as clerks, although doing the same class of work as men with professional titles elsewhere."[11] His reasoning may have been logical, but it did not lead to an increase in salaries or a change in titles.

McCulloch also requested that the Library be permitted to remain open until 10 o'clock at night, instead of 4:30 in the afternoon, and on Sundays and legal holidays from 2 to 10, like the Library of Congress. Earlier librarians had considered the advantages to the public of the institution's remaining open in the evening, but they had been stopped by lack of funds to pay additional employees. McCulloch asked the Surgeon General to request an additional $5,000 in the next appropriation to allow the Library to remain open longer, but $5,000 was a large sum compared with the $10,000 appropriation for books and the approximately $28,000 for salaries, and McCulloch did not receive it.[12]

World War I Disrupts Procurement of European Publications

Soon after World War I began in Europe during the summer of 1914 its effects were felt in the Library. Before the year was over all Belgian medical

periodicals, most of the French, and many of the Italian had suspended publication. By 1915 the supply of Russian, Russian-Polish, German, and Austrian journals was cut, and the flow from other countries was impeded.[13] Turmoil within belligerent countries was partially the cause of the stoppage, but the Library's system of payment was also responsible.

The Librarian, by government regulation, could not pay dealers for journals, books, and other publications until they reached the institution; in other words, the Librarian could not pay in advance.[14] If a European bookseller sent a bundle of journals to the Library and the journals went down with a torpedoed freighter, the seller bore the loss. Therefore sellers accumulated journals for the Library but would not ship them.

The absence of European journals delayed the preparation of many citations for the *Index-Catalogue* and *Index Medicus*. McCulloch endeavored in vain to restore the flow of Russian journals by asking the U.S. Embassy in Petrograd to help him locate a bookseller (Russian periodicals had been coming through a dealer in Leipzig, Germany).[15] He borrowed some German and Austrian journals from the Boston Medical Library and New York Academy of Medicine and from the editors of the *Journal of the American Medical Association* and the *Boston Medical and Surgical Journal*, who were still managing to procure the periodicals from Europe.[16] With these borrowed copies the Library kept somewhat up-to-date with its indexing of German and Austrian periodicals.

In Europe hundreds and finally thousands of dollars of the bookseller's capital was tied up in bundles of journals that gathered dust. It became apparent that after the war a large quantity of journals from Germany and Austria, and a lesser quantity from France, Switzerland, Italy, Portugal, Spain, and other countries would reach the Library. The Library could not put aside money to pay the sellers because, by law, an appropriation that was not spent within a certain time reverted to the Treasury. Congress rescued the Library from its dilemma by doubling the usual appropriation to $20,000 for the fiscal year ending June 1919 and again for 1920. The larger appropriation would also permit the purchase of rare works that might be offered for sale at comparatively low prices after the war, plus publications of the 1914–1918 period that were expected to be higher in price because of inflation.

After the fighting ceased the channels of communication opened rapidly, and during 1919 practically all of the missing periodicals from Germany, Austria, and a few other countries arrived. The Library was still unable to locate a bookseller in Russia, and gaps remained in the serials of that country.[17]

With European books and pamphlets the situation was different. Routine ordering procedures had been disrupted. The Library had not ordered books published in enemy countries. Dealers had not accumulated books for the institution, as they had journals. In 1919 the Library had begun purchasing from Europe, but many of the volumes had been printed in small editions because of wartime conditions and were no longer available. The Library was unable to acquire as many works published between 1914 and 1918 as it desired.

THE WARD HEALER

Weekly Chatter of U. S. Army Hospital No. 12

Vol. VI—No. 6 5c PER COPY July 26, 1919

HOW TO KEEP 'EM DOWN ON THE FARM

Title page of one of the short-lived magazines published by doughboys in World War I Army hospitals

Aside from the customary publications, the Library sought official documents issued by European army medical departments, especially from 1917 onward when the United States was involved in the war. In the view of the librarians these documents might contain information, based on actual wartime conditions, about the operations of military and civilian medical agencies that would be of use to the United States Army Medical Department.

McCulloch suggested to his superiors that they order the medical officers at the U.S. embassies in London and Paris to obtain such reports.[18] He requested the French Ambassador in Washington to have French military publications brought across the Atlantic by diplomatic couriers.[19] He asked the director of the British Army Medical Service for manuals, reports, and other publications issued by the Royal Army Medical Department.[20] British and French officials cooperated by supplying documents, not numerous in total number but relatively complete for the war period.[21]

Another type of wartime publication sought by the Library soon after the armistice was the Army hospital magazine. Published by enlisted men at a number of general and base hospitals during 1918 and '19, their titles reflected the doughboy humor of the times: *Gee Aitch 43* (from General Hospital no. 43, Hampton, Va.), *Mess Kit, Ward Healer, Biand-Foryu, Star Shell, Plattsburgh Reflex, Trouble Buster,* and others. Garrison, Acting Librarian, wrote to editors for copies and succeeded in obtaining almost all of them.[22] Because of his foresight the Library contains one of the best collections of these scarce magazines, containing photos and drawings of surgeons, soldiers, and nurses now dead and buildings and facilities now gone.

Impact of the War on Employees

The war affected the staff of the Library in several ways. Divisions of the Surgeon General's office continued to reach into the Library and borrow clerks, occasionally for long periods of time. In 1916 during the trouble with Pancho Villa along the Mexican border, the SGO requisitioned half of the clerks and retained them for 4 or 5 months. In March 1917, just before the United States entered World War I, six clerks were borrowed for more than a month. When these clerks were elsewhere the indexing of journals and preparation of the *Index-Catalogue* slowed down.[23]

The expansion of the military services as the United States approached the war drew men from the Library. Charles Toepper, who had left the Library in 1905 to accept a lieutenancy in the Philippine constabulary and returned in 1908, left again to become an officer in the ordnance department. Howard M. Savage also accepted a commission in the Army. Two other clerks transferred to combat-related parts of the Surgeon General's office.

Garrison, who had joined the Officers Reserve Corps with the grade of major in April 1917, was called to active duty in July 1917.[24] He went to the military camp at Plattsburgh, New York, for training and thereafter was sta-

tioned at the Library. He was appointed to the Medical History of the War Board in August and spent much time on the history during the next 2 years. Therefore, although he was assistant to the Librarian and ran the Library when the commanding officer was away, he could not devote much of his time to library affairs.

There were veteran employees, men who had been with the organization for decades, who simply could not work at an accelerated wartime pace. David O. Floyd, principal clerk, died April 23, 1918, after 36 years of service. Frederick W. Stone, who had joined the Union Army in 1861, later gone into the Surgeon General's office and been Billings' secretary, had a stroke in 1918 but continued to work. Harry O. Hall, brought to the Library by Billings in 1875, still presided over the reading room. Robert W. Hardy, a clerk for 49 years, had slowed down because of ill-health and age. John J. Beardsley, in the Federal service since 1863, was now so infirm as to be "deadwood."[25]

Instead of obtaining the sort of intelligent, hard-working persons that McCulloch desired, the organization had to fill some vacancies with clerks "whose usefulness had ended in other divisions" of the SGO and were sent to the Library "largely as pensioners." One of these was unable physically to perform the work in other divisions, another was transferred without the knowledge or consent of the Librarian, and another, blind in one eye and almost blind in the other, was sent "in order that he might be given a desk at which to sit until he could no longer report."[26] McCulloch protested, telling his superiors that "this branch of the [Surgeon General's] Office should no longer be used as Botany Bay to which the wreckage of all other divisions of the Office are sent to die. Each part of the Office should be compelled to [take] care of its own wreckage, and not make this a dumping ground."[27]

Morale was low because of the department's policy regarding the grades of library clerks. During the previous two decades the grades and salaries of clerks gradually slid downward. As clerks with higher grades died, resigned, or retired, the Medical Department forced the Library to hire clerks at lower grades. In 1894 six clerks earned $1,800 a year; by 1917 only two. Six $1,600 clerks of 1894 decreased to four in 1917; nine $1,400 clerks gave way to four, and eight $1,200 clerks to six. In contrast, four $1,000 clerks in 1894 increased to 13 by 1917.[28] While the SGO was cutting the number of high grades in the Library, it was bestowing promotions elsewhere. McCulloch noted that the "M. & L. force is demoralized by the fact that the work devolves upon low grade clerks, and there is no inducement to become efficient."[29]

To enable the Library to continue to operate, the War Department permitted it to hire temporary employees. Several of these were women, among them Audrey G. Morgan, M.D., and Loy McAfee, M.D. As in factories and offices throughout the country, the war period opened the Library for the first time to women employees in significant numbers.[30] None of these women were trained librarians, but they learned quickly what they needed to know. A few

found they liked the profession and stayed on during the 1920's and 1930's. In 1919, the war over, the government began to lay off temporary employees and by the end of the year the Library had lost many of its new workers.

In 1919 as the temporaries were being discharged, the Surgeon General assigned six sergeants to the Library. These men prepared cards for the new public card catalog by clipping entries from the *Index-Catalogue* and pasting them on blank cards. They rearranged books, pending the preparation of a proposed shelf list and a new classification.[31] They remained about a year, until their enlistments were up in 1920, and then departed.[32]

Wartime Compression in the Building

The war forced the Medical Department to jam more officers, NCO's, and civilians into the crowded building. Besides the Library and museum the structure still housed the 50-year-old accumulation of Civil War pension records administered by the Adjutant General's office. Chemists and draftsmen occupied other rooms. The editor of *Military Surgeon* and the officer in charge of Confederate graves had offices there. At least 11 rooms in the center wing, the capacious first floor room under Library Hall, and much of the cellar was occupied by these intruders.[33]

Now the department decided that the studio of a group of photographers, recruited to produce movies, slides, filmstrips, and photos for instruction at army camps, would be installed in the building. Space also had to be made for several artists of the anatomical art section; for additional officers detailed to the museum for work in pathology; for other groups, and for specimens shipped from the war zone. The museum was compressed much more than the Library, but the latter lost space usually reserved for clerks, readers, and acquisitions.

The room in the basement where duplicates were stored was overflowing, and donations of duplicates, accumulated for presentation to needy libraries, had to be refused because there was no place for them.[34] There was no shelf space for incoming government documents, and some had to be piled on the floor of the third tier of stacks. The staff wondered where they would shelve the flood of European publications expected to arrive after the war ceased.

Fortunately for the Library, in 1918 the War Department agreed to remove the pension records filed in the large room beneath Library Hall and in the cellar. Garrison, the Acting Librarian, proposed to convert the front end of the room into a reading room and stack area for journals and the back end into a stack area for documents. This was done; temporary wood stacks were erected therein as soon as possible. The floor of this room consisted of wood planks laid atop wood joists. The area, therefore, with wood floors, furniture, and stacks, and paper publications was considered to be somewhat of a fire hazard by the safety-conscious staff. Garrison recommended that the wood floor be replaced by concrete and the wood stacks by iron, but this was not done until some years later.[35]

Bound periodicals and public documents were moved from the second levels

of stacks in Library Hall to the lower room, freeing considerable space for acquisitions. With space available on the shelves Garrison hoped to reclassify and rearrange the books.[36] The reclassification did not come about, but new works soon came aplenty, so much so that within a few years an officer of the Corps of Engineers would advise caution in adding more books else the safe capacity of the floor beams and girders in Library Hall would be exceeded.[37]

Proposal to Merge the Surgeon General's Library With the Library of Congress

Another side effect of the war was an attempt to remove the institution from the Medical Department and integrate it into the Library of Congress. A member of the Senate Committee on Military Affairs suggested that this be done. The reasons for the proposal are not known, but perhaps the Senator was puzzled by the presence in the Army of a major research library whose readers were largely civilians, just as a later generation of Pentagon executives would question the arrangement. The Secretary of War did not object, so the following amendment was added to the Army Appropriation Bill: ". . . on or before January 1, 1915, said Library shall be transferred to and become a part of the Library of Congress, and so much of the amount herein appropriated as may be necessary is made available for paying the expenses of such removal."

There were reasonable arguments in favor of the move. The Library of Congress was open until 10 o'clock in the evening and therefore accessible to more readers than the Army Library, which closed at 4:30 in the afternoon. It would be to the advantage of scholars and students to have libraries in one location rather than separated. There were opinions that it would be more economical.

The Medical Department opposed the legislation. Librarian McCulloch asked physicians and organizations to influence their congressmen against the amendment. Medical societies cooperated, sending resolutions opposing the move to senators and representatives of their states. Editors stirred up their readers.[38]

The House Committee on Military Affairs would not agree to the amendment, and it was deleted from the bill.[39] The Library remained where it was, but it may have come close to being severed from the Medical Department and sent to the congressional library building on Capitol Hill.

The History of the Medical Department in World War I

The idea that a history of the Medical Department's activities in the war be written probably occurred to a number of persons, but the architect of the history was Garrison. In August 1917 McCulloch requested Surgeon General William Gorgas to create a board to collect material for the preparation of a medical and surgical history of American participation in the war, the board to consist of Garrison (a major since July 1917), Captain John S. Fulton, and McCulloch.[40] Gorgas established the board a few days later.[41] Thereafter Gar-

rison was not only involved in library affairs, but for the next 3 years he spent much time planning for, corresponding in connection with, and advising on the history.

Garrison initiated the collecting of much of the basic information for the history, although other names often appeared on orders and letters. Upon his suggestion reports by medical officers who had been sent to Europe as observers were obtained and cataloged. He arranged for the compilation of administrative histories of the divisions of the Surgeon General's office. He suggested the preparation of semiannual histories by each division of the office. He was responsible for instructions being sent to camps and hospitals to compile histories. Between May 19 and June 19, 1918, Garrison visited 20 camps and air fields in the South Atlantic, gulf, and mid-Western states to show surgeons the proper way of compiling histories of their installations. He asked the Surgeon General to send a circular to camps and base hospitals in the United States and France requiring that war diaries be kept. Also at his suggestion circulars were sent to officers informing them of the proposed history and asking them to collect material.[42]

As the collection of documents progressed there was not sufficient space in Garrison's office or elsewhere in the Library-Museum Building for the expanding historical work, and another room was obtained in the Surgeon General's office, which had moved into temporary building F in the center of Washington.[43]

On July 2, 1918 the Surgeon General appointed to the History Board an advisory council composed of Casey Wood, Victor Vaughan, and William Welch, all three temporary officers. Wood was the most active in the history program and was soon placed in charge of the office in Tempo F.

The History Board encouraged medical officers to publish articles about their experiences. To make certain that articles would meet professional standards and not reveal military secrets, the Surgeon General established a board of publications in April 1918. McCulloch presided over the board, Garrison was secretary for a few months.[44]

During the time that the Nation was in the war McCulloch was eager to sail to Europe with the troops. In May 1917 he had offered his services to former President Theodore Roosevelt, who had planned to raise a volunteer regiment and lead it overseas.[45] After the War Department's disapproval had ended Roosevelt's dream of an expedition, McCulloch remained at his post in Washington while all around him medical officers headed for the war zone.

In July 1918 McCulloch finally managed to be sent overseas, using as his excuse the necessity for conferring with the chief surgeon and other medical officers of the A.E.F. about the proposed history. He saw the medical sights of London, visited medical headquarters in France, toured battle areas, went to the great library of the Faculty of Medicine in Paris, and started home in December. McCulloch's desire of serving in France was never fulfilled, but he had a glimpse of the war at close range.

During the 6-month period that McCulloch was overseas, Garrison worked on the history of the war, reviewed manuscripts sent to the board of publications, coedited *Index Medicus* (he had asked Frank Stockman to assist) and, as Acting Librarian, directed the organization.

In October 1918 Surgeon General Gorgas retired and Merritte Ireland became the chief medical officer. Ireland reorganized the Surgeon General's office. The Historical Board of Garrison, McCulloch, and Fulton was renamed the Historical Section of the Library Division.[46] By this time Garrison had a firm conception of the history. He and Casey Wood conferred with Ireland, who approved a tentative draft of the publication program for a 15-volume series and assigned authors.[47]

Shortly after the armistice the Surgeon General's office began to consider the writing and publication of the individual volumes. On January 8, 1919, an editorial board of 30 officers, Garrison among them, was created to judge the manuscripts submitted for publication. Garrison concentrated on writing a history of the administration of the SGO, but during the year four different officers were given command of the Library, and Garrison had to spend much of his time keeping the organization running smoothly.

The compiling, writing, and editing of a multivolume history by more than a score of authors was a major undertaking, and the Surgeon General finally decided to establish a much larger, formal group, to produce the volumes. On December 4, 1919 he abolished the Library's History Section, replacing it by a History Division in the SGO. The History Division was headed by Francis A. Winter, then by Paul F. Straub, concurrently with their jobs as librarians. Contract surgeons were sent to the Division to help manage the large project.[48]

Garrison was not assigned to the History Division. Busy in the Library, he continued to write the administrative history of the SGO.[49] But those who followed in Garrison's footsteps changed the scope of the volume and omitted his name from the title page and chapter headings when the volume was published in 1923.[50] The complete series of 15 volumes was published from 1921 to 1929 under the title, *The Medical Department of the United States Army in the World War*. No other branch of the Army compiled a history of comparable size. The foundation of this massive, impressive set lay in Garrison's conception, planning, and hard work that inspired and stimulated the senior officers in the SGO to develop and continue the project until it was completed. By-products of Garrison's research were the lectures on the history of military medicine he delivered at Carlisle Barracks in 1921 and the articles he published in *Military Surgeon* between 1916 and 1922.[51]

McCulloch Suggests Abolition of the *Index-Catalogue*

At about the time the long war was beginning in Europe the Library gave away its last complete set of the *Index-Catalogue*, first series. Shortly thereafter the Patent Office Library, needing shelf space for its expanding collection, offered to return its set. Librarian McCulloch gladly accepted the offer. Sur-

mising that other governmental, nonmedical libraries might not be using their copies, McCulloch asked them to return idle sets.[52] Within a few years all sets reclaimed from Federal agencies had been given away. Thereafter libraries could only obtain recent volumes from the Library or Superintendent of Documents and had to pick up early volumes as they appeared occasionally in catalogs of antiquarian booksellers, who acquired them from estates of physicians.[53]

The distribution of the *Catalogue* in 1914 was typical of yearly distribution during this period. Out of 1,000 copies 403 were donated to libraries in the United States, 303 to libraries in other countries, 25 copies were retained for use in the Library, leaving only 269 copies for sale by the Superintendent of Documents.[54] Since all of the latter volumes were sold within a few years of publication (the price was only $2 a volume, more later, always an extraordinary bargain) there remained for distribution only the 25 copies stored in the Library. The Librarian doled these copies out carefully, generally to new libraries.

During the war copies of the *Catalogue* on the way to European libraries were lost when ships were sunk in the Atlantic. The Library stopped sending volumes abroad until the conflict was over; then it dispatched copies again. But some years elapsed before connections were reestablished with all its European friends.[55]

Useful as the *Index-Catalogue* was, it could not keep up with current literature. The number of journals and books published each year increased while the *Catalogue* fell further and further behind. The most recent references might be 15 or 20 years old. For instance, a reader in 1912 seeking references to articles on tuberculosis would find them in the volume published back in 1893, 19 years earlier. The reader would then have to consult all the volumes of the *Index Medicus* between 1893 and 1912 to be up-to-date.

Furthermore, the preparation of the *Catalogue* was a never ending task that absorbed much of the library's resources. Therefore when the preparations for the final volume of the second series were completed in 1916, McCulloch wanted to end the work unless the medical profession overwhelmingly favored continuation. Garrison, the principal assistant, had mixed feelings. He opposed continuing the work unless the medical profession demanded it.[56] On the other hand from his viewpoint as a historian of medicine he was reluctant to see the bibliography stopped. ". . . the value of the *Index-Catalogue* is not so much for the immediate present as for the future, where it would be difficult to bring these things together again," he told a correspondent, "I should like to say that the medical profession will lose a great deal if it passes up the *Index-Catalogue*."[57]

McCulloch sent a circular letter to medical libraries, medical school faculties, medical societies, and prominent physicians requesting their opinion. As an alternative he promised to continue indexing, placing the cards in a public file cabinet, and to publish special bibliographies on topics of wide interest, such as pellagra and influenza.[58]

The replies were unanimous for the continuation of the *Catalogue*.[59] McCulloch felt that he had to go ahead, and he requested an appropriation for printing the first volume of series 3. This volume was published in 1918 (normally it would have appeared in 1917, but was delayed a year by war conditions) with changes designed to save time and money. Reprints were no longer listed, contractions were used, a smaller font of type was adopted, and articles of little value were omitted. Garrison noted that thereafter the "process of exclusion [of worthless articles] had to be carried out with the utmost rigor" because of the high cost of printing.[60]

Albert Allemann, who had assisted Garrison with the editing of the *Catalogue* since 1912, became the chief editor when Garrison went into the Army. Allemann was a conscientious, hard-working Swiss with deep affection for the institution. Born in 1860, he had immigrated in 1884 and supported himself by teaching languages. At the age of 40 he had come to the Library and, believing that he ought to learn something about medicine since he was reading about it every day, attended Georgetown Medical School in the evenings, receiving his M.D. degree in 1904. He edited practically all of series 3 (1918–1932), carrying out the "process of exclusion" and other policies suggested by Garrison and the librarians to reduce the cost and hasten the preparation of the volumes.

First Step Toward a Bibliography of Incunabula

The war was responsible for the temporary abandonment of the Library's compilation of a bibliography of incunabula. The first incunabula had been obtained by Billings in the 1860's. He did not go out of his way searching for them but picked up several each year, purchasing copies when they were advertised at comparatively low prices.[61] Copies also arrived through gift and exchange. Through the slow but steady acquisition of pioneer printings, the institution had a sufficiently large collection to be of use to John Stockton-Hough, the first American physician to study medical incunabula in the 1880's. Billings loaned some incunabula to Stockton-Hough, sent him transcriptions, and allowed him to have photographs taken (Billings did not want photos made and gave permission grudgingly).[62]

During the early 19th century the clerk most interested in incunabula was Felix Neumann.[63] Urged by Garrison, Neumann agreed in 1915 to compile a catalogue of the Library's holdings.[64] Garrison searched through 800 pamphlet boxes looking for items for Neumann.[65] Their enthusiasm for the early printings infected McCulloch, who directed that they be purchased whenever possible[66] and even thought of bringing Arnold Klebs, a Swiss physician and expert on incunabula, to the Library to work on the volumes by employing him under contract as an acting assistant surgeon.[67]

In late 1915 Klebs came to Washington at his own expense and remained almost a year, working on the Library's collection.[68] During that period the old publications, which were dispersed throughout the building shelved ac-

cording to subject, were brought together and placed in glass exhibition cases. Klebs and Neumann cooperated, intending to produce a bibliography which would have been published in the *Index-Catalogue* and as a reprint, but because of the war it was not completed.[69] McCulloch finally published the first list of the Library's 231 incunabula in *Annals of Medical History* in 1917.[70]

Owen's Dream

The first move to obtain a new Library-Museum Building came not from the Library but from the museum. In 1882 a young physician named William O. Owen demonstrated his abilities to an examining board and was accepted by the Medical Department as an Assistant Surgeon. Over the years he rose to the rank of colonel and then in 1914, owing to a mix-up in the records, was retired. In May 1916 the error was rectified, and he was called back into the department and placed in charge of the museum.

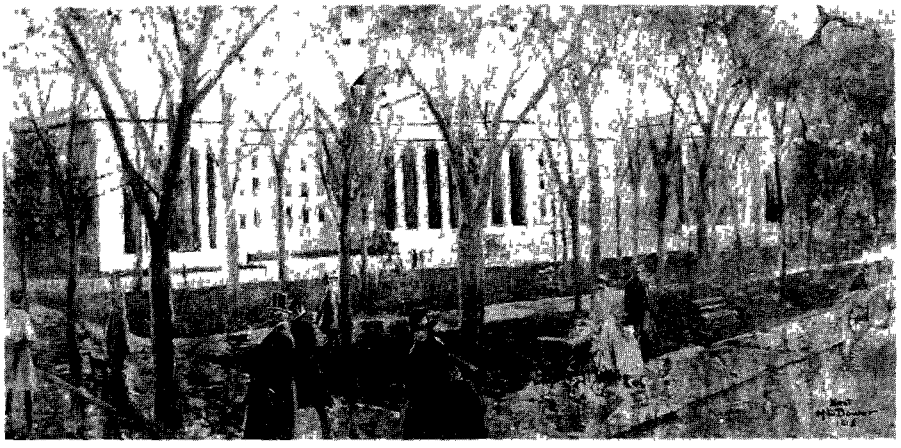
As a coincidence in 1916 Congress established the Public Building Commission to determine what buildings would have to be constructed to contain all the government agencies in Washington. Perhaps this survey was the stimulant that started Owen thinking about a new home for the crowded museum and Library.

Owen began to plan a large three-story structure that would house the museum, Library, Army Medical School, and Field Medical Supply Depot (the latter was then in a rented building at 21 M St., N.E.) and also have rooms where medical and scientific societies could meet. The structure would have 118,260 square feet of floor space (the current building had somewhat more than 40,000) and would cost an estimated $2,300,000. It would sit on the south side of the Mall between 12th and 14th Streets.[71]

Owen circulated his plan among his colleagues.[72] Only the commanding officer of the school objected, on the grounds that the structure would not be suitable *if* the department enlarged the school in the future. Surgeon General William Gorgas was captivated by the concept and told Owen to proceed. Owen consulted the Commission of Fine Arts to ascertain the style of architecture and design that the building should have and had an architect draw up floor plans and a front elevation. Gorgas requested, but did not receive, $10,000 from the Secretary of War to engage an architect to draw up detailed plans and specifications. Gorgas also asked Lieutenant Maurice L. Bower, an artist who was with the museum during the war, to paint a picture of the proposed building, and for more than a quarter of a century this painting hung in the Surgeon General's private office.

The Commission of Fine Arts, a body authorized to approve the design of proposed buildings for the purpose of maintaining architectural harmony along the Mall, assigned a site between 4½th and 6th, A and B Streets, S.W., and told Owen to redesign the structure, making it less ornamental and grandiose. Owen had plans drawn up for a plainer, four-story structure [73]

Owen not only planned and pushed for the building within the Medical



A third of a century after John Shaw Billings planned the first Library-Museum building, Colonel William O. Owen proposed this new, larger building. The painting was made by Lt. Maurice L. Bower, who served in the Medical Department during the war.

Department, he also directed Major Robert W. Shufeldt to rally civilian physicians to urge Congress to give approval and funds. Shufeldt had retired from the Medical Department in 1891, begun to practice medicine in Washington, and been recalled to active duty in January 1918.[74] He sent a circular letter to scores of prominent physicians and officers of local and state medical societies, asking them to endorse legislation for a new building. He mimeographed copies of the replies and stapled the copies together in a volume an inch and a half thick. He presented copies of this volume, which he entitled "Letters from Medical and Surgical Societies, Deans of the Medical Colleges of Class A, and from Eminent Physicians and Surgeons of the United States making an Appeal to Congress for an Appropriation to be applied to the building and equipping of the proposed new Army Medical Museum . . ." to members of the House and Senate committees on military affairs, and to other influential legislators. He visited Representative Julius Kahn and asked him to introduce a bill on the subject. Kahn replied that the House committee had discussed the proposal to some extent and advised Shufeldt to postpone action until a more propitious time. Apparently military matters connected directly with the war monopolized the committees' attention and kept the Museum-Library's friends from proceeding.[75]

Surgeon General Gorgas retired on October 3, 1918, and was succeeded by Merritte W. Ireland, who preferred that the new library be erected close to Walter Reed General Hospital rather than on the Mall.[76] This was the beginning of a debate that would last a third of a century over the site of a new library building.

Owen's "dream," as he called it, of a new building stopped here.[77] Nevertheless he and Shufeldt had impressed the Medical Department and Congress, and in 1919 a bill was passed appropriating $350,000 for the purchase of land "for the final location of the Army Medical Museum, the Surgeon General's Library, and the Army Medical School," contiguous to Walter Reed, where the department hoped to establish a great medical center.[78]

World War I marked the end of an era in the Library. During the period the last of the first generation of clerks and almost all of the second generation clerks, men who had been indoctrinated by the founders, disappeared. Women employees began to displace men. The last long-term Librarian was gone, and hereafter the normal tenure of librarians would be 4 years Shelf space became scarce. The dearth of trained employees at a time when the war was stimulating the demand for more service caused the organization to fall behind in its work [79] "The business . . . is actually several years in arrears, with the current and absolutely necessary work several months in arrears," noted an Acting Librarian in 1920.[80] The war years marked the first peak in the Library's existence, during the next two decades it would slide downhill.

Notes

[1] See McCulloch's correspondence in MS/fB/101

[2] *Index-Catalogue,* 3 series, vol 1, p iv

[3] On one occasion he bought 43 photogravures from Berlin Photographie Co Letters, Mar 16, 20, 25, 1916, MS/fB/101

[4] Letter to librarian, N Y State Lib , Sept 25, 1914

[5] Letter to librarian, N Y Acad Med , Apr 6, 1916

[6] Letter, Garrison to A Klebs, Oct 17, 1928 MS/C/166

[7] Biographical information on McCulloch may be found in MS/C/137, *Army Register, Bull Med Lib Assoc* 13 21–3 (1923–24) (an editor's account of McCulloch's autobiographical speech at an MLA meeting), and *JAMA* 91 1564 (1928)

[8] *Index-Catalogue,* 2nd series, vol 21, 1916, p vi Letter, Garrison to W Gilbert, Mar 7, 1921 MS/C/166

"We have arranged with the Library of Congress to have all our author cards printed in modern style for consolidating our four author catalogues into one (the whole to be placed in cabinets in front of the book stacks pro bono publico)", letter, Garrison to William Osler, copy at JH

[9] Memo, McCulloch to Mr Wilson, Jan 24, 1917 MS/C/137 C C McCulloch, "Classification and Arrangement of Books in the Library of the Surgeon General's Office," *Bull Med Lib Assoc* n s 6 61 (1917–18)

[10] Memo, Garrison to Straub, Feb 7, 1919 MS/C/309

[11] *Report of the Surgeon General,* 1916, p 215

[12] *Report of the Surgeon General,* 1916, p 215

[13] Letters, McCulloch to F A Brockhaus, Jan 22, 1915, to librarian, Mass Gen Hosp , Feb 24, to H Goulon, Paris, May 1, to K L Rikker, Petrograd, June 3 MS/fB/101

[14] Letter, McCulloch to O Harrascowitz, Leipzig, July 24, 1915 MS/fB/101

[15] Letters, McCulloch to A Wadsworth, Feb 11, 1916, to U S Embassy, Petrograd, Feb 17 MS/fB/101

[16] Letters, McCulloch to J F Ballard, Boston Med Lib , Mar 18, 31, Apr 12, 1916, to C M Williams, N Y Acad Med , Apr 13, to G Simmons, *JAMA,* Feb 25, Mar 11, 17, 24, 31, G Smith, *Boston Med Surg J* , Mar 1, 18, 31, Apr 12 MS/fB/101 Letter, Garrison to John W Farlow, Boston Med Lib , May 12, 1916 JH

[17] *Report of the Surgeon General,* 1920, p 365, 1921, p 170 Memo, Librarian to Surgeon General, Jan 9, 1920, memo, Garrison to Surgeon General, Aug 3, 1920, letter, Secretary of State to Secretary of War, Aug 23, 1920 MS/C/15

A brief account of the effects of the war on the supply of European medical publications is in the section by McCulloch on the Library in

The Medical Department of the United States Army in the World War, vol 1, The Surgeon General's Office (1923), p 516–519 See also McCulloch's preface to *Index-Catalogue*, 3S, v 1, 1918

[18] Draft of memo for the Surgeon General, no date, memo for the Surgeon General, Mar 15, 1917, letter, Surgeon General to Col A E Bradley, American Embassy, London, Mar 15, 1917 MS/C/137

[19] Letter, McCulloch to J J Jusserand, French Ambassador, Oct 8, 1917 MS/C/137

[20] Letter, McCulloch to Surgeon Sir Alfred Keogh, Oct 8, 1917 MS/C/137

[21] Letters, Surgeon Sir A Keogh to McCulloch, Oct 29, 1917, McCulloch to Keogh, Nov 12, 1917, Col A E Bradley to the Surgeon General, Apr 24, 1917, listing official documents obtained for the Library MS/C/137

[22] For example, letters, R Davis, ed *Bombproof*, to Garrison, Dec 15, 1918, A Wikel, ed *Bayonet*, to Garrison, Dec 18, Garrison to Davis, Dec 19 MS/C/151

[23] Memos, McCulloch to Surgeon General, Oct 13, 1916, Apr 14, 1917 MS/C/137

[24] Albert Allemann moved into the post of principal assistant librarian, vacated by Garrison, and Frank Stockman into the assistant librarianship vacated by Allemann

Garrison was promoted to lieutenant colonel in August 1918

[25] Memo, Owen to Surgeon General, Aug 20, 1918 MS/C/151 Beardsley died in August 1920 Stone died Mar 25, 1919 Hall retired in 1921

[26] Memo, Noble to Surgeon General, Sept 19, 1919, memo, chief clerk to Col P Straub, Apr 2, 1919 MS/C/151 Letter, Noble to Surgeon General, Apr 23, 1920 file Personnel authorization MS/C/309

[27] Memo, McCulloch [to Surgeon General?], July 17, 1917 MS/C/137

[28] Comparison of number of clerks in M & L Division 1894–1917 MS/C/137

[29] Unsigned memo, 1917 MS/C/137

[30] The trend to hire women continued as vacancies occurred during the 1920's and 1930's, and by World War II women comprised 80 percent of the staff

The wartime recruit who remained at the Library the longest time may have been Christine C Hilbrandt, who assisted with the *Index-Catalogue* until she retired in September 1954 During one stretch of 26 years she was never absent on sick leave, surely somewhat of a record in the Library

[31] Letter, Garrison to Noble, Oct 7, 1920, memo, Librarian to Surgeon General, Jan 9, 1920 MS/C/151 A 15-page 'Tentative classification for arrangement of books," 1917, is in MS/C/137 *Report of the Surgeon General*, 1920 p 365

[32] Letters of recommendation that Garrison wrote for these men are in MS/C/166

Lists of names, salaries, and duties of persons employed in the Library including temporary employees, may be found in MS/C/137 under dates Oct 3, 1916, June 30, 1917, Oct 3, 1917, 1918 in MS/C/151 under dates 1918, Apr 10, 1918, Feb 12, 1919, Feb 18, 1919, Apr 4, 1919, Apr 25, 1919, Sept 19, 1919 and in MS/C/309, file A9a, Feb 7, 1919

[33] Letter, [W Owen?] to Surg Gen Gorgas, May 22, 1917, with attachments and indorsements file Space Information MS/C/309

[34] See, for example, letter, Garrison to Secretary of the National College of Pharmacy at George Washington University, Oct. 3, 1918, declining an offer of journals MS/C/151

[35] Memo, Garrison to C R Darnall, Dec 27, 1918 MS/C/151 Memo, Garrison to Straub, Feb 7, 1919 MS/C/309 *Report of the Surgeon General*, 1918, p 433, 1919, p 1258

[36] In the NLM manuscript collection is a 15-page "Tentative classification for arrangement of books in Surgeon General's Library," 1917, apparently drawn up by Garrison and McCulloch for the proposed reclassification MS/C/137

Garrison considered adopting James Ballard's classification in use at the Boston Medical Library, letter, Garrison to J W Farlow, Oct 16, 1917 copy at JH See also letter, Garrison to Welch, Oct 17, 1919, mentioning that Librarian R Noble was to visit medical libraries to examine classifications JH

[37] Letter, Maj B Somervell, Corps of Engineers, to officer in charge, Army Medical Museum, Nov 7, 1928, letter, S Blackman junior engineer, to Mr Merrick, Oct 27, 1928 file Old Building and Restoration, MS/C/309

[38] Letters, McCulloch to J A Spalding, May 1, 1914, McCulloch to Rep E Y Webb, Apr 30, 1914 MS/fB/101 Letter, McCulloch to J A Spalding, Apr 25, 1914 MS/C/137 Memo, McCulloch to Acting Surg Gen , 1915 file A-9a, MS/C/309 Editorials, *Bull Med Lib Assoc* 3 56–57 (April, 1914), *JAMA* 62 1100 (1914)

Rep James Lloyd of Missouri became involved in a confused, interesting misunderstanding with the secretary of the Missouri State Medical Society over the amendment See letter, McCulloch to E J Goodwin, June 15, 1914, MS/fB/101 *J Missouri State Med Assoc* 11 27, 90–91, 95–97 (1914) Statement by Lloyd, *Congressional Record*, Jan 22, 1915, pp 2277–2278

Statement opposing transfer of Library, 1914,

given to committee by Neilson Falls of the Library MS/C/137

[39] The House did not single out the amendment regarding the Library It disagreed with all Senate amendments to the Army Appropriation Bill

[40] Letter, McCulloch to Gorgas, Aug 9, 1917 MS/C/137 Fulton was secretary of the Maryland State Board of Health, a captain in the Reserve Corps, and an expert in medical statistics

[41] A G O Special Orders 196, para 217, 218, Aug 23, 1917

[42] Plan for a medical and surgical history of the American participation in the present European war, [1917] MS/C/137 Medical and surgical history of the war–July 1917–July 1918 [July 1, 1918] MS/C/151, also published in *Military Surgeon* 43, 347–350 (1918) Report of the Division of Medical and Surgical History of the War, attached to letter, McCulloch to Surg Gen Gorgas, July 12, 1918 MS/C/151 *Report of the Surgeon General* 1918, pp 436–437

At the Library there were four temporary employees working on the war history under Garrison's direction

[43] The room was on the second floor of Tempo F, occupied by the SGO from May 3, 1918, to Aug 30, 1920 See floor plan in *The Medical Department of the United States Army in the World War*, vol 1, p 128

[44] An account of the work of the Board and a list of the persons on it is in *The Medical Department in the World War* vol 1, pp 520–523

[45] Letters, McCulloch to Roosevelt, May 8, 1917, W E Dame to McCulloch, May 11, McCulloch to R Derby May 16, Derby to McCulloch, May 17 MS/C/137

[46] SGO Office Order 97 Nov 30, 1918 The Museum and Library Division, established in Billings time, was split The Library Division was set up, consisting of the Library Section and the History of the War Section The museum was placed in a new Laboratory Division See organization chart, *The Medical Department in the World War*, vol 1, p 540

[47] Letter, Garrison to Brig Gen W McCaw, Dec 11, 1918 MS/C/151

Garrison's outline of the series is in an article by him and Wood, *Military Surgeon* 44 521–529 (1919)

[48] A brief account of the work of the History Division of the SGO and its predecessors, the History Section of the Library Division and the History Board, is in *The Medical Department in the World War*, vol 1, pp 525–528 See also Loy McAfee, "Book Making Thru Military Channels," *Med Rec* 101 130–4 (1922)

[49] Letter, Garrison to Wood, July 27, 1920 MS/C/166 See also letters in Kagin, *Life and Letters of Fielding H Garrison*, pp 111, 125, 135

[50] An acknowledgement of Garrison's services is on p 13 of *The Medical Department in the World War*, vol 1

[51] Titles of these articles may be seen in the bibliography of Garrison's writings in Kagan, *Life and Letters of Fielding H Garrison* Some of Garrison s correspondence, outlines, draft, instructions and notes regarding the war history may be found in MS/C/137, MS/C/151, and MS/C/166

[52] Letters, McCulloch to librarian of Weather Bureau and Justice Dept , June 29, 1914 MS/fB/101 McCulloch likely wrote to every non-medical federal library

[53] "The entire first series and the first ten volumes of the 2nd series of the *Index-Catalogue* are entirely out of print Because of this fact, recently established medical institutions in the United States and Europe are unable to secure a complete set of the *Catalogue* ", letter, R E Noble to W W Strang, Apr 24, 1922, see also Circular letter No 2, by Col C R Darnall, Feb 4 1928 MS/C/154

[54] Letter, McCulloch to Superintendent of Documents, Jan 29, 1915 MS/C/137

See also Memorandum concerning the mailing and distribution of *Index-Catalogue*, by McCaw, Sept 13, 1912 MS/C/116

[55] Letter, Phalen to Director, Bibliothèque Cantonale et Universitaire Lausanne, Mar 16, 1927 MS/C/154

[56] Memo, Garrison to Col Darnall, Nov 26, 1920 MS/C/151

[57] Letter, Garrison to C P Fisher, Apr 20, 1916 JH

[58] Memo, Garrison to Col Darnall, Nov 26, 1920 MS/C/151 Memo, Garrison to Surgeon General, May 31, 1922 MS/C/166

[59] Resolution of the Medical Library Assn for the continuation of the *Catalogue*, *Bull Med Lib Assoc* n s 6 14 (1916), copy in MS/C/154 On p 14 of the *Bulletin* is a statement that the Mass Med Soc , and the Boston Med Lib had also passed such resolutions Letter J C Hay, John Crerar Lib , to Garrison, Apr 27, 1916, resolution of medical faculty of Johns Hopkins, May 1, 1916 and other letters from groups in the United States and Great Britain favoring continuation, Feb –July 1916, in MS/C/154

[60] Memorandum for the Surgeon General and the Librarian S G O on the *Index Catalogue* and *Index Medicus*, by Garrison, no date MS/C/166

[61] Have never tried especially to obtain them", letter, Billings to J Stockton-Hough, Aug

30, 1889 MS/C/81 As late as 1908 the Library was offered an incunabulum for $15 50, letter, C P Fisher to McCaw, Apr 17, 1908 MS/C/116

[62] Correspondence between Billings and Stockton-Hough, 1880's, in MS/C/81

[63] Felix Neumann was born in Hoenigsberg, Germany, Sept 10, 1858, and emigrated to the United States as a young man From May 1, 1900, to Sept 30, 1907, he was employed in the Library of Congress reference division, and from Oct 1, 1907 to April 1, 1908, in the Smithsonian's bureau of international exchanges He then came to the Library where he selected, ordered and cataloged all books purchased and also selected books from the Library of Congress duplicate copyright volumes Eventually he rose to the position of assistant librarian Interested in early printers and their publications, he was the Librarys first expert on incunabula and became well-known in this field In 1931 Georgetown University awarded him an honorary doctor of laws degree In his later years he was in poor health, but he continued to work at the Library until he was forced to retire by the Economy Act on July 1, 1932, almost 74 years old He died in February 1934

Robert Austin remembered Neumann thus

> I always enjoyed conversing with Mr Neumann as his German accent in pronouncing words in English fascinated me He would invariably greet me with the expression "Ach! Life is so sad " Mr Neumann had a fine sense of humor and, from time to time, would drop by and visit with library staff He was somewhat "eccentric" in his work routine—he always insisted on locking the door to his room upon leaving each day This caused somewhat of a problem for cleaning personnel at night when they cleaned the entire building By special arrangement one of the library's messengers would do the necessary chores in Mr Neumann's room when he would arrive at work each morning This room, the largest private office in the library, had book shelves down thru the center of it and book shelves from floor to ceiling along two walls and in spaces between windows Books were everywhere and very little space was left for work area Perhaps it was just as well the cleaning people couldn't get into the room as it was a hopeless place to clean—only the work area around Mr Neumann's desk could be touched Going to and from the library, Mr Neumann *always* carried a green cloth bag under his arm and employees wondered what was in the bag—perhaps his lunch and/or his home work?

Document, Felix Neumann applying for job at Library, Feb 14, 1908 MS/C/116 P Ashburn, *Med Life* 43 575 (1936) Clipping from Washington *Sunday Star*, with portrait, n d HMD Letter R Austin to W D Miles, Sept 29, 1979 HMD

[64] Letter, Garrison to A Klebs, Apr 7, 1915 MS/C/166

[65] Archivists who handle dusty documents occasionally develop allergies or other ailments This happened to Garrison He remarked to his friend Arnold Klebs "I have never cared particularly for those venerable items [incunabula] because the fine, impalpable dust they engender, like that from the cire-cloth of an Egyptian mummy, *will* get up into air-passages, causing considerable physical discomfort unless you plug the nostrils with cotton" (letter, Jan 24, 1930 MS/C/166) Garrison was annoyed with abscesses on his fingers caused, he thought, by dirt from incunabula

[66] "Notwithstanding the limited means I have tried to enlarge our collection of early printed books and during my administration have succeeded in increasing the number of our incunabula", McCulloch, *Ann Med Hist* 1 301 (1917)

McCulloch gave a talk "On Incunabula" before the MLA, May 1915, published in *Bull Med Lib Assoc* n s 5 1–15 (1915–16)

[67] Letter, Garrison to Klebs, June 27, 1915 MS/C/166 Other letters from Garrison to Klebs regarding incunabula are in this collection

[68] "One of our most distinguished authorities on old-book lore, Dr Arnold C Klebs spent over ten months in connection with the recataloging of our collection of 15th century medical books", memo for the Surgeon General, June 12, 1917 MS/C/137

[69] Letter, McCulloch to Public Printer, Feb 1, 1916 MS/fB/101 McCulloch, *Bull Med Lib Assoc* n s 5 14 (1915–16)

Klebs published an article while he was studying at the Library, "Desiderata in the Cataloging of Incunabula," *Papers of the Bibliographical Society of America*, 10 143–163 (1916)

[70] "A Check List of Medical Incunabula in the Surgeon General's Library," *Annals Med Hist* 1 301–315 (1917)

R W Shufeldt, an officer on temporary duty with the museum, wrote an illustrated article about the collection, "Various Incunabula and other Rare Works in the Library of the Surgeon General's Office," *Med Review of Reviews* 24 326–341 (1918)

[71] 65th Cong , 2d sess , Sen Doc 155, Report of the Public Buildings Commission pp 172–173, 194–195

[72] Owen's correspondence, drawings, and photographs regarding the building are in MS/C/47 Memo, Owen to Surg Gen Gorgas, Dec 8, 1916 MS/C/309

The need for a new building, from the museum's viewpoint, is discussed in Henry *The*

Armed Forces Institute of Pathology, pp 167–169, 191—195

Two typed drafts of a proposed bill that Owen drew up, hoping a new building would be authorized, are under the date Feb 15, 1917 MS/C/137

[73] A bird's-eye view of a model of the mall, showing the proposed location of the building close to the Capitol, is in MS/C/47, and in Owen's article, "The Army Medical Museum," *New York Med J* 107 1034–36 (1918)

[74] A sketch of Shufeldt (1850–1934), a versatile, interesting person, is in Edgar E Hume, *Ornithologists of the United States Army Medical Corps,* pp 390–412, portrait, and biographical refs

[75] Some of Shufeldt's correspondence, a volume of the mimeographed letters, and a bound volume containing the original letters, are in MS/C/133 Shufeldt wrote illustrated articles on the proposed building, "The New Army Medical Museum on the Map," *Med Review of Reviews* 24 596–599 (1918), and "The Need of a New Army Museum," *Nat Humane Rev* 6 108–109 (1918)

[76] Memo, Surg Gen Ireland to Owen, Nov 16, 1918 file New Building Location, MS/C/309

[77] Owen called it his "dream" in a letter to the Fine Arts Commission, Dec 14, 1917 MS/C/47

[78] Act approved July 2, 1919 (41 Stat L, 122) Also, Act of Sept 22, 1922 (42 Stat L, 1029) appropriating funds for, among other things, the "site of the Medical Museum and Library"

[79] For example, interlibrary and local loans tripled between 1915 and 1920, memo, Noble to the Surgeon General, Dec 10, 1920 MS/C/151

[80] Memo, Maj James Coupal, acting librarian, to chief clerk, SGO, Sept 9, 1920 MS/C/151

XIV

The Library in the 1920's

The Let-down After the War

After the war the demand for library service did not drop to the prewar level but continued to grow. By 1922 it was estimated that the workload had increased threefold or more since 1914.[1] While the Library's work was increasing, the government was reducing its war-related spending as rapidly as possible. The Medical Department's funds were so limited that it could not provide even the few additional employees needed to maintain the Library in top shape. Also, vacant shelf space was becoming scarce. Under these conditions the Library had to concentrate on providing essential services—interlibrary loans, indexing for the *Index-Catalogue*, answering inquiries received by mail, acquiring publications, compiling of special requested bibliographies[2]—while allowing other tasks to lag behind. The shelf listing, recataloging, and rearranging that Garrison had hoped to undertake had to be left undone. The cataloging and arranging of documents and pamphlets dropped further and further behind. The public card catalog was not kept up to date. The acquisition of catalogs and announcements of medical schools and reports of hospitals and health organizations became haphazard because no one could be spared to keep track of and write for them. The systematic collection of photographs of physicians was curtailed for the same reason. The plan for expanding and mounting the collection of autographs and letters of famous physicians was abandoned. For a period after the war the Library could not even spare clerks to send out copies of its famous product, the *Index-Catalogue*.[3]

Paul Frederick Straub, Librarian 1919

After the armistice as the American Army was busy demobilizing, Surgeon General Ireland appointed Colonel Paul Frederick Straub Librarian.[4] Little is known about Straub, which is unfortunate for he was unique among the Librarians in possessing the Congressional Medal of Honor. Born in Germany on July 3, 1865, he was brought to the United States when his family immigrated and settled in Iowa. He received medical degrees from University of Iowa, 1885, and University of Berlin, 1892. He entered the Medical Department in

Paul Frederick Straub, awarded the Congressional Medal of Honor for Heroism, Librarian, 1919.

1892 and served in the Spanish-American War, in the Philippines, and in World War I. In 1910 he published a little text, *Medical Service in Campaign: a Handbook for Medical Officers in the Field*, much of which was based on his own experience.

During the Philippine Insurrection, Straub was surgeon of the Thirty-sixth United States Volunteer Infantry. At Alos, Zambales, Luzon, on December 21, 1899, a detachment from the regiment was attacked by insurgents. He helped fight off the attackers and risked his life to rescue and carry to safety a wounded comrade. For his heroism he was awarded the Medal of Honor. He was decorated on two other occasions.

At the end of World War I, Straub was within a few months of retirement age. The Surgeon General apparently thought that the Library was a quiet, restful place for him to wait out his remaining days in the Army. He sent Straub to the institution in early 1919. With Straub the Surgeons General began the practice that continued for a quarter of a century of assigning to the Library officers approaching the end of their Army careers.

The precise date when Straub entered the institution is not known, but by February he was signing outgoing correspondence. He did not have time to learn much about the art and science of librarianship for he left the Army on May 6, barely 3 months after he arrived at the institution. He moved to Hollywood, California, practiced medicine until 1927, and died in Los Angeles on November 25, 1937.

FRANCIS ANDERSON WINTER, LIBRARIAN MAY–SEPTEMBER 1919

Francis Anderson Winter was born on a plantation in St. Francisville, Louisiana, June 30, 1867. His father was professor of Greek at Centre College. He attended Bethel Military Academy, Warrenton, Virginia, and St. Louis Medical College (M.D., 1889). In 1891 in St. Louis he watched the military funeral of General William T. Sherman and decided to join the Army. He served at several posts in the West, went to Cuba during the war with Spain, was stationed in the Philippines three times, taught at the Army Medical School, commanded the Army-Navy Hospital at Hot Springs, Arkansas, and in 1917 was sent to Europe with the A.E.F., where he was promoted to the rank of brigadier general.

Returning to the United States in December 1918, he was appointed commandant of the Army Medical School and also on May 17, 1919, Librarian of the Surgeon General's Library.[5] Winter had led an active life and did not relish desk jobs at the school and Library. After serving as Librarian for less than 4 months, he requested a transfer and in September was sent to Fort Sam Houston, Texas, as chief surgeon, where he remained until he retired in September 1922. Thereafter he lived in Washington and died there January 11, 1931.[6]

Little can be said of Winter as Librarian. He served one of the shortest tenures, along with Straub and Walter Reed. One would assume that Garrison directed the operations much of the time; during Winter's absences he was officially Acting Librarian.[7]

Francis Anderson Winter, Librarian, May to September, 1919.

ROBERT ERNEST NOBLE, LIBRARIAN 1919–1925

The Librarian who had to contend with the postwar conditions was Robert E. Noble, sent to the institution in 1919 after two previous librarians had come and gone in 9 months. Noble had been born in Rome, Georgia, November 5, 1870. He studied civil engineering (B.S., 1890) and chemistry (M.S., 1891) at Alabama Polytechnic Institute before finally settling on medicine (M.D., Columbia, 1899). In 1901 he joined the Army as assistant surgeon and by 1918 had risen to the wartime grade of major general, with permanent grade as brigadier general. Along the way he served in the Philippines from 1903 to 1907, assisted Surgeon General William Gorgas in eradicating yellow fever in the Panama Canal Zone during construction of the canal, had charge of the anti-mosquito campaign in Puerto Rico in 1911–1912, accompanied a commission to Ecuador to study yellow fever in 1912–1913, was a member of the commission sent to Transvaal, South Africa, to study causes of pneumonia among miners in 1913–1914, and headed the Personnel Division of the Surgeon General's office from 1914 to October 1918, where he organized the Medical Service and Nurse Corps for war duty. Also from February 1918 to October he was in charge of the Hospital Division. He sailed for France in October and was chief surgeon of two A.E.F. units.[8]

In September 1919 he was appointed Librarian.[9] Noble, an expert in disease control and medical administration, was now in a field about which he knew nothing, library administration. With Garrison as tutor he began to learn how to manage a library. But he barely started before Surgeon General Ireland placed him on the Rockefeller Foundation Yellow Fever Commission to the West Coast of Africa. When Gorgas, the leader, died on the way Noble became

Robert Ernest Noble, Librarian, 1919 to 1925.

head of the commission. From May 1920 until Noble returned in December, Garrison ran the Library.[10]

Noble endeavored to continue the reclassification and other improvements started by McCulloch and Garrison and to obtain more funds and employees. But this was a period of poor economic times, with the government trying to bring the country back to normal following the war, and he obtained sympathy but little else. He saw the half-century old name "Library of the Surgeon General's Office," replaced by a new name, "Army Medical Library," on January 10, 1922.[11] Noble confined his activities in the Library to managing the day-to-day operations of the organization and, unlike his predecessors and succesors, did not participate in extracurricular library activities. He wrote only two articles during his 5-year stay in the institution in contrast to other librarians who mined the rich resources of the collections to turn out books and articles on history, biography, bibliography, and library matters.

Noble remained in the Library until he retired from the Army on February 8, 1925. Thereafter he lived in Anniston, Alabama, devoting much of his time to volunteer work with the Boy Scouts. In 1955 he was named "Man of the Year" in Anniston for service to his community. He died September 18, 1956, aged 85.

JAMES MATTHEW PHALEN, LIBRARIAN 1925–1927

Noble was succeeded as Librarian by James Matthew Phalen. Born in Harvard, Illinois, November 26, 1872, Phalen studied pharmacy at Northwestern (Ph.G., 1892) but later turned to medicine (M.D., University of Illinois, 1900). He entered the Army on October 30, 1901, and advanced eventually to

James Matthew Phalen, Librarian, 1925 to 1927.

the grade of colonel. He served at several posts in the United States, was stationed in the Philippines twice, graduated from London School of Tropical Medicine in 1907, and lectured on tropical diseases at New York Post Graduate Medical School from 1911 to 1913. During World War I he was a division surgeon and medical inspector in the A.E.F. and after the armistice was a surgeon with the Army of Occupation.

Returning from Europe in 1920, Phalen attended three Army military schools, including the Army War College, and then directed the Hospital Division in the Surgeon General's office. In 1925 he was appointed Librarian.

Garrison once compared the Library to a "land-locked bay or hollow in the woods from which one emerges occasionally to see the world outside."[12] This describes the Library during Phalen's tenure. Nothing unusual happened to interrupt the quiet routine, and the organization moved along unobtrusively.

Phalen directed the Library only 2 years before his 4-year tour of duty in Washington expired. He was sent to the Panama Canal Zone where, he told Garrison, he was "somewhat homesick at times for the Library."[13] In 1930 he returned to the United States and was attached to various National Guard units until he retired in 1936.

Phalen had a literary streak and was quite at home in the Library.[14] During his term plans were being made for production of the monumental *Dictionary of American Biography*. Phalen agreed to write sketches of a number of prominent American physicians. He began researching and writing in 1927 and continued after he reached Panama; the necessary books and journals were sent to him on loan. By the time the 20-volume DAB was completed in 1936, Phalen had provided 101 biographies, which put him among the top 14 contributors.

After Phalen left the Army he settled in Washington and spent most of his days at the Library, researching history and writing biographies. In 1940 he published *Chiefs of the Medical Department, United States Army: Biographical Sketches*. That year he was appointed editor of *Military Surgeon* and wrote many editorials and biographies for the periodical during his long term. In 1942 he published *Sinnissippi*, a popular local history of Rock Valley in Illinois and Wisconsin. Four years later he wrote, *I Follow Mr. Thackeray*, an account of a tour he and his wife made through Ireland. In 1950 he brought out *In the Path of Stones*. Phalen continued to write and edit until a few months before he died of heart disease at Walter Reed on October 5, 1954, at the age of 81.[15]

Percy Moreau Ashburn, Librarian 1927–1932

At the time Phalen's term was approaching its end and Surgeon General Ireland was considering a succesor, Fielding Garrison thought he could have received the post of Librarian if he had requested it. He did not do so because, under the "Manchu" regulation, he would not have been permitted to remain long.[16] Instead he stayed on as assistant and the Surgeon General appointed Percy M. Ashburn Librarian.

Ashburn, born in Batavia, Ohio, on July 28, 1872, graduated from Jefferson Medical College (M.D., 1893) and joined the Army in 1898. He was stationed for a long time in the Philippines, where he was a member of the Army Board for the study of tropical diseases. While there he wrote *Elements of Military Hygiene* (1909, 1915). He seved in Panama from 1914 to 1917, was in the A.E.F. from 1918 to 1919 and in the Surgeon General's office from 1919 to 1920. He established the Medical Field Service School at Carlisle in 1920 and directed it until 1923. From 1923 to 1927 he taught military hygiene at West Point, and in 1927 was appointed Librarian.

"Like most of those who will succeed me (unless the law be changed)," Ashburn recalled later, "I went to the Library without either training or experience in that sort of work." But Garrison took him in hand and instructed him in the fundamentals. "I was glad to have him to induct me into library work and he did it gladly and made me like it," wrote Ashburn. "By practicing what he taught me, I soon learned how he could be so well informed on ancient and current medical literature and I even came to feel that, had I been caught by the Library as early as he was caught and lived my life in it as he had lived his, I might have been able to know it as well as he."[17]

At first Ashburn contributed to the routine by scanning journals written in English, French, Italian, Spanish, and Portuguese, selecting articles for inclusion in the *Index-Catalogue*. Then at the request of Surgeon General Ireland he began to compile a history of the Medical Department. He had never done anything like this before, but with assistance from Garrison, whose office ad-

Percy Moreau Ashburn, Librarian, 1927 to 1932.

joined his, and Louis C. Duncan, a medical officer who had written many articles about the Civil War, he moved ahead and published the history in 1929. His interest in history thus awakened, Ashburn began to read everything he could find about the influence of disease on the early colonization of South and North America. After researching for 4 years he wrote a "Medical History of the Conquest of America in the Sixteenth and Seventeenth Centuries" but could not find a publisher who thought the story would sell. Ashburn put the manuscript away. Several years after his death his son Frank found a firm willing to accept it, and it was published under the title *The Ranks of Death, a Medical History of the Conquest of America* (1947).[18]

By the time Ashburn was approaching the end of his term he liked library work so much that he attempted, with approval of Surgeon General Ireland, to circumvent the "Manchu" regulation and remain as permanent Librarian. He retired on December 31, 1931, but returned the next day on active duty. Since the 4-year rule did not apply to retired officers, he seemed safely entrenched in the post. Undoubtedly he would have continued as Librarian until he died or became incapacitated had not the Depression caused Congress to seek ways of reducing Federal spending. A law was passed cutting the pay of retired officers on active duty, and Ashburn left on August 15, 1932.

In 1934 Ashburn accepted the position of superintendent of Columbia Hospital in Washington and remained in that post until a few months before his death on August 20, 1940.[19]

Shortage of Trained Personnel

During the 1920's the normal staff consisted of a Librarian (an Army officer), a principal assistant librarian, one or two assistant librarians, and 20 to 25 clerks.[20] Librarians asked for authority to hire more clerks, but the Medical Department, beset by requests from other units for additional men and bounded by congressional appropriations and War Department regulations, did not have necessary funds.[21]

A serious ailment of the organization was a chronic shortage of *trained* employees. Librarian Noble suggested in 1920 that the Medical Department establish a school to instruct "properly qualified men in all matters appertaining to a library, care of books, classification, cataloguing, etc., and that the Library School be a part of the educational system of the Army."[22] Surgeon General Ireland told Noble that it was hopeless to ask for legislation to train civilians, but that there would be no difficulty in setting up a school for enlisted men when the Library moved to Walter Reed.

Many of the men who came into the Library did not have the spirit and dedication of the earlier clerks. Often newcomers decided, after they had experienced the preparation of the *Index-Catalogue* or other tedious duties, that they preferred to spend their lives at other tasks in other places at higher salaries.[23] Unable to hire qualified men, the Library hired women. Originally staffed by men, the organization had had to employ women during the war and

found them as proficient as male clerks. Thereafter women vied against men for vacant positions. By 1927 women outnumbered civilian men 12 to 11, and they held jobs as responsible and highly salaried as men.[24]

As in every organization there were employees with idiosyncrasies. One librarian washed his socks and handkerchiefs somewhere in the building and hung them to dry on a line strung across his office. Another, who could not control his appetite, became so corpulent that he had difficulty walking up and down stairs. He was inordinately fond of strawberries with milk, and in the spring he would buy crates of berries from hucksters passing by. After he died his associates found dozens of empty berry boxes and milk bottles in his office. At the other end of the building museum employees prepared the skeleton from the body of one of their associates (he had willed his body to the museum) and sat it in a chair in front of a window facing homes across the street until neighbors complained.

Maintaining an adequate number of trained clerks was only part of the Library's personnel problem: the other part was maintaining continuity in important positions. In 1930 the lack of continuity in the directorship and leadership became critical. Garrison left. Allemann was past the compulsory age of 70 and would have to retire in February 1932. Neumann, 2 years older than Allemann, was forced to retire in July 1932 at the age of 74. Librarian Ashburn had to leave in August 1932. Ashburn had foreseen these departures and in the late 1920's he had persuaded Surgeon General Ireland to sponsor legislation, passed in 1931, that permitted the institution to establish the position of Principal Librarian. This was the highest civil service rating in the organization. The incumbent had to be a physician, have an intensive knowledge of medical literature, and an extended knowledge of European languages. Ashburn appointed a person whom he and Garrison knew to be highly competent, Beatrice Bickel, experienced as a practicing physician, medical editor, linguist, and public health physician.[25] Bickel took up her duties on May 12, 1931. She acted as deputy to the Librarian, she chose the articles to be indexed for *Index-Catalogue*, and selected the medical subject headings for the articles.

Ashburn also sought a person to edit the *Catalogue* when Allemann would leave. After a long search for a scholarly physician able to fill Allemann's shoes Ashburn found[26]

> a Hungarian doctor who would be a jewel in this setting if I could get him. He is about 35 years old, has taught pathology, specialized in urology, and is now in charge of a commercial laboratory in Brooklyn which does all sorts of medical laboratory work. He can work in all the modern European languages except the Slavic group, reads and talks Latin fluently, knows Greek and has studied Hebrew and several other Semitic languages, and he wishes to come to the Library. Doubtless you will consider this last fact an evidence of mental infirmity.

The Hungarian doctor, Claudius Francis Mayer, arrived on February 25, 1932, three days before Allemann retired.[27] From the beginning the duties of Mayer, as editor and compiler of *Index-Catalogue*, overlapped those of Bickel. At times

there was a difference of opinion about the subject classification, and then Mayer would change or subdivide Bickel's heading. Still, the two got along amicably although Mayer, a much more forceful person than Bickel, gradually overshadowed his superior and made the decisions regarding the *Catalogue*.

Garrison, now at Johns Hopkins, summarized the problems in Washington thus: "That Library is in a very bad way. 1. through dying off or evanishment of trained worthwhile personnel: 2. through too much rotation of presiding or commanding officers, nearly all of whom, after the death of Walter Reed, had to unlearn the mentality and way of life of army posts and of the two big wars they served in (1899 and 1917–18)."[28]

THE *Quarterly Cumulative Index Medicus*

Garrison had edited *Index Medicus* alone until World War I placed so many additional burdens upon him that he had to seek a coeditor. The person that he chose was Frank John Stockman, a young man who had started to work in the Library several years before and become so much interested in history of medicine that he had assisted with the proofs of Garrison's *History of Medicine*. In the evenings he had attended Georgetown University, receiving his D.D.S. degree in 1912. Later he had attended courses in medicine and received his M.D. degree from Georgetown in 1917.

In 1917 when Garrison entered the Army, Albert Allemann was promoted to the position of principal assistant librarian vacated by Garrison, and Stockman moved into the post of assistant librarian vacated by Allemann. Stockman then occupied the third highest position in the Library. He was Garrison's "right-hand assistant," working on the history of the Medical Department's participation in the war and coediting with Garrison *Index Medicus*, 1917–1919, and the War Supplement volume. At the end of December 1919 Stockman, whom Garrison now considered to be "the most talented young man we have ever had here," resigned to work for the American Medical Association, leaving Garrison again with the sole responsibility and labor of editing *Index Medicus*.[29]

Garrison edited the 1920 volume by himself, but the work proved so burdensome that he recruited Albert Allemann as coeditor for the 1921 volume. He considered transforming the *Index* into a yearbook or having it published monthly by a medical journal. In the end he converted it from a monthly into a quarterly and changed the classification to alphabetical, under subject headings. He did this because most of the old-timers who had assisted by copying citations in their spare time were now gone, because it required so much of his time to sort index cards upon which citations were written, and because of his disenchantment with the subject classification.[30]

In 1921 the Surgeon General's office decided that Garrison should serve a tour of duty overseas and scheduled him for the Philippines. Major Edgar E. Hume, Major Arthur Newman Tasker, and Captain William S. Dow were assigned to the Library as Garrison's replacement.[31] Knowing that he could not assist with the editing of *Index Medicus* in the Philippines, Garrison asked

James Ballard, assistant librarian of Boston Medical Library, to coedit with Allemann. Ballard declined. Garrison then instructed Hume and Tasker in the art of bibliography, and while he was away they assisted the editor of the *Index-Catalogue*. Garrison handed the coeditorship of *Index Medicus* to Tasker, beginning with the July 1922 number.

Tasker was a 16-year veteran of the Medical Department, having served in the Philippines, been stationed at posts in the United States, campaigned with Pershing along the Mexican border, and been gassed at Ypres in World War I. He had taught military hygiene at West Point, zoology at New York Post Graduate Medical School, and, while assisting in the Library, was teaching medical entomology in the Army Medical School. A graduate of Wesleyan University, George Washington University Medical School and Johns Hopkins Medical School, he was well-read, spoke eight languages, and was considered by some of his associates to be the most erudite officer in the department.[32]

Tasker coedited *Index Medicus* through 1924 and then returned his share of the editing to Garrison, who had come back from the Islands. By now Garrison was growing increasingly tired of the routine of indexing. He had been associated with the *Index-Catalogue* for more than a quarter of a century and *Index Medicus* for two decades. He referred to the preparation of the indexes of the latter as "drudgery of the most devitalizing kind, ruinous to the eyesight, with consequent impact upon the nervous system, and wearying to the flesh." Furthermore his labor on the periodical promised to increase because his assistant and sister, Florence Garrison, was leaving.

Florence Garrison had started to work at the Library during the war. Intelligent, competent, and industrious, she had been retained when most of the temporary employees had been discharged following the armistice. By 1927 she had risen to the responsible position of chief of indexers. Garrison referred to her as the "real prime mover and backbone of the old *Index Medicus*, doing all the drudgery on it and managing the finances."[33] But Florence finally felt obliged to stop assisting with the preparation of the *Index* in order to help care for their mother, who was in her eighties, half blind, partially deaf, and ill. "I had no one else to carry on" Garrison wrote, "in the sense of arranging and alphabeting the pile of 15,000–20,000 cards which came up for every quarterly number, a gigantic game of poker requiring incredible patience, accuracy and industry."[34]

Some years before Garrison had suggested to George H. Simmons, editor of *Journal of the American Medical Association*, that *Index Medicus* be combined with the AMA's *Quarterly Cumulative Index* and be published by the AMA. The *Quarterly*, started by the AMA in 1916, differed from *Index Medicus* in indexing only the most important journals, in classification, and in other details. A union of the two periodicals would save labor, time, and money. Simmons did not agree, but in 1925 when Garrison suggested the plan to Morris Fishbein, Simmons' successor, Fishbein favored it.[35]

During the next year there was constant correspondence between Garrison

and Fishbein and conferences in Washington and Chicago between representatives of the AMA, Army Medical Library, and Carnegie Institution.[36] Finally an agreement was reached that provided for the publication by the AMA of a journal to be called *Quarterly Cumulative Index Medicus*, with financial assistance from the Carnegie Institution for 5 years. Garrison would send index cards to Chicago every week where they would be interspersed among the cards prepared in the AMA Library. Two volumes would be published each year. The editorial board would consist of two persons from the Library and two from the AMA. There would be an advisory board composed of one representative from the Library, one from the AMA, and one from the Carnegie Institution.[37]

The first number of the *Quarterly Cumulative Index Medicus* appeared in January 1927. The final number of *Index Medicus* was published in June 1927, there being an unavoidable overlap.[38] The cooperative venture proceeded smoothly, considering the volume of indexing carried on in two libraries hundreds of miles apart, and the logistics.[39] Garrison was relieved of some of the routine work. He continued as one of the editors for 2 years, but he had had enough. In December 1929 he told Fishbein, "Due to abuse of the eyesight over close work, night and day, for a prolonged period, and its impact upon the nervous system . . . I conclude that, at my time of life, it is wiser to relax, go slow and take things as they come."[40] Garrison dropped off the editorial board and became a member of the advisory board.[41] The cooperation between the two libraries continued until 1932 when the Carnegie Institution withdrew its financial support. The AMA then assumed complete responsibility for indexing and for publishing the *QCIM*.[42]

The Yearbook Proposal

No one was more aware of the large, growing backlog of *Index-Catalogue* citations than Garrison. Perhaps this was because every month in *Index Medicus* he published citations that would not appear for years in the *Index-Catalogue*. In 1920 he suggested an alternative to the perpetual publication of series after series of the *Catalogue;* that the third series be finished in half the time by doubling the size of the volumes and that thereafter yearbooks be issued. Each book would list the complete medical literature of that year. Since the citations in the yearbook would duplicate those in *Index Medicus,* the latter could be discontinued. Thus two volumes, one of the *Catalogue* and one of *Index Medicus*, would be replaced by one volume, a yearbook. Physicians and researchers would be served better. The burden on the Library would be eased, and economies would result. The librarians of the 1920's adopted Garrison's idea in principle.[43] However, they could not obtain the unusually large sums of money needed to print double-size volumes of the *Catalogue*.[44]

Back in 1916 at the end of series 2 the Librarian, McCulloch, had been afraid to take the responsibility of stopping the *Catalogue*. As the end of series 3 came in sight the librarians were ready, but the Surgeon General was re-

luctant. So in 1930 Surgeon General Ireland sent a form letter to libraries and institutions asking for their opinion. "As you know," Ireland stated, "all of the current literature is now indexed in two volumes per year by the Quarterly Cumulative Index Medicus, and reprinting it in the *Index-Catalogue* is a somewhat expensive luxury."[45] But medical libraries and societies, not having to do any of the tedious bibliographical work and receiving the results free (or for only $2.00–$2.75 a volume if they had to pay), naturally voted for the continuation of the *Catalogue*.[46] Therefore even before the final volume of series 3 appeared in 1932 Librarian Ashburn had to put the yearbook from his mind and begin making plans for series 4.

In 1925 someone, probably Garrison, saw a means of completing the series within a decade, so the Library could switch to a yearbook. Garrison and Morris Fishbein of the American Medical Association had agreed to unite *Index Medicus* with the AMA's *Quarterly Cumulative Index* to form the *Quarterly Cumulative Index Medicus*, publication to start in January 1927. Since the *QCIM* would print references to current articles, the same references could be left out of the *Index-Catalogue* and the latter could be prepared much more rapidly.[47] The Librarian gave orders to do this and it was done starting with volume 6, 1926. The *Catalogue* thereafter listed only titles of articles that had appeared before 1926 and titles of books regardless of date.[48] With fewer citations to print the Library was able to complete series 3 in 10 volumes in 1932 instead of 25 volumes in the mid-1940's.[49] But by the time the series was completed the idea of a yearbook was dropped.

Fielding Garrison Leaves the Library

After the war Garrison continued to work in the Library as a temporary officer. He seems not to have been entirely content, the reasons are not clear, but after 30 years perhaps he was frustrated at not being able to move ahead in his profession. He hoped that an academic position would be offered—William Welch had suggested that Johns Hopkins would be the place for him, and Winford Smith, superintendent of Johns Hopkins Hospital, had discussed it with him—but none was forthcoming and in September 1920 he accepted a commission as a lieutenant colonel in the Regular Army.[50]

Eventually the Medical Department, rotating officers around various posts, selected him for a tour of duty in Manila. Garrison felt that he was more useful in the Library than he would be in the Philippine Islands and he did not want to go, but he did not protest and he was sent in 1921.[51]

Garrison found existence in Manila monotonous, and he did not feel at home in the tropical climate, but for the first time since he entered the Library he had the leisure to reflect upon his life and it made him melancholy. He told his friend Arnold Klebs:[52]

> I myself have lived and worked for over 30 years in a drab, dull milieu of low spirits and lowered vitality and I am paying the piper for it now, when I really need the pep This alone saddens me that amidst all the bouquets and encom-

> iums, no one gives a bibliographer credit for the horseloads of work he has done and how much it takes out of his vitality. At best, only a discerning few—e.g., the French medico who said of the *Index-Catalogue*, "C'est un travail herculéen," or one or two sympathetic utterances of your own about me. I once asked Billings' daughter: "Was the Doctor *always* so sad?" She replied immediately, "Always!" and went on to describe his nightly labors up into the small hours of the morning. The eyes of steelly Prussian blue became rather bleared in the long run, although the bodily frame was a tremendous horse-power. . . . This brain-tire, a mortally depressing, at the same time, exasperating feeling of ennui and mental helplessness, goes back to all those years of dull drudgery in the Library, and if that sort of thing could take some starch out of even a superman like Billings, you will realize how well it has done its work in my case. . . .

As his stay in Manila neared its end, Garrison decided that he did not wish to return to the Library immediately. His self-examination of his 34 years in the institution had made him reluctant to take up his old position. Yet, there was still no academic opening for him and in the autumn of 1924 he was back in Washington as assistant to the Librarian. He did not display his feelings by decreasing the quality and quantity of his work, but his colleagues observed a change in his personality. Allemann noted that Garrison had been generally kind, pleasant, and polite, although occasionally nervous, before he went to the Islands, but after he returned he was irritable and "demonstrated at times moods which affected his relationship with associates and friends."[53]

While some of Garrison's moodiness had been brought on by the tedium and monotony of decades of toil over bibliographies, some stemmed from his position as a perpetual subordinate in the Library. He had gotten along well with the early librarians. He said he "liked" Billings, Merrill, Reed, McCaw and Straub very much.[54] He wrote that McCulloch was "very good and kind to me in all really fundamental, first-class situations."[55] But a recent librarian, probably General Noble, had embarrassed him, accused him of being a poor administrator, and made him determined to leave a situation where he would always be under the command of a person who was at the top because of his military rank, not because of proved professional ability. He confided to Klebs:[56]

> I don't think you have ever realized how very painful and humiliating it has been to remain in a subaltern and secondary position, officially and militarily, for nearly forty years, the insults and rebuffs which must be weathered and (worse than that) the feeling engendered among friend and colleagues (e.g. [Harvey] Cushing, [Edward C.] Streeter and yourself) that one has, after all, no 'administrative' ability. In that very ungenerous pronouncement, all you people have overlooked the fact that the Library is run by *military* administration, i.e. with the aid of a good chief clerk (the equivalent of an efficient orderly or desk sergeant in the military) it is a machine that runs itself. When Noble was in Africa for six months, I ran it mutterseelenallein and everything went forward like clockwork, although, God knows, before that semester, I had never been given a chance to demonstrate so-called 'administrative' ability, which to my mind would be, getting a maximum amount of work done with a minimum of friction.

To my knowledge only one librarian, Noble, out of the 11 with whom

Garrison associated, said that Garrison could not administer.[57] But Albert Allemann, who worked under Garrison and succeeded him as principal assistant librarian, said, "He supervised the whole clerical force [i.e., library staff] and assigned to each clerk his or her work."[58] He was Acting Librarian during long absences of the regular Librarian. During 1918 he directed the Library for 6 months while McCulloch was overseas, and in 1919, when the establishment had four librarians in succession, he ran the Library most of the time. Librarian Straub wrote: "He was the main spring of the machine and in my time [1919] was almost entirely responsible for the success of the institution. He was most tactful, and I soon acquired the conviction that he was able to conduct an efficient and systematic library service in spite of amateurish ideas that may have influenced the officer in charge."[59] One can only wonder what administrative task Garrison could not have handled in an organization employing approximately 25 persons and spending $20,000 a year on publications. It is now impossible to ascertain in what way Garrison failed to live up to Noble's standards for administration, but the charge seems unreasonable.

Another Librarian, Phalen, under whom Garrison worked after he returned from the Philippines, had a different opinion for the reason why Garrison had not been appointed Librarian: "I may say that Garrison was neurotic, very easily offended at times, suspicious, sensitive and shy, and that [he] was considered temperamentally unsuited for the duties of the librarianship, and for that reason, and that alone, he never attained that position."[60] Phalen may have been at fault, not Garrison, for he ran the organization in such a manner that Garrison asked visiting historians to meet him outside of the building, remarking that the Library was reserved for business.[61]

There is no indication that Garrison ever showed his dissatisfaction openly. He continued to work hard at the tasks that fell to his lot as assistant to the Librarian, and he instructed new librarians—Phalen, Ashburn, Hume—as they were detailed to the Library. But he kept looking for a different job, and finally in the fall of 1928 William Welch offered him the post of librarian and lecturer on history of medicine at Welch Medical Library, Johns Hopkins.

In January 1930 Garrison began to spend every Sunday and one other day during the week at the Welch Library. In the spring he moved his family to Baltimore, which he found he preferred to Washington. At the end of April he left the Library that he had entered 40 years earlier, as a young man of 20, and began to work full time at Johns Hopkins.[62] Even then his sense of duty was so great that he traveled to Washington every Saturday to assist in the Library until his replacement arrived.[63]

Before he left, Librarian Ashburn bemoaned the Library's loss, telling Morris Fishbein:[64]

> Colonel Garrison's method of work is to allow a tremendous pile of journals to accumulate throughout the week and then on some day, usually Friday just before the cards have to be sent away, he gets at them and heads about three times as many as anyone else can do in the same time and they are sent off to

> you as promptly as any of the other cards. The other matter in which I fear I might have misled you was my rather silly remark that in a sense my job will be simpler when Colonel Garrison gets away. 'In a sense' simply means that I will know just what to expect from each person and will have no one else giving instructions that are at variance with my expectations but that is a very small sense and the total result of Colonel Garrison's leaving will be nothing but loss. My work will be more than doubled and there will be many problems whose solution I cannot now foresee.

Librarians Ashburn (1927–1932) and Edgar E. Hume (1932–1936) consulted him in person and by mail about the new library building the Army hoped to have built at Walter Reed Hospital, about proposed changes in the *Index-Catalogue*, and other matters.[65]

At Johns Hopkins William Welch became very friendly with Garrison, whose advice he sought often on matters of history. "I count it the greatest piece of good fortune for our medical library," Welch told him, "that you were induced to leave the S.G.O. Library to take our librarianship, and nothing can deprive you of the only reputation worth having, recognition by your peers as a leader in your special field."[66]

Garrison lived only a few years longer, dying of cancer on April 18, 1935. He had worked in the Library for four decades, a record surpassed by only a few persons, he had labored over many volumes of the *Index-Catalogue*, edited or coedited 26 volumes of *Index Medicus*, and become known as a top-notch bibliographer and historian throughout the medical profession of the Western world.

Ashburn, the last Army Librarian under whom Garrison worked, remembered him as[67]

> A rare and remarkable genius . . . His industry was prodigious and he worked without regard to hours. His mind was versatile and more nearly concerned with "all knowledge" than any other which I have known. His information was as though mentally card-indexed, always promptly available. And it was not merely medical information—music and higher mathematics were his hobbies and thoroughly familiar to him in theory and practice; he knew the world's literature, and I mean that statement literally. Not only did he know the good things of English, French and German literature, the Russians whom so many have read in translation, the Greek, Roman and Hebrew classics, but he was familiar with current trends in Spanish and Portuguese, in Scandinavian and Italian, and his knowledge of Chinese and Japanese literature, classical and modern, astonished me. And Garrison was not a man who tried to astonish. He always acted as though I were as familiar with the subject as he, and mentioned an author or quoted his works with an air of apology. . . . I even came to feel that, had I been caught by the library as early as he was caught and lived my life in it as he had lived his, I might have been able to know it as well as he. But only special gifts of God, which I know have been withheld, could have made me capable of loving and understanding mathematics, languages, and music as he did or could have made me as industrious. I trust that in some heavenly Academy he is walking with the great ones of intellect and of art, enjoying communion with Hippocrates, Galen and Harvey, with Newton and Galileo, St. Paul and Moses, with Beethoven and Mozart, that he hears the music of the spheres and is accompanist to the heavenly choir.

Notes

[1] Memo for Noble, unsigned, Feb 21, 1922 file Historical Information, MS/C/309

[2] Copies of many of these multipage bibliographies are in MS/C/151 and MS/C/166

[3] "The delay which you experience in receiving volume 2 [of series 3, *Index-Catalogue*] arises from the fact that we have been reduced to such a point in our library personnel that we have been unable to undertake the general distribution of this volume", letter, Garrison to W S Miller, Nov 27 1920 MS/C/154

[4] Dates concerning Straub's military career may be found in *Army Register* Brief obituaries are in *Military Surgeon* 82 74 (1938) and New York *Times* Nov 26 1937 Gerard F White of the Medal of Honor History Roundtable also provided information

Straub published a little text, *Medical Service in Campaign* in 1910 2nd edition in 1912

The earliest date I have seen in connection with Straub is a memo, Garrison to Straub, Feb 7, 1919 MS/C/309

[5] Memo, by Col C R Darnall, May 17, 1919 MS/C/151

Librarian Paul Straub retired from the Army on May 6, 1919 Francis Winter was assigned to the Library on May 17 I assume that Fielding Garrison acted as Librarian during the interval

[6] Autobiography MS/C/44 *National Cyclopedia of American Biography*, vol 28, p 259 Obit by J R Kean, *Military Surgeon* 68 294–6 (1931)

[7] Documents signed by Garrison as Acting Librarian are in MS/C/151

[8] Biographical information on Noble may be found in MS/C/44, *Army Register*, obituary in *JAMA* 162 1408 (1956) and *Mil Med* 119 346 (1956)

[9] Documents in MS/C/151 show that Noble was appointed Librarian in September 1919

[10] See for example, letter, Garrison to Noble in Nigeria, Oct 7, 1920 reporting events in the Library MS/C/166

[11] Army Regulation 40-405 Jan 10, 1922

[12] Letter, Garrison to Phalen, Jan 18, 1928 MS/C/166

[13] Letter Phalen to Garrison, Mar 15, 1928 MS/C/166

[14] "I can understand how you might wish that you were back in the Library as you undoubtedly got a great deal of kick out of it, probably more than most officers", letter, Garrison to Phalen, Jan 18, 1928 MS/C/166

[15] *National Cyclopedia of American Biography*, vol 45, p 228–9 *Army Register* Obituaries in *Mil Surg* 115 473–4 (1954), *JAMA* 156 1265 (1954) Washington *Post*, Oct 6, 1954, Washington *Star*, Oct 6, 1954

[16] "There was a juncture when I think I might have had the librarianship on application, about 1928 (I think), but in that case, my stay there would have been brief, and I preferred to go on serving there up to my promotion and on my initial station, at Walter Reed, instead of on a War Department detail, the limit of which is four years (1924–8)", letter, Garrison to Welch, Aug 9, 1932, JH

[17] Ashburn, "A Greenhorn's Experience in the Library," *Med Life* 43 573–9 (1936) Most of the Librarians did not leave any reminiscences of their life in the Library Ashburn is one who did, in the above article, although unfortunately too briefly

[18] Ashburn's manuscript and notes are in MS/C/27

[19] Biographical data in MS/C/44 *Army Register* Obituaries in *JAMA* 115 872–3 (1940), Washington *Star*, Aug 20, 1940

[20] Lists of employees, their grades, duties, and salaries, are in memos for Library force, SGO, by Noble, Jan 26, 1920, Feb 14, 1920, memo for Heads of Divisions, SGO, Sept 13, 1920 MS/C/151 Memo, Librarian to Surgeon General (1921), memo for General Noble, Feb 21, 1922, list dated 1927 file Historical Information MS/C/309 Letter, Garrison to A Malloch, Apr 12, 1926 MS/C/166 File Personnel Authorization, MS/C/309

[21] For example, see memo, Noble to Surgeon General, Dec 10, 1920, memo, Noble to Surgeon General, Sept 14, 1921, with memorandum for General Noble returning his memorandum of Sept 14, Sept 17, 1921, memo, Noble to Surgeon General, Sept 19, 1921 MS/C/151

"When you consider that the Library of Congress employs 600 persons, which is 24 times the number employed here, whereas we have about one-quarter as many items as they have, you will see that we are not particularly well off if the ratio were kept up We ought to have 150 people employed here Of course this is not an apt comparison because the two institutions are not alike ", memo Jones to the Surgeon General, Sept 2, 1936 MS/C/205

[22] Letter, Librarian to the Surgeon General, Jan 9, 1920, with 1st ind by Surgeon General, Jan 27 MS/C/151

[23] "Our main problem is to build up a new and adequate personnel", letter, Garrison to Klebs, June 12, 1930 MS/C/166 The size of the staff, number of vacancies, and other information can be found in the annual reports of the Surgeon General, 1920 to 1940

[24] List of employees, [1927] file Organization, MS/C/309

[25] Beatrice Adelaide Bickel was born in Germany She received her medical degree from Cleveland Medical College and then took graduate courses in comparative anatomy, anthropology, and physiology She practiced medicine for a decade, was an acting assistant surgeon in the U S Public Health Service for 6 years, and a medical editor for 7 years In 1930 she became a contract surgeon for the Medical Department and was assigned to the Library When Garrison retired and went to Johns Hopkins, Bickel took over part of his duties, in the discharge of which Garrison considered her "highly competent" She was appointed Principal Librarian (sometimes referred to as Chief Librarian) on May 12, 1931 She retired Aug 31, 1942, and died June 11, 1946

Robert Austin, whose career in the Library spanned the 1930's and 1940's, had this impression of the Principal Librarian "Dr Bickel was a very private person and, as far as I know, only one or two people on the staff had a relationship with her that revealed very much about her private life She owned a house in the Glen Echo area of Washington where she lived alone I found Dr Bickel a very interesting person She was always gracious to me and cooperative and quick to understand my problems when I had occasion to go to her in the absence of the Librarian Dr Bickel was attractive, of medium build with a very nice figure She wore expensive looking clothes of good taste She was intelligent, had a good knowledge of foreign languages, was quick in her thinking and in her movements She was tidy in her work habits and never left unfinished work on her desk at the end of the day Her handwriting was very distinctive—rather masculine in appearance—using bold strokes with letters formed in a straight perpendicular position One summer Dr Bickel went to Mexico and someone said she had an interest in the ancient Indian culture of Mexican, Central American, and South American Indians"

Letters, Austin to W D Miles, Sept 29, 1979, Jan 3, 1980 HMD Letter, Garrison to M Fishbein, Oct 2, 1930 MS/C/166 Information on list AML personnel *ca* 1935 MS/C/309 Brief obituary from Washington newspaper MS/fB/120

[26] Letter, Ashburn to McCaw, Dec 1, 1931 MS/C/166

[27] Allemann wanted to continue working like Fletcher, who retired at the age of 91, but he was already over the statutory age limit of 70 and had to leave He died Dec 10, 1940

Mayer was born in Eger, Hungary, July 6, 1899 He attended Leopold-Franzens-Universitat, Innsbruck, Royal Hungarian Pazmany Peter University, Budapest (M D , 1925), and University of Leipzig He served as pathologist to the Pathological Institute and intern in the Urological Clinic of University of Budapest, pathologist and serologist at the Hospital of National Institute for Social Insurance, Budapest, and consultant in medical history and bibliography to Ministry of Health, Museum for Public Health and Sociology, Budapest He came to the United States in 1931 and worked as medical director of Lindsay Laboratories, Brooklyn, N Y , until he accepted the post at the Library in 1932 He wrote articles, chapters, projected a biographical-bibliography of 16th century books, and edited the *Index-Catalogue* for a generation before leaving the Library in 1954 See biographical information in MS/C/42

[28] Letter, Garrison to Welch, July 31, 1932 JH

[29] Stockman was born in St Louis, Aug 28, 1887 After leaving the Library in December 1919 he worked for the American Medical Association, assisting Morris Fishbein, and then went to the American Institution of Medicine He was hired by Winthrop-Stearns as medical director in 1925 and rose to the position of senior vice-president He died on Apr 17, 1955, while on vacation in Florida See obituary, *N Y Times*, Apr 19, 1955, letter, Garrison to V Robinson, Dec 23, 1919, containing quotes above, MS/C/166 Information was also obtained from AMA and Georgetown

[30] Letter, Garrison to E C Streeter, Apr 6, 1920, in Kagan, *Life and Letters of Garrison*, pp 120–121

[31] Hume was assigned to the Library full time, Tasker and Dow of the Army Medical School part time, memo, Noble to Col R G Humber, Oct 24, 1923 file organization, MS/C/166

[32] Tasker was born in Washington, D C , Feb 3, 1878 His father, who had been a cavalryman during the Civil War, kept two horses, and equitation became one of Arthur's hobbies Like Garrison he was fond of music He was an excellent violinist, attended opera and symphonies, and collected recordings of classical works He enjoyed traveling and toured many countries After retiring from the Army with the rank of colonel he lived in Baltimore and died there May 30, 1977, at the age of 99 years For biographical information, see items in NLM

[33] Letter, Garrison to Klebs, June 12, 1930 MS/C/166 Garrison wrote to Klebs from the Philippines on Mar 4, 1923, "The Index Medicus is now run by Major Tasker, Allemann and my sister" MS/C/166

"My little sister was really the motor power of the Index Medicus after Dr Fletcher's death, in the sense of doing all the drudgery and at-

tending to all the business details, until the long last illness of my mother compelled her, and also me, to give it up', letter, Garrison to Henry B Jacobs, Aug 21, 1930 JH See also letter, Garrison to Welch, Mar 7, 1923 JH

Correspondence between Morris Fishbein and Florence Garrison regarding the *Index* may be found in MS/C/156 and MS/C/166

[34] Letter to Klebs, June 12, 1930

Florence Garrison entered the Library Jan 24, 1918, and resigned Feb 15, 1930

[35] Letter, Garrison to Fishbein, Mar 21, 1925 MS/C/166 See also letter, Fishbein to Richardson, Oct 23, 1925, MS/C/166, which gives the impression that Simmons and Fishbein initiated the joining of the two indexes

[36] Some idea of the differing viewpoints that had to be reconciled, particularly with regard to classification, may be seen in Garrison's correspondence, especially between Garrison and Fishbein beginning Mar 21, 1925, and extending through 1926, in MS/C/166 and MS/C/156 A few of these letters were printed by Kagan in *Life and Letters of Garrison*

Correspondence regarding the *QCIM* is in the records of the Carnegie Institution

[37] The method of cooperation between the AMA library and AML is explained in preface, *QCIM*, vol 1, Jan 1927

[38] In the "Valedictory," p ii of the June 1927 issue, is a brief history of the *Index Medicus* from its inception in 1879, and a list of editors, publishers, and printers

[39] Many questions sent by the AMA to the AML regarding entries in the *QCIM* may be found in correspondence between Fishbein and Garrison, 1927–1932, MS/C/166 and MS/C/156, and Ashburn and Garrison, MS/C/151

[40] Letter Garrison to Fishbein, Dec 4, 1929, see also Fishbein to Garrison, Apr 22, 1929 MS/C/166

[41] *QCIM*, vol 5 1929, was the last volume to carry Garrison s name as editor Garrison resigned from the advisory board in 1931, letter, Garrison to O West, Oct 20 1931 MS/C/166

[42] Accounts of the joint venture may be found in Morris Fishbein *A History of the American Medical Association 1847 to 1947*, pp 1165–1169, F H Garrison, "The Quarterly Cumulative Index Medicus, what it stands for and how to use it," *JAMA* 89 26–29 (1927)

[43] *Report of the Surgeon General*, 1921, p 170, 1922, 176–177, 1923, 178, 1924, 237 *Index-Catalogue*, vol 3, 1922, p iii, vol 4, 1936, p iv

In a number of letters and documents of the 1920's are indications that the Library planned to stop the *Catalogue* when series 3 ended and publish a yearbook, for example, Garrison to M M Tye, May 8, 1925, and Garrison to Fishbein, Oct 15, 1925 MS/C/166

[44] The cost of printing series 1 and 2 was borne by congressional appropriations The first volume of series 3, 1918, was financed by an allotment from the general military fund of the War Department, in keeping with military procedure during the war The War Department "quietly and generously" continued to provide allotments for series 3 See Memorandum for the Surgeon General by Garrison, n d , MS/C/166

The printing of the *Catalogue* was meticulous and therefore expensive For example, the cost of printing volume 5 in 1925 was $18,500 plus $800 for proof corrections, or $19,300 The usual number of copies, 1,000, was printed Copies were sold by the Government Printing Office for $2 55 each Therefore, the government lost $16 75 on each volume it sold In 1936, the cost of printing volume 1, series 4, was approximately $33,000, or $33 a volume The GPO sold the volume for $2 50

[45] A copy of the form letter sent by Ireland to M Fishbein, May 6, 1930, is in MS/C/156

[46] Harvey Cushing's protest against abandonment of the *Catalogue*, May 5, 1930, is in MS/C/183

Index-Catalogue vol 10, 1932, p iii

[47] Garrison also suggested that efforts be made to bring the *QCIM* to such pefection that a yearbook would not be needed, and the Library would be freed from the task of publishing a bibliographical volume each year See Memo for the Surgeon General and the Librarian SGO on the Index-Catalogue and Index Medicus, n d MS/C/166

[48] The measures that Librarian Phalen took to reduce the number of citations in the *Catalogue*, thereby completing series 3 as quickly as possible, are given in detail in a memo by Albert Allemann, "Instructions of Col James M Phalen for preparing the subject cards for the printer," [1928] MS/C/154 See also *Index-Catalogue*, vols 6–10, 1926–32, letters of transmittal

[49] The disadvantage was, that a person now had to consult the *Catalogue* and the *QCIM* But researchers had been consulting both the *Catalogue* and *Index Medicus* for decades, so any disadvantage was minor One wonders why the plan was not adopted much earlier

For reasons beyond the control of the Library there were a few years during which the *Index-Catalogue*, series 3, was not published on schedule 1919, 1921, 1924, 1927 In 1924, for instance, the delay was caused by the lateness of the session of Congress, which in turn affected the schedule of the Public Printer

[50] "Welch put up the proposition to me at

Atlantic City once Winford Smith canvassed the whole matter with me at the end of the war, but as nothing offered, I had to go into the Regular Army", letter, Garrison to Klebs, Mar 4, 1923 MS/C/166 See also letters, Garrison to Welch, Aug 4, 1920, Oct 22, 1922 JH

Garrison s official station was Walter Reed, but he was detailed to the Library as assistant to the Librarian (see, for example, letter, Garrison to E B Krumhaar, Aug 11, 1926 MS/C/166)

[51] "I sometimes wish I had made a strenuous stand [against being sent to the Philippines] on the ground that I was doing the best work for the government where I was if it [a post at Hopkins] had been offered me before I left for this place [Manila], I should have accepted with alacrity", letter, Garrison to Klebs, Mar 4, 1923 MS/C/166

[52] Letter, Garrison to Klebs, May 15, 1924 MS/C/166

[53] Allemann quoted by Kagan in *Fielding H Garrison*, p 78

Garrison was aware of his waspishness during this period "I am still very irritable, captious, sensitive, cantankerous, jahzorning, critical and even unjust at times", letter, Garrison to Klebs, Sept 1, 1926 MS/C/166

[54] "I can recall some military chiefs—Billings, Merrill, Walter Reed, McCaw and particularly Straub, whom I liked very much", letter, Garrison to Klebs, Jan 3, 1923 MS/C/166

[55] Letter, Garrison to Klebs, Oct 17, 1928 MS/C/166

[56] Letter, Garrison to Klebs, June 26, 1926 MS/C/166

[57] "As a medical historian he was outstanding, as an administrator, a minus quantity", letter, Noble to E E Hume, quoted in *Bull Inst Hist Med* 5 335 (1937)

[58] Allemann quoted by Hume, *Bull Inst Hist Med* p 341

[59] Straub quoted by Hume, *Bull Inst Hist Med* p 335

[60] Letter, Phalen to Solomon R Kagan, quoted by Kagan in *Fielding H Garrison*, p 28

[61] "I request or insist that our meeting in future be outside the Library for the simple and sufficient reason that my position there has been and is subalternized and therefore painful and sometimes humiliating", letter, Garrison to Klebs, June 26, 1926 MS/C/166

"I should be content if I never saw the Washington Library again, on account of many painful memories associated with my last six years there", letter, Garrison to Welch Aug 9 1932 JH The librarians during that time were Phalen (1924–27) and Ashburn (1927–1932)

[62] Correspondence between W Welch and Garrison at Welch Medical Library, particularly Welch to Garrison, Nov 27, 1928, Jan 11, 1928 [1929], Jan 6, 15, 1930

Garrison retired from the Army in May 1930 with the rank of colonel

[63] Letter, Garrison to Klebs, June 12, 1930 MS/C/166

[64] Letter, Ashburn to Fishbein, Feb 21, 1930 MS/C/151

[65] Correspondence between the librarians and Garrison may be found in MS/C/166, MS/C/151, MS/C/152, and in file New Building Construction in MS/C/309

[66] Letter, Welch to Garrison Aug 11 1932 Welch Med Lib

[67] *Med Life*, 43 573–5 (1936)

XV

The Library During the Depression

EDGAR ERSKINE HUME, LIBRARIAN 1932—1936

THE Great Depression touched the Library in several ways. As economic conditions plummeted, the Librarian was Percy Ashburn, who had been appointed in 1927, retired from the Army in 1931, and been permitted to remain. He might have kept the post for many more years had not Congress enacted legislation to reduce government expenditures and assist the economy. Among the new laws was one which cut off pay of retired officers on active duty. Ashburn tried to be exempted from the law, seeking help from Senator Frederic C. Wolcott (William Welch's nephew) and other influential persons, but he was not successful.[1] He left the Library in 1932 and was succeeded by Major Edward Erskine Hume.[2]

Hume was born in Frankfort, Kentucky, December 26, 1889. After attending Centre College (B.A., 1908, M.A., 1909), Johns Hopkins (M.D., 1913), University of Munich and University of Rome, he joined the Army in September 1916. At Army Medical School he ranked first in his class. Following graduation he was sent to Fort Leavenworth, brought back to Washington for a few months, and then ordered to France. He was present at the battles of Meuse-Argonne and Saint Mihiel, then went to Italy and was in the battle of Vittorio Veneto. After the war he was named American Red Cross Commissioner to Serbia and surrounding territory, and he directed the antityphus-fever campaign in the Balkan States until August 1920, when he returned to the United States.

From the autumn of 1920 to June 1922 Hume was in the I Corps Area Laboratory at Fort Banks, Massachusetts. On his own time he attended classes at Harvard and M.I.T., receiving a certificate in public health and a diploma in tropical medicine. Hume had shown skill in writing, translating, history, and biography (he had published a genealogy of the Hume family when he was 24) and for these reasons he was assigned to the Library in 1924 to replace Garrison. Before Garrison left for the Philippines he instructed Hume.[3] For 2 years Hume worked in the institution, mainly assisting Albert Allemann prepare the *Index-Catalogue*. Concurrently he attended Johns Hopkins and received the degree of doctor of public health. Leaving the Library in April 1926, Hume

Edgar Erskine Hume, Librarian, 1932 to 1936.

served at Fort Benning until 1930, then instructed in the New Hampshire and Massachusetts National Guard.

When Percy Ashburn left the Librarian's post in 1932 several officers desired the job.[4] Hume received it, and the Surgeon General could hardly have made a better choice. Hume was familiar with the routine, he spoke five languages and could translate five more, and he was at home in the scholarly, bookish atmosphere. Unfortunately, economics dictated that the Library could not advance, and Hume could only mark time.

In 1936 Hume's 4-year term as Librarian expired. He was sent to the Medical Field Service School and then to Winter General Hospital. In April 1943 he was assigned to General Eisenhower's staff in North Africa. Eisenhower appointed him chief of Allied Military Government in Italy in August 1943, and Hume eventually governed two-thirds of the country. From September 1945 to June 1947 he was chief of Military Government in the U.S. zone of Austria. Thereafter he was chief of the Reorientation Branch, Civil Affairs Division, Department of the Army; chief surgeon of the Far East Command on General MacArthur's staff; director general of medical services of the United Nations Command in Korea; and surgeon on the staff of the Supreme Commander for Allied Powers. He retired with the rank of major general in 1951.

Hume was a handsome, pleasant person with tremendous energy, the intellectual curiosity of a scholar, and seemingly no fear. At the battle of Vittorio Veneto he was wounded and received his first medal for heroism. He was wounded twice in Italy during World War II and twice in Korea. By the time

he reached the end of his career he was the most decorated medical officer in the Army. Among his decorations were two distinguished service medals, the Legion of Merit, the Navy Bronze Star, the Air Medal, and the Soldier's Medal. He received the last for crawling into the cellar of the bombed post office in Naples and rescuing five wounded persons before the building collapsed. He was decorated by 37 countries in Europe and Latin America, was presented with honorary degrees by 10 American and several European universities, received the Gorgas Medal and the Sir Henry Wellcome Prize in 1933 while at the Library. He was an honorary colonel in the Serbian Army and an honorary citizen of two-score Italian and Austrián towns.

Hume was lecturer in history of medicine at Georgetown and University of Kansas. He was more interested in history and biography than any other person associated with the Library, except Garrison, and this was reflected in many of his articles and in his books, among which were *Max von Pettenkofer, Medical Work of the Knight's Hospitallers of Saint John of Jerusalem, Victories of Army Medicine,* and *Ornithologists of the United States Army Medical Corps*.[5] Hume died of an aneurysm of the aorta January 24, 1952, shortly after retiring from the Army.[6]

The Depression Retards the Library

The effects of the Great Depression were felt in the Library when the usual appropriation of $19,500 was reduced to $14,300 for fiscal year 1933–34. Forced to reduce purchases, Librarian Hume decided to spend funds entirely on journals. He reasoned that books were less important and could be purchased later from second-hand dealers, whereas back issues of periodicals would be difficult to obtain. Furthermore, periodical literature was the backbone of the *Index-Catalogue.*

The devaluation of the U.S. dollar to 60 cents forced the Library to pay more for European journals, leaving less money for American. Hume explained the shortage of funds to domestic publishers and asked them to give journals to the Library. The majority did so.

Still there was not sufficient money to continue all subscriptions. Hume evaluated journals to decide which would be discontinued until economic conditions improved. Besides estimating the value of each journal to patrons, he considered the availability of the journal in other medical libraries of the area, as Welch Library in Baltimore.[7] Hume had to cut the subscription list from 2,041 periodicals to approximately 1,600.

The following year Congress repeated the appropriation of $14,300. Hume continued the policy of concentrating on journals. When he requested American publishers again to send journals free, some agreed but the majority refused, asking why they should donate to the Library when the government was collecting more taxes and spending large sums on Depression projects.

During these 2 years the Library purchased very few books, only 16 between July 1, 1933, and May 1, 1935. "No rare medical items have been purchased

since June 9, 1933, although the economic distress world-wide has brought many rare and desirable old medical books on the market at sacrifice prices," noted Hume in April 1935. Fortunately the Library of Congress continued to send some of its duplicate American medical books.[8]

During the Depression the Library suffered in other ways. Persons could not be hired to replace employees who retired.[9] Salary increases were not permitted. The Government Printing Office bound fewer volumes. The *Index-Catalogue* was suspended after the final volume of series 3 appeared in 1932 and was not resumed until 1936.

The years 1933, '34 and '35 were the worst for the Library. In 1935 Congress increased the appropriation to $15,700, only $1,400 more but important in a low budget. The organization began to purchase books again. In 1936 Congress elevated the appropriation to $20,660 and the 3-year depression was over for the Library, although the effects would linger for some time.

The Beginning of the Fourth Series of the *Index-Catalogue*

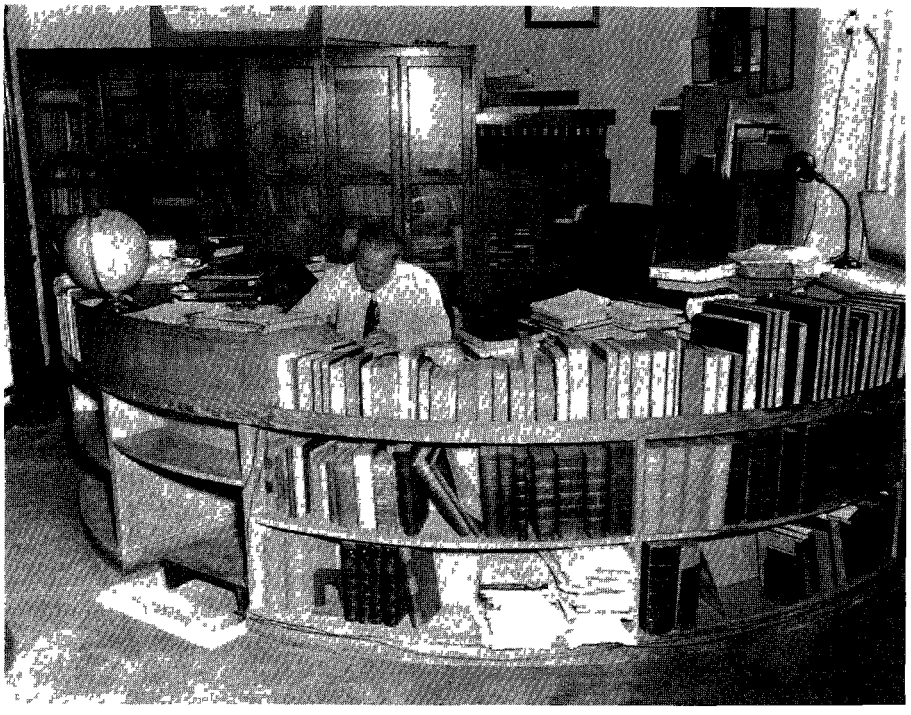
After the third series of the *Index-Catalogue* ended, Garrison and other persons concluded that it was not as useful as the first and second series for several reasons, one of which was the omission of citations printed instead in the *Quarterly Cumulative Index Medicus*. Librarian Hume therefore decided to resume the earlier practice of printing all citations, whether or not they appeared in the *QCIM*, and to include citations that had been left out of series 3.[10]

The new editor, Claudius Francis Mayer, arrived only 2 days before the previous editor, Allemann, retired in 1932 and therefore had no one to coach him. But Mayer was an extremely intelligent person—Librarian Jones considered him to be a genius—and he took up the job without difficulty. He began to think of changes that would reduce the time and cost of preparation and allow more citations per volume.

Hume asked Garrison, Morris Fishbein, and others for opinions of Mayer's proposed modifications.[11] They agreed that most were beneficial, and Hume ordered these to be adopted. Thereafter Arabic numerals replaced Roman, paginations were reduced, margins were narrowed, abbreviations were shortened, and other measures were taken to conserve space.[12] The fourth series was scheduled to begin in 1933, but because of the Depression no funds were available for 3 years.[13] The publication came dangerously near to being suspended for all time. Volume 1 finally appeared in June 1936 amid favorable publicity.[14] Through the remainder of the 1930's the Library published a volume each year.

Progress Toward a New Building

In 1930 Reed Smoot, chairman of the Public Buildings Commission, informed Secretary of War Patrick Hurley that the Library and museum would have to vacate their home as soon as possible. The old building would have to



Claudius Francis Mayer, editor of the Index-Catalogue *from 1932 to 1954, at his specially-designed semicircular desk*

be torn down because it did not fit into the plans for development of the Mall and the beautification of Washington.[15] But the Army could not transfer the Library and museum from the building immediately because there was no other place to house the collections. To prepare for the eventual move officers in the Surgeon General's office and the Quartermaster Corps began to draw up preliminary plans, elevations, and perspectives for a new building costing $2,086,000 [16] In the autumn of 1930 these plans were submitted to the Director of the Budget who recommended to President Hoover that Congress be asked to appropriate money for construction. The President decided that because of the large deficit in the national budget construction should be postponed until development of the Mall required removal of the old building.[17]

News that a new building was in the offing spread around, and in June 1931 the American Medical Association passed a resolution favoring a site on Capitol Hill, rather than Walter Reed, under the belief that Capitol Hill would be more convenient for visiting physicians coming in on the train. Surgeon General Robert Patterson objected, pointing out that the average physician of Washington was as close to Walter Reed as Capitol Hill, and that only an insignificant number of out-of-town physicians came to the library (72 in 1930) because

interlibrary loans were so easy to arrange (308 institutions borrowed 9,764 books in 1930). This was the beginning of a long tug-of-war between physicians who preferred a site on Capitol Hill and those who favored Walter Reed.[18]

The United States was then sinking into the long business depression of the 1930's. When Franklin Roosevelt was elected President, he persuaded Congress to appropriate a large sum to stimulate industry and employment by construction of public works. The Medical Department saw that the public works program offered an opportunity of gaining a new building, and Surgeon General Patterson asked friends to help obtain the necessary legislation. At his request the American Medical Association and other important medical societies urged Congress and the Administration to allot $2,000,000 of the public works fund for construction of a Library and Museum Building at Army Medical Center.[19]

The most influential lobbyist may have been Harvey Cushing, who had begun borrowing books in the 1890's when he was a young surgeon and continued after he had become a teacher at Johns Hopkins and Harvard, surgeon-in-chief of Peter Bent Brigham Hospital, and finally professor of neurology at Yale's Medical School. Cushing was a bibliophile, biographer, and a leader in his specialty, neurosurgery. One of his daughters, Betsey, had married James, son of President Roosevelt. In the summer of 1933 Patterson asked Librarian Hume to request Cushing to inform the President about the need for a new Library-Museum Building. Cushing obliged by writing the following letter to Roosevelt:[20]

> The fact that one Sara Delano Roosevelt is my grandmother and another one my granddaughter, and that you by some strange fate have become my stepson or brother-in-law or whatever it may be—I was never good at genealogy—is, I suppose, the reason why people like this Major Hume think I may conceivably have some influence with you and may therefore be prevailed upon to inject myself into your Blue Eagle activities.
>
> Most things of this sort I pretend never to have received, but this one I really feel I must hand on to you.
>
> You of course know all about the Surgeon-General's Library, for which John S. Billings was originally responsible. It is the only great medical library in the world, and the Index Medicus and the Index Catalogue are probably more widely used throughout the world than any other medical book which has ever been published since the book of Isaiah.
>
> I happened to be writing for this thesis which I needed and probably the only place in the world where it could be secured was in Washington. This is an indication of how the Library is continually being used by the medical profession.
>
> The question of what to do with the Library in the future, for it will have to be moved away from the present site soon, has been a problem long agitated. The Army is very proud of it, and justly so, and though Herbert Putnam would take it with the Congressional Library, he rather thinks it is better where it is, and there is a consensus of opinion among the medical profession, the Army Medical Corps and the Medical Library that the proper place for it would be in connection with the Walter Reed Hospital, for it would be convenient to the workers there and no less convenient than it is for the general profession.

> But you mustn't believe me about this or anything else without looking into it further. And I don't know any man in the world who would be more proud to have a note from you at this juncture than William H. Welch who at eighty-four is recovering from an operation at the Johns Hopkins Hospital and can be reached there. If you should ask Miss Le Hand to drop him a note and say your step-son suggested that you write to ask him what is his opinion about where the Surgeon-General's Library ought to be moved and whether it is of any use to anyone and ought to be kept up at whatever cost, he will tell you better than anyone else the true facts, for he was close to Billings ever since its original foundation.

Perhaps as a result of this letter the President asked Herbert Putnam for his "personal judgment" of the proposal for a new building. Putnam affirmed the importance of the Library and the necessity for new housing, repeated that he did not favor consolidating the AML with Library of Congress, and that he preferred a site on Capitol Hill.[21] Roosevelt also ordered the Director of the Budget to study the proposal to erect a building at Army Medical Center. The Director reported in favor.[22] Despite these recommendations nothing could be done because public works funds had already been allotted to projects of greater importance. The Administrator of Public Works placed the proposal on a preferred list for action when additional funds would become available. The President did not forget, for in February 1934 his secretary asked Surgeon General Patterson to bring plans to the White House.[23] Roosevelt made one decision that was important in planning thereafter, that the site be Capitol Hill.[24]

In the Spring of 1934 Patterson again asked Hume to ask Cushing to intercede with Roosevelt. Cushing suggested to Hume that the President's physician be asked to talk with the President about the building.[25] Cushing also wrote the following letter to the White House:[26]

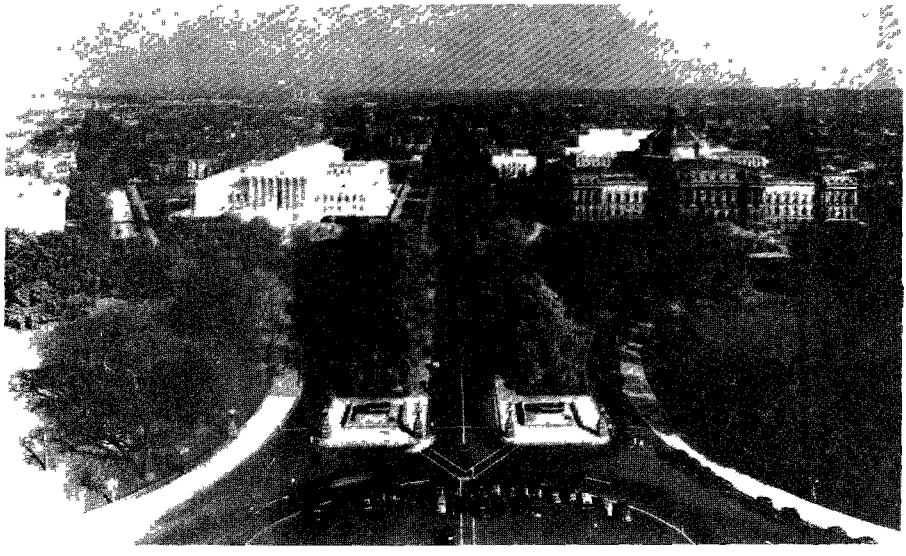
> Again may I remind you, as I did a year ago, of the great opportunity if not obligation on the part of the Government to be of service to the united medical profession of the country by properly housing the Surgeon-General's Library and Museum.
>
> The facts are briefly these:
>
> (1) The Library and the world-renowned *Index Catalogue* which it publishes are of the utmost importance not alone to the Army Medical Officers but to the medical profession as a whole throughout the world.
>
> (2) The present Library building is not only outworn, outgrown and unsightly, but stands in the way of the future development of the Mall.
>
> (3) In 1922 by Act of Congress a proper site for the future Library was purchased in the vicinity of the Army Medical Center and the architects' plans and specifications for a building estimated to cost *ca*. $2,000,000 were completed. Work can be started so soon as funds are available and competitive bids for construction made.
>
> (4) A year ago, if I understand correctly, the Director of the Bureau of the Budget reported favourably on the matter which was turned over to the Director of Public Works who saw the merits of the proposition. Inasmuch as no money was then available, he stated that the project would be put on a preferred list should further funds become allocatable for public works.
>
> (5) In view of the probability that through Congressional action a generous

> sum for public works is likely to be put in your hands, this would seem to be a proper time to recall to the attention of the Director of Public Works the desirability and importance of this particular project

Roosevelt directed his assistants to look into the matter, and several days later he replied.[27]

> I have your letter of April 25 reminding me, as you did a year ago, that the Government can be of service to the united medical profession by properly housing the Surgeon General's Library and Museum I agree that the facts as they are subdivided in your letter undoubtedly are well taken and that this Library and Museum could be considered as strictly utilitarian The question naturally arises, however, as to the wisdom of asking for $2,000,000 for an expenditure of this kind at this time If surplus monies were available, I would have no hesitancy in endorsing the request Insofar as plans and specifications are concerned, I find none has been prepared The estimated cost of $2,000,000 is more or less tentative and the plans have never exceeded the sketch stage The project could be placed on a preferred list should surplus monies become available for work of this kind However, as matters stand today relative to the building program for the District of Columbia, it does not appear that we could include it in the present-day comprehensive plan

The President attached to this typed letter a hand-written note "H C The above is the "official" answer—all the same I am going to try to get that building started next year! F.D R "



A likeness of the proposed Library-Museum building was optimistically inserted into this photo taken from the Capitol The Supreme Court now occupies the site suggested for the Library-Museum, across the street from the Library of Congress.

The Library remained on the list of public works, but other buildings were decided to be of greater importance. Roosevelt explained this to Cushing in August 1934:[28]

> The situation in regard to the building for the Surgeon General's Library is this. We are all tremendously keen about a new building for it. However, out of Public Works funds we must keep the District of Columbia somewhere within a reasonable ratio of expenditures compared with population, remembering that these Public Works appropriations are primarily to relieve unemployment. We have to consider the most pressing needs first and, therefore, have allocated this year enough money for a) One new building to take care of actual Government workers; b) A new sewage disposal plant, very much needed, as my nose on River trips testifies; c) A T.B. sanitarium to meet a serious T.B. situation; d) a stack room to take care of important current documents.
>
> These projects all put together exceed what should be the District's quota by about 100%. Therefore, with much reluctance, I have to put the Surgeon General's Library building over to another year. . . .

At this time a large annex for the Library of Congress was being constructed on Capitol Hill. This annex had much free space into which the Library of Congress would expand in later years. The idea arose that half of one floor of the annex could be used to house the Army Medical Library, the latter being either united with the Congressional library or kept separate and administered by the Medical Department. Cushing learned of this idea from Herbert Putnam at lunch in Washington in January 1935, and he undoubtedly alarmed the Medical Department when he told Fielding Garrison of Putnam's views:[29]

> I learned to my surprise that Mr. Putnam had appeared to change his mind about an association between the Congressional Library and the Surgeon-General's Library and that he felt that one of the floors in the huge new annex might be a very suitable place for it. He felt that the books would be much more available and accessible there to the many people who use the Library than if it were moved out in connexion with the Walter Reed Hospital.
>
> I am handing this on to you to ask what you personally would think about it. It might be just at this juncture a great opportunity to get the books all gone over and repaired, and since Mr. Putnam apparently has no difficulty in getting all the money he needs from Congress for his purposes it might be a wise move.
>
> I also saw Senator Fess there and he seems to be very much disturbed about the present condition and future status of the Surgeon-General's Library, and perhaps this might be a good time to have the matter reviewed.
>
> But before going into it any further, I would like to get your personal slant on the matter. The Surgeon-General persuaded me now almost two years ago to intercede with the President who in a personal note promised me that he would take the matter in hand and would do what he could. I do not like to pursue him further in regard to it without knowing just how the Medical Corps might feel in regard to going under the wing of the Congressional Library.

The uniting of the medical library with Library of Congress was an old idea but apparently new to Cushing.[30] Surgeon General Patterson and Garrison told him their reasons for preferring to keep the Library independent and locating it at Army Medical Center,[31] but Cushing felt strongly that the Library would benefit if it were connected with LC, as he informed Garrison:[32]

> I agree absolutely with you that wherever the Library should be moved, it still ought to remain as the Surgeon-General's Library and be under a librarian appointed by the Army just as it is now. At the same time, I can't help feeling that at present the Library is neglected and forgotten and that on the other hand the Congressional Library under Mr. Putnam's leadership gets all the money it needs without difficulty, and it is rather too bad not to have the S.G.O. Library profit by this.

Cushing did not push the union of the two libraries, but he liked the idea of housing the medical library in the annex. He suggested this to the President, who replied:[33]

> I am delighted to know of that new suggestion in regard to the Army Medical Library. We might even add another story to the new Annex and architect it to look like a pillbox.

Franklin Delano, uncle of President Roosevelt and chairman of the National Capital Park and Planning Commission, had also heard about the idea and he favored it. Possibly he viewed it as a quick means of emptying the old building for demolition. He urged Patterson strongly to accept the alternative. Patterson compromised a bit by promising to send medical incunabula from AML to Library of Congress, but he would not give up the Library.[34]

While fears of a forced merger with or housing in the Library of Congress continued, the Army Medical Library approached the 100th anniversary of its birth, set arbitrarily by Hume as 1936. Cushing seized the approaching Centenary Celebration as an excuse to remind the President about the need for a new building. He wrote:[35]

> I am informed by the Surgeon-General that preparations are on foot to celebrate the centenary of the founding of the Surgeon-General's Library sometime in November. He has asked me to deliver an address on the occasion, but my brain being not much better than my legs these days, I felt obliged to decline, and suggested that some distinguished foreign medicos be invited to come and take part in the ceremonies.
>
> This recalls to me that two years ago the present urgent needs of the Library were brought to your attention and the desirability of moving it from its present site to that long allocated for the purpose near the Walter Reed Hospital. You kindly replied, explaining why it was impossible to allocate funds at the time, but enclosed a pencilled note to the effect that you would bear it in mind and strike when the circumstances were more favourable.
>
> Could you possibly find the ways and means now, there would be abundant reason to celebrate this 100th anniversary of the Library's foundation, either by starting the evacuation for the new building or even possibly actually laying its cornerstone The occasion would be doubly worth celebrating should it more or less coincide with the beginning of your second term of office, about which I haven't the slightest manner of doubt.

Roosevelt replied:[36]

> I wish I were the dictator you assume me to be! I most assuredly do want to get the proper housing for the Surgeon-General's Library started but it must be a monumental building and cannot be done out of Work Relief funds: there-

fore, it will require an Act of Congress We have had such demands for office space these two years that all special buildings of this type have been deferred I hope much, however, that the next Congress, either at the first or second session, will authorize it

Perhaps I could say as much as this at least when the Centenary takes place in November

The President was kept aware of the Centenary of the Library and when the actual time arrived he invited Sir Humphry Davy Rolleston, the principal speaker, to the White House for a chat

Notes

[1] Letters Welch to Garrison, July 30, 1932, Garrison to Welch, July 31 JH

[2] During the period between the departure of Ashburn and the arrival of Hume, Maj P E McNabb, curator of the museum, was Acting Librarian

[3] Garrison and Hume became friends Garrison characterized Hume as "a gentleman, who was very kind to my aged mother before her death, and that I shall never forget saecula saeculorum", letter, Garrison to Welch, July 31, 1932 JH

[4] Letter Garrison to Welch, July 31 1932 JH

[5] A complete bibliography of Hume's articles, translations book reviews, and books is in MS/B/181

[6] References to many sketches of Hume are in the bibliography of his writings in MS/B/181 An Army information release is in MS/C/44 Obituaries are in *Military Surgeon* 110 244 (1952), *JAMA* 148 485 (Feb 9, 1952), *Ann Int Med* 36 1154–5 (1952), *New York Times*, Jan 25, 1952

[7] Letter, Hume to Garrison, Feb 19, 1934, MS/C/152

[8] For the effect of the Depression on the purchase of journals and books see annual reports of the Surgeon General, 1934, 1935, 1936 memo, Hume to General Patterson, Dec 10, 1934 in file Historical Information, MS/C/309, memo, Hume to Colonel T J Flynn, Apr 29, 1933, in file, Cost Estimates, MS/C/309

[9] The entire Library staff consisted of 29 persons in 1934

1 Librarian, a medical officer		
1 chief librarian	$5 600 yr	
1 librarian	3,900 yr	
2 junior librarians	2,050 yr	each
1 principal library assistant	2,500 yr	
2 library assistants	1,830 yr	each
5 junior library assistants	1,695 yr	each
6 under library assistants	1,460 yr	each
1 principal clerk	2,300 yr	
1 senior translator	2,000 yr	
1 clerk stenographer	1,850 yr	
2 junior clerk typists	1,680 yr	each
1 junior typist	1,560 yr	
2 messengers	1,320 yr	each
2 junior laborers	1,140 yr	each
Total salaries	$58,215	

[10] *Annual Report of the Surgeon General 1936*, pp 198–9 *Index-Catalogue* 4S, 1, 1936, p iv, vi

[11] Letters, Fishbein to Hume, Feb 27, 1933, Hume to Fishbein, Mar 7, 1933 MS/C/156 Letter, Garrison to Hume, Mar 24, 1932 MS/C/166

[12] Changes are listed in *Index-Catalogue* 4S, 1, 1936, p v Later modifications in policy and format are mentioned in *Annual Report of the Surgeon General, 1941*, p 250

[13] The Library had the text of the first volume of the fourth series of the *Index-Catalogue* ready for the GPO, but under the Economy Acts of 1933 the sum of $43,000 for printing reverted to the Treasury because the job could not be completed by June 30, 1933

Annual Report of the Surgeon General, 1934, p 183, *1935*, pp 178–9 *Index-Catalogue* 4S, 1, 1936 p vi

[14] For example, *Time*, June 22, 1936, carried two columns with a portrait of Hume clippings in MS/fB/120

[15] Letter, Smoot to Secretary of War, Jan, 25, 1930 file, Location of New Building MS/C/309

[16] Documents in file, new Building Construction MS/C/309

[17] Memo, Army Medical Library, by C F Mayer, Jan 17, 1935 MS/C/309

[18] Letter, Patterson to E S Judd, president AMA, Oct 10, 1931 file, Location of New Building MS/C/309

Thomas Cullen of Johns Hopkins was a leader in urging physicians to support the campaign for

a new library building He favored a site in the center of Washington rather than at Walter Reed Cullen compiled a large scrapbook of letters and clippings relating to his activities, 1931–1943 A copy of this scrapbook is in NLM

[19] Letters, Patterson to presidents of the AMA, APHA, and other organizations, May 1933 file, New Building Misc Corr MS/C/309

[20] Copy of letter, Cushing to Roosevelt, Aug 21, 1933 MS/C/183

[21] Copy of letter, Putnam to the Secretary of the President, Nov 20, 1933, accompanied by copy of Putnam's report to the President file, Transfer of AML MS/C/309

[22] Memo, F W Lowery, asst dir BOB, for Mr Douglas, Nov 10, 1933, memo, dir BOB to the President, Nov 14 1933, file, Transfer of AML MS/C/309

[23] 2nd Ind to letter, to the Quartermaster General from Surgeon General Patterson, Feb 24, 1934, file, New Building Construction MS/C/309

[24] "The President's attitude in opposition to the Army Medical Center was well known to me ", Surgeon General Charles Reynolds in letter to Col Leon Gardner, Mar 15, 1946, copy attached to speech, "The Army Medical Library' file, Historical Info MS/C/309

[25] Letter, Cushing to Hume, May 5 1934 MS/C/183

[26] Letter, Cushing to Roosevelt, Apr 25, 1934 MS/C/183

[27] Letter, Roosevelt to Cushing, May 9, 1934, quoted in John Fulton *Harvey Cushing, a Biography* (1946) p 664

[28] Letter, Roosevelt to Cushing, Aug 25, 1934, quoted in Fulton, *Harvey Cushing*, p 664–5

[29] Letter, Cushing to Garrison, Jan 3, 1935 MS/C/183

[30] The idea of uniting the Library with some other agency had been suggested several times before this In 1921 a scholar named Arthur MacDonald advocated consolidating 33 agencies, including the Surgeon General's Library and Library of Congress, in the Smithsonian Institution (*Congressional Record*, Oct 26, 1921) In 1933 MacDonald recommended placing the Library under jurisdiction of LC because LC was open in the evenings, librarians rather than Army officers would be in charge, rare books would receive better treatment and be more available, economy would result, and other reasons At this time MacDonald persuaded four Congressmen who were also physicians to sign a petition to the President to unite the two libraries The Surgeon General had to busy himself writing letters to rebut MacDonald's arguments (see file, Transfer of AML MS/C/309)

[31] Letters, Garrison to Cushing, Jan 7, 1935, copy in MS/C/183 Patterson to Cushing, Jan 8 MS/C/183

[32] Letter, Cushing to Garrison, Jan 10, 1925 MS/C/183

[33] Letter, Roosevelt to Cushing, quoted in Fulton, *Harvey Cushing*, p 665

[34] Letters, Patterson to Admiral Cary Grayson, Jan 22, 1935, Patterson to Delano, Feb 18, May 14 file, New Building Construction MS/C/309 Patterson to Walter Bierring, pres AMA, May 8, 1935 file, New Building Misc Corr , MS/C/309 Cushing to Delano, Feb 25, 1935 MS/C/183

[35] Portions of letter, Cushing to Roosevelt, Aug 21, 1936, quoted in Fulton, *Harvey Cushing*, p 665

[36] Letter, Roosevelt to Cushing, Aug 25, 1936, quoted in Fulton, *Harvey Cushing*, p 666

XVI

The Library on the Eve of World War II

HAROLD WELLINGTON JONES, LIBRARIAN 1936–1945

TO succeed Hume the Surgeon General designated Colonel Harold W. Jones, a surgeon approaching the end of his career in the Army. Born in Cambridge, Massachusetts, November 5, 1877, Jones attended Massachusetts Institute of Technology from 1894 to 1897 and Harvard Medical School from 1897 to 1901. After receiving his M.D. degree he spent 2 years at Children's Hospital, Boston, and then practiced medicine in St. Louis and taught at St. Louis University Medical School.

Joining the Army in 1905 Jones was stationed in the Philippines. Later he was a surgeon on troop ships and was attached to General Pershing's command on the Mexican border in 1916. For Pershing's expedition he organized the first motor ambulance company in the Army and afterward helped develop the standard motor ambulance for the Medical Department.

During World War I Jones commanded the large (22,000 persons) Beau Désert Hospital Center near Bordeaux. In 1920 he went to the Philippines again, where Brigadier General Johnson Hagood called him "the best post surgeon that has ever served under my command," and hoped that he would become "a general officer of the Medical Corps and Surgeon General of the Army."[1] Thereafter Jones was chief of the surgical service of large Army hospitals, coming from Tripler Hospital, Hawaii, to the Library in 1936.

Jones was modest, an excellent surgeon, fond of Shakespeare, and author of almost two-score articles. And like almost all of his predecessors he knew nothing about the administration and internal workings of the Library. "After serving more than thirty years in the Army, much of it in the field and more of it in the operating room, to my amazement I was ordered to Washington to finish out my active service as The Librarian," Jones reminisced later.[2] He was cautious and diffident at first, but as time passed and he became familiar with the theory and practice of good library management he gained confidence and brought about improvements as rapidly as conditions would permit. He urged the Surgeon General to continue efforts to have legislation passed to provide a new building, he began to diversify the bibliographies published by the Library and he cooperated in having microfilming facilities introduced into the

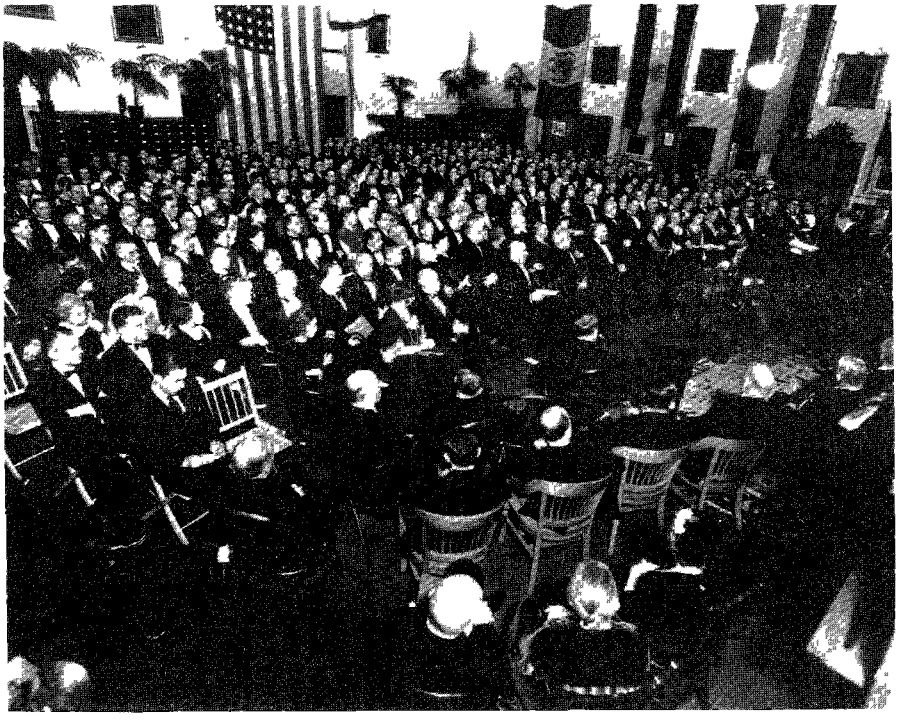
Harold Wellington Jones, Librarian, 1936 to 1945

institution He visualized an *Army Medical Library Quarterly* for articles by the staff He wondered if the Library could provide postgraduate study for medical librarianship bibliography and history

Jones tour of duty would normally have ended on August 6 1940 when he would have completed 4 years service as Librarian He would then have been nearly 63 years old and approximately a year away from retirement He asked Surgeon General James C Magee to allow him to remain at the Library for his final year, instead of being transferred to some other post Magee agreed and Jones stayed on Shortly before he would have retired in December 1941 the Medical Department, needing all its young officers for the war retained Jones on active duty at the Library [3]

The Centenary of the Library

As though to mark the end of the Depression the Library celebrated its 100th anniversary in 1936 [4] Actually the Library did not have a birthdate because it was not established on a definite day, as was the museum (May 21, 1862) Instead it evolved from a bookcase in the office of the first Surgeon



Audience of distinguished physicians listening to Sir Humphry Rolleston in the reading room during the Library's Centennial Celebration.

General. Librarian Edgar Hume probably did not know this when he began to think of a centenary, but when he became aware of it he did not find the absence of a definite date an insurmountable objection. He decided that 1836 was a reasonable arbitrary choice Eighteen thirty-six marked the end of the career of Surgeon General Lovell, during whose term the first books were purchased, and the beginning for Surgeon General Lawson, by whose order the first catalog was compiled.

One cannot help noting that the year 1818 seems more logical than 1836 for a birthdate, since it was in 1818 that Lovell took office and since Lovell acquired the first books. One suspects that Hume chose 1936 because it permitted a centenary to be observed while he was there, whereas 1818 would have placed the centenary in 1918, already 18 years in the past. As to the day, Hume picked November 16, the date on which the medical officers stationed in the District of Columbia were scheduled to hold one of their monthly meetings.[5]

Hume laid the foundation and began to make plans for the Centenary before he was succeeded as librarian by Jones in 1936. Before leaving, Hume discussed with Jones the question of who should be the main speaker. They decided on

Harvey Cushing.[6] Cushing declined and suggested Sir Humphry Davy Rolleston, physician to King George V, formerly professor of physic at Cambridge, formerly president of the Royal College of Physicians of London, and Surgeon Rear Admiral of the Royal Navy. Rolleston accepted the invitation.[7]

Jones made the arrangements, including the sending of approximately 1,200 invitations to medical organizations and libraries in North and South America, Europe, Asia, Africa, and Australia. A few days before the meeting library furnishings were moved out of Library Hall and hundreds of folding chairs were placed in rows facing a speaker's platform erected at the end of the hall opposite the book stacks. Rugs that Jones had brought from the East were laid on the platform. Flags of many nations were hung about the hall. Scrolls and letters of congratulation were displayed.[8]

On Monday evening, November 16, nearly 600 guests arrived. Among them was the Cuban ambassador, British and German military attachés, former surgeons general and librarians, representatives of organizations from many countries, medical officers, and private physicians. Library Hall became full, and many visitors had to sit in the reading room below, listening to the speeches through speakers.

Following the invocation, Jones read a message from President Roosevelt and the names of scores of organizations that had sent messages of congratulation. Surgeon General Reynolds then introduced Rolleston. As the Washington *Star* pictured the scene, Sir Humphry, "an apple-cheeked Briton with thinning hair and rimless spectacles perched on the end of his nose, spoke glowingly of the library's history" while "men in white, attired for the occasion in dinner dress, and women in evening clothes strained to catch his soft-spoken syllables, for he could hardly be heard beyond the fourth row of the high-ceilinged library. Downstairs, however, an overflow audience heard his every word blaring through amplifiers."[9]

Afterward the guests sipped gin-rum fruit punch, ate chicken salad, finger rolls, and cakes and drank coffee while strolling along the corridor looking at rare books displayed in glass cases and listening to the Army Band.

The next day the folding chairs, flags, decorations, and amplifiers were removed, and the Library returned to its normal routine. Accounts of the affair, with quotes from Rolleston, were carried in Washington newspapers. The longest lasting benefit of the centenary to the Library may have been the effect of the publicity on legislators, particularly Rolleston's remark: "what better way of celebrating the commencement of the second century of the library could there be than the erection of a new building so urgently needed and so thoroughly deserved?"[10]

New Bibliographies

Possibly because of the thoughts about the past and future of the Library aroused by the 100th anniversary celebration, Librarian Jones began to broaden

his view of the organization's activities.[11] For more than a century the Library had been collecting literature, and for more than 50 years it had been disseminating references to its literature through the *Index-Catalogue*. Now Jones decided to issue other bibliographies. The Library had no funds for publication, other than for the *Catalogue*, and it was doubtful that funds could have been obtained, but Jones could get special bibliographies into print by attaching them to the *Catalogue*. The first of these, conceived and compiled by Claudius Mayer, was a list published as a supplement to the *Catalogue* under the title "Congresses: Tentative Chronological and Bibliographical Reference List of National and International Meetings of Physicians, Scientists, and Experts."[12]

Jones visualized a number of other special bibliographies, one of which, on legal medicine, reached about 20 percent of completion before it ceased owing to the retirement of the compiler Loy McAfee.[13] Another special bibliography was the "Bio-Bibliography of XVI Century Medical Authors" by Mayer. Mayer intended this to be a union list of all 16th century works, not merely those in the AML, with biographical data and portraits of the authors. Jones had specimen pages of this bibliography, beginning with Abarbanel and ending with Adrianus, published at the front of *Index-Catalogue*, volume 4, 1939. Encouraged by the favorable reaction of readers, Mayer continued his task, obtaining information from several American and European libraries. Jones planned to publish a part of the bibliography in each volume of the *Catalogue* until it was complete, then to reprint it as a separate book. The first part covering half of the letter A appeared as a supplement to volume 6, 1941. Unfortunately the war caused Mayer to stop work on what promised to be a useful, authoritative reference book, and it was not continued.[14]

Jones' most ambitious plan in the field of bibliography was the compilation of a World Catalog of Medical Books, a complete inventory of all medical books ever published.[15] The foundation of the World Catalog was to be the Library's card catalog. The catalog was to be brought up-to-date by a partial reclassification of the Library's books, in accordance with modern library practice. Card catalogs of other libraries were to be microfilmed. From the film cards were to be made and interspersed in the AML catalog. Authors and titles of books would be placed in the *Index-Catalogue*. The microfilming of catalogs of other libraries began in 1940, but the war halted this project and eventually it was abandoned forever.

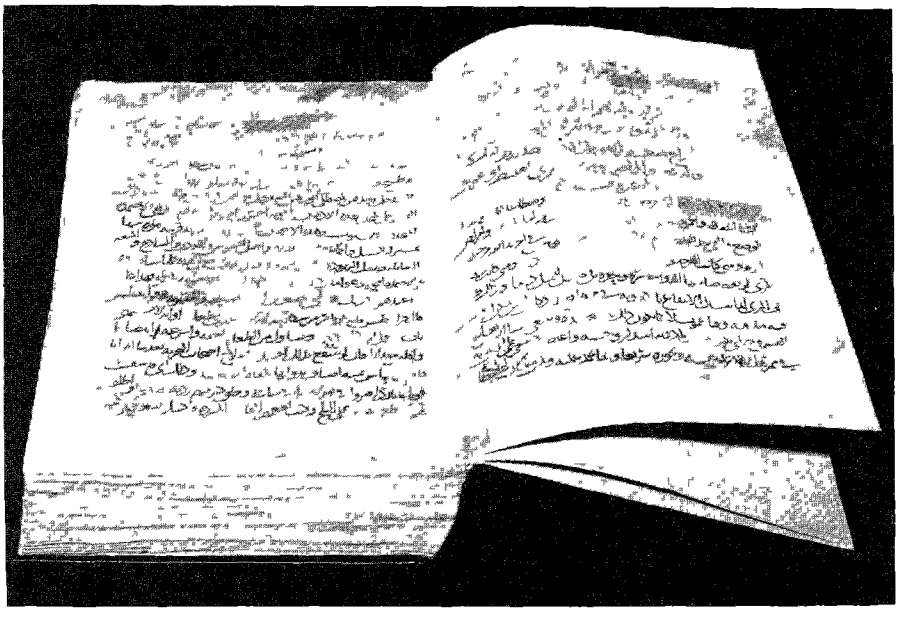
Although the portrait collection seems unrelated to the *Index-Catalogue*, the development of the collection was, in the 1930's, supervised by Mayer. In 1939 it was decided to broaden the card catalog of portraits into a Union List of Medical Portraits. Cards in the portrait catalogs at New York Academy of Medicine, College of Physicians of Philadelphia, Northwestern University Medical School, John Crerar Library, and Jefferson Medical School were photographed and combined with AML cards.[16] The war intervened and this work was stopped.

EDGAR'S BEQUEST HELPS BUY ARABIC MANUSCRIPTS

The Library has received many gifts of printed and manuscript material, of pictures and photos, but only a few of money. The second largest sum came from William F. Edgar, a physician who had wagon-trained west over the Oregon Trail in 1849 and eventually settled in California. There he prospered, and in 1893 and '94 he drew up a will leaving his estate to his wife during her life, to charitable, educational, and civic organizations after her death, and, for reasons not known to us, the residue to the Army Library-Museum

Edgar died in 1897, his wife a third of a century later. The trustees of the estate approached the Secretary of War in 1931, but the Library and museum could not accept the bequest until 1933 when Congress passed a joint resolution permitting them to do so Under the terms of Edgar's will the Library received one-fifth of the residue, $3,662, the museum four-fifths, $14,647. Thirty-six hundred dollars was a respectable sum in the Great Depression year of 1933, when Congress appropriated only $14,300 for acquisitions.

The Librarians found the bequest useful in purchasing items or having work done for which there was no appropriation One of the earliest uses for the money was to cover the cost of repairs to portraits, and to pay artist Franklin B. Clark for an oil painting of Garrison Some expenses of the Centenary Celebration in 1936 were covered by the bequest. In 1940 Jones set aside a



Arabic manuscript by al-Razi dealing with intestinal diseases. Written in 1094, this is the oldest book in the Library.

small area in the basement as a staff lounge, where employees who brought lunches from home could eat, and he paid for the furnishings with Edgar monies. The Librarians spent the money sparingly, generally less than $200 a year during the 1930's, nevertheless because it was available for unusual expenses Jones considered it to be "a great comfort to the Library in time of need."[18]

While there was still a considerable sum remaining in the Edgar bequest, Jones had the opportunity of purchasing a group of Arabic medical manuscripts. These writings were part of a large collection assembled by Abraham S. Yahuda, a scholar who had brought them to the United States when he fled the war in Europe. In 1940 Yahuda sent packing cases filled with his manuscripts to the Library and spent weeks there sorting out the medical items. Jones was hesitant about buying such exotic material, but after much deliberation and negotiation he bought one lot and later another lot, 130 documents in all, for about $7,500, some of the money coming from the Edgar fund.[19] Even at that, Jones felt that the sum was so large in comparison with the annual appropriation that he spread the payment over several fiscal years.

After this the librarians again drew money conservatively from the bequest, less than $100 or $200 a year until 1956 when the balance was exhausted by the purchase of 5 tables and 20 chairs for the Library's dining area.[20]

The Library Is Full

During the tenures of Ashburn and Hume shelves became filled in Library Hall, the reading room, and the corridors. Publications had to be stored in every nook and cranny.[21] By the time Harold Jones arrived in 1936 he found the Library's portion of the building about to overflow:[22]

> As far as I can see there is literally not an inch of room for expansion anywhere in the entire building except a dirty old coal hole in the cellar which is simply unspeakable. Everywhere books and magazines are piled high, and how anybody knows where things are or how anybody can get at anything if they want it, is beyond me. . . . Everywhere you go, every dark cubby-hole that is opened up in the basement, shows stacks and stacks of books and periodicals rising to the ceiling, the shelves groaning and bent under the weight, and really the confusion is indescribable. Valuable books are left uncared for, there is no rhyme or reason as to why they are placed where they are, and if anything happened to the people who know the locations I doubt if they would ever be found. The longer this confusion goes on the worse it will be when we try to eventually straighten things out, and not one move can be made now because there is nowhere to go except out on the street.

Jones searched the building and managed to find space here and there for additional shelves. He placed a few bookcases in Library Hall and the reading room, thereby decreasing space for readers.[23] By 1939 Jones could not find any more usable space. "Now the end has been reached," he informed the Surgeon General, "and the Librarian is using the last available space for between four and five thousand books. In a little more than a year there will be no room

whatever and by no stretch of the imagination can any more books be received unless something is done."[24]

Jones recommended that a temporary wing be erected next to the Library end of the building, or that space be borrowed from the neighboring Department of Agriculture, or that an empty house, hall, or church be rented.[25] But the Medical Department had been encouraged by the passage of legislation authorizing a new Library-Museum Building, and it would not accept Jones' suggestions. Jones had no alternative but to move volumes out of the building. He had all the duplicates, about 50 tons, packed into 500 boxes and shipped to the Army Medical Center for storage. Part of the freed space in the cellar was shelved for volumes, part was used for expansion of the infant microfilm service. Still searching for storage Jones thought of the recently erected National Archives Building. He asked Robert D. W. Connor, Archivist of the United States, for a loan of shelf space. Connor kindly offered 1,000 linear feet.[26] One wonders from whom Jones would have borrowed space next if events during World War II had not brought another temporary solution to the Library's space problem.

The Library Is Dirty

The Library was not only crowded, it was becoming run-down. The advancing age of the building was partially responsible, but there were other reasons. Washington now had many more buildings and houses than it had in the 1880's when the Library was erected, and the coal furnaces of these structures threw smoke into the air much of the year. Impalpable dust found its way into the Library and settled on volumes. A vacuum cleaner was in use constantly.[27] Several janitors spent their time cleaning and dusting.[28]

The plumbing and toilets were antiquated. Some of the furniture and rugs were badly worn. Paint was not applied often enough. When Jones was appointed Librarian in 1936 the Library looked like this to him:[29]

> It is frightfully dirty, ragged, unkempt, and disorderly. Dirt is rampant, and you can hardly touch anything here without having to wash your hands. The linoleum is ragged and disreputable, the walls grimy, the paint flaking off, the books dusty and the leather bindings cracking, and so on. There seems to be no standard of decency, no minimum housing and working conditions The place lacks proper toilets and lavatories. It is badly lighted, and while I do not wish to complain personally, the office of the Librarian is quite unspeakable. . . . We need the whole place cleaned, we need a lot of paint and electric wiring on the inside, we need varnishing, we need workers to go over the books and treat the bindings, we need people with vacuum cleaners, we need all the floors gone over, we need new linoleum, or better still floor rugs, we need new furniture, new shades, and many other things. . . .

Prodded by Jones the department repainted Library Hall and the reading room, installed reading lamps, touched up the exterior, repaired leaks in the roof, purchased new furniture, and enlarged the visitors parking lot. More radiators were placed along the walls of the reading room. The building stopped

using its boiler and began to receive central heat from the government heating plant. Still, the department was reluctant to sink much money into the old structure since it was thought that a new building would soon be constructed.

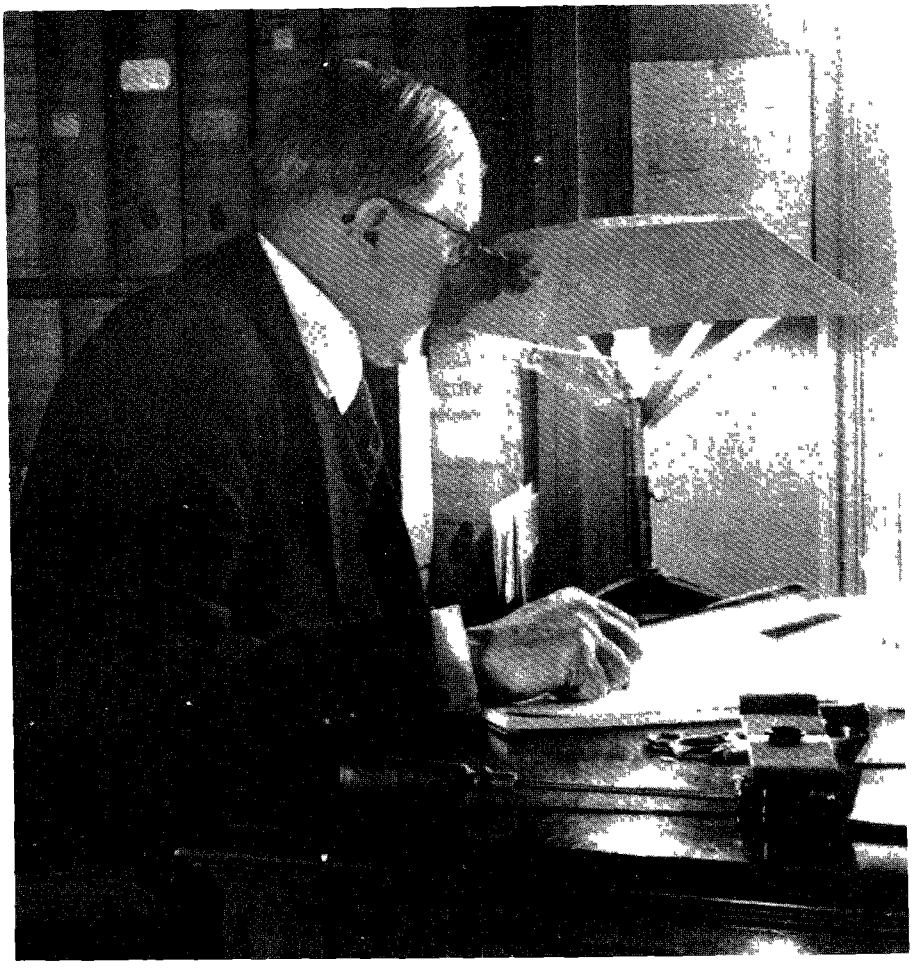
FRIENDS OF THE LIBRARY, THE BEGINNING OF MICROFILMING, AND THE ESTABLISHMENT OF *Current List*

In 1907 Atherton Seidell, a biochemist, published the first edition of his classic reference book *Solubilities of Inorganic and Organic Substances*. During the years that followed he spent many hours in various libraries compiling data for later editions. In 1926 at Maison de la Chimie in Paris he became acquainted with microfilm. Two years later in France he had to leave his family and laboratory to travel to Monaco to peruse a specialized journal. It occurred to him that this time-consuming trip would not have been necessary if microfilm facilities had been available for scholars and scientists engaged in library research. Thereafter he never stopped his efforts to encourage libraries to develop free microfilm service for patrons.[30]

In the 1930's he was a leader in organizing the American Documentation Institute, a nonprofit microfilm service. The Department of Agriculture loaned the institute office space. Seidell installed a camera in the Agriculture Library and began to provide microfilm at a low price. Subsequently he placed cameras in the National Bureau of Standards Library, the Geological Survey Library, and, in 1937, the Army Medical Library. The medical library, understaffed, could not spare a person to operate the camera, and Agriculture sent over a photographer two or three times a week to film orders that had been received. During fiscal year 1938–1939 this service filled 1,591 orders totaling 5,000 pages of text.[31]

Microfilming was moving slowly into libraries at this time. Firms were developing cameras and viewers, libraries were purchasing equipment and integrating microfilming into their operations, and researchers were being informed of the availability of film. By 1940 Librarian Jones was convinced of the potential usefulness of microfilm, and he wanted the service improved. He did not have funds to purchase a camera and other equipment and to hire an operator, but Seidell offered to form a volunteer organization to sponsor microfilming and publish a periodical that would inform researchers of recent articles available on film.[32]

Seidell began in August 1940 by inviting five prominent physicians of Washington to join him in a group to be called "Friends of the Army Medical Library."[33] These men were Hugh Cumming, formerly Surgeon General of the Public Health Service and now director of Pan American Sanitary Bureau; Arístides A. Moll, secretary of Pan American Sanitary Bureau, George B. Roth, professor of pharmacology at George Washington University; Michael X. Sullivan, director of Medical Research Institute, Georgetown University; and William L. White, National Institute of Health. After these men had agreed to unite with him in the undertaking, Seidell set about enlarging the group. He des-



Atherton Seidell, who introduced microfilming into the Library He devised a number of simple, inexpensive magnifying viewers to enable persons to read microfilm in their laboratories, offices, or homes Here he is looking through a microfilm viewer built into his lamp shade. Another of his viewers, consisting of a handle and magnifier, is on the table.

ignated the original six as the executive committee and himself as executive secretary He was, in fact, the active member of the original Friends and paid the starting-up expenses out of his own pocket, the others were silent partners who added prestige by their presence. He sent out 2,800 form letters inviting physicians and scientists to become Friends, to use the microfilm service of the Library, and to subscribe to his proposed journal [34]

In the months that followed many individuals and libraries became Friends,

but in the meantime Seidell proceeded with microfilming and the periodical. He gave his camera and processing equipment to the Library, paid the cost of installation, and advanced $200 to start the work. Under his direction and the nominal sponsorship of the Friends, "Medicofilm Service," as it was named, produced its first film in September 1940, filling 122 orders for 22 customers.[35]

Medicofilm Service was managed by Seidell, and the work was done by library employees on their own time. Two members of the reference staff collected and brought volumes to the camera, for which they received 3 cents a volume. Two other employees filmed the material. The expense and the remuneration of the workers was paid by charging 30 cents (reduced to 25 cents in July 1941) for an article up to 25 pages in length, plus 10 cents for each succeeding 10 pages. Microfilms were made free for the Surgeon General's office and the Library. The operation became self-supporting eventually and thereafter showed a profit.

At first patrons were informed of the new microfilm facilities by a pamphlet, "Medicofilm Service of the Army Medical Library; its purpose and plan of operation together with a list of more than 400 abbreviated titles of modern periodicals currently received by this library."[36] To publicize the services more widely, Seidell began publishing on January 1, 1941, a pocket-size 20-page weekly periodical, *Current List of Medical Literature*. It appeared under sponsorship of the Friends, but it was managed entirely by Seidell.

The titles in *Current List* were copied from index cards prepared for *Index-Catalogue*. A library employee, Deborah Hannon, typed the manuscript out of working hours. The copy was pasted in columns and reproduced by the Washington Planograph Co. Each issue contained about 1,000 titles. The work was done so rapidly that a subscriber was furnished with the titles of articles eight to 10 days after journals arrived at the Library. In contrast, readers of *Quarterly Cumulative Index Medicus* had to wait from 2 to 3 months to learn of the articles.

Articles in *Current List* were arranged under approximately 50 subject headings dealing with medicine and allied sciences. A researcher glancing at articles under his speciality, as cardiology, dentistry, ophthalmology, could ascertain quickly the presence of new articles he might wish to read. *Current List* did not displace other index journals; it was merely a rapid, convenient, inexpensive way of announcing new articles, microfilms of which were obtainable quickly from the Library.

On the inside of the back paper cover was frequently printed an order blank for readers to use in sending for film. At other times the inside of both covers carried news and announcements of the Friends and the Library, and editorials written by Seidell, Jones, Claudius Mayer, and other persons. On occasion the Library used the covers of several issues to publish a long list of wanted journals needed to fill gaps in the journal collection. Beginning in February 1941 the Friends began to issue the Library's "Recent Book Acquisitions," as a supplement to *Current List* with hope of attaining wider distribution of the former.

The publication of *Current List*, including typing, printing, and postage, cost about $5,000 a year. The subscription price was $5 a year (which amounted to about 10 cents a number). The cost of starting the journal was paid by Seidell. The number of subscribers increased rapidly, but the journal did not begin to pay for itself for some time. Seidell supplied almost all of the deficit, the remainder coming from profit earned by Medicofilm Service.[37]

The plan of informing researchers of newly arrived articles and supplying microfilm copies was very successful. The number of customers increased rapidly. During the first 6 months an average of 444 orders arrived each month. By June 30, 1941, 1,300 persons and institutions had become Friends. Medicofilm Service had exposed almost 2 miles of film to fill 4,736 orders for 950 universities, hospitals, research institutions, individuals, and government agencies. With funds from Rockefeller Foundation and assistance of the Sanitary Bureau of the Pan American Union, *Current List* and microfilm copies of medical publications were being sent free to 150 medical institutions in Central and South America.

Legislation for a New Building

Talk of unification of Army Medical Library with Library of Congress or removal to the LC annex persisted. In November 1936 Harvey Cushing told Surgeon General Charles Reynolds that Herbert Putnam saw no reason why the medical library could not be located in the annex while retaining its name and being operated by the Surgeon General's office:[38]

> I have talked once or twice with Herbert Putnam about it and he is under the impression that the medical profession doesn't quite know what it wants, whether to go to the site near the Walter Reed Hospital or to join up with the Congressional Library. I think that he himself, now that the new building is going up, feels differently from what he originally did. He intimated to me that one floor of this new building would be about double the space now occupied by the Library and Museum and that he did not see any reason why it should not be called the Surgeon-General's Library and be run by the Army just as it now is. Meanwhile, it could take advantage of their cataloguing system and all the rest; and what is more important still, the Library of Congress had very little difficulty in getting money for whatever it wanted whereas the Surgeon-General's Library might sometime have difficulty in getting support.
>
> Something more was said about the suggestion that the incunabula might be moved over to the Congressional Library where they could be put in the air-conditioned room, for they were rather deteriorating in their present quarters.

Finally Librarian Jones decided that he had to separate rumor from reality and he, with Surgeon General Reynolds in tow, went to see Putnam. Putnam told them that "certain influential persons" had advised the President not to erect a new library building at Army Medical Center, that he did not believe that it would necessarily be more economical if the AML were transferred to LC, that he preferred AML to be in its own building, but that he would have

to admit, if questioned by congressmen, that LC had plenty of space to absorb AML.[39]

It is usually impossible to learn precisely all the events that cause a bill to be introduced into and passed by Congress. The Medical Department had many friends besides Cushing urging Congress and the Administration to provide a new building. Yet, probably none of them was able to approach President Roosevelt as closely as Cushing, and it may have been Cushing's letters to the White House that finally resulted in the President's sending for Surgeon General Reynolds in April 1938, to tell him legislation would be prepared. The President suggested that he marshal public sentiment to urge Congress to act and that he hold a news conference to inform reporters that a new library-museum would be forthcoming.[40]

Within a few days Reynolds requested from the Adjutant General an allotment of $3,750,000 from Public Works Administration or other funds for construction of the building at Army Medical Center.[41] The War Department placed the building on a list of construction projects that would be presented to the PWA.[42]

Librarian Jones and Curator James E. Ash of the museum now began a broad campaign to persuade Congress to pass the bill that would come from the White House. They drew up lists of hundreds of names of medical libraries, institutions, and influential persons to whom the Surgeon General could write asking for support.[43] Scores of replies reached the Medical Department and were later presented to the congressional committees that, in the meantime, had received the bill.[44]

On April 28 Representative Andrew J. May and Senator Morris Sheppard introduced identical bills, drawn up by Surgeon General Charles Reynolds, to authorize construction of a new Army Medical Library-Museum Building in Washington.[45] Congress enacted the legislation very rapidly, and the President approved the law June 15.[46] The Secretary of War now had permission to construct a building costing no more than $3,750,000 on a site approved by the National Capital Park and Planning Commission, but he had not been given any money to carry out the work.

On June 13 Roosevelt asked Congress to appropriate $3,750,000 for construction of the proposed building.[47] The Senate passed a bill quickly appropriating one-third of the sum, but the House did not have time to act before Congress adjourned on June 16, and the bill died.

More than a year passed before the legislative process began again, with the White House directing the War Department to include funds for the building in its estimate of appropriations.[48] The department's estimate, submitted to Congress on January 4, 1940, requested $470,000 to purchase a site and $130,000 for plans. The House Committee on Appropriations agreed to the amount for plans but not for a site, pointing out that the law passed in 1938 had not authorized the buying of land.[49] The Senate did not agree with the House and desired to give the entire sum of $600,000. But the House remained

adamant, stating that money was needed more urgently for other military projects. The final appropriation act, June 15, 1940, thus gave the Army $130,000 for planning the building.[50] A supplemental appropriation act passed several days later specified that the Secretary of War and Surgeon General should approve the selection of the architect and the design.[51]

On October 4, 1940, the Secretary of War authorized Surgeon General James Magee to form a committee to chose an architect and a design. This committee selected the firm of Eggers and Higgins, New York, which had participated in the design of the National Gallery of Art, Thomas Jefferson Memorial, and National Archives. The Secretary approved and a contract was drawn up.[52] The architects developed a series of plans that they submitted first to Jones and Ash, and, after May 1941, to a board consisting of Jones, Ash, former librarian James Phalen, and two other officers.[53]

Meanwhile President Roosevelt had told the Army to place the building behind the Library of Congress near East Capitol Street.[54] Through 1940 and '41 the National Capital Park and Planning Commission kept changing its overall plan for the Hill area as it sought to make a harmonious setting for the Supreme Court building, the proposed Justice Holmes Memorial Garden, and other structures. Finally in March 1941 the commission and the Surgeon General agreed on a block on the south side of East Capitol Street between Third and Fourth streets.[55]

In October 1941 the Commission of Fine Arts approved the architect's plans but asked for more ornamentation (one result of which was a planned statue of Billings) and suggested a larger site.[56] The Army still did not have funds to purchase ground on Capitol Hill. In June 1941 Surgeon General Magee had asked Representative May to introduce a bill that would provide the Army with $1,000,000 for the land.[57] May's bill passed but like previous legislation it only authorized, it did not appropriate, funds.[58] The sense of the House during debate was that nothing more than planning of the building would be done until the war emergency period had passed.[59] In the spring of 1942, at the request of the Army, the contract with the architects was canceled because the United States was now at war.[60]

Jones Organizes the Staff

The employees, up to this time, were organized very loosely, as they had been since the days when Billings directed the Library. Everyone knew his or her job and carried on without much supervision.[61] When the promise of a new building brought Jones and the architects together in 1940, he realized that the staff would have to be organized along functional lines if the interior of the Library's half of the structure was to be laid out for maximum convenience and efficiency.

Finally in November 1941 Jones carried out his ideas and grouped the employes into three divisions and one department named the Index-Catalogue

and Research Division, the Acquisition, Finance and Supply Division, the Custody and Loans Division, and the Clerical Department.[62]

The duties of the Index-Catalogue and Research Division, headed by Claudius Mayer, included: cataloging all publications for the library, maintaining the main card catalog, selecting articles and sections of books for inclusion in *Index-Catalogue*, publishing *Index-Catalogue*, developing the portrait collection and catalog, arranging the manuscript and autograph collection, performing bibliographical research for government agencies and private individuals, translating, and abstracting. This division also did the planning to fill in Jones' ideas for changes in organization, cataloging, accessioning, subject classification of books, and other matters.

The Custody and Loans Division had charge of the main book and periodical collections, served readers in the library, and ran the interlibrary loan system. The Acquisition, Finance and Supply Division searched book-trade sources for works that should be acquired, ordered the works, handled the financial accounts (this had been done in the Surgeon General's office until early 1941), and accessioned new arrivals. The Clerical Department included the clerical, messenger, mailing, and labor services, and later the microfilming service. Thereafter Jones modified the organization from time to time to meet changing conditions [63]

Notes

[1] Efficiency reports on Jones by Hagood, 1923–1924 MS/C/8

[2] Jones, "The Army Medical Library in Retrospect and Future," *Bull Med Lib Assoc* 34 4 (1946)

[3] Biographical information on Jones may be found in his papers in MS/C/8, and in his articles "A Journey to the Kingdom of the White Elephant, ' *Military Surgeon* 56 159–68 (1925), "The Pill Artillery in Mexico," ibid , 59 545–568 (1926), "A Doctor chases the Pulajanes," ibid , 67 297–316 (1930), "Following Rainbows 'Round the World," ibid , 71 76–85, 172–181 (1932), "Looking Backward," ibid , 76 74–83 (1935), "Delegate-at-Large," ibid , 81 430–442 (1937)

[4] Correspondence regarding the arrangements for the Centenary, letters of congratulation, scrolls, programs, clippings, and reprints of articles are in MS/C/140 Several articles were written for the Centenary Jones, "The Centenary of the Army Medical Library," *Military Surgeon* 80 1–4 (1937), Rolleston, "the Oration Commemorating the One Hundredth Anniversary of the Founding of the Army Medical Library, Washington," 5–20, Jones, "The Greetings from Beyond the Seas," 21–31, Claudius F Mayer, "From Drawings to Photography in Color," 31–44, E E Hume, "Buildings for the Army Medical Library," 45–52 Jones', Rolleston's, and Mayer's articles were also published (without the illustrations used in *Military Surgeon*) in The Army Medical Library Number of *Med Life*, 43 Dec 1936, along with additional articles P M Ashburn, "A Greenhorn's Experience in the Library", J M Phalen, "American Medical Literature", Albert Allemann, "Dr Billings and His Work " Jones had reprints of all the articles in *Military Surgeon* and *Med Life* bound in volumes for presentation, *The One Hundredth Anniversary of the Army Medical Library, Washington, D C , 1936*

[5] Letters, Hume to Victor Robinson, July 11, 1936, Surg Gen C R Reynolds to H Cushing, Aug 11 MS/C/140

[6] Letters, Hume to C R Reynolds, Aug 11, 1936, Reynolds to H Cushing, Aug 11 Jones to Reynolds, Aug 24 MS/C/140 Fulton, *Harvey Cushing*, p 665, 676

[7] Jones' remarks on arrangements in *Bull Med Lib Assoc* 40 103–104 (1952)

[8] Hume and Jones prepared for distribution

to the guests an eight-page pamphlet, *Routine Operation of the Army Medical Library* A copy is in Archival Collection

[9] *Star*, Nov 17, 1936

[10] The Washington *Star*, *Herald*, and *Post* all mentioned the need for a new building in their accounts of the Centenary

[11] *Annual Report of the Surgeon General, 1939*, p 248

[12] *Index-Catalogue* vol 3, 1938 The 288-page supplement has its own pagination, apparently Jones hoped to have copies printed, bound, and issued separately An addition to the list was published in *Index-Catalogue*, Vol 4, 1939

[13] Memo, Jones for Dr Bickel and the indexing department, May 31, 1940 MS/C/42

[14] Mayer's plans, sources, and methods for the bibliography are in his seven-page introduction to the supplement

[15] *Annual Report of the Surgeon General* 1939, p 248 *Index-Catalogue* 5, 1940 p iii, 6, 1941, p iv *Current List Med Lit* , 5 Aug 5, 1943, inside cover

[16] Changes in the style of cataloging and coverage in the fourth series are listed in Annual Report of the Librarian FY 1940–41 file, Consolidated Fiscal Year Activities, MS/C/309

[17] Jones, editorial inside covers *Current List*, 4 no 23, June 10, 1943

[18] *Annual Report of the Surgeon General, 1940*, p 260

[19] A survey of the manuscripts may be found in Sami Hamarneh, 'Arabic Manuscripts of the National Library of Medicine, Washington, D C " *J Hist Arabic Sci* 1 72–103 (1977)

[20] For background of the Edgar bequest see Henry, *Armed Forces Institute of Pathology*, p 234–5 Brief remarks on the fund are in annual reports, 1937–1949, *AML Bulletin*, Jan 3, 1952, May 23, 1956 Correspondence between Jones and Sommer, NLM Correspondence between Jones and Mayer, and Mayer and Yahuda, MS/C/42 Claudius F Mayer, "The Collection of Arabic Medical Literature in the Army Medical Library," *Bull Med Lib Assoc* 30 96–104 (1941–42), "Checklist of Arabic Manuscripts," *Bull Hist Med* 16 201–16 (1942) Princeton University purchased the bulk of Yahuda's manuscripts

[21] "The other day, one of our staff was complaining about the crowded conditions in the 'Thesis Room' unfortunately for our peace of mind this is not the only place where we keep such dissertations, for it is impossible to keep them confined to a single room They crawl all over the library, some 200,000 of them There is not a single inch of space left in any of the boxes for the squeezing in of any more theses All the available room is taken up now by the medical dissertations of the last three centuries " C F Mayer, *Current List Med Lit* 1 No 14, April 2, 1941, inside cover

A list of all the rooms used for library purposes, the number of square feet in each room, and the use made of the room is in Memo, Jones to Surgeon General, Mar 16, 1937 file, Space Information, MS/C/309

[22] Memo for the Surgeon General by Jones, Sept 2, 1936 MS/C/205

[23] Some of the cases had glass fronts and locks In these all the incunabula, more than 450, were brought together and arranged in alphabetical order Similarly 3,000 16th-century volumes were selected from the general collection and placed in locked cases for the first time Erotica was locked up in a cherrywood book case with a solid front A unique copy of the 1721 reprint of Thomas Thatcher's *A Brief Rule to Guide the Common-people of New-England how to order themselves and theirs in the small pocks or measels*, a broadside, and perhaps a few other small, rare publications were kept in the Library's safe

[24] *Report of the Surgeon General, 1939*, p 249 Letter, Jones to Surgeon General, Oct 12, 1939 file, Space Information, MS/C/309

[25] Memos, Jones to Surgeon General, Oct 5, 1939, Oct 12, Nov 28 file, Space Information, MS/C/309

[26] Letter, Jones to Connor, July 16, 1941, and attached corr file Space Information, MS/C/309 Books, including the stock of *Index-Catalogue* and the old *Medical and Surgical History of the War of the Rebellion*, were stored in the Archives from Sept 1941 until January 1944, when they were moved to the Cleveland Branch

[27] In 1910 the Library acquired its first vacuum cleaner, a Duntley Pneumatic Cleaner It was in constant use for 2 years before it wore out Librarian McCaw told the Surgeon General that the "method of cleaning books and shelves in the Library by a pneumatic machine is invaluable," and requested a stronger, more durable cleaner See letter, McCaw to Surg Gen , Feb 5, 1913, MS/C/116

[28] The Librarians complained in their annual reports to the Surgeon General that more janitors were needed

[29] Memo, Jones to Surgeon General, Sept 2, 1936 MS/C/205 Jones also said "To my mind the Museum is in an infinitely better position than the Library It is fairly clean and looks prosperous, apparently has plenty of space in which to display its wares, and meanwhile the Library is barely able to stagger along and is in a condition that has to be seen to be appreciated "

[30] Elizabeth E Medinger, "A Brief look at the activities of Atherton Seidell, Ph D (1878–1961) in the field of documentation," typescript

in MS/C/198 Sketches of Seidell may be found in Proc Nat Microfilm Ass 10th Convention, 1961, pp 302–305 with port , Wyndham D Miles, *American Chemists and Chemical Engineers,* (1976), 432–433, with refs Information was also obtained from Miss Medinger (Seidell's niece) and from Joseph H McNinch

Reginald Hawkins, *Production of Micro-Forms,* (1960) and Jean Stewart, Doralyn Hickey, and others, *Reading Devices for Micro-Images,* (1960) provide an account of the development of microfilm for library use, and refer to Seidell and the AML

[31] Annual report of the Librarian, FY 1938–39 file Consolidated FY Ac MS/C/309

[32] Another purpose of this organization was to attract gifts to the Library, but so far as I am aware this did not happen

[33] Letters, G B Roth to Seidell, Sept 3, 1940 W C White to Seidell, Sept 4 Seidell to Surgeon General James Magee, Nov 8 file, Friends of AML, MS/C/309

[34] Letter, Seidell to members of the Friends, Nov 25, 1940, with draft of form letter attached file, Friends of AML MS/C/309 A copy of the printed form letter is also in this file

[35] *Current List Med Lit* 1 No 5, Apr 9 1941, gives statistics for the first few months of service Information on microfilming in the Library by Medicofilm Service and its successor, Photoduplication Service, may be found in *Current List* and in reports of Photoduplication Service annual reports of library activities, and reports of activities of the Medicofilm Service, MS/C/309 A good account of microfilming, the Friends, and *Current List* is on pp 128–146 of 'The National Medical Library Report of a Survey of the Army Medical Library Appendixes,' by Keyes D Metcalf and others, 1944, in Archival Collection or MS/B/190

[36] Published in September 1940 A copy is in Archival Collection

[37] "Dr Seidell has already sunk a good deal of money in it and I doubt very much if he gets it back" H W Jones, Brief notes for answers on war effort in Army Medical Library, 1942, file Historical Info, MS/C/309

[38] Letter, Cushing to Reynolds, Nov 25, 1936 MS/C/183

Thomas S Cullen's scrapbook, Proposed New and Centrally Located Surgeon General's Library Building, copy at NLM, contains correspondence and clippings regarding efforts to obtain a new building during this period

[39] H W Jones "Interview with Mr Herbert Putnam January 5, 1937", Reynolds, "Record of conference with Dr Putnam January 5, 1937", letter, Putnam to Jones, Jan 8, 1937, Memo, Reynolds to Jones, Jan 11 file, Transfer of AML, MS/C/309

[40] Letter, Reynolds to W Bierring, Pres AMA, July 21, 1938, this letter states that Reynolds talked with Roosevelt on April 18 Another document, "Efforts to secure congressional appropriation for new army medical library building," p 6, gives the date as April 21 Letter, Reynolds to Marvin McIntyre, Secretary to the President, Aug 5, 1938, also gives the date April 21 File, New Building Misc Corr , MS/C/309

[41] Letter, Reynolds to Adjutant General, Apr 21, 1938 file, New Building Misc Corr , MS/C/309

[42] Extracts concerning Army Medical Library and Museum, Apr 15, 1942 file, New Building Misc Corr , MS/C/309

[43] Jones, memo for the Surgeon General, in letters to secure site for new library and museum, May 3, 1938 file, Location of New Building, MS/C/309

[44] Letters or excerpts are in "Hearings before the Committee on Military Affairs of the House of Representatives, Seventy-Fifth Congress, Third Session, on H R 10455", in the hearings before the Senate Committee, and in H R Report 2493 to accompany bill H R 10455 copies are in MS/C/47 Henry, *Armed Forces Institute of Pathology,* pp 236–240

[45] 75th Cong , 3d sess , bill H R 10455, Apr 28, 1938 and bill S 3919, Apr 28, 1938, "To authorize the Secretary of War to proceed with the construction of certain public works in connection with the War Department in the District of Columbia " Copies of these bills, accompanying House and Senate reports, excerpts from Congressional Record, and Communication from the President, are in MS/C/47

Reynolds stated that he drafted the bill, in letter to Col L Gardner, Mar 15, 1946 file, New Building Misc Corr , MS/C/309

[46] P L 611, 75th Cong copy in MS/C/47

[47] 75th Cong , 3d sess , Senate Doc 204 copy in MS/C/47

[48] Memo, A G Love to Gen Magee, Feb 5, 1940 file, Location of New Building, MS/C/309

[49] 76th Cong , 1st sess , H R Report 1912, "Military Establishment Appropriation Bill, Fiscal year 1941," p 16

[50] *Congressional Record,* June 10, 1940, pp 7895–7896 76th Cong , Public Law 611, approved June 13, 1940, p 15

[51] 76th Cong , Public Law 668, approved June 27, 1940, p 32

[52] Status report of Army Medical Library and Museum by H C Jones, Apr 2, 1941 MS/C/47

[53] Office order 119, May 21, 1941, established this Board file, New Building Boards and Meetings MS/C/309

[54] Memo, A. G. Love to Gen. Magee, Feb. 5, 1940: file, Location of New Building: MS/C/309.

[55] Memos and letters regarding sites on Capitol Hill and a large map are in file, Location of New Building: MS/C/309.

[56] Records in Eggers & Higgins Corr., file, Location of New Building: MS/C/309.

[57] Letter, Magee to May, June 24, 1941, in H.R. Report 884, June 28, 1941.

[58] 77th Cong., 1st sess., bill H.R. 5146, intro. June 24, 1941; H.R. Report 884, to accompany bill H.R. 5146, June 28, 1941; Senate Report 600, to accompany bill H.R. 5146, July 28, 1941; Senate Report 665, to accompany bill H.R. 5146, Aug. 21, 1941; P.L. 256, approved Sept 24, 1941; copies in MS/C/47.

[59] *Congressional Record*, 77th Cong., 1st sess., pp. 4748, 7122, 7214, 7378, 7415, 7571.

[60] George F. Denniston of Eggers & Higgins, office instructions and report, Feb. 7, 1944: file, New Building contracts: MS/C/309.

[61] The organization of the Library in the 1930's, with a list of all employees (30 civilians and one medical officer) and their duties, is in Report of survey of the duties and responsibilities of the positions in the Army Medical Library, Nov. 6, 1936: MS/C/186.

[62] Library Order 6, Oct. 29, 1941, to take effect Nov. 1: file, Library Orders, MS/C/309. Annual report of Library activities for FY 1942; file, Consolidated Fiscal Year Activities: MS/C/309. The names of the above divisions were modified later.

[63] Details and dates of the many changes in organization during World War II may be found in file, Library Orders: MS/C/309.

XVII

The End of the Old Library and the Beginning of the New

Changes During World War II

AFTER the United States declared war in December 1941, Jones prepared the Library for emergencies that might arise. He appointed air raid wardens for the building and for each floor. Staff members were taught to use firefighting apparatus. On Sundays an employee designated as the "Library Officer of the Day" remained in the building to provide emergency service (later the Library expanded its service because of the war and remained open on Sundays). Consideration was given to moving the 1.5 million index cards that had been prepared over a span of 15 years for printing the *Index-Catalogue,* but eventually the cards were microfilmed and the film safeguarded. The portrait collection was readied for shipment out of Washington on 24-hours notice.[1]

The Surgeon General changed the status of the Library and museum from departmental to field installation on July 1, 1942.[2] The Library was now comparable to a medical supply depot or medical equipment laboratory. It had greater independence from the Surgeon General's office which, from the librarian's viewpoint, led to easier operation.

It became practically impossible to buy books and journals of enemy countries, for which the Library in normal times spent about two-fifths of its appropriation.[3] The number of journals received dropped from about 2,200 to around 1,300. Jones borrowed some missing journals from libraries that managed to obtain them and had microfilm copies made for the compilers of the *Index-Catalogue.* The microfilms were kept on the shelves until the missing issues were acquired after the war. He also borrowed and filmed journals from the Office of Alien Property Custodian and from military intelligence agencies. Late in the war the number of journals received rose to approximately 1,900, chiefly owing to the acquisition of Latin-American and newly established U.S. periodicals.

Early in the conflict the demand for library services increased only slowly. But as the country concentrated on the war and the armed forces expanded, requests from Army and Navy hospitals and other military medical units for

services accelerated. More and more orders arrived for microfilm, translations, abstracts, bibliographies, and information. Much translating was done for medical officers who could not read certain foreign languages, for the Military Information Division of the Surgeon General's Office, and for other parts of the War Department. Many bibliographies were compiled and sent out, the highest 12-month production being 554 between July 1944 and June 1945, 90 percent going to members of the armed forces.

Loans, which had reached 15,000 a year before the war, gradually decreased to the 12,000 range. The loan policy was liberalized. If a book or journal could not be sent because it was needed in Washington a photostat or microfilm copy was offered. The development of microfilm facilities made possible the mailing of film copies and reduced the number of volumes that had to be sent. Previously the largest borrowers had been universities and medical societies, as Medical College of Virginia, Pittsburgh Academy of Medicine, Tulane, Louisiana State, and Yale, but now the Army, National Institute of Health, and Department of Agriculture requested the most volumes.

The largest increase in service was the demand for microfilm copies of articles and even entire books from military hospitals and units and research institutions. Copies of *Current List of Medical Literature* sent to military medical units kept the personnel informed of recent articles, and as a result the number of requests for microfilm of articles rose beyond all expectations. It was much easier and cheaper to sent microfilm overseas than to send books and journals. Filming made possible the filling of requests from several places for the same article. Indeed, one wonders what the Library would have done if microfilm had not been perfected and simultaneous requests had arrived for the same journal from the South Pacific, North Africa, and other theaters of war. Jones considered the development of microfilm as one of the two most notable events in the Library during his tenure.

The increasing work in the Library could not have been carried out without additional employees. One officer and eight civilians were added during fiscal year 1942, raising the total number of workers to 46. The authorized total in FY 1943 grew to 69. By June 1, 1945, it had leaped to 156.[4]

Shortly after the war started the Library lost men to the armed forces and two of its top staff, Beatrice Bickel, the Principal Librarian, and Charles Toepper, the chief assistant librarian, through retirement.[5] Fortunately from time to time Jones managed to acquire top-notch professional librarians. The first of these was Thomas Keys, who obtained a leave of absence from Mayo Clinic, received a commission as 1st lieutenant in the Medical Department and came to Washington in June 1943. Jones and Keys became close, and Jones relied upon him for advice in many matters.[6]

Shortly after war arrived Jones tried to obtain additional space by suggesting that a temporary two-story fireproof brick annex, large enough to hold 80,000 to 100,000 volumes, be constructed close to the west side of the building, connected by a bridge, but the War Department disapproved.[7] Fortunately he

soon acquired, under very reasonable conditions, use of part of a building in Cleveland, and moved about one-quarter of the Library's possessions there.

The shifting of books to Cleveland set free space for microfilm cameras, developers, other equipment, and for new employees, but before long the Library was again crammed full of readers, workers, volumes, and furniture. Finally in 1943 Jones was able to obtain about 5,000 square feet of space on the ground floor of the Washington Auditorium, 19th and E Streets, N.W., and there the indexing, translating, and binding assembly units and a few thousand books were placed. But the auditorium was almost 2 miles from the Library, and a truck had to carry volumes back and forth. Eventually Jones gained permission to use more than 8,000 square feet in the Fisheries Building Annex, east of the Library on Independence Avenue, and the Fisheries Building at 8th and Independence Avenue. This accommodated the indexing, translating, binding, and emergency shelflisting units, the finance section, the acquisition division, and tens of thousands of books.[8]

Space became available within the building as employees and books moved to other locations. Some stacks were removed from the reading room to give visitors more space. Units were moved up, down, and sideways to improve the flow of material. A general house cleaning was carried out. New lights were installed in the reading room and stack area. Stacks were lighted adequately for the first time; previously attendants had to use flashlights. A new telephone system was installed with additional outside lines and interoffice communications; before this only two lines led into the building, and if one division phoned another division, all service was blocked and no outside calls could come in.

In the midst of the war Jones obtained a grant from the Rockefeller Foundation to finance a detailed study of the Library by a group of practicing librarians. The group's criticism of the method of operations and the crowded, poorly maintained building caused Jones to turn his thoughts again to the proposed new building, plans for which had been put away early in the conflict. The approved location was still Capitol Hill, more so now than ever because President Roosevelt had approved Archibald MacLeish's idea of a cultural center around the Capitol comprising Folger Shakespeare Library, Library of Congress, National Archives, Army Medical Library, and museums.[9] Jones asked for $5,500 to pay architects to revise plans along lines suggested by Keyes Metcalf, Harvard librarian, one of the study group. Congress approved the sum in the Army Appropriation Bill, and Jones changed the plans in many ways, including the insertion of a tunnel to connect the building with the Library of Congress.[10]

During the replanning Jones made a new estimate of the growth of the Library and museum. Owing to the wartime expansion of both institutions, and the establishment of the Army Institute of Pathology (spawned by the museum in 1943), it appeared that the proposed building would have to be much larger than conceived originally. But the Fine Arts Commission had placed restrictions on the height of buildings and setback from the street;

therefore a bigger building could not be erected on the chosen site. Jones decided to ask for twice as much land, so the building could be broader and wider.

Government agencies and private firms coveted land on the Hill, and Jones' request was certain to stir up considerable opposition. But before it proceeded very far Surgeon General Norman Kirk, Museum Curator James Ash, Jones and other officers began to debate the future relationship between the Library and museum. Kirk decided on May 5, 1945, that while the Library would be in a logical location adjacent to the Library of Congress, the museum and Army Institute of Pathology ought to be close to hospital facilities at Walter Reed. The Library was to be separated from its old partner, the museum, and it could now look forward to expanding into the entire proposed building. Jones had to think about revising plans again.[11]

During the first 2 years of the war Jones was busy finding room for expansion of the Library, enlarging facilities to provide services to United States military forces in all parts of the world, and solving the many abnormal problems in acquisitions, circulation, and services caused by the war. In the remaining years of the war he would begin to change the Library drastically, pushing it from the old into the modern era.

Survey of the Library by Professional Librarians

In 1943 the Army, not satisfied with the performance of a segment of the Medical Department, conducted a thorough inspection of the Surgeon General's office. Jones worried that the inspection might extend into the Library, and the investigators find "what they might regard as a state of confusion." He decided to head off a possible military survey by having a group of professional librarians visit the Library, observe the staff at work, and suggest ways of improving the operations and management. Jones asked the Carnegie and Rockefeller foundations to finance a survey. Largely through the urging of Alan Gregg, the Rockefeller Foundation agreed to provide $20,000 to pay expenses for such a study under the sponsorship of the American Library Association.[12]

The ALA appointed a team of six librarians: Keyes D. Metcalf, Harvard University; Janet Doe, New York Academy of Medicine; Thomas P. Fleming, Columbia University; Mary Louise Marshall, Tulane University; L. Quincy Mumford, New York Public Library; and Andrew D. Osborn, Harvard University. These persons visited the institution several times during the summer and autumn of 1943. They called in experts in certain fields, as William Jackson of Harvard, who gave an opinion about the rare book division at the Cleveland Branch.

The surveyors criticised the old building for its lack of space and inconvenient arrangement of rooms (which would have been remedied by a new building had the war not intervened), the administrative and organizational structure (which Jones was improving), the low appropriation, the insufficient

number of professional library employees, the absence of a shelf-list, and other things.

They noted that the rate of growth of the Library, which had been the most rapid in the country, perhaps in the world, during Billings' time, had decreased until it was probably the slowest among large research libraries. The acquisition of monographs and texts was not comprehensive, and many important works were missing. The acquisition of publications of international congresses and of state health reports had been incomplete, and these collections were no longer outstanding. The acquisition of publications in the fields related to medicine, such as biochemistry, biophysics, and nursing, was particularly weak. A number of important journals were not being received, and there were gaps in some series.

The surveyors pointed out that the incompleteness of the collections was largely the fault of the relatively small appropriations that the Library had been receiving for many decades while the output and prices of medical publications had been climbing. On the other hand they felt that the Library could have acquired more items if exchanges and gifts had been pursued more vigorously and if acquisition procedures had been more efficient.

The surveyors were distressed by the shabbiness of the main card catalog, a hodge-podge of cards of different designs. They also discovered that the catalog was incomplete; when 4,690 titles of publications on the shelves were verified against the catalog, 1,047 titles were not found among the cards. A reader in search of a book might have to check the card catalog, all four series of *Index-Catalogue*, plus the cards being compiled for *Index-Catalogue*. Furthermore, a reader might not find a book he was searching for because many entries did not conform to American library practice. Finally a reader might find a card that had no classification mark, in which case an attendant might not be able to locate it (surveyors estimated that some staff members spent two-thirds of their time tracking down books for readers).

The surveyors recommended that the card catalog be scrapped and a new catalog be compiled not from old cards, but from the publications, according to standard library practice. The preparation of a new card catalog would be a long, expensive ($500,000 to $750,000) job; yet the surveyors felt that it was worth it and that the longer it was delayed the worse readers would suffer.

Examining the classification system the surveyors found that it was no longer as useful as it had been in the 1870's when Billings had developed it. The Library had grown and there were too many publications for a simple classification. The system had been revised on occasion, most recently by Jones in 1942, but it was inadequate. Furthermore the majority of the collections (dissertations, pamphlets, statistical works, reference volumes, periodicals, rare books) were not classified; each group had its own arrangement.

Among the books that had been classified, the classification names had not been written on the spines of the volumes where they could be seen but on bookplates inside the front covers. Many class names had not been written on

cards in the catalog, and attendants could not tell, except by experience, where the books were located in the stacks. Because there were no class marks on the spines, books were frequently misshelved when they were returned to the stacks. The surveyors believed that the only solution was the adoption of a new classification system, and the reclassification of every item in the Library.

The surveyors found much fault with *Index-Catalogue;* such as unnecessarily complete coverage of some journals (as *Journal of the American Chemical Society*), the inclusion of books and journals remote from medicine, excessive coverage of some books and insufficient coverage of others, lack of uniformity in subject headings within the four series, use of little-known headings, lack of cross references, and even the punctuation, format, and typography. They felt that the Library had concentrated on the *Index-Catalogue* to the detriment of reader service, acquisitioning, cataloging, and other functions; and to remedy this they recommended that the Index-Catalogue Division be reduced in size and responsibilities to that of a publication office for *Index-Catalogue.*

The surveyors critized the Library for not having taken part in important cooperative ventures of the library world, such as the compilation of the monumental *Union List of Serials.* They recommended that Jones forget his proposed "World List of Medical Literature" that the Library had started to compile a few years earlier. They suggested that Mayer discontinue, at least for the present, the "Bio-Bibliography of XVI Century Medical Authors" already begun in series form as a supplement to *Index-Catalogue.*

The surveyors disclosed their observations and recommendations in a small book, *The National Medical Library: Report of a Survey of the Army Medical Library,* published by the American Library Association in 1944. The surveyors also provided a typed appendix, giving additional comments for the staff but of less interest to outsiders.

The report criticized the Library strongly. Yet it was remiss in not emphasizing that the Library's plight was not of its making; that former librarians extending back to McCaw, McCulloch, and Garrison (and the Surgeons General as well) were aware of some of the shortcomings but could not obtain the necessary funds, space, and employees required to maintain the Library on the trajectory set by Billings. The report could leave a reader who did not know anything about the history of the institution with the false impression that the employees, from the Librarian down, were responsible for the low state of affairs, which was far from the truth.

The report reiterated the need for improvements that Jones was bringing about. It gave him and his successors guidelines for further action, and, by publicizing the poor, shabby condition of the Library, it put pressure on the Army to support requests for larger appropriations that would prevent the institution from slipping backward into its prewar mediocrity and keep it moving upward in search of excellence.

The survey started the transformation of the Library but in so doing brought about conflicts between the past and present, conservatives and modernizers.

The leader of the conservatives was Claudius Mayer, Principal Librarian and editor of *Index-Catalogue*. Mayer was a genius, with great energy and drive. But he was unwilling to delegate authority and despite his productivity was somewhat of a one-man bottleneck in the publication of the *Catalogue*. He resented bitterly the criticism of the *Catalogue* in the survey report. He resented the coming of nonmedical people—professional librarians, administrators—to reorganize the institution. Conservative Mayer did not get along well with reformer Jones; they had battles ending with each man storming into his office and slamming the door behind him. Still Jones was never deterred from his aim to improve the Library, and Mayer never ceased resisting change.

Jones accepted the survey report as his Bible. In doing so he marked the beginning of the end of the old Library and the beginning of the new. To aid him in carrying out the recommendations of the surveyors he brought to the AML on November 3, 1943, Private Francis R. St. John, in peacetime a skillful administrator of the New York Public Library. Jones recommended St. John for Officer Candidate School, and after St. John had been commissioned as a 1st lieutenant appointed him as his assistant.[13]

St. John knew many competent library specialists, and he recommended persons whom Jones persuaded to move to Washington and help lead the reorganization. Among St. John's suggestions was M. Ruth MacDonald, head cataloger of the Detroit Public Library, whom Jones lured to the AML to supervise recataloging of the collections. Another was Scott Adams of the order-cataloging department of Providence, Rhode Island, Public Library, whom St. John invited to head the AML Acquisitions Department. Another was Sergeant Ralph R. Shaw, head of the Department of Agriculture Library in peacetime.[14] Not all those whom St. John and Jones sought were willing to uproot themselves and come to the capital, but by June 1945 there were 48 professional class employees on the staff whereas in 1940 there had been only 5.[15]

St. John and Shaw introduced up-to-date management practices and the latest library technology. Time-studies were made of operations; functions and responsibilities of employees were clarified, records were kept to demonstrate effectiveness of employees; and the compilation of a manual of operations was begun. St. John and Shaw moved sections around to bring about the most efficient flow of materials and cooperative working conditions. By the end of the war the employees were organized into 6 divisions composed of 26 sections, compared with the first organization, 4 years earlier, of 3 divisions and 1 department.[16]

With experienced librarians as supervisors and with additional employees and space, Jones was able to improve the AML in many ways. Shelf listing was started. When completed in 1945 the Library had for the first time an inventory of its books (but still not of its pamphlets and dissertations). The development of a new classification was begun under the direction of Mary Louise Marshall of Rudolph Matas Medical Library, Tulane, assisted by a group of librarians. Revision of the standard list of subject headings was started. Modernization of

the card catalog began with consolidation of files of cards, preparation of new guide cards, and insertion of new typed cards in place of cards on which were pasted clippings from the *Index-Catalogue*. Journals, previously arranged by country or language, were rearranged according to the *Union List of Serials*. Steps were taken to reorganize the portrait collection along subject lines.[17]

In May 1944 Jones reached the peak of his reorganizations by persuading Surgeon General Kirk to change his title from Librarian to Director and by obtaining permission to place the operations of the Library in the hands of a civilian professional librarian titled The Librarian.[18] Jones appointed St. John as Acting Librarian on September 1.[19] After considering 35 persons for the job, Jones appointed Wyllis Wright as Librarian in the summer of 1945.[20]

Wright had begun his career at New York Public Library, continued at the American Academy in Rome, and returned to New York as chief cataloger before coming to Washington in July 1945. Arriving at the Library he faced the formidable task of modernizing the organization and solving the problems that arose with the end of the war and the return of peace. He studied problems thoroughly before choosing solutions, and for a time the long, slow rebuilding of the Library proceeded smoothly. But unfortunately the authorities of the Director and Librarian had not been adequately defined. The dual responsibility for administering the institution did not work as well in practice as in theory. Friction developed between the two top administrators, and later the split had to be mended.

Part of the Library Moves to Cleveland and Becomes the History of Medicine Division

The destruction of cultural treasures in Europe aroused fear for the safety of similar objects in the United States. Archibald MacLeish, Librarian of Congress, and Robert D. W. Connor, Archivist of the United States, asked libraries, museums, and agencies in Washington about their plans for storing irreplaceable objects in safe areas.[21] Jones looked over the Library's collections and estimated the amount of storage space that would be needed.[22] He took precautions to protect rare manuscripts and publications. The title page of each incunabulum was photographed for identification, the volumes were placed in numbered boxes and moved to a room in the basement. Sixteenth century books were shelved in steel cases in the same room. Seventeenth and eighteenth century books (about 27,000 in all) scattered through the stacks were brought together over a period of months, inventoried, and boxed.

The necessity for a safe place to store the Library's prized possessions became a lever that Jones used to pry space from the government. In January 1942 he suggested that a small branch library be set up in a temporary building at Army Medical Center or in a town close to Washington, perhaps Rockville, Frederick, Warrenton, or Fredericksburg. Into this tempo would be moved

rare books and other works needed least during the war, such as documents and older statistical publications.[23]

Jones was told to seek a place in the Midwest. He looked at sites offered to the government and in a short time selected part of the Dudley P. Allen Memorial Library Building owned by the Cleveland Medical Library Association. This was located at 11000 Euclid Avenue about 4 miles from the center of Cleveland. The trustees offered rooms rent-free, requesting only that the government reimburse the association for a proportionate share of the cost of maintaining the building.[24] The final agreement called for a rental payment of $1 a year plus $8,000 a year for expenses effective June 1, 1942, with privilege of renewal for 8 years. The Army Medical Library utilized most of the rooms on the third floor of the structure, plus tiers 8 and 9 of the stacks.[25]

On July 3, 1942, Jones detailed Thomas Keys to direct the Cleveland Branch, arrange facilities, hire employees, receive shipments of books from Washington, and start the work of unpacking and shelving. Keys, with advice from the Army district engineer office and a firm of architects, ordered steel and wooden shelves. He engaged typists, two librarians, and Max H. Fisch, assistant professor of philosophy at Western Reserve University, to be civilian head of the branch and curator of rare books.[26]

The first shipment of rare books left Washington on August 25, 1942. Other shipments followed until almost all the rare books, documents, and statistical volumes, packed in 952 boxes weighing 75 tons, had been sent. A steel cabinet for storing elephantine folios and anatomical atlases was dismantled, packed into a dozen crates and shipped. Students from Western Reserve, hired temporarily, unpacked, dusted, and shelved the books in the tiers of steel stacks. Incunabula were placed in a separate room in locked, glass-door cases sent from Washington. Documents and statistical works were arranged on wooden shelves in a large central room.

The early tasks of the branch were cataloging, shelf-listing, repairing, rebinding, and microfilming. The two librarians began to draw up a shelf-list of the rare books, and Fisch a catalog of incunabula. For the classification of rare books it was decided to arrange them by century, and alphabetically by author within each century. Documents and statistical publications were classified by country, United States documents by state or city. Efforts were made to obtain missing documents from the issuing agencies.

While arranging books members of the staff culled the ones that needed rebinding or repairing. It was found that several thousand 16th-, 17th-, and 18th-century volumes were in poor condition. Some had been badly treated before they reached the Library, some had been handled carelessly afterward. All had been exposed to dust and dirt, and to the extremes of humidity and temperature. Covers were warped and split, spines broken, leather torn and crumbling. Pages were loose, torn, cracked, stained, and missing. Corners were bent and broken.

It was estimated that three-fourths or more of the pre-1800 volumes needed

Binding Studio in Cleveland, 1945. Jean Eschmann works by the window, right.

restoration. With advice from experts, Jones and Keys laid out a plan. The books were to be considered as part of a research library, not museum pieces. The volumes, then, were to be restored to a condition where they could be handled easily and without damage. Original bindings would be repaired if practical. If not, the oldest volumes would be rebound in a simple, dignified leather binding with a few lines of tooling, rather than in a "period" binding that slavishly imitated those used in the place and at the time when the book was printed. Only the best English oasis morocco would be used. Metal clasps would be restored or replaced. Slipcases would be made for books whose clasps might damage adjacent books and for volumes with delicate or easily soiled bindings. All books printed before 1600 would be rebound in full leather; those before 1700 in half leather; those before 1800 in quarter leather. Furthermore the volumes were placed in one of three groups: those that, because of rarity or importance, would be painstakenly restored, those that would receive lesser treatment, and those that would be repaired as economically as possible.

In its restoration program the branch was aided by advice from Thomas Holmes, a professional bookbinder who had also compiled monumental bibliographies of the writings of Cotton Mather, Increase Mather, and other members of the Mather family. Holmes walked into the reading room one day for a bookman's chat with Keys and to look at the old volumes. Keys grasped the

opportunity to enlist him for service in the Honorary Consultants. After becoming a consultant Holmes delivered an informative lecture entitled "The form of the Book and the Restoration Programs at the Army Medical Library" at one of the meetings in order to stimulate interest in the important work going on in the bindery.[27]

In February 1943 a contract was entered into with National Library Bindery Company, East Cleveland to repair and rebind the early books, and also to machine-bind later books, pamphlets, and documents. In September 1943, because of difficulties under government regulations of having manuscripts and rare books restored, repaired, and rebound by contractors, the Library set up its own bindery. A studio was leased in the building of the National Library Bindery Company for $75 a month, and several persons were employed to do this work under the direction of Jean Eschmann, a master craftsman who had learned the art in Europe and practiced it in Cleveland for many years. This bindery became, according to experts who visited it, the best of its kind in the United States.[28]

The rare book collection soon became the chief concern of the Cleveland Branch. In 1943 Fisch's designation as "Curator and Civilian Head of the Branch Library" was changed to "Curator of Rare Books." There were not as many visitors as there would have been in normal times, but scholars stopped by occasionally to consult the collection.[29] Exhibits were arranged for visitors, the first being a display of the works of Vesalius in commemoration of the 400th anniversary of publication of *Fabrica*. In March 1944 Fisch began a preliminary inventory of incunabula. On June 1 Dorothy Schullian, instructor in classics at Albion College, joined the branch and began to prepare a full bibliography for eventual publication as a printed catalog.[30]

In 1945 Keys suggested that the Cleveland Branch be named the Medical History Division and that all the branch's functions concerned with rare books be kept together as a division when the branch returned to Washington. Jones agreed. The division was organized into three sections; the Rare Book section, consisting of a reference and catalogue unit; the Rare Book Binding Section; and the Medical History Section, consisting of a Medical History Unit and a Medical Biographical and Portrait Unit.[31] Thus the Cleveland Branch, conceived as a means of freeing space in Washington and as a safe storage place for valuable and hard-to-replace publications, metamorphosed into the History of Medicine Division of the Library.

Separated from the main library in Washington, the History of Medicine Division in Cleveland was obliged to maintain most of the activities of an independent library, including book selection, cataloging, reference use, interlibrary loans, microfilming, and binding. It continued many of these functions, acting as a library within a library, after it returned from Cleveland to join its parent. The size of the staff at the end of the war, 19 (fewer later), was almost as large as that of the main library in prewar years.[32]

MEDICOFILM SERVICE ENDS, PHOTODUPLICATION SERVICE BEGINS

The Library service that increased most during the war was the providing of microfilm for the armed forces, hospitals,and researchers. During fiscal year July 1941 to June 1942, 6,208 orders arrived from 1,198 customers requiring exposure of 3 miles of film. After war started the Medicofilm Service received a huge order from the American Bureau for Medical Aid to China to film 14 copies of 67 complete medical journals for air delivery to Chinese institutions. Expressed in other terms, 425,538 pages were filmed 14 times, for a total of 7 million frames, requiring 60,000 feet or 12 miles of film.[33] Later, the Library microfilmed 100 journals regularly and more than 100 texts for Chinese medical centers. Chinese hospitals and institutions had practically no current medical literature except that sent by the Library.

The privately sponsored Medicofilm Service functioned quite satisfactorily, but with the arrival of war Jones decided that the Library needed a unit under his command to microfilm material for the armed forces and to copy material for safe keeping. During March 1942 the Library started its own Photoduplication Service, as the microfilm operation was named.[34] Hundreds of thousands of index cards, and thousands of pages of books and journals were filmed in 1942. Photoduplication Service also began to microfilm articles for military hospitals. For persons who did not have a viewer for reading microfilm the service at first made photographic enlargements. Later it used V-mail equipment to produce photoprints.

In January 1943 Jones adopted a policy that Atherton Seidell had been advocating for years, that microfilm be furnished free in place of volumes being loaned. Seidell announced this in *Current List of Medical Literature*:[35]

> A notable if experimental step toward facilitating the dissemination of medical literature which has just been taken by the Librarian of the Army Medical Library, is the decision to substitute microfilm copying without charge for the interlibrary loan of books in all cases where they may be desired by accredited libraries. This has been made possible by the acquisition of equipment required for the expanding needs of photoduplicating service to military and emergency establishments. The increased facilities now permit the Library to send out limited amounts of microfilm copies of articles in bound journals at no greater cost than it entailed in sending out and getting back books on interlibrary loan, considering the damage suffered by the passage of books in the mails. It is thus now able to extend its service to medical research by the adoption of this highly efficient means of rendering its collections more widely available.
>
> This marks the beginning of the recognition of microfilm copying as a service which public reference libraries might render to those at a distance on the same gratuitous basis that long custom has authorized them to serve those who are unable to come in person to the library. The gradual extension of microfilm copying in lieu of loans of scientific journals may perhaps contribute as much to the advancement of science as any other innovation of library practice of recent times.

Now that the Library was offering free microfilm to almost all customers,

only commercial firms and persons who did not have access to interlibrary loans patronized Medicofilm Service. The latter filled a diminishing number of orders from home and abroad until the end of 1943, and then it expired.[36]

While the Friends of the Library were publicizing and encouraging the use of microfilm, Seidell was persuading manufacturers to devise inexpensive viewers that researchers could use in laboratories, at desks, at home, or in new military installations where large viewers were not available. By the summer of 1943 three types of hand-held viewers had been developed, selling at prices from $3.50 to $7.00.[37] The Library helped civilians obtain them by accepting and passing orders to the manufacturers. It provided viewers free to military personnel who needed them. In the autumn of 1943 Cosby Brinkley, chief photographer of Photoduplication Service, developed a monocular viewer with variable focus.[38] Seidell had 300 of these manufactured for $1,000 and offered them to readers for $3.75 each.

The demand for microfilm increased greatly as the war progressed. In January 1943 Photoduplication Service filled 1,229 orders for 49,769 pages, in January 1944, 3,030 orders for 117,496 pages, and in December 1944, 9,032 orders for 509,138 pages. In 1945 it produced 2,034,306 pages of negative film and 4,550,000 pages of positive film, about 90 percent of which went to medical units overseas. It filmed regularly each issue of 45 medical journals and sent the film by air to more than 90 military installations.[39] It produced photoprints and photostats for government agencies upon request. And the service was fast, only 48 to 72 hours elapsed between the arrival of an order and the sending of the film.

To handle the large number of orders, to expose, develop, dry, package, and mail hundreds or thousands of feet of film each day, the Library had to purchase additional cameras, and developing and drying equipment. It had to hire more men until there were eight, including the supervisor, Brinkley. The service finally took over the periodical reading room and the two adjacent offices used by indexers of *Index-Catalogue*—for whom office space had to be found in another building.[40] The Army War College and National Archives assisted with film processing, otherwise the Library might not have been able to handle the volume of orders that poured in toward the end of the war.

Microfilming proved so useful during the war that Jones called it one of the two most important events in the Library during his term in office. If microfilm facilities had not been available, the Library would have had to send volumes. The logistics, then, would have been overwhelming. More persons would have had to be hired, large numbers of identical copies of journals would have had to be purchased, more shelf space would have had to be found somewhere, and volumes sent out would have displaced other cargo on military air transports. In Jones' opinion, an adequate quantity of medical literature could not have been supplied to the armed forces in the field without the use of microfilm.[41]

Current List Changes Hands and the Friends of the Library Expire

In the autumn of 1941 it had occurred to Seidell that he might be able to widen the circle of users of microfilm and *Current List* if the Medical Library Association would accept cosponsorship with the *Friends*. He began corresponding with Mary Louise Marshall, president of the association, and after considerable discussion the association agreed to his proposal at its spring 1942 meeting.[42] Beginning with the July 1, 1942, issue *Current List* appeared under the auspices of both organizations.

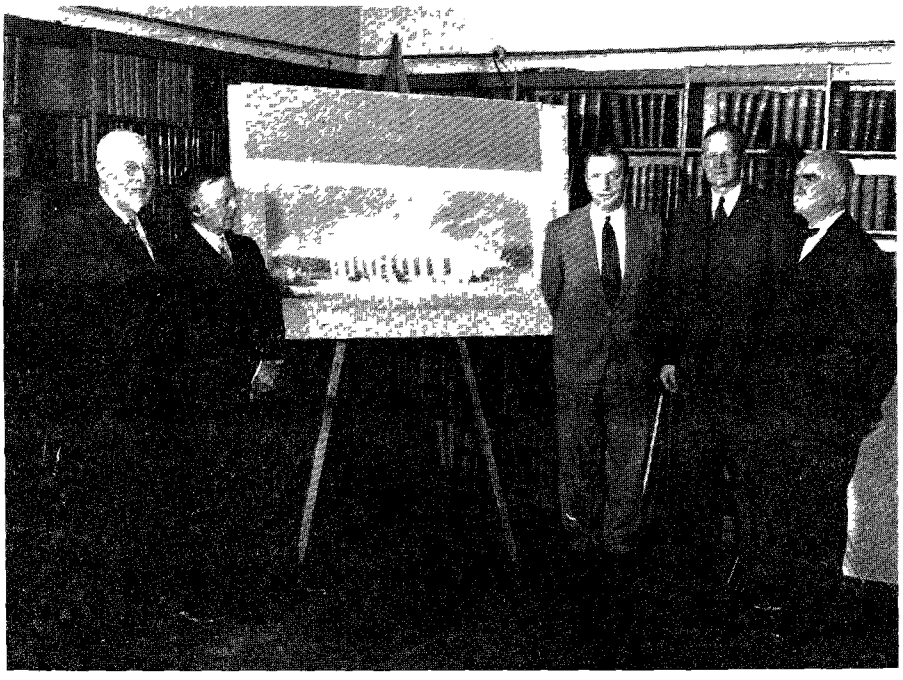
The Friends and MLA were very generous in distributing copies of *Current List*. They sent free copies to more than 100 libraries that did not subscribe. In 1942 with the cooperation of the Pan American Sanitary Bureau and funds provided by Nelson Rockefeller the Library began to send copies to medical schools, libraries, and scientific institutions in Central and South America. This gave Latin American institutions access to material in the Library and benefited the Library by bringing exchanges.[43]

By 1945 free copies of *Current List* were being sent to all U.S. and Allied military hospitals and medical units. More than 500 copies were being sent as exchanges. Jones felt it was not justifiable to ask the Friends and MLA to continue to be responsible for a bibliographic journal so important to the Medical Department and Library. Furthermore Seidell was scheduled to go to France and would no longer be available to edit the periodical. Jones obtained permission from the Army to publish *Current List*. The August 31, 1945, issue was the last under the sponsorship of the Friends and MLA, the September 7 issue the first under the Library.

Gone, now, were the main reasons for which the Friends had been formed 5 years earlier. Although the organization had attracted more than a thousand members, no one in the Library had the vision to see other uses for the group or the initiative to keep it going. Seidell was busy elsewhere.[44] Without a leader and a purpose for existing the organization expired.

The Association of the Honorary Consultants to the Army Medical Library

In 1933 at the request of Librarian Hume, Surgeon General Patterson had invited several prominent physicians and librarians to become an advisory committee to the Library.[45] Apparently Hume never consulted with any of these persons, and his successor, Librarian Jones, was not aware of them until he began to think about getting advice on the proposed new building in 1938. Jones then suggested to Surgeon General Reynolds that the committee be revitalized and enlarged, but Reynolds did not do so. The idea of an active advisory committee remained in Jones' mind, and in the spring of 1943 he asked Surgeon General Kirk for permission to revive the group of volunteer consultants. Jones felt that experts in areas of medicine, librarianship, and book



Five members of the Honorary Consultants viewing a drawing of a proposed new Library-Museum building, 1944. From left to right: Thomas J. Holmes, bibliographer; Pierce Butler, professor of bibliographical history, University of Chicago, John F. Fulton, professor of physiology, Yale University, Keyes D. Metcalf, director of Harvard University libraries; Thomas S. Cullen, professor of gynecology, Johns Hopkins University.

collecting could give worthy, practical suggestions about improving the organization and its services. Kirk approved the idea, and through 1943 invitations went out to carefully selected persons to become Honorary Consultants to the Army Medical Library.[46]

The thought occurred to Jones that the consultants would be an effective "lobby" for the Library, particularly for a new building, if they were organized into a group. He sounded out a few of them about organizing, and the positive answers encouraged him to go ahead. He arranged a meeting on October 5 and 6 in Washington, to acquaint the men with the plight of the Library and need for a new building. He made arrangements for them to form an association if they wished to do so.

Fifty-seven of the seventy-seven consultants attended. After receiving a thorough briefing on the operation of the Library they organized themselves into a formal association with John F. Fulton as president, Chauncey D. Leake, vice president. Jones, secretary-treasurer; and these three plus four others

(Clyde Cummer, Wilburt Davison, Morris Fishbein, and Henry Viets) as the executive committee.

The executive committee met a month later in Cleveland. They revised the draft constitution, applied for a grant from Rockefeller Foundation to cover expenses, and appointed committees to give advice on acquisitions, rare books, a new building, and endowments and grants. Rockefeller Foundation agreed to provide $6,000 a year for 5 years (later reduced to a total of $19,500) and the American Medical Association offered $1,500.

The Honorary Consultants and its executive committee were now organized and ready to function. The first request for the committee's advice came from the Surgeon General in April 1945, when there was a discussion about sites for the new building. Two months later Jones called together the acquisition and rare books committees to discuss ways of strengthening the collections. Thereafter the consultants met with Jones individually, in committees, and annually as the full organization to assist with the development of the Library.

Director Jones Retires

So many moves, changes, and improvements were made during the 3½-year period from 1942 to mid-1945 that readers who went away at the beginning of the war and returned at the end must have been amazed. Service was faster, surroundings were much more conducive to studying, and more literature was available. The credit belongs to Jones. He had recognized some of the faults of the Library—lack of space for employees and literature, out-of-date facilities—after he had arrived in 1936 and made his first inspection. He learned of others—low salaries, obsolete classification, no shelf-list, too few employees, insufficient funds—after he had been there a while and become involved in the operations. His perception of the need for improvements was broadened by his emergence from medicine into the library field and by his mixing with and learning from medical librarians. He became so active in the Medical Library Association that he was elected president in 1940 and 1941 and edited the association's *Bulletin* in 1941 until his war-related duties forced him to give it up. He was courageous for requesting a survey and for beginning what must have seemed a very expensive, interminable modernizing of the institution. Under his direction the Library began to ascend out of the mediocrity into which it had been sliding for a quarter of a century. Next to Billings, Jones was the librarian who had the greatest impact on the old institution.[47]

By VE Day Jones was 5 years past the normal retirement age and was not in good health.[48] On August 31, 1945, he was relieved from duty. The last major act of the Friends, before that organization dispersed, was to raise a fund to have Jones' portrait painted by Rolf Stoll of Cleveland School of Art. The inscription read: "Presented by the Friends of the Army Medical Library in recognition of his contributions to the advancement of medicine, and of his interest in extending the Library's service to the field of microfilm copying."[49]

Western Reserve University bestowed an honorary doctor of laws degree on him in 1945, the citation reading, "We owe more than we can acknowledge to Colonel Jones for his reorganization and expansion of the Army Medical Library."

During retirement Jones coedited *Blakeston's New Gould Medical Dictionary*, and later the medical sections of *Encyclopedia Americana*. The Medical Library Association presented to him the Marcia C. Noyes Award in 1956 for his outstanding services to the medical library profession. He died April 5, 1958.[50]

Notes

[1] The most useful sources of information on the impact of, and changes during, the war are in files in MS/C/309

[2] Office of the Surgeon General, Office Order 237, July 1, 1942

[3] Some literature being sent to the Library was lost when ships were sunk at sea. Conversely, copies of the *Index-Catalogue* being sent to Europe went to the bottom in one shipment 65 copies of volume 6 for Great Britain went down

[4] Lists of names, grades, salaries and duties of employees may be found in files Personnel Authorization, Personnel Control Forms, MS/C/309

During the war the Library also acquired a few enlisted men who were placed in charge of supplies and given other housekeeping duties. The detachment was gradually disbanded during 1951

[5] Toepper was born in Missouri, Feb 9, 1874. He joined the Navy when he was 16, came out when he was 19, attended Michigan Military Academy for a year, enlisted in the Army and served as a sergeant in the Sixth Cavalry until 1898. Leaving the military for a time he worked at the Washington Navy Yard, then for a firm in Joplin, Mo. On Aug 1, 1905, he entered the Library, but left on Dec 26 to accept a commission as a lieutenant in the Philippine Constabulary. He returned to the Library on Feb 15, 1908, and remained until 1916 when he became a captain in the Ordnance Department. He returned again in 1920 and stayed until ill health forced him to retire on Jan 31, 1942. He died in Florida on Mar 21, 1942, and was buried in Arlington Cemetery.

Toepper was the last of the second-generation librarians. When he began working, Fletcher, Garrison, McCaw, and Civil War veterans ran the Library. He was the final survivor of that group, and with his death the last personal tie between the old library and the new was severed.

Robert Austin, who associated with Toepper for a quarter of a century, recalled him thus:

> Mr. Toepper was a mild mannered, soft spoken, man of medium height and build, who, like Garrison was inclined to have moody periods and preferred to be left alone. He was always cooperative when I needed his help in locating library materials, and I owe a lot to him in helping me to learn the off-beat locations of books and the clues to pursue that usually produced results. If Mr. Toepper couldn't find a book or pamphlet, no one on the staff could. When I had to go to him, I told him all the places I had looked, he would then take the request from me, pick up his flash light, and start the search but he would never let me go with him—he had his own special routine based on many years of servicing the collection and he didn't want to share it. However, when he located the material, he would tell me where he found it so I could mark the location in the book or on a card.

Document, C. G. Toepper applying for reinstatement, May 28, 1908, with favorable endorsement by McCaw, May 29. MS/C/116. Brief obituary, *Bull. Med. Lib. Assoc.* 30, 372 (1942). Letter, R. Austin to Wyndham Miles, Jan. 3, 1980.

As in World War I, some members of the staff entered the military forces. One of these was I. Nathaniel Markfield, a graduate of George Washington University, who came to the Library in December 1931, volunteered after the U. S. entered the war, was commissioned as a second lieutenant, was seriously wounded in France in November 1944, and returned to the Library in 1946, where he served until he retired in 1971.

[6] Keys came to the Library June 1, 1942, in compliance with War Dept. special orders 129, according to Office Order 12, July 7, 1942 file, Library Orders. MS/C/309

Thomas Edward Keys was born in Greenville, Miss , Dec 2, 1908 After receiving his B A degree from Beloit and M A from Chicago he began his library career at Newberry Library, Chicago He went to Mayo Clinic Library in 1934 and from there came to the Army Medical Library in 1942 During the war he advanced from the rank of lieutenant to lieutenant colonel and was awarded the Army Commendation Ribbon In 1946 he returned to Mayo Clinic as librarian, retiring in 1972 In the latter year Beloit awarded him an Sc D degree, h c At Mayo he also taught history of medicine from 1956 to 1972 Keys wrote many articles, *Cardiac Classics* (with F A Willius), *The History of Surgical Anesthesia*, *Foundations of Anesthesiology* (with A Faulconer), *Applied Medical Library Practice* and *Classics and other Selected Papers for Medical Librarians* (with J D Key) He presided over the Medical Library Association and received the Marcia C Noyes Award He lectured extensively at home and abroad From 1959 to 1962 he served on the Board of Regents See biographical sketch in *Bull Med Lib Ass* 63, 415–7 (1975), unpublished memoirs (copy in NLM) and *Who's Who in the World* (1978–79)

[7] Memo, Jones to Exec Officer, SGO Jan 29, 1942 file, Security, War Measures MS/C/309

[8] Library business ended at the auditorium and began at Fisheries on July 7, 1944, Office Order 17, July 11, 1944 file, Office Orders MS/C/309

[9] Letter, MacLeish to Jones, July 22, 1943 file, Location of New Building MS/C/309

[10] Eggers & Higgins, office instructions and report, Feb 7, 1944 file, New Bldg Construction MS/C/309

[11] Annual Report, 1944–45, p 16–19 file, Consolidated Fiscal Year Activities MS/C/309 Henry, *Armed Forces Institute of Pathology*, p 270–4

[12] Jones' statement of the origin and an outline of the survey are in minutes of the first staff meeting at the Army Med Lib , Mar 31, 1943, file, Min Div Chief Meetings MS/C/309

An account of the background of the survey, what the surveyors saw, and what they recommended is in *The National Medical Library Report of a Survey of the Army Medical Library* By Keyes D Metcalf, et al , (1944), and in the typed, unpublished appendix to the report Copies in archival collection, NLM Information is also in file, Survey Library MS/C/309

Articles summarizing the report are F R St John, "Survey of the Army Medical Library," *Library J* 70 195–197 (1945), W B McDaniel, "Study of the Army Medical Library," *Coll & Res Libr* , 6 191–192 (1945), H W Jones, "The Army Medical Library in Retrospect and Future," *Bull Med Libr Assoc* 34 3–11 (1946)

[13] Office Order 4, Mar 10, 1944 file, Library Orders MS/C/309

Francis R St John was born in Northampton, Mass , June 16, 1908 After receiving his A B degree from Amherst in 1931 he became assistant in the reference department of New York Public Library, 1931–1939 While at NYPL he attended Columbia and received his B L S degree in 1932 He was assistant librarian of Enoch Pratt Library, Baltimore, 1939–1941, chief of circulation at NYPL, 1941–1947, director of library service of the Veterans Administration, 1947–49, and chief librarian of Brooklyn Public Library, 1949–1963 At the end of the war St John received the Army's Legion of Merit for his assistance in reorganizing the Library He was an advisor on library matters, organized the firm of Francis R St John Library Consultants in 1964, and published many professional articles He died July 19, 1971 For obituaries see New York *Times* July 20, 1971, *Lib J* 96 2725 (1971), and other library publications

[14] Office Order 4, Mar 20, 1945 file, Library Orders MS/C/309

Ralph Robert Shaw was born in Detroit, May 18, 1907 He was hired as an assistant at the Cleveland Public Library in 1923 and held this position until 1928, concurrently attending Western Reserve and receiving his A B degree in 1928 He then moved to New York and worked at the New York Public Library, 1928–29, and Engineering Societies Library, 1929–36, also attending Columbia and obtaining his B S and M S degrees in 1929 and 1931 From 1936 to 1940 he was chief librarian, Gary, Ind , public libraries, 1940 to 1954 director of the U S Department of Agriculture libraries 1954 to 1964 professor (and sometimes dean) of Rutgers University Graduate School of Library Service, and 1964–69 professor at University of Hawaii Shaw was a vigorous, energetic, imaginative person who tried to find ways of improving library service and transmission of knowledge Among his inventions, some of them patented, was the rapid selector and the photoclerk He founded the Scarecrow and Nokaoi presses for publishing works in the library and book fields He served as a consultant to government and industry, and was recipient of the Dewey Medal Shaw died Oct 14, 1972 "Essays for Ralph Shaw," edited by Norman D Stevens (1975) contain a biographical sketch and reminiscences of Shaw

[15] Lists of names, grades, salaries, and duties of employees may be found in files Personnel

Authorization and Personnel Control Forms MS/C/309

[16] The many organizational changes during World War II may be traced through Library Orders and other files in MS/C/309 The function of each section and division in the Library in mid-1945 is given in detail in Annual Report, 1944–45, in file, Consolidated F Y Activities, MS/C/309

[17] Letter, St John to Romona Javitz, NYPL, Nov 10, 1944 file, Personnel Authorization, MS/C/30

[18] Office Order 13, May 23, 1944 Army Regulation 40-405, change 1, July 3, 1944

[19] Diary in file, Historical Information, MS/C/309

[20] Wyllis Eaton Wright, born in Jacksonville, Fla , Dec 13, 1903, died in California, Oct 2, 1979 He received his B A and M A degrees from Williams College and his B S from Columbia School of Library Science He was sworn in as Librarian, AML, on July 2, 1945 After leaving Washington he was librarian of Williams College, 1947–68, then was associated with Stanford until he retired in 1974 He was an officer in several library societies, served on international and national committees, edited books, wrote articles and published *Colonel Ephraim Williams* He was awarded the Dewey Medal and Margaret Mann Citation See *Who's Who in America*, profile by Deoch F F Fulton in *Bull Bibliog* 20, 105–7 (May–Aug , 1951), files in MS/C/309, and letters, Wright to Wyndham Miles in NLM

[21] Letter, MacLeish to Jones, Dec 11, 1940, file, Security, War Measures MS/C/309

[22] Letters, Jones to MacLeish, Jan 17, Sept 24, 1941, Jones to Brooks, chief clerk, SGO, Sept 23, 1941 file, Security, War Measures MS/C/309

[23] Memo, Jones to Surgeon General, Jan 27, 1942, file, Security, War Measures MS/C/309

[24] Resolution of Board of Trustees, May 11, 1942, letter, Clyde Cummer, Cleveland Med Lib Assn to Jones, May 12, 1943 file, Misc Civilian Committees MS/C/309

Information regarding events in Cleveland may be found in annual reports of the branch, 1942–1948 file, HMD Fiscal Year Activities, MS/C/309 A scrapbook of clippings, letters, photos, and other memorabilia is in the possession (1980) of Thomas E Keys

[25] Diagrams of the third floor and of the tiers are attached to inspection reports, U S Army Insector General, 1944–50 Diagrams showing arrangement of books in the tiers are in report of operations and activities, Cleveland branch July 13, 1942 to July 1, 1943, file, HMD Fiscal Yr Activities MS/C/309

[26] Max Harold Fisch, born Dec 21, 1900, educated at Butler and Cornell (Ph D , 1930), taught philosophy at Cornell and Western Reserve before joining the Library in 1942 From 1946 to 1969 he was professor of philosophy at University of Illinois He has also been a visiting professor at several universities, here and abroad, and an officer in learned societies Fisch has written, edited and translated a number of books, including *Nicolaus Pol Doctor 1494*, and has written scores of articles, biographical sketches, and other contributions At present he is working on a two-volume biography of Charles S Peirce, the great American philosopher, and editing a 20-volume series of Peirce's works A biographical sketch of Fisch and a list of his writings is in *Studies in Philosophy and in the History of Science Essays in honor of Max Fisch* (Richard Tursman, ed , 1970) See also *Who's Who in the World* (4 ed , 1978–79), and sketch with port in *Illinois Alumni News* March 1965

[27] For Honorary Consultants see later in this chapter

Letter, Keys to Wyndham Miles, Mar 3, 1979 NLM

Thomas James Holmes was born in Newcastle-under-Lyme, England, on Dec 27, 1874 After serving an apprenticeship to a bookbinder he entered the trade In 1902 he and his wife emigrated to the United States He bound books in New York and in Cleveland Eventually he became personal librarian to Samuel and William Mather and compiled bibliographies of the works of their ancestors In his later years Holmes lived on a farm in Newbury, Ohio He died Feb 7, 1959 See *The Education of a Bibliographer an Autobiographical Essay by Thomas James Holmes, Bibliographer of the Mathers* (1957), T E Keys, "Bookmen in Biology and Medicine I have known," *J Hist Med Allied Sci* 30, 326–30 (1975), Holmes, "The Form of the Book ," *Proceedings of the Second General Meeting of the Honorary Consultants* Oct 5 and 6, 1945

[28] "Having been thwarted in the attempt to secure the money in a mass appropriation to repair it [rare book collection] because of legal restrictions, we hit on the idea of opening our own studio This was perfectly legal" letter, Jones to R Fritz, Mar 14, 1944 MS/C/148

Jean Charles Eschmann was born in Basel, Switzerland, 1896, served his apprenticeship there, and came to the US in 1919 He worked at Riverside Press, Cranfield Academy of Art, Bloomfield Hills, Mich , Artisan Guild, Highland Park, Mich , National Library Binderv, Cleveland, and Cleveland Branch of AML His hand bindings were exhibited at the Grolier Club and other places in America and Europe See

NLM Bulletin Jan 25, 1961 "Jean Eschmann," *Bookbinding and Book Production* 49 No 6, 44–45 (June 1949), G Miller, "Medicus Librorum, Jean Eschmann, Restorer of Rare Books," *Bull Cleveland Med Lib* 3 3–8 (1956) Eschmann died Jan 18, 1961

Thomas Keys, "The Restoration Program," *Bull Med Lib Assoc* 33 172–4 (1945)

[29] The register signed by visitors starting February 1943 is in NLM

[30] Dorothy May Schullian, born in 1906, attended Western Reserve and University of Chicago (Ph D in Latin) She was a fellow of the American Academy in Rome for several years and then taught at Western Reserve and Albion before coming to the Library In 1961 she went to Cornell as curator of the history of science collections and held this position until she retired on June 30, 1972 She has translated, edited and written several books, including *A Catalogue of Incunabula and Manuscripts in the Army Medical Library* (with F E Sommer), *Music and Medicine* (with M Schoen), and *The Baglivi Correspondence from the Library of Sir William Osler* Most of her many articles deal with history of medicine, and several concern the Library and books in HMD A very readable history of NLM by her and Frank B Rogers appeared in *Library Quart* 28 1–17, 95–121 (1958) She has edited the notes and events section of *Journal of the History of Medicine and Allied Sciences* for a quarter of a century and is engaged in other historical endeavors A brief biography by Max H Fisch and partial bibliography of her writing is in *Bull Hist Med* 47 91–96 (1973)

[31] Annual Report of Library Activities for 1945, p 33 file, Consolidated Fiscal Year Activities MS/C/309 Report of annual general inspection, Oct 17, 1945 NLM

[32] The chiefs of the division were Major Thomas Keys, July 3, 1942–Dec 31, 1945, Max Fisch, Jan 1, 1946–September 20, 1946, Robert Austin, Sept 21, 1946–June 15, 1947, William J Wilson, June 16, 1947–Aug 31, 1954, Harriet C Jameson, Sept 1, 1954–Oct 1959, Dorothy May Schullian, 1959–July 1961

[33] Annual report of Photoduplication Service for 1942, file, Photoduplication Sect F Y Act , MS/C/309

[34] Office order 5, Mar 7, 1942, file, Library Orders, MS/C/309

[35] Volume 4, No 1, Jan 7, 1943 The policy of the Library in furnishing microfilm free was stated in *Current List* 6 No 15, April 14, 1944, 7 No 1, July 7, 1944, 9 No 1, July 6, 1945 The policy regarding loan, sale, or gift of microfilm varied at times The variations are not dealt with here

[36] *Current List* 4 No 16, April 22, 1943, 5 No 12, Sept 23, 1943 Monthly statistics of the number of orders, customers, and other data of Medicofilm Service for the period September 1940 through February 1941 are in *Current List* 1 No 15, April 9, 1941, March 1941 through September 1941 in 1 42, Oct 15, 1941, for October 1941 through September 1942 in 3 No 16, Oct 15, 1942 The annual report of Photoduplication Service for 1943 is the last in which statistics for Medicofilm Service are given, but the service may have functioned on a small scale into 1944

[37] *Current List* 4 No 21, May 27, 1943, and later issues

[38] Office Order 20, July 31, 1944 file, Library Orders MS/C/309 Brinkley received an award for developing this viewer file, Library Orders MS/C/309

[39] In *Current List* 6 No 3, Jan 21, 1944 is a map of the world showing locations to which microfilm was sent

[40] A floor plan showing the location of the Photoduplication Service's equipment in the reading room and offices is in *Current List* 6 No 11/12, Mar 12/24, 1944

[41] "The most important events in the library in the last ten years have been (2) the growth of the Photoduplication Service on a large scale as a vital contribution to the war effort, without which medical literature could never have been supplied the Armed Forces in any adequate amount", H W Jones, Annual report of the library activities for 1944 file, Consolidated F Y Act MS/C/309

Jones wrote the following articles and notes publicizing and describing the Library's microfilm service "Medical Research and the Microfilm," *Military Surgeon*, 89 172–6 (1941), "Extension of the Loan Service of the Army Medical Library to include Photoduplication for Army Hospitals," *Military Surgeon* 90 328 (1942), "Nicer Film Service," *Canadian Med Assoc J* 46 391 (1942), "Photoduplication Service of the Army Medical Library," *J Chem Educ* 21 342–3 (1944)

[42] Correspondence between Seidell, Marshall, and Jones beginning Oct 28, 1941, is in file, Friends of the AML MS/C/309 Letter, Jones to Marshall, Dec 18, 1941, "I think the main purpose of Dr Seidell's proposal is to get someone to take over the actual responsibility of the publication of the *Current List* He is not a physician or a librarian and he is seeking someone identified with library work who could take his place now that the Army Medical Library itself cannot take this over, but the financial responsibility involved makes it impossible for

anyone here to assume any responsibility for the publication "

[43] Editorials and announcements on the covers of *Current List* provide information about distribution and subscriptions, for example 1 No 27, July 2, 1941, 4 No 1, Jan 7, 1943, 8 No 1 Jan 5, 1945, 11 No 20A

[44] Lists of members were printed in *Current List* 1 No 7, Feb 12, 1941, 1 No 8, Feb 19, 1941, 1 No 17, April 23, 1941

[45] The names of members and other information about the committee, 1933–41, are in The National Medical Library Report of a Survey, Appendixes, pp 19–22

[46] The idea of reviving the advisory group was arrived at by Jones and Thomas Keys Keys was then Jones' assistant

Correspondence, notes, minutes of meetings, and other records of the Honorary Consultants are in MS/C/148 Accounts of several of the consultants' annual meetings were published in *Bull Med Lib Assoc* A bound set of reprints of accounts of all meetings is in Archival Collection

[47] John Fulton wrote a long editorial in appreciation of Jones' work at the Library in *Bull Med Lib Assoc* 33 409–12 (1945)

[48] Jones' remarks about his health are in a letter to John F Fulton, Sept 18, 1945 MS/C/8

[49] Jones portrait hangs in the reading room, NLM *Current List* 6 No 20, May 19, No 22, June 2, 1944, has information on the Friends' role in providing the portrait

[50] Obituary by Thomas E Keys, *Bull Med Lib Assoc* 46 646–9 (1958)

XVIII

Modernizing the Library

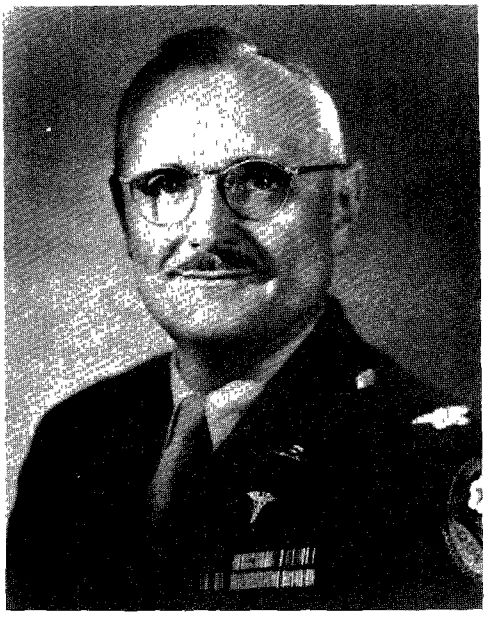
WHEN peace arrived the improvements begun in the Library during the war had not been completed. The vigorous acquisition of journals and books, planned but delayed by the conflict, had to be accelerated. The campaign for a new building to house the collection and provide adequate space for librarians and readers had to be continued. Shelf-listing, the development of a classification system, cataloging, and recataloging had to be carried on until finished. The expanding, largely new staff had to be synchronized into a smoothly running, efficient organization. Publication of the *Index-Catalogue* had to be resumed. The *Current List* had to be enlarged and improved until it reached the level of a major reference periodical. Responsibility for seeing that these objectives were attained rested on three directors: Leon Lloyd Gardner, 1945–1946; Joseph Hamilton McNinch, 1946–1949; and Frank Bradway Rogers, 1949–1963.

LEON LLOYD GARDNER, DIRECTOR 1945–1946

As Harold Jones approached retirement in 1945 Surgeon General Norman T. Kirk picked Colonel Leon Lloyd Gardner as the next Director "because of his knowledge of books."[1] Gardner had been born in China, April 28, 1894, and grown up there, with the exception of the Boxer Rebellion period when his parents had sent him to the United States.[2] He graduated from Pomona College and then obtained his master's degree in zoology and doctor's degree in medicine from University of Pennsylvania. After instructing in anatomy at Vanderbilt and practicing as a surgeon he entered the Medical Department in 1924.

Gardner graduated first in his class at Army Medical School in 1925, receiving the Hoff Medal, and first at the Medical Field Service School, receiving the Skinner Medal. He served at various forts, was stationed in the Philippines for 3 years, then returned to the United States. In 1937 he attended the Command and General Staff School at Fort Leavenworth. During World War II he served in every major theater of operations and commanded a general hospital in France.

Gardner arrived on September 10, 1945, at an unsettled time in the Library. The war was barely over and the enlarged staff was still not well organized and not functioning at high efficiency. A year before the top management had been



Leon Lloyd Gardner, Director of the Library, 1945 to 1946.

divided between the Director, as administrative head, and the Librarian, as technical head.[3] Gardner, the new Director (the title was soon changed temporarily to Commandant), and Wyllis Wright, the first civilian Librarian, who had been on the job only 2 months, had no precedents to guide them in their relationship although Wright had worked successfully under a similar arrangement at New York Public Library.

As the months passed by disagreements began to arise between Gardner and Wright. The reason for the differences between the two men is obscure, but the probabilities are that it lay in the split between the conservatives and reformers, the split that had opened 2 years earlier when former Director Jones began to carry out the recommendations of the survey. Wright was committed to progress. Gardner seems to have been impressed by the viewpoint of the conservatives and began to oppose some of the changes ordered by Wright. Well-liked by the staff, Wright was a rather inflexible, stiff-lipped, almost humorless New Englander cast in the mold of Calvin Coolidge, with a rigid way of doing things. It is possible that some of the friction was caused by Wright's reluctance to compromise.

In the summer of 1946 senior staff members rebelled. Wright resigned, effective June 30. At the urging of Gardner, he postponed his leaving until the end of the year. Other employees tried to meet with former Director Jones, hoping he would intercede, but Jones, out of loyalty to a fellow officer, refused an interview. Finally the chairman of the Library Staff Association and M. Ruth MacDonald persuaded him to listen to their complaints.

In the meantime John Fulton and other members of the Honorary Con-

Joseph Hamilton McNinch, Director of the Library, 1946 to 1949.

sultants had become aware of the disagreements between Gardner and Wright and the unrest among the employees. The threats of resignations and the tangled administrative difficulties caused Fulton to act. On December 4 he wrote to Kirk, stating that the Library was in serious difficulty and requesting a meeting of Kirk, himself, Luther Evans, and Keyes Metcalf.

Receiving the letter, Kirk asked Jones for advice. Jones recommended that Kirk relieve Gardner without delay and appoint a new Commandant. Kirk asked Jones to suggest a replacement. Jones ran his eye down the Army list and selected several, which led Kirk to remark, "you certainly have picked the best men in the Army and most of them cannot be taken off the jobs they have." Jones replied: "There has always been the danger of taking a mediocre man simply because he is available. Mediocre people are always available. What you have to do is pick a good man, even if it hurts. Here is Colonel McNinch . . . one of the best of the younger administers I know of." Joseph Hamilton McNinch was then in charge of the group writing the medical history of the war, but Jones argued that McNinch could also manage the Library if he were assisted by a good librarian. Kirk lost no time in transferring Gardner and naming McNinch Commandant of the Library.[4]

Gardner then directed the Physical Standards Branch of the Surgeon General's office He also attended Johns Hopkins' School of Public Health and Hygiene, receiving a master of public health degree in 1948. After retiring from the Army on May 31, 1949, he practiced medicine for a time in Washington and later in San Diego, California.

JOSEPH HAMILTON MCNINCH, DIRECTOR 1946–1949

Joseph Hamilton McNinch was born in Indianapolis, October 5, 1904. He

received his bachelor's and doctor's degrees from Ohio State and entered the Army in 1930. He was stationed at Army camps, taught at Army Medical School, was assistant chief of the Medical Statistics Division of the Surgeon General's office, and served in the European Theatre during the war. In 1945 the Surgeon General named him editor-in-chief of the medical history of World War II, and he retained the editorship when he was appointed Commandant (a title soon changed back to Director) on Dec. 23, 1946.[5]

When Colonel McNinch entered the Library he interviewed the senior staff members to learn about them and the friction within the organization. He adopted, with one exception, the report of the surveyors, published a few years before, and used it as his Bible. He left the operations of the organization in the hands of professional librarians and concentrated on administration. "Colonel McNinch was a most excellent choice for the directorship," recalled Librarian Wyllis Wright. "He was a firm, capable administrator and anxious to take the trouble to understand the workings of a library." After Wright departed at the end of 1946, McNinch appointed Scott Adams the Acting Librarian. Adams found that McNinch had insight, was judicious, had directness of purpose, and sensed the underlying problems of the institution.[6]

Experience eventually persuaded McNinch that the surveyors had been wrong in recommending that administration be divided between a military director and a civilian librarian:[7]

> I decided that the assignment of two individuals to jointly operate the library had some inherent problems. It seemed to me that either we should take a well-qualified professional librarian and send him or her to medical school, or take some well-qualified physician and send him to library school. The latter course of action seemed to be more practical from a number of points of view.
>
> The next question was. should the doctor be a member of the Army Medical Corps or a civilian physician. I saw no reason to send a medical corps officer to library school, assign him to the Library, and then transfer him away from Washington at the end of four years in accordance with an old law which prohibited regular military officers from staying in Washington for more than four years. However, one of my Army mentors, Colonel (later Major General) George Dunham, had taught me never to believe anything without looking it up. On looking up the law to which I have just referred I found that it made an exception for medical corps officers and chaplains. I immediately then recommended that the library assignment be made a career assignment. I sent a photostat copy of the law and its exceptions with a staff paper to the Secretary of the Army and we received an immediate approval. With this approval, I then recommended that the position be advertised in the Army and Air Force (Air Force Medical Service at that time was still in the Army) and that the officer selected be sent to library school.

The Surgeon General accepted all but one of McNinch's recommendations, that the new Director be given the rank of brigadier general.[8] A committee made the final selection and chose Major Frank Bradway Rogers, then attached to Walter Reed Hospital, as the future Director. "I did have opposition to the selection of Major Rogers on the ground that he was too young," recalled

McNinch, "but was able to point out that the famous and eminent John Shaw Billings was in his thirties when first assigned to the Library. For some reason, most people seemed to think that he had always been the age at which time his portrait for the library was painted "[9]

Among the other important actions that McNinch participated in were those concerning the location of the proposed new building, the future of the *Index-Catalogue,* and the charges for microfilm. Along the way he fell in love with Eleanor Coffyn, the very able head of the reference section, and they were married.

After Rogers received his degree in library school in 1949 and was ready to assume command of the Library, McNinch departed. He then held a number of posts, among them chief surgeon, U.S. Army Far East Command, chief surgeon, U.S. Army, Europe, and commanding general, Army Medical Research and Development Command. After retiring with the rank of major general in 1962 he occupied high positions in the American Hospital Association and the Veterans Administration. He also served on the Library's Board of Regents.[10]

Frank Bradway Rogers, Director 1949–1963

Frank Bradway Rogers was born in Norwood, Ohio, December 31, 1914. Assisted by a scholarship he worked his way through Yale, graduating in 1936 He worked for 2 years at various jobs in New York, Boston, Cincinnati, Chicago, and St. Louis, and then entered Ohio State University College of Medicine where he was a member of the Reserve Officers Training Corps and where he

Frank Bradway Rogers, Director of the Library, 1949 to 1963

graduated in 1942. After interning at Letterman General Hospital he was called to active duty and sent to the Medical Field Service School, Carlisle Barracks, for training. He remained at Carlisle as an instructor until 1945 when he was ordered to the Philippines, and thence to Japan where he served as surgeon, 25th Infantry Division. In 1947 he returned to the United States and was assigned to Walter Reed Hospital as a resident in surgery.

One day he saw on the hospital bulletin board a notice that the Surgeon General was seeking a young officer to direct the Library. Rogers had always felt at home among books and had even hoped that he might be lucky enough to end his Army career at the Library. He was one of several applicants, was interviewed by a committee,[11] and received the job. He reported for duty at the Library on March 1, 1948, was given a desk in Director McNinch's office, and began to learn how the institution operated. He was sent to Columbia University School of Library Service. During school vacations he worked at the Library with McNinch. After receiving his master's degree in librarianship he returned to the Library in September 1949 and became Director on October 21, 1949, when McNinch left.[12]

The library degree was particularly important at that time because the organization was being modernized, and many improvements were being made. The Director needed to know why and how library operations were done. The degree gave Rogers standing within the Library group, none of whom could denigrate his ideas as not coming from a "librarian."

Rogers set about diagnosing the weaknesses in the institution's operations and seeing to it that they were strengthened. He rounded out the modernization of the Library's organization and methods begun in the 1940's by Jones. Under his direction the Library passed from military to civilian control, moved from the old to a new building, and mechanized the production of indexes. He kept in touch with everything going on in the Library's divisions. To his associates he was an industrious perfectionist; and Kanardy Taylor, Librarian from 1951 to 1956 said, "I don't think that anyone could have done better."[13]

Rogers' 14-year term bracketed a transition period in the life of the Library. When he arrived, the institution was still largely old-fashioned. When he resigned on August 31, 1963, to become librarian and professor of medical bibliography of the University of Colorado Medical Center, he left behind an up-to-date progressive organization entering the electronic era.

To compare Rogers' accomplishments with those of other directors would be a meaningless exercise because of the profound differences in the circumstances that had to be faced by the incumbents. What distinguished Rogers from almost all of his predecessors was the extraordinary range of significant library activities in which he involved himself with a resultant record of consistently high quality achievement. His accomplishments in developing the Library were recognized by his peers by the presentation to him of the Marcia C. Noyes Award, Dewey Medal, Horace Hart Award, Cyral Barnard Memorial Prize, and the Distinguished Service Medal. The Medical Library Association

elected him president in 1962, and the American Association for the History of Medicine in 1966–68. He published a number of articles on the Library, and he compiled many of the writings of his professional ancestor into a book, *Selected Papers of John Shaw Billings*. In retirement in Denver he acted as a consultant to libraries, and he devoted considerable time to his hobby, the restoration and binding of rare books. In 1975 he was awarded an honorary doctor of science degree by the Medical College of Ohio at Toledo.[14]

ACQUISITIONS

The war over, the Library set out to acquire literature published in enemy countries during the conflict, to obtain works published in the United States during the Depression, and to reestablish commercial ties with booksellers in all areas of the world.[15] The State Department's Intelligence, Acquisition and Dissemination Division assisted in initiating exchanges and negotiating contracts with book dealers in France, Italy, Spain, Portugal, Russia, Brazil, Great Britain, Egypt, and other countries. The Inter-Departmental Committee for the Acquisition of Foreign Publications. established in July 1946 within the National Intelligence Authority at the suggestion of Luther Evans, Librarian of Congress, also assisted. The committee lasted less than a year before it was absorbed by the State Department, but during that time it sent the Library about 10,000 issues of German wartime periodicals, about 3,000 monographs, and more than 1,200 theses published in France during the occupation.

The Library of Congress organized a cooperative acquisition program in Germany to purchase wartime publications of Austria, France, Italy, Germany and other countries for more than 100 American libraries and to select captured German documents for research libraries. Scott Adams, chief of the Library's Acquisition Division, was with the LC mission in the autumn of 1946 locating German and Austrian medical publications. Several thousand books and serials were obtained for the Library.

Military Intelligence and other War Department agencies assisted by channeling German and Japanese military medical documents to the Library. Strange as it may seem, the Army Medical Library had a very incomplete collection of U.S. military medical research reports. The War Department finally put out an official circular in 1946 requesting Army, Navy and Air Force medical agencies to send a copy of every publication to the Library.

As Army hospitals closed after the war their books and journals were shipped to the Library. These provided duplicates, some of which, with the Library's other duplicates, were sent to 18 Veterans Administration libraries. Other duplicates were exchanged with American and foreign medical libraries. Literature not exchanged was offered to the American Book Center, to the American Library Association's Committee on Aid to Libraries in War Areas, and to other agencies to help rebuild libraries damaged during the war.[16]

The American Medical Association began to donate back issues of journals from its large accumulation. It sent these in yearly batches, starting with 25,000

issues of 1932. These journals were particularly welcome for they filled gaps that had occurred during the Depression when lack of funds had forced the Library to discontinue many subscriptions. Duplicates were made available to other libraries through the Medical Library Association Exchange.

The reestablishment of commercial ties in the book trade took some time. It was not until the Spring of 1947 that the Library received its first postwar shipment of serials and books from a firm in Berlin. After normal relations were reestablished with foreign nations, the Acquisition Division made certain that the institution would receive the most important journals of countries and areas by compiling lists of all journals published. On occasion these lists were submitted to specialists for evaluation. For instance, a jury of physicians examined a list of 1,600 Latin-American journals and judged 65 to be outstanding, 175 fairly important, several hundred of minor value, and the remainder inconsequential. The Library then had a logical priority system of selecting journals from that part of the world.

In July 1948 Joseph Groesbeck, chief of the Acquisition Division, journeyed to Japan to make arrangements with publishers and book dealers for the opening of trade channels with the Library. Previously the supply of Japanese journals and books had not been adequate although the Library had begun acquiring Japanese medical writings during Billings' time. Groesbeck also reopened and extended the Library's exchange relationships with Japanese institutions and made arrangements to provide medical schools with recent American medical literature.[17]

In obtaining old books the Library was limited by funds and by the difficulty in locating desirable books it did not already possess. One method of obtaining the literature was hit upon by William Jerome Wilson, a charming, witty scholar and bibliographer of considerable stature who had written many articles and collaborated with Seymour de Ricci on the *Census of Medical and Renaissance Manuscripts in the United States and Canada* before coming to the Library as chief of the History of Medicine Division in 1947.[18] Wilson conceived the plan of filling gaps in the collection with microfilm copies of early books. From 1950 to 1955 the New York Academy of Medicine graciously loaned 232 16th century books for microfilming. HMD halted the project in 1955 in order to concentrate on other matters, and it was never resumed.[19]

The History of Medicine Division also applied microfilming to produce a portable catalog of its books, which Wilson carried in a brief case on a buying trip to Europe in 1953. The catalog was made by photographing the 23,000 item checklist of the collection, cutting the film into strips and mounting the strips in transparent envelopes. The strips were read by a device consisting of a magnifying glass and flashlight. Consulting this list in each book shop he visited, Wilson found 600 volumes for purchasing out of several thousand that he examined.[20]

Exchanges of duplicates had taken place with other libraries since the 1870's, but the institution had never had sufficient employees to maintain the duplicates

in an orderly arrangement, permitting easy locating and withdrawal of specific books or journals. Now the Library had the manpower to bring order out of the chaos. It sent lists of duplicates to 157 libraries in Australia, South America, Asia, Middle East and Europe to initiate piece-for-piece exchange. It sent a gift of several tons of duplicates to Japan. It drew up want lists of journals published in specific countries or geographical areas and sent them to libraries in the countries. For example, a want list distributed to French libraries brought in 2,665 serial issues. International exchange resulted in the Library's obtaining thousands of publications, only a small proportion of which was available commercially. The exchanges also served as a vehicle of good will between countries.

Exchanges and gifts (particularly journals from AMA) were of considerable importance to the Library during this period. For example in fiscal year 1950 the Library obtained 43,337 serial issues by exchange and gift out of a total received of 75,074. In fiscal year 1951 two-thirds of serial issues were acquired by exchange and gift, 94,000 pieces were sent on exchange in the U.S., 50,000 were sent on exchange to foreign libraries, and 184,000 exchange pieces were received.

Photographs of physicians and medical subjects were pursued as actively as printed materials. Ten thousand pictures of hospitals, medical objects, and persons were obtained from the Armed Forces Institute of Pathology, 2,200 portraits from the Army Medical Illustration Service, and hundreds from the Navy and Air Force medical departments. Posters were acquired from the Red Cross, National Institutes of Health, and military medical agencies. Duplicate pictures came from New York Academy of Medicine and College of Physicians, Philadelphia. Individuals sent material, two unusual collections being Morris Fishbein's medical bookplates and Webb Haymaker's portraits of 618 individuals who attended the 4th International Neurological Conference, Paris, 1949. Letters, more than 10,000, sent to teachers in medical schools, members of medical organizations, directors of hospitals, and physicians soliciting portraits and pictures brought in thousands of items. In the 10-year period following the war the portrait and print collection jumped from 15,000 items to almost 60,000.[21]

Binding

The binding studio of the History of Medicine Division in Cleveland remained in the National Library Bindery Company building from September 15, 1943, until July 30, 1948, when it moved to the Allen Memorial Library, close to HMD. By then the major portion of the damaged early books had been repaired and rebound, and one by one the employees left for other jobs. By October 1952 only Jean and Elia Eschmann remained. On June 30, 1955, they completed the last binding and the restoration program, perhaps the most extensive undertaken by any medical library, was finished. The equipment was

shipped to Washington, and the Eschmanns turned to practicing their art for other patrons in Cleveland.

During the 11 years that the bindery existed the Eschmanns and their assistants carried out 10,317 operations on 9,717 volumes, restoring 4,246 of them, binding 2,012 in full leather, 2,689 in half leather, 543 in buckram, and making 827 slipcases. The total cost of salaries, supplies, and rent amounted to $178,325. Thus the average cost of restoring a volume was $18.35. They returned to usefulness and attractiveness volumes that had deteriorated under the ravages of time, temperature, transportation, water, dirt, insects, and careless readers. To those who remembered the shabbiness of the books in their old battered condition, their fresh, clean, neat look was almost unbelievable.[22]

Routine binding followed a different course from that of the special Cleveland binding. The Library was required by law to have publications bound at the Government Printing Office. It had to pay for this service, but it never received sufficient money from the Medical Department to bind the accumulations. Each year from the 1870's onward there had been a backlog of journals, pamphlets, and paperbacks; and as time passed and the collections grew, as the number of periodicals increased, and as much-used volumes began to need rebinding, the backlog became larger.

During Jones' librarianship the clerical work involved in sending items to and receiving them from the GPO was handled by a small unit called the Binding Records Section. In June 1945 Jones renamed this the Binding Section, gave it the job of readying items for binding at the GPO, and told it to do as much pamphlet-binding as it could. This was the stitching or fastening of pamphlets in commercial or homemade binders, the preparation of cut-flush type bindings, recasing, mending, repairing, and labeling. At first the section rebound only a few hundred items a year, but from 1949 onward it turned out thousands of pamphlets annually. One advantage of inhouse binding was that publications were out of circulation a much shorter period than those sent to the GPO. In 1948 at the suggestion of Helen Turnbull, head of the section, the Library designed its own endpaper for use in its bindery. This gave the publications a distinctive appearance and saved money.

Seldom could the section plan its deliveries to the GPO in advance because it did not know how much money it would receive and when. During 4½ months in 1951 it was given so little that it could send only 193 volumes. Then suddenly it was allotted $20,000 to be spent in the final 6 weeks before the end of the fiscal year and everyone had to work overtime to send off 3,678 volumes. Worse, in 1952 it was suddenly allotted $96,000 for the period March through June. Temporary employees had to be hired and vacations were postponed, but still the section could spend only $76,000. Fortunately from then on budgeting and planning became more certain. By the end of fiscal year 1952 the GPO had bound approximately 100,000 items, the Binding Section one-quarter as many.

The GPO's monopoly on binding, which had irritated every Librarian since

Billings, was finally ended by Rogers. In 1953 he asked the Department of Defense for permission to have volumes bound by commercial firms under contract, emphasizing that the Library would save money and be able to plan binding more effectively. His request, which required a waiver from the Congressional Joint Committee on Printing, was granted in the spring of 1955, effective July 1. The firm awarded the first contract proved to be unreliable, but later contractors were satisfactory.[23]

Scope and Coverage

In 1948 McNinch invited several dentists, pharmacists, and medical specialists to examine the collections to determine whether the Library was acquiring the important publications in their fields.[24] The following year Rogers went further and established an internal Committee on Scope and Coverage to define the subjects to be collected and the degree of collecting within each subject.[25] This committee, comprised of Estelle Brodman, Scott Adams, and Joseph A. Groesbeck, using the framework of the Library of Congress classification to define the Universe of Discourse, determined the medical and nonmedical (as physics, chemistry, technology) subjects that should be collected, and it defined four degrees of coverage for the subjects: skeletal, reference, research, and exhaustive. It also recommended policies for specialized areas within the Library, as the Art Section and History of Medicine Division. It met with representatives of several other government libraries to see how the policies of these libraries would affect that of the AML, but only with the Department of Agriculture Library was there an overlap, in the area of veterinary medicine. The committee's report provided a basic policy for acquisition and was revised periodically thereafter.

A by-product of the scope and coverage study was the withdrawal of books that were judged "out of scope." Estelle Brodman looked at every book in the collection, a task that took years, and weeded out those that did not belong. Out went *Arrowsmith*, Dr. Serocold, and a number of mystery novels in which physicians figured prominently. Also disposed of were J. Bokalders, *The Latvian Economist;* Frank Brandegee, *Address on the Life, Character, and Public Services of William McKinley;* F. H. Bowman, *The Structure of the Cotton Fibre in its Relation to Technical Applications;* William H. Brown, *The Art of Enameling on Metal;* annual reports of the Boy Scouts of America; a book on diseases of high altitudes, which turned out to be a satire on the political situation in Peru; and a book classed under "Electrotherapy," which proved to be a trouble-shooter's handbook on *Krankheiten* of lead storage batteries. Volumes withdrawn were given to the Department of Agriculture, Army, John Crerar, and other libraries, or placed in the duplicate collection.[26]

The Library's basic policy had been to try to acquire all publications in all languages, but the cost of processing seldom-used leaflets, broadsides, school catalogs, almanacs, hospital reports, etc., some typed, some mimeographed, caused the staff to question whether they were not acquiring and retaining too

much. Rogers organized a symposium "The Acquisition Policy of the National Library of Medicine," held April 12, 1956, in which a panel of six persons from different fields discussed the subject from the viewpoint of library technology, clinical medicine, research, history, and strategic intelligence. The symposium did not provide slick solutions but, as Estelle Brodman said, "It did give us assurance that we were proceeding along the right lines, and it provided us with important voices to combat any complaints we might have received about our decisions on scope and coverage. Politically and emotionally, therefore, it had important results."[27]

Shelf-listing, Classifying, Cataloging, Recataloging

The Library surveyors had emphasized the necessity of recataloging and cataloging. Jones sought for a competent person to supervise the operation and finally persuaded M. Ruth MacDonald to leave her post as chief cataloger of Detroit Public Library and come to Washington. During the summer of 1945 the first shelf-listing project was completed, resulting in an inventory of 126,860 monographs.[28] Librarians then began to sort more than 71,000 pamphlets stored in 1,300 boxes and 215 packages in the basement. Dust had been accumulating on these containers for decades, and the workers had to wear surgical masks, rubber gloves, and smocks. Approximately 42,000 pamphlets were shelf-listed, the remainder (theses, journals, documents, and other publications) being transferred to other collections or set aside for exchange.

The shelf-list index cards were photographed on a V-mail machine, printed in long rolls, cut and trimmed. Almost 200,000 photoprint cards were alphabetized and placed in the card catalog trays, in front of the old catalog cards.

During December 1945 and January 1946 the shelf-listers again donned smocks, masks and gloves and inventoried old, stored serials. Other holdings were also inventoried. In the spring of 1946 the shelf-listing team finished the work started 2 years earlier, completing one of the initial tasks in modernizing the Library.

Before the shelf-listing was started the development of a new shelf classification for the Library was begun by a committee appointed by Jones and financed by the Rockefeller Foundation.[29] The group considered basing the classification on the Library of Congress schedule for medicine because this would have advantages to both institutions but concluded reluctantly that revision was not practical. Instead they decided to devise new schedules for medicine and allied sciences using the letters W and QS-QZ (the LC classification was retained for nonmedical works, as dictionaries, encyclopedias). The classification tables were compiled during 1944, '45, and '46 by Mary Louise Marshall of Tulane with advice of specialists in different fields of medicine.

While the classification was being developed, descriptive cataloging of acquisitions was done in a brief form and subject cataloging was done using the old system.[30] Catalogers started to apply the new classification on October 1, 1946, preparing author and subject cards for the new public catalog. The Library

began to prepare the classification for publication in 1947 and distributed copies to other libraries in 1948. An abridged form of the classification prepared by Marshall was adopted by the Veterans Administration libraries.[31]

After the cataloging program was well under way, it became apparent that the classification schedules were overly detailed. On instructions from McNinch, Rogers prepared a cut-down version of the W schedule and catalogers began to use his revision on November 1, 1949. This brief classification along with simpler cataloging rules allowed the catalogers to proceed much more rapidly.

After being tested for a year the revised *Army Medical Library Classification* was prepared for publication and issued in April 1951. Thereafter the classification was revised and reissued periodically, being kept up-to-date between revisions by lists of "Additions and Changes."

Recataloging books that had been in the Library started in October 1946, simultaneously with the cataloging of new arrivals. The bio-bibliographical collection was recataloged first, then reference books in the reading room, followed by monographs in the stacks. The latter project was not completed until June 1952. This was one of the largest, if not the largest, recataloging programs ever undertaken by an American library. Thereafter the recataloging of serials and other groups of publications proceeded slowly and intermittently depending upon priorities of library services and operations.[32]

Cooperation With Library of Congress

Cooperation between the Army Medical Library and Library of Congress in areas of mutual concern was desirable from the viewpoint of efficiency and to avoid duplication of work. In 1946 the Library of Congress agreed to print and distribute catalog cards prepared at the Army Medical Library.[33] Cards turned out by catalogers from October 1946 to March 1948 were published by LC in a series known as the MED series. The Library of Congress sold these cards to libraries willing to subscribe to a year's output; there were not many subscribers. The cards contained subject headings and classification notations according to both LC and AML systems, so that other libraries could follow the system they preferred. The cards were reproduced later in *A Catalogue of Books Represented by Library of Congress Printed Cards, Supplement*, 1942–1947, and in *Library of Congress Cumulative Catalog*, 1948. This cooperation between LC and AML permitted a centralized distribution of catalog cards without duplication of work

On April 1, 1948, the Library suspended its cooperative catalog agreement with LC, because of the decision to revise the AML classification. Instead it sent mimeographed copies of its cards to LC where they were filed in the National Union Catalog and published as a supplement to the *Cumulative Catalog of Library of Congress Printed Cards* under the title *Army Medical Library Author Cards (April–December 1948)*. In 1949 LC published the cards as a supplement to its author catalog under the title *Army Medical Library,*

Author Catalog, 1949. In 1950, its major cataloging and recataloging difficulties overcome, the Army Medical Library resumed its cooperative agreement with Library of Congress. Main entries, added entries, and cross-references were typed on mats and sent to LC where they were printed in card sets for subscribers. At the end of each year the cards were reproduced in book form under the title *Army Medical Library Author Catalog*. The two libraries continued to issue catalog cards, annual volumes and 5-year cumulated volumes until 1965.

End of the *Index-Catalogue*

Prospective resumption of publication of the *Index-Catalogue*, suspended during part of the war, raised old arguments over the value of this bibliography. From the viewpoint of researchers and physicians in search of up-to-date information on a subject the *Index-Catalogue* was not satisfactory as a finding aid. Since it was published in a cycle of about 20 years, only about 5 percent of references in each volume were current, the remaining references being from 2 to 19 years old, or often even older. The fault was not in the indexing but in the "dictionary" arrangement that required 20 or more years for the *Catalogue* to run through the alphabet and start over.

Furthermore, the indexing process created a backlog of unpublished references. Every year the backlog grew. In 1920, after a half century of indexing, a million references had lain in the files waiting to be printed. During the 1920's and 1930's the total increased. After World War II the rate of accumulation accelerated. The number of unprinted references was expected to reach two million by 1951, three million by 1960.

There was no practical way of reducing the ever-growing backlog of unprinted references. The *Index-Catalogue* could not be published more frequently or in larger format because of the expense—volume 10 of the fourth series cost approximately $175,000, or $175 a volume for each of the 1,000 copies printed.[34]

Every Librarian from the time of Champe McCulloch, during whose tenure (1913–1919) the backlog reached enormous size, had puzzled over the disadvantages of the *Index-Catalogue*, begun before they were born and seemingly destined to go on forever. Finally McNinch decided to seek advice from physicians and librarians about the matter. He persuaded Surgeon General Bliss to appoint a committee "to study the indexing requirements of modern medical science and the publications of the Army Medical Library as devices to satisfy these requirements." Named the Committee of Consultants for the Study of the Indexes to Medical Literature published by the Army Medical Library, this group met 12 times, the first on September 24, 1948, the last on May 1, 1952.[35] General Bliss also contracted with Sanford Larkey, librarian of Welch Medical Library, to undertake research for the committee. Larkey assembled a staff and provided assistance to the committee from November 1, 1948, to September 30, 1953.[36] The Larkey group undertook two major studies: one, a

survey of world medical serials and the coverage of these serials by indexing and abstracting services; the other, the preparation of printed indexes by automatic punched-card equipment.

After the committee was fairly along in its task McNinch, the outgoing Director, and Rogers, the incoming Director, asked the group to concentrate on the critical state of indexing in the Library. Both McNinch and Rogers recommended that the *Index-Catalogue* be stopped when the series ended, and that a new periodic index be developed out of the *Current List*.[37]

The committee considered the fate of the *Catalogue* for 2 months and then agreed reluctantly that it be ended as soon as possible.[38] News of the impending demise of the reference work circulated among medical libraries, and a number of prominent physicians wrote to Surgeon General Bliss protesting the action.[39] Rogers did his best to calm the objectors, explaining the reasons for stopping the *Catalogue* and announcing that the *Current List* and other publications would take its place.[40]

On March 31, 1950, the routine indexing of journals for the *Index-Catalogue* ended. The staff continued to index accumulated journals and to subject-head tens of thousands of references in the Mh-Mz portion of the alphabet for the volume then under preparation.[41]

In 1954 the last of the Mh-Mz cards were sent to the printer. As typesetting progressed it was seen that the book would be too large if all the references were printed. Rogers recalled 7,000 cards, and the volume closed at Mn instead of Mz. The tome, issued in 1955, was the largest volume of the *Catalogue* ever produced, with more than 1,500 pages and 110,000 references. Rogers had one section, "Military Medicine," covering 938 pages with more than 30,000 references, reprinted in a separate volume.

While volume 11, Mh-Mn, was being compiled, catalogers selected from the backlog of 1.5 million unpublished references the title, author, and subject entries of monographs. Rogers first planned to publish these references in a five-volume supplement to the *Catalogue*. Later, to keep the cost down and hasten the work, he reduced the supplement to three volumes, one for titles and authors, two for subjects. This fifth series, as it was named, appeared in 1959 and 1961.[42] When the final pages came off the press, the 61 volumes of this massive bibliography had listed 579,566 author titles, 538,509 book and pamphlet titles, and 2,556,036 article titles. The *Index-Catalogue* ended 87 years after Billings began indexing and after it had been slaved over by four generations of conscientious editors, surely something of a record.

Development of the *Current List of Medical Literature*

After the *Current List* became an official government publication in August 1945, Director Gardner and editor Ignatius McGuire decided on a number of changes.[43] The subject index would be published monthly instead of semiannually, the price would be decreased from $5 to $3, and the *List* would be

confined to current publications and therefore not include wartime publications now arriving in large quantity.

There was no certainty that the *List*, born at the beginning of the war period and successful during abnormal times, would be judged worthwhile by readers and survive in normal times. But scientists and physicians found the little periodical so convenient and useful that its circulation jumped from 1,500 to 5,000 in 2 years, and its existence was secure.

Editor McGuire prepared *Current List* by himself. He was overwhelmed by the task, and in October 1947 he resigned and moved to California. The Acting Librarian Scott Adams recruited Mildred Kuch, who had at one time been with *Quarterly Cumulative Index Medicus*, as the new editor. She produced the *List* but because she was poor in health the monthly indexes for 1947 and '48 fell behind. She died of cancer in January 1949.

By the spring of 1949 the indexes were 11 months in arrears. At the Medical Library Association meeting in Galveston in April 1949, librarians complained to Rogers that delays in the indexes were handicapping their readers. McNinch gave first priority in the Library to bringing the indexes up-to-date. Several employees were shifted from other duties to assist with the indexes, and two numbers were prepared by outside librarians under contract.[44] By October 1949 the indexes were again current.

By this time McNinch, the outgoing, and Rogers, the incoming Director had decided that the *Index-Catalogue* would be replaced by other indexes, primarily a larger *Current List*. The new *List* would be issued monthly instead of weekly and contain a monthly and a cumulated index. Journals would be arranged in alphabetical order instead of being grouped by subject.

With suggestions from other libraries, 1,225 journals were chosen for inclusion. Fifty-seven percent of these were in non-English languages. Titles of articles in foreign periodicals would be given in the vernacular and in English translation. It was expected that a score or so of journals would be added each month.

On the recommendation of M. Ruth MacDonald, McNinch appointed Seymour Taine, a young cataloger, as the new editor.[45] Taine proved to be an excellent planner, able to foresee the details that arose in a new operation and to overcome obstacles. He was ingenious, as for example in devising (with the aid of an officer in the Prosthetics Research Laboratory at Walter Reed) a hand stamp to number citations for the *List* and in constructing an inexpensive layout board instead of purchasing an expensive commercial model. In March 1950 the nucleus of the new *List* staff moved into Tampa Hall and began to expand. Equipment was acquired. Indexing began in May and for the next 2 months the staff learned, mostly by experience, how to turn out a large monthly index periodical.

To produce the *List* the Library adopted the "shingle" method developed by Ralph Shaw at the Department of Agriculture Library. Indexers scanned articles, writing subject headings on forms provided for that purpose. These

Slips of paper bearing citations for Current List of Medical Literature *being shingled by Hertha E. Bishop.*

and the journals were passed to typists who skimmed through articles typing citations, authors' names, and subjects in precise positions on rolls of paper 5 inches wide, perforated every 3 inches for tearing into slips. Strips of these slips were filed under journal titles until the cutoff date for the publication of an issue of the *List*. At that time the slips were numbered in sequence with all slips for a given article assigned the same number; the strips were then separated into slips. The citation slips were laid on boards in numerical order and held by tape sticky on both sides so that they overlapped vertically, or were "shingled," in three columns to make a page. The pages were then photographed for photo-offset printing by a commercial firm. After the citation slips were all paged and photographed, the subject and author slips were alphabetized and then treated in the same manner. Author and subject slips were kept and interfiled with the succeeding months' slips. Twice a year accumulated author and subject slips were shingled to produce cumulated indexes.

The first number of volume 19 of the new *Current List* went to press on July 10. Production improved during the remainder of 1950, more and more

journals and articles being covered. In 1951 the Library experimented by producing one volume for the year instead of two volumes. But it took only 1 year for the staff to learn that it was not practical, and in 1952 they switched back to two volumes a year.

In February 1953 the Bureau of the Budget began to question the Library's authority to publish the *List*. Rogers did not learn of this until October, when the Adjutant General ordered the Library to suspend publication. Rogers and the Surgeon General objected strenuously, and in December the Bureau relented, agreeing to allow the *List* to continue until October 1, 1954, provided that no more than $19,500 be spent on printing, no more than 4,100 pages be set up, and no more than 1,800 copies be distributed to government agencies or sent for exchange.

To stay within the page limit Rogers and Taine decided to switch from a three- to a four-column format, losing legibility but gaining 50 percent more references per page and volume. The February 1954 issue, already half composed in a three-column format, was torn down and remounted in four columns. To stay within the $19,500 limit they reduced the number of copies for official use from 700 to 500, and for exchange from 1,400 to 1,000.

With the *List* on the verge of extinction Rogers bombarded his superiors with cogent reasons for continuation. Finally the Bureau of the Budget granted the Library authority to publish the index for 3 years, until 1957, and increased the limit on funds to $28,000 annually.

Medical Subject Headings

Needing a subject heading authority list for books, catalogers began a file of subject cards, making a card for each book cataloged, giving the source or authority for the subject, cross-references, and a scope note if necessary.[46] The Library sponsored a symposium on medical subject headings in December 1947 to open the undertaking to discussion by other medical librarians.[47] By 1950 the file contained 20,000 cards. The file was examined systematically while the subject indexes of the *Army Medical Library Author Catalog* were being edited in 1950 and '51.

The compilation of a list of standard subject headings for articles became necessary in 1950 when Rogers changed the format of *Current List*.[48] Taine, Rogers, and their associates modified the subject heading list of *Quarterly Cumulative Index Medicus* to draw up the first of several provisional lists for *CL*. Ideas for categories came from the studies of the research group assisting the Committee of Consultants on the Study of Indexes. As indexers referred to this list they revised it, adding terms to make the list more precise and assist users to locate articles. In 1954 the Library published the compilation for the use of other libraries and information specialists under the title, *Subject Heading Authority List Used by the Current List Division Armed Forces Medical Library*.

It seemed to Rogers that a single list for books and articles would be pref-

erable to separate lists. A single list would be simpler for users, save time, and be more economical for the Library. With much labor and thought on the part of Taine, Rogers, and others, one list of standard headings and subheadings was drawn up for articles and books. Subheadings had been reserved traditionally for indexing articles, but now Rogers decided to use them also in cataloging books. The work was published in 1960 as *National Library of Medicine Medical Subject Headings. Main Headings, Subheadings, and Cross References Used in the Index Medicus and the National Library of Medicine Catalog*, and revisions were issued periodically thereafter.[49]

Bibliographies

The *Index-Catalogue* was replaced, in part, by bibliographies on specific subjects. The first of these was compiled between April and December 1950 by librarians who sifted through myriads of unpublished *Index-Catalogue* cards and other sources to produce *The Pituitary-Adrenocortical Function: ACTH, Cortisone and Related Compounds*, a 366-page volume containing more than 3,400 references. This was followed in 1951 by *Plasma Substitutes; N^{15} in Biological Research; Intravenous Injection of Fats and Oils for Nutritive Purposes; Lower Nephron Nephrosis; Fibrinolysin, Profibrinolysin, and Antifibrinolysin;* in 1952 by *Pathology and Physiology of Burns, 1942–1951; Psychopathology of Aging, Medical Photography and Radiography; Fat Embolism; Bibliography of Military Psychiatry; Gas Gangrene and Gas Gangrene Organisms*, and in subsequent years by many additional bibliographies.

During meetings of the Committee of Consultants for the Study of the Indexes to Medical Literature, Chauncey Leake commented a number of times about the need for the publication of critical reviews of scientific and medical literature, particularly for scientists entering new areas. Scott Adams, the executive secretary of the group, agreed with Leake's reasoning. Later Adams suggested to Director Rogers and Seymour Taine that an index of reviews be started. This led Rogers and Taine to establish the *Bibliography of Medical Reviews* as a by-product of *Current List*. The first annual volume, covering 1955, appeared in March 1956.

A bibliography of a different kind, one that had been wanted for a third of a century, was a catalog of the Library's incunabula.[50] Fielding Garrison, Felix Neumann, Champe McCulloch, Claudius Mayer and others had hoped to do this, but for various reasons had stopped short and published lists.[51]

In 1944 after the History of Medicine Division had been established and Max Fisch had arrived, the idea of bibliography was revived and Fisch started to study and catalog the early printed works. Later that year Dorothy Schullian joined the division and took over the cataloging. Francis Erich Sommer of the John G. White Collection, Cleveland Public Library, was engaged as a consultant to catalog Oriental manuscripts. Sommer, a rare linguist, familiar with 81 or 94 languages, according to different authorities, worked part-time at the branch for 3 years.[52]

In September 1946 Fisch asked Henry Schuman, an antiquarian bookseller and publisher, if he would be interested in bringing the book out. Schuman agreed. Rising costs of printing forced Schuman later to request a subsidy, which the Honorary Consultants provided. *A Catalogue of Incunabula and Manuscripts in the Army Medical Library* by Schullian and Sommer, describing 490 incunabula, 35 early Western manuscripts, and 137 Arabic, Persian, Turkish, Singhalese, and Hebrew manuscripts, appeared in 1950.

Providing Service

The greatest increase in service to readers came about through the use of photography. During 1945 the Library obtained equipment from V-mail surplus and adapted it to produce inexpensive photoprints, 8 inches wide instead of the V-mail 5-inch width. Since these photoprints did not require a viewer, many readers preferred them to microfilm. During 1946 188,000 pages of photoprint were produced; during 1947, 246,000 pages; and during succeeding years larger quantities.[53]

The policy of providing free microfilm was becoming a bit expensive for a library operating on a small budget, and starting on January 1, 1947, civilian customers were charged for film. Atherton Seidell, who was largely responsible for the introduction of microfilming into the Library, tried to persuade Director McNinch to restore free film.[54] McNinch felt that the Library could not afford this, but he compromised with Seidell. Starting in May 1948 the Library presented users with the option of purchasing film or borrowing it for 90 days.

Microfilming proved useful in a variety of ways. Security copies were made of incunabula and of 2 million index cards for future volumes of the *Index-Catalogue*. Positive microfilm copies were made of scarce Russian journals and sold to other medical libraries at cost. Books and journals printed on poor quality, deteriorating paper were filmed for preservation. Service microfilm, from which copies could be produced, was made of frequently used journals in order to reduce wear and tear on the volumes. In conjunction with the State Department and Office of the High Commissioner for Germany, microfilm of medical literature was made for the Institut für Forderung Öffentlichen Angelegenhalten, Frankfurt/Main, Germany, to enable German scientists, students, and libraries to obtain access to medical literature destroyed in the war.

The spectre of copyright restriction, ignored during the war when the Library began to turn out multiple copies of film, now arose. The question as to whether or not the photoduplication of articles was an infringement of copyright and if so how this valuable service could be maintained was debated by librarians here and elsewhere. So many groups were involved—researchers, authors, publishers, students, librarians, professional societies—that the question could not be answered readily, and it continued to be discussed into the future.

An indication of the usefulness of film to patrons may be gained from the quantity produced in 1952, 10 years after Photoduplication Service began, when

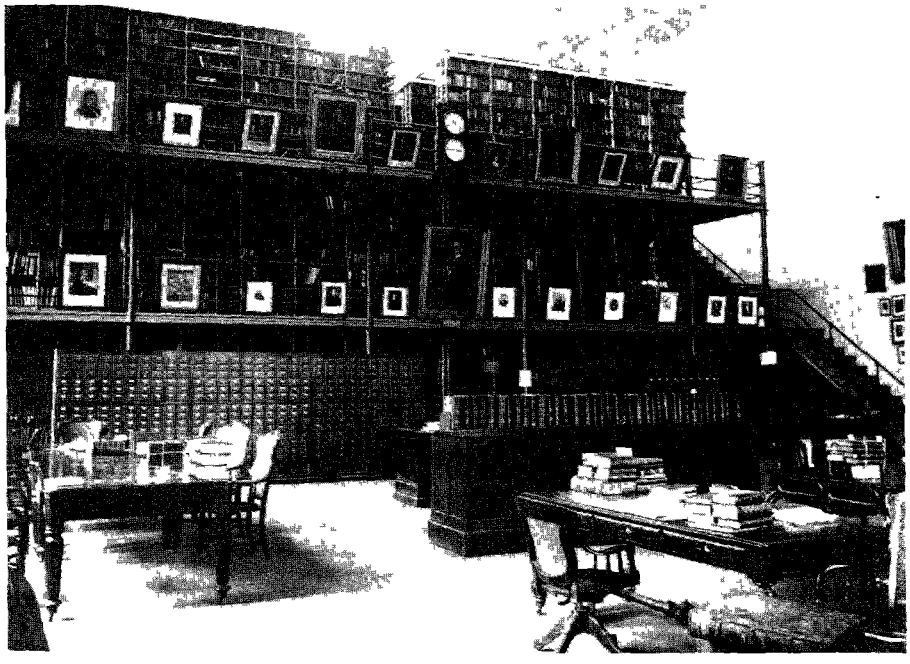
15 persons filled 88,000 orders for 1,431,600 frames of microfilm, 1,164,200 photoprints-photostats, plus other reproductions. Microfilm copying amounted to more than half the use of the Library, local reader use being second, and interlibrary loan of volumes third.

Aside from advances made in photoduplication, regular loans remained an important function. No other medical library made as many interlibrary and individual loans. Volumes were sent to all sections of the country but mainly to the mid-Atlantic and southeastern regions. The majority of loans were made to other government agencies, as the National Institutes of Health and Naval Medical Center. None were made outside of the United States, microfilm being sent instead. Photographs and portraits were also loaned. By 1955, more than 37,000 loans were being made each year.

The number of requests for information increased greatly. During the war many military and civilian scientists had learned that they could depend on the Library for rapid answers to queries and for compiling bibliographies on medical subjects. After these men returned to their peacetime pursuits, they continued to call on the Library for assistance. Back in the 1930's only a fraction of the time of two or three librarians was required to answer a few hundred questions and compile a few dozen bibliographies each year. Now several persons worked full time answering thousands of mail, telephone, and oral queries (11,453 in 1952) and compiling hundreds of bibliographies (475 in 1954) annually. About one-quarter of the questions and one-third the requests for bibliographies came from military personnel, the remainder from civilians. Questions came from every state, from Latin-America, Africa, Asia, Europe, and Australia. Because of the large size and special character of its collections, the Library was frequently the court of last resort, the only place, practically speaking, where certain information was available.

Because of the increase in the size of the staff, the Library was now able to assist other institutions on a larger scale than previously. Estelle Brodman, chief of the Reference Division, advised the National Institutes of Health on the development of its library.[55] M. Ruth MacDonald, chief of the Catalog Division, spent 3 months in Germany in 1952–53 by invitation of the State Department serving as consultant to the new American Memorial Library in Berlin. Rogers assisted in the survey of Department of Commerce libraries for the Secretary of Commerce and in 1954 surveyed Korean medical libraries for the Korean Ministry of Health. Kanardy Taylor consulted with the Post Office Department on its new library. Harold W. Tucker, a reserve officer, came from his position as head of the Gary, Indiana, library system to spend a year and a half at the AML and, with Estelle Brodman, make a detailed survey of the Army Medical Service field libraries. The Library also supervised two branch libraries; one, the Army Surgeon General's Reference Library, the other the Air Force Surgeon General's Library.[56]

The tradition of exhibits dated back to the 1870's, but heretofore they were set up only on special occasions. Now the Library emphasized them. Three



The stack of the reading room, about 1917.
On the left is the first public card catalog On the right series 1 and 2 of the Index-Catalogue *are lined up on a catalog desk.*

types were prepared, one for showing at meetings of medical and library societies, one for medical schools, and one for use in the Library. The first and second types were not successful, and they were discontinued. The frequency of exhibits within the building increased until they were being changed monthly. The latter were usually arranged by a volunteer interested in some special subject [57]

The Association of the Honorary Consultants to the Army Medical Library

During the decade from 1945 to 1955 the Library was aided by two volunteer groups, the first of which was the Association of Honorary Consultants, organized in 1944 The association held its first postwar meeting in October 1945 at the Allen Memorial Medical Library in Cleveland. Thereafter it met every October in Washington at the Library or Walter Reed or a hotel. Between meetings the members were kept informed of events through the monthly *Army Medical Library News,* started in August 1945 by Jones.[58] On January 24, 1947, the members incorporated their organization in the District of Columbia as the "Association of the Honorary Consultants to the Army Medical Library."[59]

A third of a century later the stack end of the reading room looked like this on an average day.

Membership hovered between 90 and 100, the latter number being the maximum set by Jones. A few members died each year and were replaced by new members nominated by the Library Director and appointed by the Surgeon General.

In the association were members of the Committee on Medical Research of the National Research Council. There were members who had been associated with other research organizations. These persons had become conscious of the deficiencies in the Library through its inadequate response to requests for literature during the war, and when they became consultants they supported wholeheartedly the implementation of the survey report by Librarians Jones and McNinch.

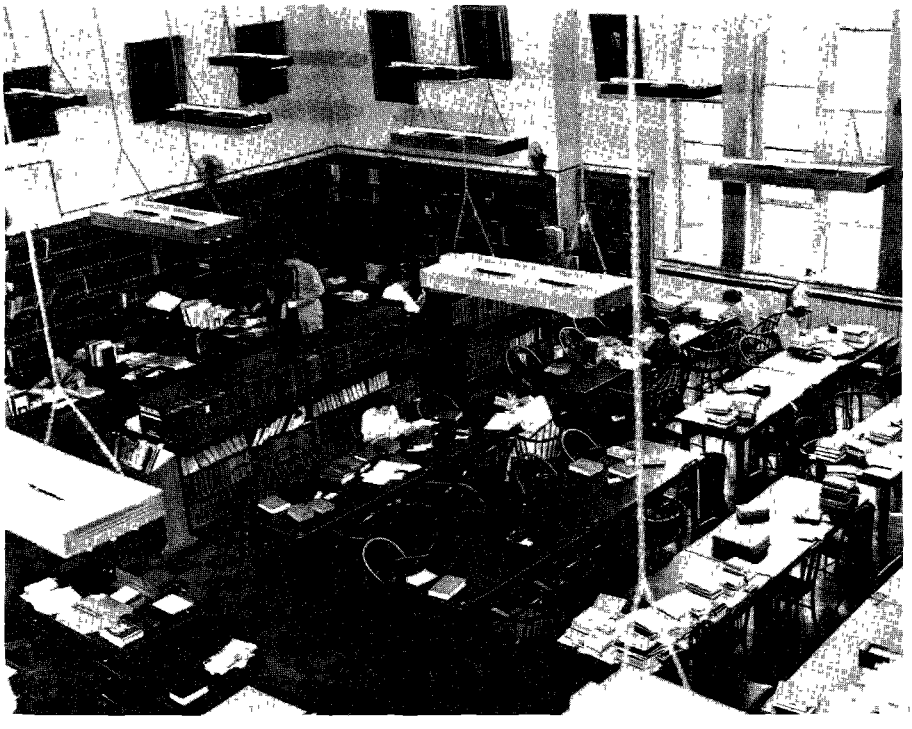
Most of the deliberations went on in standing committees, of which there were five; executive, building, endowments and grants, acquisitions, and history of medicine. A temporary committee existed in 1945 to explore the possibility of starting a journal or annual for scholarly articles written by employees. The acquisitions and the history of medicine committees met periodically with appropriate Library employees for briefings. The endowment and grants committee had two goals: one, to persuade individuals, firms, and societies to

The window end of the reading room, about 1917, photographed from the left end of the card catalog. On the left are exhibit cases. At the center left is the back of the catalog desk.

present gifts to the Library; two, to obtain money to pay the expenses of the Association of the Honorary Consultants. They succeeded in obtaining funds from a few firms (Sharp-Dohme, Ciba) and individuals (Chauncey Leake, John Fulton, among others), and one association (American Pharmaceutical Convention). The building committee kept abreast of the deliberations going on in the Army over the site and legislation for the proposed building. Some consultants, acting individually, pressed officials, legislators, and Medical Department advisors to provide funds for the building.

In the early 1950's when the Defense Department began the slow process of transmuting the Army Medical Library into the Armed Forces Medical Library, it signaled the end of the Honorary Consultants. Having been appointed by the Army Surgeon General, they could not appropriately represent a library in the charge of three Surgeons General. The executive committee of the consultants took steps to disband their group. The U.S. District Court of the District of Columbia issued a decree on December 9, 1952, dissolving the corporation.

During its 8 years of existence the Honorary Consultants assisted the Library in several ways: paying a debt of approximately $400 owed by *Current List* in 1945 (the *List,* at that time, was still being financed by the old Friends organization); paying costs of printing the *Army Medical Library News* from November 1945 onward; publishing *Proceedings* of their meetings in pamphlets and in the *Bulletin of the Medical Library Association;* and encouraging and subsidizing publication of the important *Catalogue of Incunabula and Manu-*



The window end of the reading room photographed a third of a century later.

scripts in the Army Medical Library, by Dorothy M. Schullian and Francis E. Sommer in 1950. They contributed in an intangible way by giving employees recognition for good work, encouraging employees to progress, and by influencing military officers, civilian officials, and legislators to upgrade the institution.

Friends of the Armed Forces Medical Library

Before the consultants disbanded, Rogers planned the formation of a new volunteer organization to be called the Friends of the Armed Forces Medical Library in imitation of the Friends group that had existed from 1940 to 1945. The Friends would be open to anyone in contrast to the consultants, membership in which had been by invitation from the Surgeon General.[60]

Rogers made arrangements for a combined dinner-organization meeting of potential members at the Willard Hotel, October 24, 1952. Through Wilbur Davison, president of the Honorary Consultants, Rogers invited former consultants and other persons to attend. Thirty-five men and women showed up. Davison, presiding temporarily, explained the reasons for ending the consultants and beginning the Friends. Copies of a proposed constitution and bylaws,

prepared by Rogers, were discussed, modified and adopted, officers were elected, Rogers talked for a few minutes, and the Friends were in business.

Secretary Robert Stecher sent letters to librarians and physicians, inviting them to join the group. Within a few months 200 persons had become members. The organization held a business-dinner meeting once a year in Washington. The executive committee met occasionally when necessary. Members were kept informed of events through the monthly *Armed Forces Medical Library News*.

Money came into the treasury from dues ($2 a year), gifts, and dinner meeting tickets. It was used to pay the cost of dinner meetings, postage and other administrative costs, printing the *AFML News*, and a few other expenses. The latter included $55 to reimburse Seymour Taine for materials to build two boards used in pasting up *Current List*, thereby saving the Library approximately $1,000 the boards would have cost from a manufacturer.

In 1956 Rogers, through chairman Benjamin Spector, sent to a number of the Friends copies of the Hill-Kennedy bill to transform the AFML into a National Library of Medicine. He also sent speeches, editorials, and other information, and asked members to use their influence with journals, newspapers, and legislators to support the bill. After the Hill-Kennedy measure became law, Rogers recommended that the Friends disband. The executive committee obtained the assent of the approximately 300 members by a mail poll. On December 10, 1956, the committee met at Welch Library, transferred $767.35 remaining in the treasury to the Director of the AFML for whatever purpose he saw fit, and the Friends ended.

The time from 1942 to 1956 was a transition period in the life of the Library, perhaps the most momentous period since it moved out of Ford's Theatre in 1887. During these years the "ownership" of the Library passed from military to civilian control. The Library expanded from half of a building into the whole building and portions of other buildings. A new home, desired since World War I, was close to reality.

The *Index-Catalogue* was discontinued and replaced by other finding aids. Through a committee of consultants the Library began to determine systematically what, how much, in what way it should index, and in what form it should provide indexes to the public. Through a contractor it started to determine the possibility of using machines to assist in the preparation of indexes.

A new classification was devised and the publications recataloged. A new public card catalog and an annual printed author catalog were provided for readers. The scope and coverage of the Library was defined for the first time. Early publications were segregated into a History of Medicine Division. The "art" collection was revitalized. The collecting of documentary medical moving picture films was begun.

In 1956 the staff was more than six times larger than in 1942, the number

of acquisitions more than ten times, the funds spent for publications almost four times, the amount of binding two times, circulation within the library several times, exchanges many times, and photoduplication thousands of times At no time since the early Billings era were the changes in the Library so large and significant

Notes

[1] H W Jones, Report of an interview with the Surgeon General, Major Norman T Kirk, 7 Dec 1946 MS/C/148

[2] Biographical information on Gardner may be found in *Army Register*, Edgar E Hume, *Ornithologists of the United States Army Medical Corps* (1942), pp 150–160, with port , directories of the American Medical Association Information was also provided by Johns Hopkins University

[3] During Gardner's term he gained the impression that the title "Director," used in the Library since July 1944, was being restricted to chiefs of certain War Department staff divisions, and he requested the Surgeon General to change his title to "Commandant " This was done on Nov 14, 1946, by Army Regulation 40–405 The title was used for only a few months before being changed back to Director

[4] Information on the disagreements between the Director and the Librarian may be found in Records of the Honorary Consultants, MS/C/148, letter, Wyllis Wright to Wyndham Miles, Feb 1, 1979, NLM, recorded autobiography of Maj Gen Joseph H McNinch, Nov 30, 1976, NLM, W Wright, Report on the progress of the survey recommendations, pp 9–10, file Survey Library MS/C/309, Scott Adams, Tape-recorded autobiography , July 18, 1979, NLM

[5] McNinch felt that the title "Commandant" was not appropriate for the head of the Library and he requested the Surgeon General to change it back to Director (memo, McNinch to Surgeon General, June 2, 1947, file Directorship, MS/C/309) The Surgeon General obliged on July 3, 1947 (change 1 to Army Regulation 40–405, July 3, 1947)

The Historical Division, SGO, was transferred to the Library's Table of Organization in January 1947 but remained in the Pentagon It was transferred to Walter Reed Hospital on Dec 1, 1951

McNinch was designated Commandant of the AML pursuant to letter from the Adjutant's Office, Dec 23, 1946

[6] Letter, Wright to Wyndham Miles, Feb 1, 1979, Scott Adams, Tape-recorded autobiography , July 18, 1979 NLM

[7] Notes by McNinch, May 1979 NLM

[8] Memo, McNinch to the Surgeon General sub final report on administration of the Army Medical Library, Aug 26, 1947, with attached correspondence file AML September 1947 MS/C/205

[9] Notes by McNinch, May 1979 NLM

[10] Biographical information on McNinch may be found in *Army Register*, *Who's Who in America*, and tape recorded autobiography, November 1976 NLM

[11] Among the members of the Committee were J H McNinch, H W Jones, and Luther Evans

[12] Rogers was a major when he entered on duty at the Library, and reached the rank of colonel He resigned, effective July 31, 1960, and on Aug 1 became a member of the Public Health Service with rank of medical director

[13] Tape-recorded autobiography of Kanardy Taylor NLM

Kanardy Leslie Taylor, born in Peoria, Ill , 1910, attended Eureka College, University of Illinois Library School and University of Chicago Graduate Library School From 1934 he rose through successive positions of responsibility in Illinois State and John Crerar libraries and came to AML as assistant to the Director, Oct 1, 1950 His title was changed to Librarian in 1951 After leaving AML in 1956 he was with the Northwestern, Air University, and DHEW libraries, retiring from the latter as Department Librarian in 1973 He was an officer in several professional societies, and wrote a number of articles and chapters on library matters See biographical data in Manuscript Collection and tape-recorded autobiography of Taylor

[14] Biographical information may be found in tape-recorded autobiography of Rogers, 1977 NLM

[15] Information on acquisitions may be found in annual reports of the Library, *Army Medical Library News*, files IDC on Acquisition of Foreign Publications, Acquisition Division F Y Activities, Acquisition Division Procurement, Disposition of Publications, MS/C/301, S Adams, "Sources of Acquisitions," *Bull Med Lib Assoc* 36 178–83 (1948), S Lazerow, "The

National Medical Library Acquisition Program," *Bull Med Lib Assoc* 42 427–53 (1954), records Hon Consultants, MS/C/148 Scott Adams, Tape-recorded autobiography July 1979 NLM

[16] Letter, Surg Gen N Kirk to Eileen Cunningham, Feb 14, 1946 file Other Medical Libraries MS/C/309

[17] Letter, McNinch to Chief, Public Health and Welfare Section, Supreme Commander for the Allied Powers, sub Army Medical Library Mission to Japan, Mar 3, 1948, file Activities of AML MS/C/309

[18] Wilson, 1884–1963, attended Western Reserve (A B), Northwestern (A M), Garrett Biblical Inst (S T B), and Harvard (S T M , Ph D) He taught Greek at Iowa Wesleyan, Greek and Latin at College of the Pacific, English at East Washington College of Education From 1927 to 1929 he studied Greek manuscripts in Europe At Library of Congress, 1929–1941, he directed the compilation of *Catalog of Latin Vernacular and Alchemical Manuscripts in the United States and Canada,* supervised the *Annotated Bibliography of American History,* and collaborated with de Ricci During World War II he was a historian in the Office of Price Administration He was chief of HMD from June 13, 1947, to Aug 31, 1954 For an obituary see *Library of Congress Information Bulletin,* 22 no 42, 565–6, Oct 21, 1963 Appreciative remarks about Wilson and a characterization of him by F B Rogers, Director of the Library, are in taped autobiography of Rogers NLM

An Army officer who made the annual inspection of the History of Medicine Division in 1950 recommended that all volumes published before 1925 be microfilmed, the microfilm be retained by the Library, and the original volumes sold "since, reportedly, the subject matter held thereby has found little practical use by Department of the Army personnel " Wilson suggested humorously that by the same reasoning the United States could sell for fabulous sums the originals of the Declaration of Independence and Constitution See report of the U S Army Inspector General, 1950 NLM

[19] File HMD Fiscal Year Activities, MS/C/309, annual reports of the Library, Wilson, "Historical Libraries, New Style," *College Research Libraries,* 54–68 (1950), "A Plan for a Comprehensive Medico-Historical Library," *Lib Quart* 21 248–65 (1951), "Plans for Collecting 16th Century Sources," *Bull Med Lib Assoc* 39 110–7 (1951)

[20] Wilson, "The Bookbuyer and the Catalog of Holdings," *Bull Med Lib Assoc* 42 10–14 (1954), "Bookbuying with a Portable Catalog," *Armed Forces Med Lib News* 8 1–4 (Aug 1953), annual reports of the Library

[21] Information on the prints and portraits collection may be found in annual reports of the Library, *Army Medical Library News,* records in the collection, Helen H Campbell, "The Picture Collection in the Army Medical Library," *Bull Med Lib Assoc* 37 52–8 (1949), M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952,' *J Cataloging Classification* 9 69–75 (1953)

[22] For information on the bindery during this period see annual reports of the Library particularly 1955, pp 44–49, *Proceedings* of the Honorary Consultants, *Army Medical Library News,* file HMD F Y Activities MS/C/309

[23] For binding during the postwar period see M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952," *J Cataloging Classification* 9 58–78 (1953), annual reports of the Library, *Army Medical Library News* Catalog Div F Y act , MS/C/309

[24] Information on scope and coverage may be found in Army Medical Library, Policy on Scope and Coverage, (processed), 1951, and subsequent published editions, copies in Archival Coll , J Groesbeck, "Some Problems of Scope and Coverage," *Bull Med Lib Assoc* 38 97–101 (1950), Acquisition Policy of the National Library of Medicine, proceedings of a symposium held 12 April 1956, (processed) 1957, copy in Archival Coll , file, Acquisition Division F Y Activities, MS/C/309, S Lazerow, "The National Medical Library Acquisition Program," *Bull Med Lib Assoc* 42 447–53 (1954), S Adams, "Weeding as an Art," *Bull Med Lib Assoc* 42 30–1 (1954)

[25] Memo, Rogers to Brodman, et al , Nov 17, 1947, establishing a Committee on Scope copy in Report of Comm , Oct 20, 1950, in Arch Coll

[26] Titles of books withdrawn from the collections may be found in a series of drawers labeled "Withdrawal file" in the public card catalog Unfortunately in the 1950's some volumes on science were withdrawn from the main collection without consultation with the History of Medicine Division, then located temporarily in Cleveland HMD wishes those volumes were still in the Library

[27] Letter, E Brodman to W Miles, Mar 6, 1979 NLM

[28] Inforamtion on shelf-listing may be found in file Catalog Div F Y Activities, and other files in MS/C/309, M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952," *J Cataloging Classification* 9 58–78 (1953)

[29] On the committee at various times were

Keyes Metcalf, Andrew Osborn, Janet Doe, Mary Louise Marshall, Francis R St John, Helen Norris, Herman Henkle, David Haykin, Wyllis Wright, M Ruth MacDonald, and M Irene Jones

Information on the development of the classification may be found in annual report of Library activities for 1945, p 44–45, file Consolidated FY Activities and other files in MS/C/309 preface to Army Medical Library Classification, hectograph edition, 1946 preface to Calssification, preliminary edition, 1948 M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952," *J Cataloging Classification* 9 58–78 (1953), E R Hasting, "Use of Serial Shelving Numbers in the National Library of Medicine," *Lib Resources Tech Services* 3 62–63 (1959), M F Tauber, Report on the recataloging program of the Army Medical Library, June 1949, MS/C/186, M Irene Jones, "The Army Medical Library Classification," *Proceedings Fourth Annual Meeting of the Association of Honorary Consultants*, 1947, pp 45–47

A copy of the classification in each stage of development, and a copy of each published edition, is in the Archival Collection

[30] Information on cataloging may be found in M F Tauber, Report on the recataloging program of the Army Medical Library, June 1949, MS/C/186, file Catalog Division F Y Activities, MS/C/309, F B Rogers, "Cataloging and Classification at the Army Medical Library," *Bull Med Lib Assoc* 39 28–33 (1951), M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952," *J Cataloging Classification* 9 58–78 (1953), *Army Medical Library News*

[31] The Army Medical Library Classifiction an Informational Outline (Distributed by Special Service, Library Service, VA, Mar 1947) 15 p Copy in Archival Collection

[32] The progress of recataloging may be followed by reference to annual reports of the Library, 1950's and 1960's

[33] Information on the cooperation between AML and LC may be found in introduction to *Armed Forces Medical Library Catalog, 1950–54*, vol 1, Authors, *Army Medical Library News*, M R MacDonald, "The Army Medical Library Author Catalog, 1950," *Bull Med Lib Assoc* 39 102–4 (1950), F B Rogers, "Cataloging and Classification at the Army Medical Library," *Bull Med Lib Assoc* 39 28–33 (1951)

[34] The Superintendent of Documents sold volumes for $4 25 Therefore the government subsidized each volume by $170

[35] Surg Gen Bliss appointed this committee on July 7, 1948

The minutes of the committee with related documents and a photo of the members is in the Archival Collection, NLM

Members of the committee at various times were Lewis H Weed (first chairman), Chauncey Leake (chairman), John Fulton, Sanford Larkey, William S Middleton, Ebbe C Hoff, Eugene W Scott, Mortimer Taube, Ralph Shaw, Janet Doe, Basil G Bibby, Verner W Clapp, Morris Fishbein, David E Price, Austin Smith, Joseph McNinch, Frank B Rogers

[36] The original contract, with extensions ran from Nov 1, 1948, to Jan 31, 1951 The second contract ran from Feb 1, 1951, thru Sept 30, 1953 Reports of the work done under contract by the Larkey group are in the Archival Collection

Members of the research group were Sanford Larkey, Wilhamina A Himwich, Eugene E Garfield, Helen G Field, John M Whittock, Jr

The research group assisting the Committee of Consultants on the Study of Indexes experimented with the production of subject heading lists using sorters, collators, and other business machines with punched cards The group developed the idea of sorting headings into categories The ability to manipulate cards and make lists of various categories for study turned out to be a fruitful way of producing a subject heading authority list The method was used later to produce the categories in *Index Medicus* In the estimation of Frank B Rogers, the Director at that time, this was the most important contribution of the group (Frank Rogers Tape-recorded comments on Index Committee May 24, 1979)

[37] Memo, McNinch to committee chairman, Oct 20, 1949, in minutes Indexing Committee p 121–123 Rogers statement in minutes, p 124–139

Information on the production of the *Index-Catalogue* during this period may be found in files including Index-Catalogue Div F Y Activities, in MS/C/309, annual reports of the Library

[38] Minutes, pp 217–220, 229–232

[39] Excerpts from these letters are in minutes, pp 257–264

[40] See, for example F B Rogers, Scott Adams, "The Army Medical Library's Publication Program," *Texas Rpts Biol Med* 8 271–300 (1950)

[41] Claudius Mayer, editor of the *Catalogue* from vol 10, 3 series, 1932, up to this time, left the Library on Sept 10, 1954 His arguments for the continued publication of *Index-Catalogue* are in MS/C/42

[42] The printing of series 5 is discussed in annual reports of the Library, 1960, 1961

[43] Editors of the *List* were Ignatius McGuire, who had been head indexer for *Index-Catalogue*, August 1945 until his resignation from the Library, Oct 31, 1947, Mildred Kuch, a librarian of long experience who came from the Department of Commerce, from November 1947 until her death on Jan 7, 1949, Seymour Taine, acting editor, August–October 1950, editor October 1950 to 1959

Information on the *List* may be found in annual reports of the Library, records Hon Consultants, records Advisory Group, *Current List*, covers, files in MS/C/309, minutes of the Committee to Study the Indexing Requirements of the Army Medical Library, S I Taine, "New Program for Indexing at the National Library of Medicine," *Bull Med Lib Assoc* 47 117–123 (1959) F B Rogers, S Adams, "The Army Medical Library's Publication Program," *Texas Rpts Biol Med* 8 271–300 (1950)

[44] Helen Bayne, New York University Bellevue Medical School, and Mary Louise Marshall, Tulane University Medical School, compiled the May, June 1948 indexes

[45] Seymour Irving Taine, A B , B S , began his library career at University of California, Berkeley after serving in the Army during World War II He came to NLM in 1949, edited *Current List, Bibliography of Medical Reviews*, and *Index Medicus*, and occupied several responsible positions In 1964 he went to NSF, then to WHO, NASA, NIH, NLM, and finally in 1973 to WHO as chief librarian and chief, Office of Library and Health Literature Services He wrote many articles and in 1962 received the Ida and George Eliot Prize

[46] Information on the Authority List may be found in S Taine, "Notes on the Subject Approach to Medical Periodical Literature," *Bull Med Lib Assoc* 39 118–21 (1951), F B Rogers, "Report from the Army Medical Library," same, 290–4, S Taine, "The Subject Heading Authority List of the Current List of Medical Literature " same, 41, 41–3 (1953), M R MacDonald, "Cataloging at the Armed Forces Medical Library, 1945–1952," *J Cataloging Classification* 9 58–78 (1953), Minutes of symposium on medical subject headings, in file Activities of AML, MS/C/309, file Catalog Div F Y Activities, MS/C/309 minutes of Committee of Consultants for the Study of Indexes to Medical Literature, records AFML Advisory Group, Frank B Rogers, Tape-recorded comments on Index Committee, Welch Medical Library Research May 24, 1979 NLM

[47] Articles by Sanford Larkey, David Haykin, Janet Doe, Claudius Mayer, and Estelle Brodman, *Bull Med Lib Assoc* 36 69–107 (1948)

[48] For the change in *Current List* see later in this chapter

[49] Preface to *National Library of Medicine Medical Subject Headings* (1960)

[50] Information on incunabula may be found in records Hon Consultants, correspondence of F H Garrison, MS/C/166, files including Incunabula Catalogue, HMD FY Activities, in MS/C/309, correspondence of Osler, Klebs, Schullian, Schuman, Fulton and others, 1915–1958, at NLM

[51] *Ann Med Hist* 1 301–15 (1917), *Bull N Y Acad Med* 6 365–453 (1930), *Index-Catalogue* 3 s , 10, pp 1415–36, (1932)

[52] Sommer was born in Germany in 1890 He was precocious with languages, inventing an "Indian" play language when he was a boy He learned Persian while he was an adolescent and picked up Sanskrit and Swedish during school vacations An import-export firm in Antwerp, consulates in Russia, and the Red Cross utilized his linguistic talents In 1922 he and his wife came to the United States, and in 1926 he found his true home in the John G White Collection, Cleveland Public Library, where he remained until 1965 One account credited him with knowing 94 languages Another with speaking 14 fluently, reading 22 easily, and having a working knowledge of 45 others He wrote an occasional article or note, and several pamphlets on the learning of Russian, Arabic, German, and Chinese Sommer died Dec 6, 1978 See clippings, other documents, and obituary in Cleveland *Plain Dealer*, Dec 9, 1978, in NLM

[53] Information on service may be found in annual reports of the Library, *Army Medical Library News, Army Medical Library Bulletin*, files on Exhibits, Translation, Reference Service, Photoduplication Service, and other topics in MS/C/309, records Hon Consultants, records Advisory Group, Eleanor Coffyn, "Medicine's 'Information Please!'," *Proceedings Fourth Annual Meeting of the Honorary Consultants* 1947, pp 39–44

[54] When McNinch arrived at the Library to assume the post of Librarian in January 1947, his first visitor was Seidell campaigning for free film Later, Seidell tried to persuade the AFML Advisory Group to sanction free film see Seidell's Memorandum on the Role of Microfilm Copying in the Armed Forces Medical Library [1952], in Proc U S A F M L Advisory Group

[55] Brodman, Survey of National Institutes of Health Library, Bethesda, Md (processed), 1951

Estelle Brodman, born in New York, June 1, 1914, received her B A degree from Cornell,

B S , M S , and Ph D from Columbia, and honorary D Sc from Illinois She began her library career at Cornell and then moved to Columbia, where she was an instructor of Frank B Rogers, at whose invitation she left New York and came to the National Library of Medicine as head of the Reference Division From 1960 to 1961 she was also associate director for extramural planning Brodman left NLM to become librarian and professor of medical history at Washington University School of Medicine in 1961 She also taught at Catholic University, Keio University in Tokyo, and University of Missouri She has served on several commissions, held office in societies, been president of the Medical Library Association, and was a member of the President s National Advisory Commission on Libraries She has written two books, many articles, and received the Marcia C Noyes Award for Distinguished Librarianship and the Murray Gottlieb Award for Medical History A curriculum vitae, other biographical information, and a tape recorded interview with Brodman are in HMD

[56] The Army Surgeon General's Reference Library was set up during World War II Estelle Brodman described it thus "It was staffed by an old lady who had been mailroom clerk when she was put in charge of the collection (which was housed in whatever building the Surgeon-General's office was placed at the time) consequently the catalog was of an individualistic nature, to say the least, the collection was haphazard and unbalanced, the systems for circulation or fiscal accounting of the most primitive nature The Library was placed under the Army Medical Library [in the spring of 1947] a year or two before I came to Washington and until the old lady retired (about 1950 or so) was only handled by weekly visits from the Chief of the Reference Division or someone designated by her as liaison, and by sending over duplicates of some medical books received at the main AML When the old 'librarian' retired a regular librarian from the AML was assigned to the SGO Library and a real reorganization took place The scope of the collection was changed to fit the needs of the officers at the SGO, books were purchased without regard to the main AML collection but cataloged by the Catalog Division at NLM Gradually, especially under Mary Alice Jackson, a very nice, small medical library which gave good service amid comfortable surroundings evolved When AML became the NLM, control of that library was, of course returned to the Army " (letter, Brodman to W Miles, April 12, 1979 NLM)

The Air Force Surgeon General's Library was started and a librarian, Jacqueline L Chambers, supplied by the AML in June 1950 This branch library was housed in the Pentagon It was transferred from the Library to the Air Force on July 1, 1953

[57] Annual reports of the Library contain lists of the exhibits Programs of some exhibits are in the Archival Collection

[58] This publication was first titled the *Army Medical Library Newsletter* and was mimeographed on cheap, poor quality paper In November 1945 the title was changed to *Army Medical Library News* and was printed on better paper

[59] Correspondence, minutes of meetings, legal documents, and other records of the consultants are in MS/C/148 Information is also in the *AML News*, 1945–1952, and in the annual *Proceedings* of the association Several of the proceedings were published in *Bulletin of the Medical Library Association*, two were published as pamphlets, and one was issued as a typescript Articles by staff members and much information about the Library is tucked away in the proceedings Complete bound volumes of the *News* and *Proceedings* are in the Archival Collection

Officers of the consultants were president, John Fulton, 1944–46, Chauncey Leak, 1947–49, Wilbur Davison, 1950–52, vice president, Leake, 1944–46, Davison, 1946–49, Henry Viets 1950–52, secretary/treasurer, Harold Jones, 1944–47, treasurer, Jones, 1948–49, Robert Stecher, 1950–52, secretary, Joseph McNinch, 1948–49, Thomas Keyes, 1950–52, executive committee, Clyde Cummer, Wilbur Davison, Morris Fishbein, Viets, Stecher, George Lull, Reginald Fitz, at various times Lists of members are in the *Proceedings* for 1944, 1945, 1948, 1949

[60] Information on the Friends may be found in records of the organization, MS/C/158, and in the *Armed Forces Medical Library News*, financed by the Friends

Officers of the Friends were chairman pro tem, Wilbur Davison, 1952, chairman, Henry Viets, 1952–54, Benjamin Spector, 1954–56, secretary/treasurer, Robert Stecher, 1952–54, Mrs Breed Robinson, 1954–56, executive committee, Edward Cushing, E B Krumbhaar, Atherton Seidell, 1952–54, Sanford Larkey, Tom Jones, Henry Viets, 1954–56

XIX

The Army Medical Library Becomes the National Library of Medicine

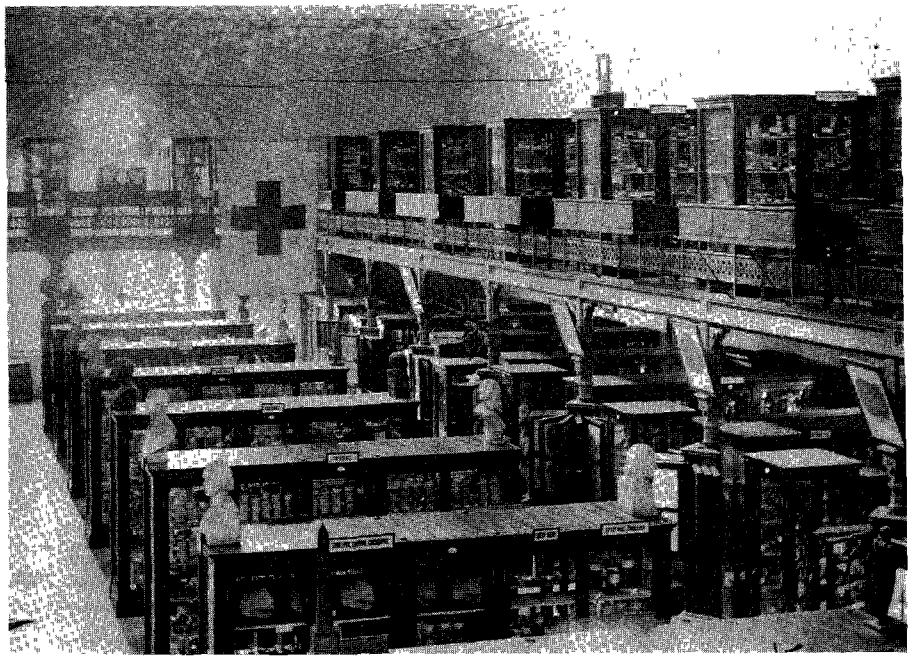
The Museum Moves and the Library Occupies the Entire Building

By 1945 the Library had been divided among four buildings; the main building, Fisheries Building, Fisheries Annex, and Allen Library in Cleveland. In the autumn of that year it seemed, for a time, that the Cleveland volumes could be brought back to Washington. The Librarian of Congress consented to house the material in the LC Annex for 5 years (when, it was assumed, a new AML building would be ready) if the Army Library would erect steel shelves in an empty annex deck. But the Architect of the Capitol ruled that the War Department did not have authority to pay for the stacks, the Library of Congress had no money to purchase them, so the annex space remained empty and the volumes remained in Cleveland.[1]

By 1947 the main building was again bulging with publications. This time space was obtained from the Library's old partner the museum, which the Medical Department moved temporarily into Chase Hall, a wartime barracks nearby on Independence Avenue. The Museum's offspring, the Armed Forces Institute of Pathology, continued to occupy a portion of the building for several years, but the Library now had room to expand. Director McNinch had the walls of Museum Hall painted, shelves erected, and then moved the Acquisition, Catalog, and Index-Catalogue Divisions into the area. Documents were moved from Fisheries Annex onto the Museum Hall balcony, and other collections were shifted around.

In the autumn of 1948 the Library was permitted to use part of Tampa Hall, a temporary wartime structure across the street at 7th Street and Independence Avenue. Tampa's basement floor was concrete and could bear the weight of stacks, but the first and second floors were wooden and not designed to carry heavy loads. Book cases were placed around the perimeter of the rooms where the supports were strongest, but the floors shook when librarians walked. The flammability of the building also caused uneasiness.

Another crisis over space was averted in 1950 when Cleveland Medical Library Association consented to extend for 5 years the lease on the rooms



Old photograph of Museum Hall, crammed with exhibits of the Army Medical Museum.

occupied by the History of Medicine Division. But soon HMD became oversaturated as Director Rogers shipped 20,000 monographs of the 1801–1850 period to Cleveland in order to reduce overcrowding in the main building. To make a place for the arrivals HMD withdrew more than 10,000 out-of-scope U.S. government documents from its collection and returned them to the issuing agencies or the United States Book Exchange. It also moved about 15,000 little-used items into a warehouse. When the second lease expired it was renewed for 5 more years by the library association.

In 1952 government housing officials decided to move the National Park Service into Fisheries Annex and recompense the Library by permitting it to use Escanaba Hall, a temporary building at 9th and Independence. Collections had to be rearranged, some volumes being sent from Fisheries to Cleveland, some to Tampa Hall, and the 1850–1920 volumes to Escanaba Hall. Escanaba, like Tampa, was liable to the risks of fire, floor overloading, and poor security, but the Library utilized every bit of space and managed to shelve more than 110,000 volumes in the structure.

Lack of space for publications, librarians, and readers was not the only thing wrong with the main building. Parts of the structure were wearing out, some from age and some from lack of proper maintenance, the latter resulting from insufficient appropriations. During heavy rain, water came in around windows,

Museum Hall about 1948, after the Museum had moved out and the catalog, acquisition, and index-catalogue divisions of the Library had moved in.

accumulated in puddles on the floor, and caused paint to peel off the walls. It leaked through the skylights in Library Hall and dripped into wastebaskets and buckets placed around the floor and on tables. Tarpaulins had to be thrown over catalog cases, desks, and card files had to be moved, work was disrupted, and books and journals were damaged. Each range of stacks was protected by a roof of copper so that water leaking through the skylights would land on the roofs and run off onto the aisles instead of dripping on books.

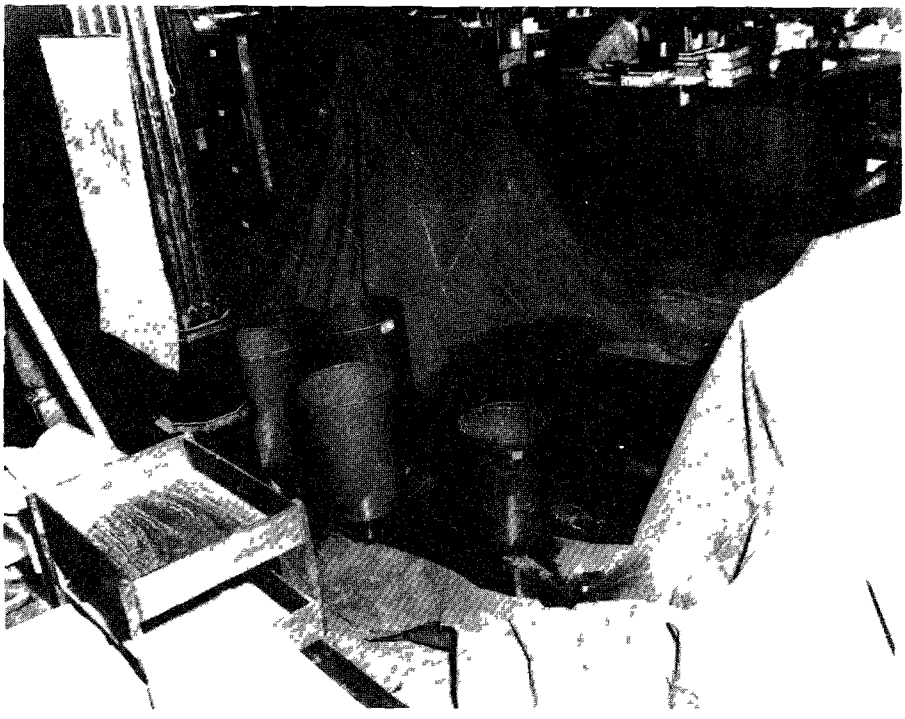
A drain in the concrete basement floor, over which a wooden floor had been laid, became clogged. Water 2 feet deep collected under the floor providing a breeding place for insects. Joists rotted until some 2 by 10's were reduced to 2 by 4's. The floor settled almost 2 inches before the damage was discovered and rectified.[2]

A downspout enclosed in the front wall corroded, allowing water to seep through the wall and raise and rot the floor in the Librarian's office. Finally all the downspouts in the walls had to be capped and replaced by exterior downspouts.

Certain renovations were desirable to improve the original characteristics of the building. The ceiling of Library Hall was 47 feet high; therefore the

room was drafty and practically impossible to heat comfortably in the winter, although additional radiators were installed Conversely, some rooms and stack areas became unbearably warm and humid in the summer A few exhaust fans and window type air conditioners were installed in the 1950's

Originally there was no way to move books from the third or second tier of stacks to the main floor of Library Hall except by carrying them or using a small hand-pulled dumbwaiter There was no way of moving book trucks from one floor to another. Volumes had to be carried up or downstairs from rooms or tiers to the interlibrary loan office, photoduplication office, loan desk, or other locations. The large increase in service rendered by the Library during the war made the slow movement of publications by manpower intolerable As soon as conditions permitted, in the autumn of 1945 Director Gardner requested that an electric elevator be installed in the stack area A short time later he asked that it be run to the basement where publications were received and dispatched. Not only would an elevator speed all services, but it would pay for itself in decreased personnel costs in a few years After much discussion at various levels within the Public Buildings Administration, the Military District of Washington, and the Corps of Engineers over the expense of the elevator



Waste paper baskets and tarpaulins catching water leaking through the roof after a heavy rain on the night of March 25, 1953

and the limited life of the old building, in the spring of 1946 the Library was promised an electrically controlled dumbwaiter and a new stairway. This did not satisfy the next Director, McNinch, and he renewed the pleas for an elevator. Permission was finally granted in 1947 and the elevator erected against the outer wall of Library Hall in 1948.[3]

The original gas lights had given way long ago to electric lights, but the combination of electric and natural lighting was not adequate in many areas. Flashlights were still used in the stacks in Library Hall until fluorescent lamps were installed. Desk lamps finally arrived in the 1950's.

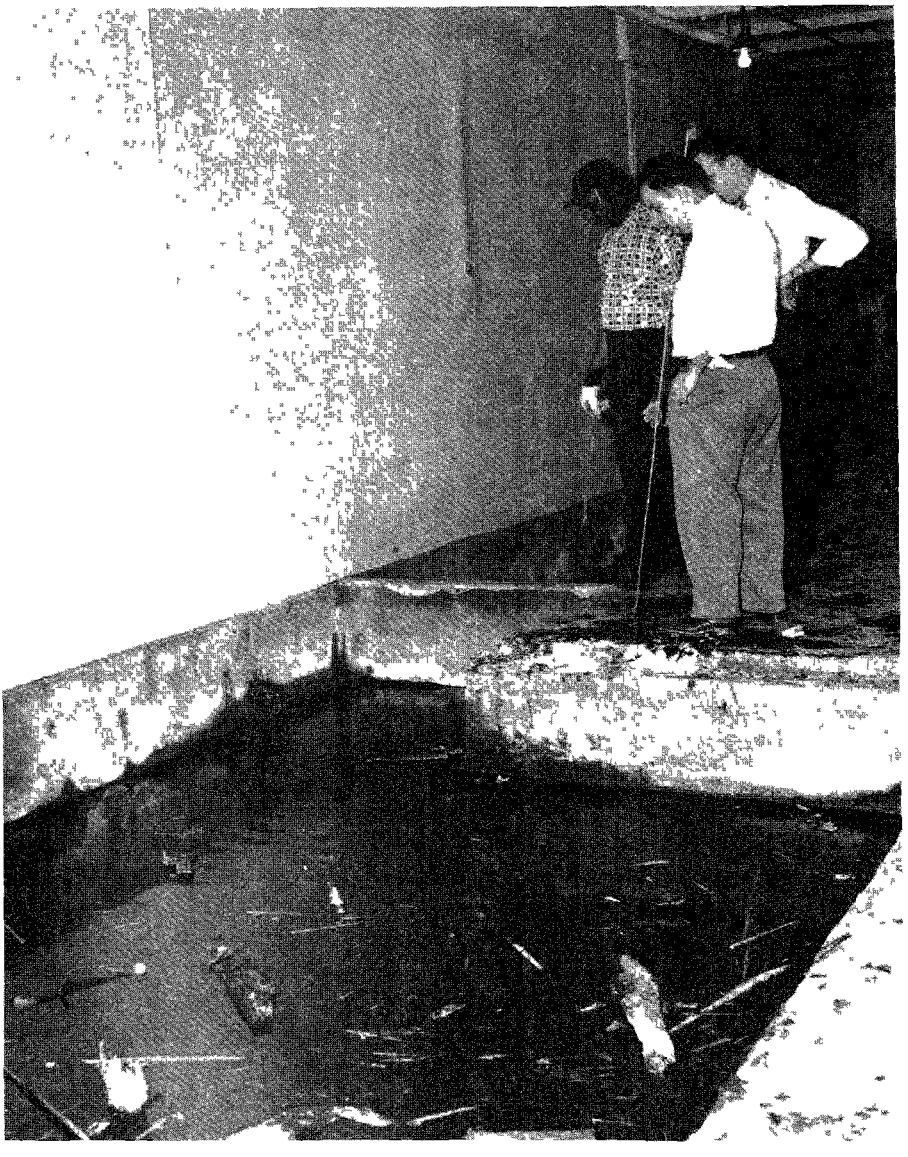
The building did not have a canteen or cafeteria. This was not owing to a gap in the original plans, for in the 1880's such facilities had not been placed in public buildings. Later, the interior became so crowded that no space could be spared for dining. The first canteen, operated by the Washington Society for the Blind, was installed in a small open space at the foot of the cellar stairs in 1948.

The Library had the dubious distinction of being the only Federal building in Washington with an outhouse. In Billings' day it may have been thought desirable to place toilet facilities in a separate building but it was inconvenient, particularly in the winter. Toilet facilities were installed on the third floor of the main building in 1950, but the outhouse remained in use as long as the Library remained.

In 1951 Congress appropriated funds to construct a building for the Armed Forces Institute of Pathology, which had remained when the museum departed. The Institute forecasted that it would move during the summer of 1954 and promised to bequeath all of its space in the old building to the Library. The Institute underestimated by only one-half year and started to transfer its equipment and furniture to its new building in February 1955.

As the Institute departed Rogers began to have the entire structure renovated. Following a plan that had taken a year and a half to prepare, all collections and work units were relocated. Every volume in the Library, more than three-quarters of a million pieces, was shifted. Four and nine-tenths shelf miles of serials were moved. One hundred and thirty thousand volumes were transferred from Escanaba Hall; fifty thousand from Tampa Hall. During the reshelving librarians discovered that the cast iron stacks in Library Hall were buckling from the immense weight of books that they had supported for two-thirds of a century. The stacks had to be shored up with channel steel beams. Finally after years of separation all book collections and work groups, except those in Cleveland, were reunited. Since 1942 the Library had been divided, inconveniencing readers and librarians. Much money and time had been spent moving collections and divisions, money which could have been saved or used more profitably had a new building been erected for the Library as planned during the 1930's.

Even after all the renovations of the mid-1950's had been completed, parts of the structure continued to break down. The worst water damage to publi-



A clogged drain dammed water to form this pool under the wooden floor in the basement. Astonished at the mess is Joseph McGroarty of the Library, center, and two employees of the Public Building Service

cations in the life of the structure occurred one rainy night in September 1957 when a drain pipe above the cellar stacks backed up and began to leak The next morning Robert Austin entered the area and saw a torrent of water pouring over books of the 1801–1850 period.[4] Employees rushed to move the books

and stacks, and carry more than 400 soaked volumes to the bindery, where other employees spent the day interleaving pages with paper towels while electric fans blew air over open books to evaporate the water. Books were even hung on clotheslines to dry. About 25 volumes were damaged so badly they could not be salvaged while others had to be repaired or rebound.

Birds entered through holes in screens and unscreened windows and then flew wildly about Library Hall trying to escape. A starling was found down in the basement stack. Readers were amused by pigeons roosting and clucking on the card catalog. Bats were found hanging from pipes. An employee felt something on her shoulder, turned her head, and saw a bat perching there.

Rats and mice found entrance to the building. In the winter of 1957 employees discovered that rats were coming up through holes in the floor of the east basement stack area and nibbling starch-filled bindings of folios and foreign theses. Exterminators discovered that the rat holes went down beneath the foundation to the remnants of the old Tiber Creek. The Tiber, which had flowed from its source near the White House toward Capital Hill and along Canal Street to the Anacostia River, had been filled in early in the 19th century and the east end of the building had been erected near the bed of the ancient waterway.

Windows fitted so loosely that cold air penetrated easily. During an unusually cold, blustery spell in the spring of 1958 Library Hall became so chilly that public service had to be suspended for a day, the first time on record. Dirty windows could not be washed conveniently because the wood frames were so deteriorated that they would not hold hooks from window washers' belts. Chunks of plaster fell from the ceiling of a room.

As though to top off the deterioration, a cornice came loose and had to be removed before it fell and perhaps killed someone.

New Name, New Parent, New Building

While librarians were shifting collections around in the old building and its satellites, trying to make space for acquisitions and to allow persons to work comfortably and efficiently, the campaign for a new building was progressing slowly. Plans for the interior had been redrawn to accommodate the Library alone, as a result of Surgeon General Kirk's decision to provide a separate building for the museum and AFIP. In 1946 the Medical Department requested money for construction, but the military establishment, retrenching and reorganizing after the war, had problems more important than the AML, and the Surgeon General could not push his request through the upper levels of the Army.[5]

By 1947 the estimate of space needed in the proposed building had risen considerably over the 1941 estimate. Because of the skyrocketing cost of materials, labor, and land, and the increase in size of the structure, the estimate of the cost of the land and the building reached $15 million, as compared with $4,750,000 in 1941. The director of service, supply and procurement in the

Defense Department vetoed the Army's request for legislation to appropriate $15 million. Instead he pointed out that the Library was used much more by civilians than by military personnel and therefore ought not to be financed by military funds. He suggested that the Library be transferred to some other agency such as the Public Health Service or Library of Congress.

The presence of a large research library in the armed forces began to perplex civilian officials who were trying to make the financial and business part of the military establishment as efficient as possible. The Library was a minor problem but only because its cost was small compared with the sums being spent on ships, planes, and other military items. The Library thus became the subject of study by several committees. The Commission on Medical and Hospital Services of the Armed Forces (frequently called the Hawley Commission after its chairman Major General Paul Hawley) considered the Library in 1948 and recommended, among other things, that it remain in the armed forces, be renamed the Armed Forces Medical Library, be budgeted for by the Army Department, and receive a new building. Off on the side the first Hoover Commission on Organization of the Executive Branch of the Government was recommending that the Library be transferred to the proposed Department of Health, Education, and Security (eventually established as the Department of Health, Education, and Welfare) and be given a new building.

Director McNinch saw that one way out of the dilemma was to have the Army categorize the Library as a "civil function." The budget for the AML would then fall under the Department of the Army Civil Functions Appropriation Act rather than the Military Appropriations Act. Through 1947 and '48 the idea wended its way upward to the Secretary of the Army. In the summer of 1949 the Secretary of Defense adopted the idea by requesting the General Services Administration to include the building in that agency's legislative program.[6]

Within the Defense Department, Comptroller William J. McNeil had disagreed with the Hawley report and suggested that the library be transferred from the Army to the Federal Security Agency or, if that were not possible, that it be budgeted for by the Army as a civil function. McNeil's recommendation and the Hawley report were considered by the Medical Advisory Committee to the Secretary of Defense. This committee, influenced by McNinch and Michael De Bakey, recommended that the Library remain in the Army as a civil function and be given a new building.

The Library was also looked at by another group, the Defense Department's Management Committee, chaired by General Joseph McNarney, set up to find ways of reducing the department's budget. It was estimated that the Library was costing the Army approximately $1,180,000 a year, thus the committee's concern. In the summer of 1950 this committee suggested that the Library be transferred to the proposed Department of Health, Education, and Security or be placed in the Library of Congress or be set up as an independent agency under supervision of the Joint Congressional Committee on the Library.

The Medical Advisory Committee disagreed with the Management Committee and set up a subcommittee on the Library. This subcommittee, composed of Edward Cushing, John Fulton, Henry Viets, Chauncey Leake, McNinch, and De Bakey recommended that the institution be made a civil function of the Defense Department and that the National Research Council's Division of Medical Sciences study the question. Secretary of Defense Louis Johnson agreed to the latter in the summer of 1950.

By the spring of 1951 the NRC Committee on the Army Medical Library, chaired by George W. Corner, concluded, among other things, that the Library had become in the fullest sense the National Medical Library, it should continue under the military, have a governing board to direct its policy, and be given a new building.[7] By this time, however, because of the Korean War and unsettled world conditions the Defense Department had to defer action on the Library.

This was a period when officials were trying to unite military agencies. A proposal was made to place the Library under the aegis of the Navy, Air Force, and Army and have the directorship rotate among medical officers of the three services. While the proposal was being debated and moving forward, Rogers labored to persuade his superiors that it would be a step backward to rotate the directorship every few years instead of continuing the policy of having a permanent Director.[8] His view on this point finally prevailed, and when Robert A. Lovett, the Secretary of Defense, signed a directive transforming the Army Medical Library into the Armed Forces Medical Library on March 4, 1952, there was no mention of rotation.[9]

The Library now had a new name.[10] Henceforth the Director was to be an officer of the Army, Navy, or Air Force appointed by the Secretary of the Army with approval of the Secretary of Defense. It was to have an advisory group composed of the Director, a representaative from each service, and up to five civilians appointed by the Director. And it was to have a civilian Librarian, appointed by the Director. Rogers continued on as Director of the renamed institution, Kanardy Taylor continued on as Librarian, and the advisory group was set up a few months later.[11]

During these years when the Library's future was being discussed by high level officials, officers, and committees, the location of the proposed building was being debated anew. The possibility of an atom bomb attack on Washington in a future war caused civil defense planners to object to the erection of new government buildings in the center of town. In addition a building on the perimeter of the town would cost perhaps $2 million less than a building on Capitol Hill, displace fewer persons and businesses, cause no demolition of houses, not contribute to traffic congestion, and allow free parking of automobiles. Director McNinch opposed a site on Capitol Hill because he feared that the Library of Congress would eventually absorb the AML if it were placed there. He came to favor Bethesda where the large Naval Medical Center and expanding National Institutes of Health were close together on opposite sides

of Wisconsin Avenue.[12] On the other hand some other Army officers opposed Bethesda because they felt that if the building were erected there, the Library would be absorbed by the Navy or Public Health Service. Many officers and civilians preferred a site at Walter Reed, but as time passed more and more of them came to favor Bethesda.

By 1949 Surgeon General Raymond Bliss had decided on Bethesda. In March 1953 Secretary of Defense Charles Wilson told the Secretary of the Navy to plan, budget for, and construct the building at the Naval Medical Center.

The Navy gave Commander John A. Oley the task of preparing plans for the building and stationed him at the Library in April 1953 as a special assistant to Rogers. After attending a summer course in medical librarianship at Emory University and visiting several new library buildings throughout the country, Oley began to chart the flow of operations in the AML, survey all jobs, estimate the space that would be required in the future, and draft diagrammatic plans. Rogers thought his plans were excellent and showed them to Keyes Metcalf, the AFML's consultant and one of the most knowledgeable persons in the United States in regard to library structures. Metcalf said of them: "I think these are one of the best statements of requirements for a library building that I've ever seen." The Navy used Oley's data in making sketches and estimating the cost of the building.[13]

Commander Oley retired in September 1955. The following year Robert W. Severance, formerly librarian at Baylor and more recently deputy director of the Army Library, came to AFML as Rogers' assistant to do further work on the plans, act as liaison with architects and contractors, draw up a list of equipment for the new structure, and plan the move.

In the summer of 1955 Congress appropriated $350,000 for the preparation of plans and specifications of the building.[14] Later that year Wilson reviewed the apportionments of appropriated funds and decided that, because of the size of the defense budget and need for funds elsewhere, the Library would have to be deferred again. Therefore the $350,000 was not spent.

By this time many members of the staff had given up hope of ever seeing a new Library. They had been disappointed so many times that they had come to feel that they would work forever in the old, grimy, run-down structure. The Director's spirits may have been lowest on the day Major General Elbert DeCoursey, who had obtained *his* building for the AFIP, sat along side of Rogers on a Pentagon bus and remarked sadly, "Rogers, you're never going to get that building, you're never going to get it."[15]

Meanwhile earlier in February 1955 the Task Force on Federal Medical Services of the second Hoover Commission released a report recommending that the Armed Forces Medical Library be designated the National Library of Medicine and be transferred to the Smithsonian Institution as a semiautonomous agency with an adequate budget and building.[16] The Defense Department and Bureau of the Butget opposed transfer to the Smithsonian because

President John F. Kennedy greeting members of the Second International Congress on Medical Librarianship, Washington, D.C., 1963.

funds had been appropriated for plans and they doubted the wisdom of placing the Library within the Smithsonian group. Nevertheless the plan appealed to some congressmen. Senators Joseph McCarthy and H. Alexander Smith, along with three representatives, introduced identical bills between June 20 and July 21 to implement the task force proposal.

Thus in the summer of 1955 the Library's future was proceeding along two lines, one stemming from the Hoover Commission aimed at converting the Library into a semi-independent agency within the Smithsonian Institution, the other, from the Defense Department, intending to retain the Library in the armed forces with a new building at Naval Medical Center.

At this juncture Senators Lister Hill and John Kennedy, both influential in health legislation, became interested in the Library. In September members of their staffs began to develop legislation that would unite the Library with the medical exhibits of the Smithsonian into an independent agency to be named "The National Library and Museum of Health."

Director Rogers received a draft of the bill in early 1956. He opposed it for several reasons. He felt that the proposed Library-museum would have a difficult time as an independent agency (as, for example, the National Archives had before it was absorbed into the Federal Security Agency); the museum ought to be the subject of separate legislation, and the best course would be to attach the Library to the Public Health Service and give it a building on the NIH grounds in Bethesda.

The bill was rewritten and introduced by Senator Hill on March 13, 1956. Under the terms of the bill the Library would become an independent agency named the National Library of Medicine governed by a Board of Regents

composed of the 4 Surgeons General, the Librarian of Congress, and 12 other knowledgeable individuals appointed by the President. The Board would have the responsibility of acquiring a site, erecting a building, advising the Director, and carrying out other duties.[17]

Several years previously Surgeon General Leonard Scheele of the Public Health Service had been asked if his organization would harbor the Library. Scheele was enthusiastic about the idea but laid down the policy that the service would accept, not fight for, the institution. Between 1949 and 1955 the majority of Army officials wrestling with the problem of the Library came to favor the PHS as the Library's new home if the Army were to relinquish it. Even before the Hill-Kennedy bill was introduced sentiment was swinging from the Library as an independent agency toward the Library as a PHS agency. Senator Hill preferred that the Library be independent but was willing to see it enter the PHS. Scheele obtained permission from the Secretary of HEW to bid for the Library and directed his staff to draft a bill for the purpose.[18] The bill was well received. Rogers, after considering it, preferred the placement of the Library in the PHS to other alternatives.

In hearings on the Hill-Kennedy, McCarthy, and Smith bills before the Senate Subcommittee on Health, April 10 and 11, 1956, Scheele presented a strong case for the PHS, reinforced by arguments from the Bureau of the Budget and prominent medical librarians. On the other hand Leonard Carmichael of the Smithsonian gave reasons why his Institution did not want the Library. During the following month the committee redrafted the Hill-Kennedy bill to transfer the Library to the PHS, and on June 11 the Senate passed the measure.

The bill specified that the building be erected in or near the District of Columbia. Earlier an editorial writer in the Chicago *Sunday Tribune* had praised Hill and Kennedy's efforts to assist the Library and had suggested that the building be erected in Chicago where there were universities, fine libraries, five medical schools, plus the headquarters of the American Medical Association and several other medical societies.[19] This started a campaign by civic leaders and physicians to persuade Congress to place the Library in that city. Chicago newspapers ran editorials calling their town the Nation's number one medical center. Mayor Richard Daley appointed a 19-person National Medical Library Committee. Chicago's Medical Center Commission offered, free, 9 acres of ground valued at $500,000 for the site. Chicago's council passed a resolution endorsing the campaign. Eleven representatives and one senator from Illinois introduced bills identical to the Hill-Kennedy bill except that they specified Chicago as the Library's new home.[20]

On June 19 the bill introduced by Illinois Representative O'Brien was the subject of hearings by the House Administration Committee. Mayor Daley, Senator Paul Douglas, Morris Fishbein, and 16 other prominent Chicagoans traveled to Washington and argued persuasively for their town. Thirteen physicians, librarians, educators and administrators appeared a few days later in favor of the Washington area.

The House Committee voted to take no action on the O'Brien bill, and thus on its companion bills. This paved the way for the House to take up the Hill-Kennedy bill introduced by Representative Percy Priest.[21] The House Committee on Interstate and Foreign Commerce, to whom the Priest bill was referred, avoided a fight over the site by removing the words "in or near the District of Columbia" from the bill and leaving the selection to the proposed Board of Regents. The House passed the measure on July 23. The Senate agreed to the House amendments, and President Eisenhower approved the bill on August 3.

The armed forces had supported the Library to the best of its ability, but the military's primary job was the defense of the United States and it needed the funds it could obtain from Congress for guns, ammunition, food, pay, and everything else required by the infantry, artillery, air force, and other units. It was probable that the Army would never have been able to pass along sufficient funds to enable the Library to rise to its full potential as the Nation's medical library and center of biomedical communications. The act of 1956 raised the status of the institution from that of a departmental to that of a national library, it reinforced the Library's management by the addition of a knowledgeable, influential Board of Regents; but most importantly it moved the institution into the mainstream of American medicine by placing it in the Nation's primary health organization, the Public Health Service. There the Library rounded out research, prevention of disease, and all the other health-related activities of the service.

During the years when the future of the Library was being debated by civilian and military committees and officials, McNinch and Rogers were aided by a number of prestigious physicians, men who knew from experience how valuable the Library was to the medical profession and who believed that it should be enlarged, given greater support, and be housed in a modern building. They had served on committees and subcommittees, acted as consultants and advisors, and they championed the cause of the AML in meetings where the Library seemed of relative unimportance compared with other items. Among the most active were John Fulton, Chauncey Leake, Michael De Bakey, Worth Daniels, and Alan Gregg. De Bakey supported the Library in committees and the Hoover Commission. Daniels swayed congressmen, including Representative Percy Priest, to vote for the institution. Alan Gregg of the Rockefeller Foundation worked quietly behind the scenes. The assistance rendered by these persons is immeasurable but was significant.

After the act was passed the Bureau of the Budget and Department of Defense arranged to transfer the Library's property, funds and personnel from the Army to the Public Health Service. On October 1, 1956, the Armed Forces Medical Library became the National Library of Medicine, approximately 80 years after John Shaw Billings began calling it by that name.

In the months that followed President Eisenhower appointed regents. The Board held its first meeting on March 20, 1957. The chief topic was the selection

of a site for the building. The majority of regents favored the Washington area, and they spent half a day considering 10 locations that had been suggested including Capitol Hill, the Mall, Naval Medical Center, Soldiers Home, Naval Observatory, and National Institutes of Health.[22] During the second meeting, April 29, the members visited proposed sites, discussed and rejected the Chicago offer, and voted for a site on the old Glenbrook Golf Course located on the southeast corner of the campus of the National Institutes of Health.[23]

Construction of the Bethesda Building

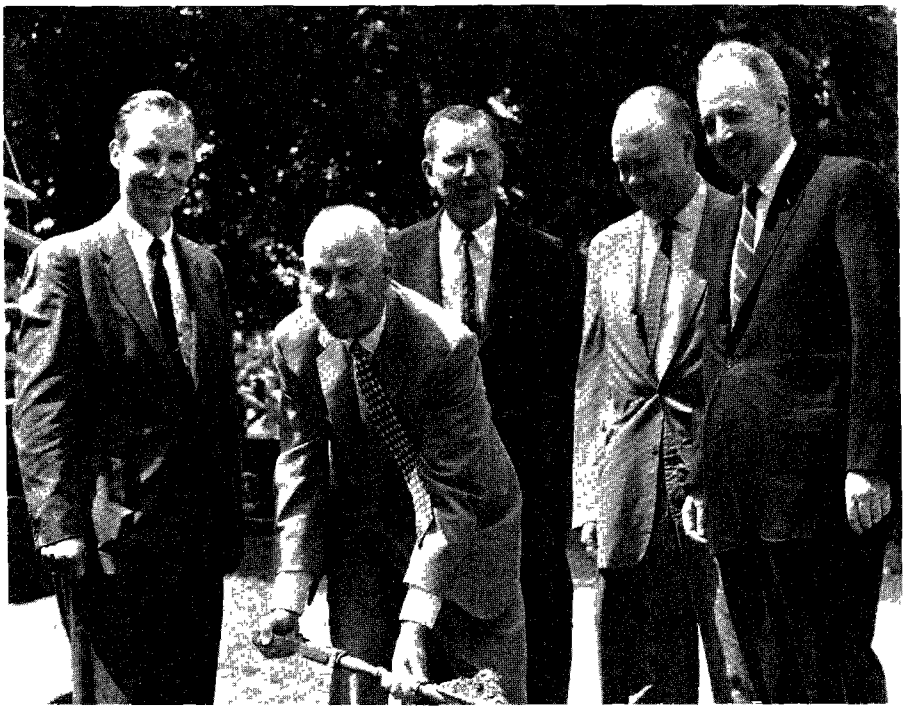
Neither the President nor the House had requested funds to erect a new building, and for a time it seemed that the planning that had been going on for 40 years would continue indefinitely.[24] But Senator Hill, chairman of the subcommittee responsible for the Library, convinced the full Senate Appropriations Committee to add $6,950,000 to the Department of Health, Education, and Welfare's appropriation.[25] Congress agreed to the amendment. President Eisenhower signed the act on August 1, 1958.[26] The Second Supplemental Appropriation Act of 1956 had appropriated $350,000.[27] Therefore $7,300,000 was now available to plan, construct, and equip a new building.

Under contract the New York firm of Robert B. O'Connor and Walter H. Kilham, which had designed library buildings for Princeton, Colgate, Louisville, and other schools, recommended that new plans based on Oley's statement of requirements be prepared. The firm estimated the cost of a building as $8,774,000 compared with the 1955 cost of $5,150,000. The Bureau of the Budget was unhappy with the increase in cost; it wanted the cafeteria and an auditorium to be deleted from the plans, and it urged that the structure be placed closer to existing NIH buildings. The Bureau limited the cost to $7,300,000 and reduced the planned area to 230,000 square feet of space, but it later withdrew its objections to the location of the building and to the inclusion of a small cafeteria.

On June 24, 1957, the General Services Administration contracted with O'Connor and Kilham to develop preliminary plans for the building. The Public Building Service approved the plans on January 30, 1958, but the Bureau of Budget objected because the floor area was 5,000 square feet larger then the approved figure. The Bureau finally compromised at 232,200 square feet. The architects reached this footage by transferring mechanical equipment from the mezzanine to C level, shortening the bay module in one dimension from 21′ 4″ to 21′ 1″, and by eliminating areas of the mezzanine to the north and south cantilevered over the hall below.

Through 1958 plans were developed, many staff members presenting suggestions that were used. Keyes Metcalf gave advice. Bids were accepted for contracts in 1959, the Arthur Venneri Company being the lowest of 17 construction bidders at $4,370,000.[28]

During the afternoon of sunny, warm June 12, 1959, a groundbreaking ceremony was held on the site to mark the start of construction. Senator Hill

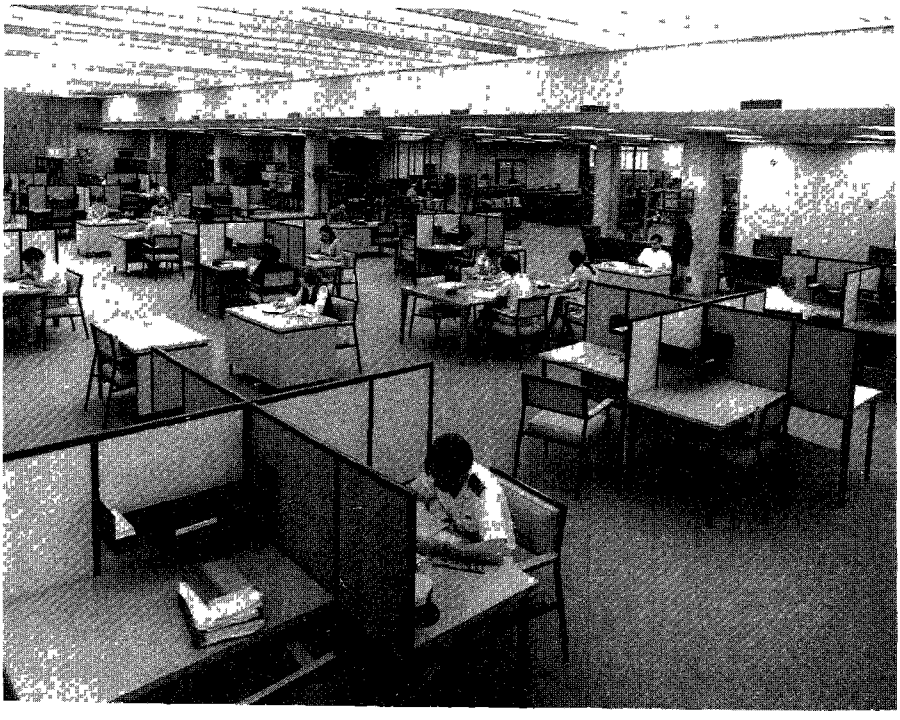


Senator Lister Hill shovels the first spadeful of earth at the groundbreaking ceremony for the new Library building, June 12, 1959. Looking on, from left, are Surgeon General Leroy Burney, chairman of the Board of Regents Champ Lyons, Congressman Melvin R. Laird, and Arthur Flemming, Secretary of the Department of Health, Education, and Welfare.

dug the first earth while former Surgeon General Leroy Burney, Representative Melvin R. Laird, Senator Gordon Allott, Secretary Arthur S. Flemming, and other distinguished persons looked on. A few days later on June 17 machines and men began to excavate in earnest.

The digging went well until September when the excavators unexpectedly encountered hard rock. The rock formation had to be blasted, which increased the cost by almost $200,000, infuriated neighbors who claimed their homes were being damaged by shock waves, and slowed the work. Unusually cold, snowy, winter weather delayed the work further. By mid-1960 construction was 4 to 5 months behind schedule, and the contractor began employing two shifts of men to speed the job.

By December 1961 the building was about 90 percent completed. Stacks were being installed in one level and the other two levels were almost finished. On the afternoon of the 14th of the month, dedication ceremonies were held in the main reading room. Secretary Abraham Ribicoff and Senator Hill spoke,



Main reading room, shortly after the Bethesda building opened

and Greek Ambassador Alexis S. Liatis presented a cutting from the plane tree on the Island of Cos, the tree under which, according to tradition, Hippocrates taught students.[29] More than 1,200 guests attended the dedication. Letters and telegrams of congratulations came from all over the world. The following morning a special symposium, "Books and Medicine," was held

When completed, the building sat on a knoll facing the main traffic thoroughfare, Wisconsin Avenue. Measuring 276 by 192 feet, constructed of reinforced concrete faced with limestone, the structure was topped by a roof having an eye-catching hyperbolic paraboloid form. Within was 231,560 square feet of floor space, and a quarter million linear feet of space for shelves with an ultimate capacity of 1.5 million volumes. Half of the structure was below ground, a precaution against the kind of atom bomb attack envisioned by civil defense planners of the 1950's. The defensive planning led to the insertion of narrow, recessed windows on the main floor and a secondary use of the building as an air raid shelter. Containers of food, medical kits, and other civil defense emergency supplies were stored against the walls on the lower levels for many years. The top floor, the mezzanine, contained offices The main floor held reading rooms, the card catalog, the history of medicine reading room and offices, and

Public card catalog area. The mural around the mezzanine was the work of Frans Wildenhain. A model of a section of a deoxyribonucleic acid is on exhibition.

large rooms for indexers, catalogers, and reference librarians. The bottom three levels, underground, provided stack and work space.[30]

The Library Moves to Bethesda

While the building was being constructed two staff members, Ray W. Grim and William H. Kurth, were planning the movement of literature, furniture, and equipment from the main building, the temporary buildings, and the Allen Memorial Library in Cleveland. They identified furniture and equipment to be retained and pieces to be discarded; figured out special handling procedures for certain items; selected and ordered new equipment; drew sketches of floors of the new building showing phones, power sources, and placement of furniture for use of movers; notified the book trade and library profession of the coming change in address; instructed staff members who would participate in the move; determined the order of priority for moving sections of the Library in such a way that operations would be disrupted as little as possible; and tried to foresee every other thing that would have to be done.[31]

A survey indicated that the degree of insect infestation in the building was low, particularly considering the age of the structure, but to kill any bugs that might otherwise be moved with the books a team of exterminators visited the

Library on three successive Friday evenings and sprayed insecticide mainly in the basement. When the move began the books on book trucks on the loading dock were dusted with low pressure compressed air before being placed in moving vans.

Ten firms looked through the old building and then submitted bids to move the Library to Bethesda; Davidson Transfer and Storage Company's was the lowest. Davidson trucks begain to transport books on March 3, 1962. In Cleveland the History of Medicine Division, separated from the Library for 20 years, was loaded into four vans and driven to Bethesda, guarded by a Pinkerton detective in each cab and insured in transit by Lloyd's of London for $6 million.

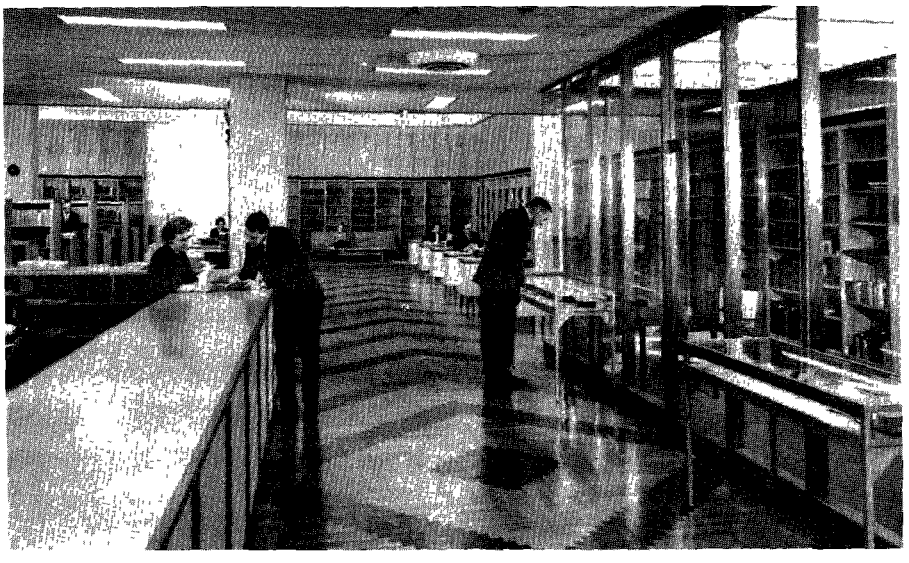
On April 6, halfway through the move, the building was turned over to the government, and the first staff members moved in. Hundreds of minor and a few major deficiencies were being corrected, and breakdowns expected in any new large building occurred. Two of the three elevators stopped running. Heat stopped flowing to one section of the building during cold weather, forcing librarians to wear overcoats. Filing cabinets for the Director's office were a sixteenth of an inch too large to fit into their allotted space. Despite precautions, pieces of ancient furniture from the old building turned up, some of it of unidentifiable use. On the whole the move proceeded very well, and the doors were opened to the public on the morning of April 16.

The last book was removed from the old building on the Mall at 12:17 p.m. on May 3 and shelved in Bethesda by Rogers at 5 p.m. It had taken 60 days to move the largest medical library in America, but so well had the transfer been planned that scarcely any interruption occurred in service.

Death of the Building on the Mall

After the Library moved, a decision was made to preserve the building. It was one of the oldest structures in the country designed specifically as a Library and museum; the country's first true postgraduate medical school was established there in 1893; many famous scientists had researched there (Walter Reed and James Carroll on yellow fever, Frederick Russell on typhoid vaccine, George Callender on wound ballistics, to name a few), many noted librarians and scholars had labored there, many great bibliographies had been born there. The General Services Administration rehabilitated the structure. The Armed Forces Institute of Pathology, now in its own building at Walter Reed, planned to install some of its histopathology laboratories. In 1962 the museum moved back after being lodged in temporary structures for 15 years. The museum had always attracted tourists and after it returned to its old home it was visited by hundreds of thousands of persons annually.

In 1964 the National Survey of Historic Sites and Buildings studied the building and, upon its recommendation, the Secretary of the Interior approved it as a Registered National Historic Landmark.[32] It was described as "a massive structure, carefully designed and executed. Tasteful terra cotta ornamentation helped to make the building attractive as well as useful." Along with the Wood-



Reading room of the History of Medicine Division. On the right is the glass-enclosed incunabula room.

row Wilson House, Clara Barton House, and Naval Observatory, it was one of eight structures in the Washington area in the National Landmark Registry.

But hardly had the museum settled down when President and Mrs. Johnson persuaded Joseph H. Hirshhorn to give his collection of sculpture and paintings to the United States. The Smithsonian Institution, under whose umbrella the collection would be placed, wanted the site upon which the museum stood for the Hirshhorn Museum, and it wanted the medical museum collection. S. Dillon Ripley, secretary of the Smithsonian, told a House committee: "[the building] is not in my estimation a distinguished architectural edifice, though it may have sentimental value."[33]

Voices were raised in protest against the destruction of the building. Kenneth M. Brinkhous, professor of pathology at the University of North Carolina, testified in a Senate hearing: "I have great respect for history, and where important things are done . . . It was a good example of the late last century governmental buildings and for what was done in it I think it ought to be preserved. . . ." Frank M. Townsend, former director of the Armed Forces Institute of Pathology, said: ". . . I can't understand why the Smithsonian Institution insists on this exact side on the Mall for the Hirshhorn Museum. There is more space on the Mall than is necessary for both these buildings . . . we need not destroy a national historic landmark in order to provide for a new museum. . . ." Elbert DeCoursey, another former director of the Institute of Pathology, remarked in a House hearing: ". . . as a physician I am a humanist also, and I hate to see this building a historical site one year and the next year

see it torn down." Senator Daniel K Inouye noted " . we have been receiving a lot of letters from constituents for and against and most of the letters opposing the establishment of the Hirshhorn Museum at this location have come from people who are sympathetic with the medical profession and suggesting that one of the major reasons for not moving [the medical museum] is that this present AFIP is a historical landmark "[34] The forces that desired the land for the location of the Hirshhorn Museum were too strong, and the decision was made to raze the structure.

On the evening of October 4, 1968, the Medical Department began a ceremonial closing of the building. After listening to speeches and music the guests took a final stroll through the rooms At 10 o'clock the muffled drums of the United States Marine Band echoed throughout the building and the drum major led a procession down the stairs to the front door As the strains of *Auld Lang Syne* filled the halls the curator locked the door to the public for the last time.

Notes

[1] Information on buildings used by the Library may be found in Space Information, Old Building Restoration, and other files in MS/C/309, *Army Medical Library News*, Henry, *Armed Forces Institute of Pathology*, annual reports of the Library, reports of U S Army Inspector General filed in HMD

[2] Information on repairs and renovations may be found in *Army Medical Library News*, *Army Medical Library Bulletin*, and annual reports of the Library Employees, among them Howard P Drew, Jr , Stella Schehl, and Joseph McGroarty, also provided information

[3] File Elevator Project History MS/C/309

[4] Robert Burdette Austin was born in Sheridan, Wyo , Nov 10, 1905 He attended at various times George Washington University, Columbia University School of Law, and Western Reserve University School of Library Science He came to the Library in September 1928 and served in various capacities until September 1961 Thereafter he was associate librarian at Washington University School of Medicine until October 1967 and administrative assistant at the Francis A Countway Library of Medicine, November 1967 to September 1968 In the 1940's Austin became interested in early American medical publications He slowly and laboriously compiled bibliographical information on those that appeared before 1820 His useful, authoritative book on the subject, *Early American Medical Imprints A Guide for Works Printed in the United States, 1668–1820*, was published in 1961

[5] Documents providing information on the proposed Library building, 1945 onward, are in MS/C/309, MS/C/47, MS/C/345 and MS/C/205 See also records Hon Consultants and records Advisory Group

[6] Chronology of correspondence regarding civil functions for AML, May 1947 to 1950 file Transfer of AML MS/C/309

[7] Report of NRC Comm to Secretary of Defense, May 25, 1951

[8] Correspondence in NLM, including memo, Rogers to Gen Hays, sub , Plans for the Armed Forces Medical Library, Oct 30, 1951

Former Director McNinch, now stationed in Japan, opposed the plan of rotating the directorship He believed so strongly that the best course for the Library was to continue under a permanent director, Rogers, that he offered to return to the United States to argue against the proposal See notes by McNinch NLM

[9] DOD Directive 20 33-3, May 4, 1952 copy in *AML News*, April 1952

[10] The date was May 9, 1952, when DA General Order 49 redesignated the Army Medical Library as the Armed Forces Medical Library

[11] Papers and Proceedings of the Armed Forces Medical Library Advisory Group, 1952–1956 copy in Archival Collection

[12] For Director McNinch's views favoring a location in Bethesda see letter, McNinch to M Cummings, Mar 5, 1974, and notes by McNinch in NLM

[13] Oley, "Basic Elements in the Planning of a New Building for the Armed Forces Medical Library," *Bull Med Lib Assoc* 42 454–7 (1954) See also annual reports of the Library regarding

Oley's activities Sketches of the proposed new building based on Oley's work are in NLM

[14] 84th Cong , P L 219, Aug 4, 1955

[15] Tape-recorded autobiography of Rogers NLM

[16] Report is reprinted in 84th Cong , 2d sess , Hearings before the Subcommittee on Health on S 3430, pp 52–54, also in minutes of meeting of AFML advisory group, Oct 28, 1955

[17] 84th Cong , 2d sess , bill S 3430, "To promote the progress of Medicine and to advance the national health and welfare by creating a National Library of Medicine "

The composition of the Board was changed slightly as the measure progressed

[18] Committee Print, Proposed Legislation on the National Library of Medicine, May 18, 1956 Committee Print No 2, May 22 Hearings before the Subcommittee on Health on S 3430, pp 28–31

[19] Editorial, "A medical treasury threatened," Apr 1, 1956

[20] Copies of many Chicago newspaper clippings are in NLM

[21] 84th Cong , 2d sess , Bill H R 11524, introduced May 29 See Theodore G Klumpp, "How Congress Almost Aborted the National Library of Medicine," *Med Times* 101 40–51 (December 1973)

[22] Information of the Regents' meetings is from the Minutes copies in Archival Collection

[23] The golf course was owned by NIH but operated by Montgomery County It remained open until Mar 31, 1959

[24] The progress of the planning, construction, and equipping of the building may be traced through minutes of staff conferences, MS/C/295, minutes of the Board of Regents, *NLM News, NLM Bulletin,* annual reports of the Library

[25] Senate Report No 1719, pp 37–8 H R Bill 11645, p 33

[26] P L 85–580

[27] P L 84–219, Aug 4, 1955

[28] It was said that Arthur Vennen spent much time personally overseeing construction of the building, was proud of the results, and regarded it as his monument in the Nation's capital

[29] The tree was planted in a brief ceremony near the Library on May 11, 1962

[30] Building Data and Floor plan, National Library of Medicine PHS pamphlet, (1961) Foster E Mohrhardt, "A Building for the National Library of Medicine," *Libri* 12 235–9 (1962), lists several articles about the structure

[31] Kurth and Grim wrote a book to assist others who would need advice in like situations *Moving a Library* (1966)

[32] Letter, A Clark Stratton, Acting Dir , Nat Park Service, to Stephen Ailes, Secretary of the Army, Jan 14, 1965 copy at AMM

[33] House of Representatives, Report of Proceedings, Hearings before Subcommittee on Public Buildings and Grounds, H R 15121, H R 15122, H R 15123, H R 15312 to provide for the establishment of the Joseph H Hirshhorn Museum and Sculpture Garden, and for other purposes June 5, 1966 Copy at AMM

The team of librarians who examined the Library in 1943 noted, "The fact that the building has been in use for over fifty-six years is ample indication that it was well-planned for its time As far as the surveyors can learn, no other great research library in the United States still occupies a building completed as early as 1887 and not materially added to since" Keyes D Metcalf, et al , *The National Medical Library Report of a Survey of the Army Medical Library,* p 5

"Dr Billings must have had a good deal to do with the planning and should be given credit for the basic strong points which characterize the building Today, 73 years after construction, it is the oldest library building housing a great research collection in the United States The University of Pennsylvania Library was completed four years later, early in 1891, it is now being replaced by a new library The Cornell University Library was completed in October, 1891, a new central library for Cornell is now under construction, and the old building after gutting and complete rebuilding, except for the sturdy stone walls, will be retained as an undergraduate library The Newberry Library, the fourth oldest, was completed late in 1893, and detailed studies are now being made in regard to its future In many ways the Army Medical Library was a better planned building than either of the university libraries listed " Keyes D Metcalf, "Housing the Library," *Bull Med Lib Ass* 49 379 (1961)

[34] Joseph H Hirshhorn Museum and Sculpture Garden Hearings before the Subcommittee on Public Buildings and Grounds, United States Senate, 89th Congress, Second Session, on S 3389, a Bill to provide for the establishment of the Joseph H Hirshhorn Museum and Sculpture Garden June 3, 1966

XX

Evolution of Computerized Bibliographies

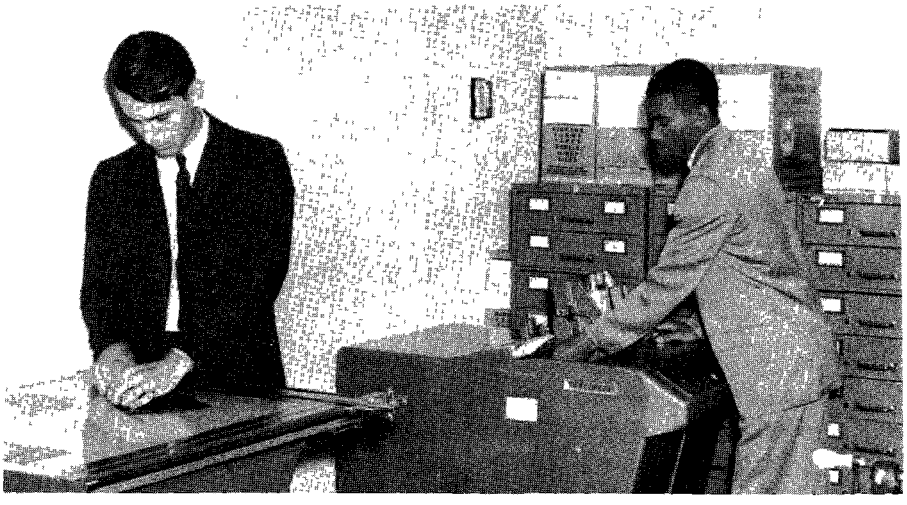
WHEN Billings began to develop the *Index-Catalogue* in the 1870's he unwittingly converted the Library into a publishing house, half or more of whose employees would spend their working hours year after year preparing annual bibliographies. The manual indexing, arranging, and editing for the *Catalogue* continued for seven decades, diverting the staff from other important library operations. Not until the 1940's did the situation change as directors and editors seized new techniques for processing and transmitting information.

Development of a Mechanized System for Producing the Library's Publications

The repetitive sorting, filing, and photographing that occurred every month during the production of *Current List of Medical Literature* suggested that much of the work could be done by machines. During the 1950's as the number of journal articles continually increased, straining the facilities of the Library to publish *Current List*, editor Seymour Taine had many discussions with Director Rogers about the possibility of mechanizing the operation. He examined equipment being used by business firms and government agencies to process data and concluded that the methods and machines could be applied in the Library. He drew up a plan to abandon the "shingling" procedure for producing the *List* in favor of punched cards which could be sorted by machines and photographed by an automatic high-speed camera to make a photo-offset negative. Since the system would be made up of data processing equipment, Rogers and Taine hoped that it could also be used for the selective retrieval of bibliographical data.[1]

Rogers was unable to obtain appropriated funds to buy or rent machines, but at a meeting of the Board of Regents members suggested that he apply for a grant from the Council on Library Resources. Rogers did this, and on April 16, 1958, the council allotted $73,800 for the Library to undertake the work.[2]

In order to understand more fully the potentialities of available equipment Taine and other staff members attended courses on data processing at the International Business Machines school in Endicott, New York. A room in the Library building was soundproofed, air-conditioned, and otherwise prepared to accommodate equipment. Consultants were engaged to assist. An advisory



Listomatic Camera photographing citations for Index Medicus *being operated by Tyrone Ferguson, right. Pages being spliced together by Donald Dodson, left.*

committee was appointed. Various tape operated typewriters, tabulating equipment, and other machines were evaluated for use, and the most satisfactory were ordered. The heart of the system was to be an Eastman Kodak Listomatic camera capable of photographing 230 punched cards a minute while adjusting its aperture to accommodate one, two, or three lines of text imprinted across the top of the cards.

Early in the experiment it was decided that the arrangement of citations in *Current List* would be changed. The grouping together of titles of all articles in a journal was almost a necessity for the "shingle" method of production, but here it would be preferable to place one complete citation on each punched card. The final publication would contain two sections; one would list citations under subject headings in alphabetical order, the other would list authors in alphabetical order.

There were a number of possible ways of arranging the flow of work, and much thought went into the development of the best system. Finally Taine settled on seven stages, starting with an indexer who scanned articles, translated foreign language titles, assigned subjects and subheadings, and typed this information on a form; an indexing assistant who added authors' names, other bibliographical information, and machine codes to the form; an input typist who turned out a proof copy and a coded punched paper tape; a key-puncher who punched subject and author cards; and an operator who ran tapes and cards through output typewriters to produce imprinted cards. The cards were sorted and interfiled by machines, then collated with cards bearing headings, subheadings, and cross-references. After corrections were made, the deck was

interfiled with a "program" deck containing the page numbers of the pages to be printed and other information. This complete deck was run through the camera, the film developed, cut into columns, the columns taped together into pages, and the pages sent to the printing firm.

Through the spring of 1959 Taine and his associates perfected the mechanized system, adjusting one part or another, replacing inferior components by better, removing bottlenecks and improving procedures. In May 1959 citations for the fourth volume of the *Bibliography of Medical Reviews* were typed on cards and filmed as a test of the new system. The published work, received from the printer in August, was quite satisfactory. The team then began to index for the first number of *Current List* to be published by the new system.[3]

While Rogers and Taine were happy with the success of the new publication system they were disappointed because it was not practical as a retrieval system. The fastest machine obtainable could sort 1,000 cards a minute. At that rate it would take 12 ½ hours to sort a 5-year accumulation of 750,000 cards, much too slow. Also, there were risks that the massive decks of cards might be mixed if they were disturbed before cumulation.

Before the Library had the opportunity to publish the first issue of *Current List* using the new system, the *List* metamorphosed into the *Index Medicus*. The transformation came about this way. Since 1950 Rogers had sought to find a way in which the Library and the American Medical Association could cooperate in publishing bibliographies. The Library's *Current List* and the AMA's *Quarterly Cumulative Index Medicus* together indexed about one-half of the world's medical literature, but they overlapped, so that about one-third of the citations in the *List* were duplicated in the *Index*. One of Rogers' suggestions to the AMA had been to divide the indexing of the world's literature with the Library, the AMA indexing all publications from the Western Hemisphere and the Library indexing everything from the rest of the world. Another suggestion was that the Library index all articles in foreign languages, the AMA all those in English. For various reasons none of the proposed methods of cooperation was acceptable.

After the mechanization experiment began Rogers saw another way by which the two organizations could cooperate. The Library could prepare the monthly index and the AMA could produce the annual cumulation. Every December the Library could alphabetize its accumulation of cards, photograph them, and send the film to Chicago, where the AMA could use it to publish the cumulation. The Library would benefit by not having to publish a cumulated volume, the AMA would benefit by not having to publish monthly volumes, libraries would benefit by having to purchase, handle, and shelve only one index instead of two, and readers would benefit by having to scan one index instead of two.

In June 1959 the AMA board of trustees and house of delegates endorsed the plan. The following month the Public Health Service and AMA signed an agreement under which the Library would publish a monthly bibliography, named *Index Medicus*, superseding the *Current List* and *Quarterly Cumulative*

Index Medicus, while the AMA would publish an annual volume titled *Cumulated Index Medicus*.[4]

The first number of the new *Index Medicus* appeared almost on schedule in late January 1960. Through the year the monthly issues became larger and more current as the team became more skillful in operating the mechanical equipment. By early January 1961 the cards from the monthly batches had been cumulated, interfiled, photographed, and the film shipped to Chicago. Some portions of the film were found to be defective and the work had to be done over, but even at that the three-volume *Cumulated Index Medicus* covering the year 1960 came from the AMA presses in April 1961.

MEDLARS

During the 3-year period in which Taine, Rogers, and their associates were using data processing equipment to prepare *Index Medicus*, they learned much about an alternative means of storing and retrieving information then being developed and installed in government agencies and business firms, namely the first generation of commercial electronic computers. Even before the mechanization project proved itself, Rogers was familiarizing himself with computers by reading, talking to experts, and attending courses in symbolic logic, computer operations, and related subjects at the Department of Agriculture Graduate School.

While computers held the promise of filling the Library's needs, they were expensive in relation to the Library's funds (NLM's appropriation was approximately $1.5 million in 1960). But it so happened at this time that the Council of NIH's National Heart Institute had become concerned over the problem of bibliography in the field of cardiovascular diseases. A subcommittee of the Council studied the matter. There were vigorous debates in the Council about the methods of gaining control over the literature. James Watt, director of the Institute, and Rogers had several discussions about the possibility of using a computer to store and retrieve information. The Heart Council decided that computer retrieval of information was feasible and that it had the authority to support the development of a computerized bibliographic system in the Library. They offered to finance the work if, in return, NLM would give some priority to literature on cardiovascular diseases when the system was completed.

In November 1960 the Library engaged an analyst to draw up specifications for a system that Rogers and Taine named MEDLARS, the acronym for medical literature analysis and retrieval system.[5] The preliminary specifications were so unsatisfactory that Rogers discarded them and, with Taine, rewrote them. The heart of MEDLARS was to be a digital computer. Information representing the indexing done by the staff was to be fed into the system, converted to magnetic tape, and manipulated in the computer. The processed magnetic tape would be used to activate a high-speed composing device capable of producing photographic masters for printing *Index-Medicus* and other publications.

NLM desired a system that would permit an increase in the number of journals indexed in *Index Medicus*, reduce the time required to prepare the monthly issues of *IM* from 22 to 5 days, produce for publication bibliographies similar to *IM* in format devoted to special fields, permit a search of the data base and retrieval of bibliographies for patrons upon request, include citations from books and other nonjournal sources, and reduce the need for duplicate literature screening operations at other libraries and information centers.

The development of MEDLARS was planned to take place in three phases, each under a separate contract. During phase I the contractor would make a preliminary design of the system, evaluate equipment available on the market, and select the equipment. In phase II all the engineering would be completed to ready the system for operation, major programs would be written for the computer, final specifications for equipment would be written, and operators would be trained. During phase III, which would overlap phase II, equipment would be ordered and installed. The entire system was to be ready for operation in the fall of 1963.

In February 1961 NLM sent invitations to bid to more than 45 firms that designed computer systems. Publicity about the project led other firms to ask for information, and Rogers extended the deadline. As replies from firms arrived, Rogers and Taine, later assisted by representatives of DHEW, Department of Defense, National Bureau of Standards, and Central Intelligence Agency evaluated them. Rogers hoped to have the contract for phase I of the project signed in June, but because of delays August arrived before it was signed, with General Electric Company.

A very competent General Electric team, composed on the average of six persons headed by Richard F. Garrard, began work on August 14. Taine acted as project director for NLM. For weeks thereafter the GE team, working with NLM employees assigned to the project, studied and amplified the MEDLARS requirements, determined possible system and subsystem configurations, and recommended various machine configurations. Important basic decisions were made, among them the decision to continue using the Library's medical subject heading list, MESH, instead of natural language or other indexing approaches; to index each article only once, for both publication and retrieval purposes; to train specialists to retrieve information for patrons; to use serial magnetic tape files for storing citations rather than random access devices; to segment computer programs into self-contained modules for ease of maintenance and system changes; and to develop a rapid, high-quality photocomposition device for preparing copy for *Index Medicus*.

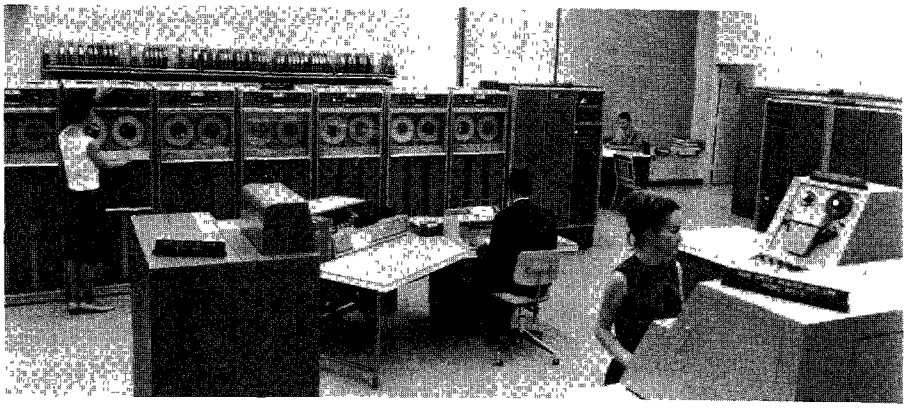
They decided that only commercially available equipment would be used, with exception of the photocomposer. Eighteen different computers were considered. Seventeen were eliminated because they were too large, too small, too slow, or for other reasons, leaving the Minneapolis-Honeywell 800 as the survivor. A MH 800 was already in use in NIH, and the GE-NLM team considered the possibility of sharing this computer. But a study indicated that

sharing was not practical, and that the money saved would not be sufficient to justify the inconveniences and problems that would arise with joint usage.

During the design phase Rogers assigned to Deputy Director Scott Adams the task of considering secondary objectives for the system. Consulting with GE, Adams proposed several, one of which was the "decentralization" of MEDLARS. A national network of MEDLARS centers was to be set up, each with a search capability and duplicate copies of the master tapes. Searches could then be made locally instead of being made in Bethesda, and the number of searches that could be run daily would be increased tremendously. Other objectives were: the storage and retrieval of text images on microfilm, permitting copies of text to be provided to searchers, probably through a separate device linked to MEDLARS; the use of on-line and remote input and output facilities such as data inquiry and display stations; and the processing of internal library transactions, such as acquisition procurement control, interlibrary loans, inventory control, and other requirements of a similar nature.

The preliminary design phase of MEDLARS was completed on January 31, 1962. The contract for the next step, the detailed design phase, was not signed by GE until the summer, but work continued nevertheless. During phase II specifications were laid out for equipment, operators were trained, development was begun of composing equipment that would print *Index Medicus*, and the computer system was developed to the point where it would operate. An idea of the magnitude of the task may be visualized by noting the time required for programming, 30 man-years. The program was tested and "debugged" on a computer at Army Map Service until the Minneapolis-Honeywell 800 arrived at the Library in March 1963. The computer room had been carefully designed, and the computer was installed and tested without major problems. GE had provided on-the-job training for operators of the system. After the computer was installed the operators kept it busy an average of 12 hours a day debugging, modifying, and integrating program modules. The Library assumed responsibility for maintaining the system in February 1964.

In operation the new system began with indexers, each of whom was assigned a number of journals every day. Starting with the first article in a journal an indexer typed the author's name and other bibliographic data on a printed form. Because of the large number of articles scheduled for citation in *Index Medicus*, the indexers did not have time to read every word in an article but used a rapid scanning-reading method of deciding what each article was about and selecting the subject headings and subheadings to be cited, using terms on NLM's medical headings subject list. Approximately nine subject headings were assigned to the average article, editorial, letter, or other item. The indexer typed these terms on the form, placing an X along side of those destined for publication in *Index Medicus*, leaving the unmarked terms to be inserted into the computer for retrieval during searches. The indexer also checked on the form preprinted terms appropriate to the article, such as the age of a person discussed in the article. The form was attached to the article, and each suc-



The Honeywell computer, workhorse of MEDLARS I, was responsible for processing over 10 years of Index Medicus, Cumulated Index Medicus, Current Catalog, *and numerous other bibliographies used throughout the world. It processed thousands of demand searches during the years before on-line searching took over. The system was also instrumental in providing data which led to the development of its own successor MEDLARS II.*

ceeding article in the journal was indexed in the same manner. The journals were passed to a reviser who checked the form against the article quickly to confirm the indexing. After revision the information was typed on paper tape in machine-readable form, proofread, the tapes spliced into batches and fed into the computer. Through the computer's input program the information on the paper tape was recorded on reels of magnetic tape, edited, and incorporated into data files.

On the retrieval end of the system the process began with a patron's writing his request on a special form and mailing it to the Library. There a librarian, using the medical subject headings list vocabulary, coded the request into a form acceptable to the computer. In MEDLARS, as with most of the computer systems developed at the time, the entire file of magnetic tapes had to be searched in sequence in order to retrieve all of the citations on a given subject. In 1964 it took about 40 minutes for the computer to read all of the tapes. Therefore it was not practical to process only one search at a time. Instead a batch of requests was inserted into the computer which retrieved citations for all of them in one sweep and sorted them at the end. The retrieved list of citations was reviewed by the specialist who had coded the request and mailed to the patron.

As might be expected with large new systems, the development of MEDLARS did not proceed altogether smoothly. One problem was the revision of the medical subject headings list, MESH. The existing MESH list, developed during the previous decade for NLM publication, contained 4,500 headings and 67 topical subheadings. Winifred Sewell and her associates worked hard

integrating 1,400 new headings, eliminating subheadings and some old headings, and producing a list of 5,700 subjects. Inconsistencies and deficiencies were noted, and changes were made. Decisions had to be made as to which subject headings would be used in *Index Medicus*, and which would be placed in the computer only for searching.

Other troubles occurred during 1963 when the Library was switching from the old method of producing *Index Medicus* to the new, forcing indexers to process journal articles twice, once using the old MESH list to index articles for the current issues of *Index Medicus* and once using the new MESH list to index articles for a computer test tape. The double processing caused the production of citations to proceed slowly. By the end of 1963 the regular production of *Index Medicus* had been maintained, but only 45,000 citations had been stored in the test tape instead of the 150,000 that had been expected. This so-called "conversion" tape was useful in testing MEDLARS, but it contained so many inconsistencies that it was not used for searching after 1965.

It had been foreseen that the development of the output system that would print *Index Medicus* might present more problems than the development of the computer segments. The intention was to link the computer to a device that would compose the text of *Index Medicus*, perhaps a mechanized line-printer of the type commonly used with computers or a mechanical photocomposition device or a cathode ray tube device. A study of the existing printers showed that none was satisfactory; they were too slow or had a poor typographical appearance or possessed other drawbacks.

Seymour Taine had persuaded Rogers to include in the MEDLARS requirements one for a fast photocompositor. General Electric arranged a subcontract with Photon Company to develop a new phototypesetter that would operate at high speed, using a magnetic tape input following computer transposition and editing. This device was first named GRAC (graphic arts composer) but this sounded somewhat like a monster in a science fiction movie and was changed to the felicitous GRACE (graphic arts composing equipment).

GRACE was scheduled for delivery in May 1963 to allow time for testing before being used to print *Index Medicus*. The engineering problems involved were difficult, and their solution took longer than expected. Several of the Library's knowledgeable visitors were very pessimistic about the slow progress of GRACE. Finally in the summer of 1963 Rogers was faced with a major decision, to delay the inauguration of MEDLARS or to find another way of printing *IM*. He decided to follow the schedule as closely as possible, and he ordered the system be placed in operation in January 1964.

Martin Cummings, who succeeded Rogers as Director in January 1964, closely monitored the construction of GRACE. He exerted pressure on the contractor and subcontractor to achieve the high quality they had promised, and he had everything in readiness for production when the machine arrived during the summer. In the meantime a conventional computer printer, loaned

by Documentation, Inc., composed the issues from January through June, and an IBM printer with a more attractive font turned out the July issue. GRACE began to produce *Index Medicus* in August.

GRACE accepted input from a magnetic tape that had been coded by the computer. The machine contained a matrix of 226 characters etched on a glass plate; these characters were in several fonts, with a complement of diacritical marks. Behind each character was a high-speed flash tube. The circuitry of GRACE timed the flashing of these lights. Between the matrix plate and a 9-inch wide roll of film was a mirror and reciprocating lens, constantly moving back and forth, photographing a line of characters, character by character, across the width of the page, at a speed of 1.7 seconds per sweep. The exposed film, in 100-foot-long rolls, was developed automatically in another machine, cut into page size strips and sent to the printer.

At the time GRACE was the fastest computer-driven photocomposer in the United States. It operated at a speed of 3,600 five-letter words a minute, more than 25 times the speed of previous phototypesetters. The August issue of *Index Medicus* contained 13,733 different citations and approximately 1.8 million five-letter words. GRACE needed only 16 hours to set and compose the type. GRACE continued to phototypeset publications until 1969 when, overtaken by age, it was replaced by an improved, faster commercial model Photon Zip 901, and sent to rest at the Smithsonian Institution. It was estimated that during its active life, from August 1964 until March 1969, GRACE composed 165,000 pages for *Index Medicus* and other bibliographies.

During the break-in period of MEDLARS, 1964, imperfections became evident in the analysis and retrieval system. There was need for improvement in the practices and techniques of indexing and for the recruitment and training of persons capable of carrying on the rigorous in-depth indexing necessary to prepare information for insertion into the computer. There was need for a method of evaluating the relevance of citations retrieved from the computer upon request and of estimating the percentage of citations missed during retrieval. There was need for computerization of the Library's technical activities, such as cataloging. There was need for further refinement and modification of the medical subject headings list. The latter was particularly important; the high quality of *Index Medicus*, of the proposed recurring bibliographies, and of individual searches depended upon MESH.

Director Cummings acted quickly to improve the list. He set up a MESH group headed by Peter Olch, a pathologist whom he brought from National Institutes of Health. Through the efforts of Olch's group MESH was expanded and developed further logically. Subheads were reinstated, the number of cross references was increased, and hierarchical or tree structures were developed for a number of categories. The MESH section received advice on special terminology from several professional groups, among them representatives of the epidemiology section of the American Public Health Association, the American

Dental Assocation, *Journal of Medical Education*, *American Journal of Nursing*, and Chemical Abstracts Service. Cummings maintained a close watch on MESH, placing it under the care of Norman Shumway after Olch left.

Despite the problems of the inaugural year, MEDLARS performed well. Indexers, revisers, computer operators, search specialists, and others associated with MEDLARS gained the practical experience necessary to operate the system efficiently and to make full use of the capabilities of the system to store and retrieve information and to produce copy for printing bibliographies. Within a relatively short time they reached a high level of competence and produced work of whose quality they were proud.

The cost of development of MEDLARS, some $3 million, was high but reasonable. At the time of the completion of MEDLARS there was no other

The first Photon ZIP Series 900 high speed computer phototypesetter, GRACE, installed in 1964, being operated by Donald Dodson. GRACE operated at a speed of 3600 words a minute, several times faster than previous phototypesetters.

publicly available fully operational electronic storage and retrieval system of its magnitude in existence. Not all of the objectives that Rogers and his staff had hoped for were attained, but on the whole the system was one of the largest and most successful library automation projects. It provided the medical profession of the United States, and later of other countries, with the most powerful bibliographic tool in the world. The original computer configuration served NLM well from the time it began to operate in January 1964 until its successor replaced it in January 1975. Its success marked a milestone in the evolution of modern libraries. And the development of the MEDLARS printer, GRACE, yielded a by-product, an advancement in the art of electronic typography.

Recurring Bibliographies

It was not intended that *Index Medicus* be the only bibliography produced by MEDLARS. Rogers, Adams, and Taine foresaw a stream of periodical bibliographies, ultimately perhaps as many as 50, issuing from the system. Once the citations to articles had been placed on the computer tapes, those in any field of medicine could be retrieved rapidly. Bibliographies covering the recent literature of any specialty could be produced without difficulty. There would be no necessity for any medical organization or agency to compile bibliographies for its members, it could be done by MEDLARS. Indeed, it would be a wasteful duplication of MEDLARS' mission to produce bibliographies by other means.

As the system approached completion Adams and Director-Elect Cummings discussed the policy that would be followed in producing these specialized lists of citations. They decided that the Library would not publish them itself, but only in cooperation with government agencies or nonprofit medical organizations. NLM would carry on the tradition of free service by supplying bibliographies without charge to the organizations, and the organizations would then have the bibliographies printed and distributed. The Board of Regents approved this policy in December 1963.

During 1964 under the direction of Taine and his successor Leonard Karel the Bibliographic Services Division formulated a number of experimental searches to obtain information on the construction of recurring bibliographies. By July 1964 the tests were completed. The first work printed from film composed by GRACE was *Cerebrovascular Bibliography,* under the sponsporship of the Joint Council Subcommittee on Cerebrovascular Disease of the National Institute of Neurological Diseases and Blindness and the National Heart Institute. The first recurring bibliography processed by MEDLARS from inception to retrieval was *Index to Rheumatology,* sponsored by the American Rheumatism Association with assistance from a grant provided by the National Institute of Arthritis and Metabolic Diseases. A pilot issue of the *Index* was printed in November 1964, and volume 1, number 1, was published on January 15, 1965.

Generally a recurring bibliography originated with a proposal from a health organization. If NLM concluded that the proposed bibliography would not duplicate any other publication and that it would help advance the subject, the

Library moved ahead. Representatives of NLM and the organization planned the format, frequency of publication, and specifications of contents. They defined the subject field using the terms in MESH, and then tested and developed the search strategy until the experts and searchers were satisfied. The Library produced a sample issue of the bibliography for review by experts in the field. Further modifications were made based on their criticism. Finally the Library produced a camera-ready copy for the organization to publish and distribute. Many months passed between the beginning of negotiations for a bibliography and publication of the first issue.

The Library and sponsoring organization benefitted mutually from the collaboration. The sponsor gained a current, thorough bibliography of primary importance to workers in its field while the library received expert advice on the literature needs of persons in the field and suggestions concerning terminology. On occasion NLM gained indexing assistance; the American Dental Association provided two indexers to the NLM staff to assist with the *Index to Dental Literature*, and the American Journal of Nursing Company added an indexer to help with the *International Nursing Index*.

Recurring bibliographies were quite successful. Within 6 months of the appearance of the first compilation, the Bibliographic Services Division was producing seven and was planning seven others. Organization after organization negotiated agreements with the Library, and each year two or three new titles appeared. By the end of a decade NLM was producing copy for 28 different recurring bibliographies.[6]

Demand Searches

The second major type of bibliography produced by MEDLARS was not intended for publication but for the use of a person carrying out research. These lists of citations were retrieved from the system by a "demand search." While MEDLARS was nearing completion in 1963 trained search specialists began to make experimental demand searches to test the computer's ability to provide relevant bibliographies on specific subjects. As might be expected the operators found "bugs" in the system. They had difficulty preparing search formulations and procedures. This led them to evaluate items that influenced the search and the adequacy of terms used in formulations. They devised a new card input program to simplify search formulations, reduce processing time, and diminish the number of searches rejected for format error by the computer.[7]

Improving the search procedure took time. Finally in March 1964 the Library began to accept requests for searches. The early searches were made for physicians, researchers, health officials, and teachers who agreed to evaluate the bibliographies produced by MEDLARS for completeness and relevance so that the staff could improve the procedures. The service was limited at first because only a few operators were sufficiently familiar with the system to process searches, give demonstrations, and train associates.

The demand for MEDLARS bibliographies increased rapidly. By mid-1964

the operators had processed more than 600 searches. During fiscal year 1965 they successfully processed 1,623 out of 1,757 requests submitted to them. Most requests came from researchers and teachers. About 95 percent originated in the United States, the remainder in other countries.

During this period Director Cummings received a visit from Cyril Cleverdon, librarian of the College of Aeronautics, Cranfield, England. Cleverdon had evolved ideas for evaluating the efficiency and effectiveness of information systems by determining their recall and precision ratios. He explained his ideas to Cummings, who saw in them an opportunity for the Library to find out how satisfactory were the bibliographies produced by MEDLARS and to learn where improvements might be made.

Upon Cleverdon's recommendation the Director engaged F. Wilfrid Lancaster in December 1965 to evaluate MEDLARS. He retained Cleverdon as a consultant and appointed a committee of six knowledgeable computer specialists to review the test procedures and the analysis of results.

In making his test Lancaster sent forms requesting information to a selected group of persons who had asked for and received lists of citations retrieved from MEDLARS. Each person was asked his opinion of the usefulness, to him, of each of the articles on his list. From the replies returned by 302 persons Lancaster was able to tell, in each case, whether the system had retrieved informative articles, or relatively worthless articles, or some proportion of the two; and whether it cited sufficient articles or too few. He found failures attributable to lack of specificity in medical subject headings, variations in the exhaustivity of indexing, lack of specificity in indexing, failure of the requester to be specific in wording his request, and other causes. He recommended improvements in several areas, including the user-system interaction, index language, indexing, and search strategy. He suggested that NLM begin continuous quality control of MEDLARS searches.

Lancaster's study was useful in and out of the Library. Outside, the report was of interest to organizations with computers because of the diversity of subject areas that it covered and because it was the first large-scale evaluation of a major operating information system. In the Library Cummings ordered that Lancaster's recommendations be adopted, and he set up a quality control unit to check the effectiveness of every search requested by a patron. Later the designers of MEDLARS II benefited from this evaluation of MEDLARS.

Certain bibliographies produced by a demand search were, in the opinion of the staff, of interest to many persons and deserved a wide circulation. In June 1966 NLM began to reprint such bibliographies, christened "literature searches," announce them through various journals, and mail copies to patrons who requested them. The first literature search was titled "Anterior Pituitary Insufficiency due to Postpartum Necrosis, 1949–1965," and comprised 77 citations. By 1976 the Library had published 356 different searches and distributed between 30,000 and 40,000 copies.

Decentralization of MEDLARS

When MEDLARS was being designed the staff looked ahead to the time when the system would be completed, and they saw that search specialists would eventually be overwhelmed by requests for computer searches. The staff and the GE team considered several ways of preventing this. The Library could open branches in other sections of the country, each with its own computer facility and employees; it could open branches whose operators would send searches to, and receive bibliographies from, NLM via data communication equipment; it could make copies of MEDLARS tapes for other libraries which would then provide search service for users in their areas. The last option was selected because it was relatively inexpensive to duplicate tapes and because the establishment of search centers in other libraries would stimulate the growth of those libraries, relieving some of the pressure on NLM. The Library soon found that this decision appealed to the medical community; within a short time 35 institutions requested duplicate tapes in order to provide service to their clientele.[8]

The decentralization of MEDLARS began in 1964 when NLM awarded a contract to University of California in Los Angeles to serve as a search center. The UCLA and NLM computers were different, and one of the purposes of the agreement was to learn what difficulties libraries might face in reprogramming MEDLARS tapes. The reprogramming took longer than expected, and UCLA did not process tapes during the life of the contract.

The second search center was University of Colorado, awarded a contract in 1965. The University arranged with the Denver Federal Center for use of a computer identical to the NLM computer, and within a reasonable time it began to provide service to physicians in its area. The following year a committee of the Board of Regents considered applications from other institutions and recommended that contracts be awarded to University of Alabama, University of Michigan, and Harvard. Ohio State and Texas Medical Center obtained permission from the Library to establish MEDLARS centers using their own funds.

Further decentralization of MEDLARS in the United States came about through the Medical Library Assistance Act of 1965. This law authorized the granting of funds to medical libraries in various regions of the United States to enable them to provide services similar to, though on a smaller scale than, those provided by the National Library. Between 1967 and 1970 there were established 11 regional libraries, each of which became a MEDLARS center. Operators came from all MEDLARS centers to Bethesda to learn how the system operated and to formulate searches. After returning home the operators formulated search requests from local patrons and mailed the formulations to NLM for processing. Centers continued to send formulations to NLM until they became fully operational and were capable of processing searches themselves.

Institutions in Europe showed interest early in gaining access to MEDLARS so that they could provide service to physicians and libraries within their countries. Even before MEDLARS was perfected the Library received requests from abroad for services and data bases. In 1965 informal discussions between Director Cummings and physicians in Great Britain and Sweden led to an agreement: the Library would provide tapes to an institution in each of those countries and train operators for them if the institutions would evaluate the service and would index for NLM. Both countries complied and sent trainees to the Library. After these operators completed their training and returned home the British MEDLARS center began to operate in 1966 and the Swedish in 1967.

To guide the establishment of future MEDLARS centers abroad and to provide for cooperation between all foreign centers and NLM, Cummings laid down these policies. The Library would not select the institutions that would become centers, this would be done by governments or by organizations within the countries using standards suggested by NLM. The Library would provide access to MEDLARS and would train operators for the centers if in return the centers would index a reasonable number of articles monthly for MEDLARS. No funds would change hands; there would only be an exchange of service.

The success of the first European centers led the Office of Science and Technology and the State Department to suggest that NLM offer MEDLARS to the Organization for Economic Cooperation and Development. For 2 years Deputy Director Scott Adams endeavored to bring about a multilateral agreement with the organization leading to the setting up of a center to serve OECD countries, but the countries could not agree on a consortium. The Library finally decided to seek agreements with individual countries. Mary Corning, the Director's special assistant for international programs, negotiated agreements with institutions in several nations, among them Institut National de la Santĕ et de la Recherche Médicale in France, Deutsches Institut für Medizinische Documentation und Information in West Germany, The National Library of Australia, and Canada Institute for Scientific and Technical Information in 1970; Japan Information Center of Science and Technology, and World Health Organization in 1972, Iran in 1975; Mexico and South Africa in 1976; Italy in 1977; and Switzerland in 1980. The Library and its partners collaborated on policy and technical matters through an International MEDLARS Policy Advisory Group, which first met in 1972.

One disadvantage of the demand search service was its slowness. The time from the submission of the request, through the formulation of the request by an analyst at NLM and the processing in the computer, to the review and mailing of the bibliography to the patron, was usually 3 to 6 weeks. Therefore when MEDLINE, the Library's on-line retrieval service, became available in December 1971 patrons turned to it. They could obtain lists of citations within minutes. As the on-line system grew the centers sent fewer and fewer requests

to NLM, and the Library discontinued the demand search service in January 1973.

Searches	FY 1965	'66	'67	'68	'69	'70	'71	'72
NLM	1,623	3,035	3,135	2,500	3,182	3,550	3,889	2,401
U.S. Centers			1,580	5,173	8,231	10,737	14,180	10,806
Foreign Centers			1,225	2,698	4,062	6,453	5,648	5,808
Totals			5,958	10,371	15,475	20,740	23,717	19,015

Selection of Journals for the Library

The Library did not have sufficient funds to index every article in every medical and related journal in the world. Nor did it wish to cite articles that would have little value for most users. Its aim was to index as much of the world's substantive medical literature as possible while avoiding the indexing of periodicals of lesser value.[9]

The selection of journals for the Library's collection, and particularly the selection of journals whose articles were cited in *Index Medicus*, was very important. In the early days one person, Billings, had chosen the journals. After he built up the subscription list it was used year after year. New journals that came to the attention of Billings, Fletcher, or later editors of *Index-Catalogue*, were added for trial. Journals that went down hill were dropped. Wars killed journals and played havoc with the list. Business depressions forced journals out of buisness. The serials on the subscription list of 1960 were far different than those on the list of 1870, but they were still essentially the choice of a few persons within the institution. On the whole the editors had chosen wisely, and there was no criticism of their lists; still the volume of periodical literature kept increasing, the Library was broadening its scope, and Director Cummings felt it would be wise to seek advice from persons outside the Library.

In 1964, he appointed a Committee on Selection of Journals for Index Medicus which evolved into a less formally constituted group of consultants for the selection of literature for MEDLARS. These groups were composed primarily of non-NLM persons, including scientists, medical librarians, and physicians. The original committee, chaired by Leonard Karel, reviewed approximately 2,300 journals being indexed for, and others suggested for, *Index Medicus*, basing its decision on the quality of the journals in research, clinical applications, or education. Members found it easy to segregate the few hundred unquestionably superior periodicals out of the more than 15,000 titles acquired then (the number increased annually), but difficult to select 1,500 to 2,000 other journals of lesser importance, especially those in unfamiliar languages. Finally the committee, often with advice from specialists in certain subjects, recommended the addition of 466 titles to, and deletion of 324 from, the *Index Medicus* list. Each year thereafter the group's recommendations changed the character of *IM* slightly, with the aim of presenting to users an index to the most useful articles published throughout the world.

COMPUTER-AIDED CATALOGING

It had been hoped, during the early planning, that MEDLARS would be able to publish the Library's book catalog data in *Index Medicus*. The latter would then be a catalog of books, serials, and theses, as well as an index to articles. It would be reminiscent of the old *Index-Catalogue* in its universal coverage. In 1963 when MEDLARS was being programmed for the production of *Index Medicus*, General Electric and NLM made several attempts to satisfy the needs of the catalogers, but technical limitations in the programs prevented the publishing of cataloging data in acceptable form. Finally in October 1963 NLM decided to postpone the inclusion of book entries in *Index Medicus*.[10]

In February 1964 an analysis was begun of the procedures used by the Technical Services Division in selection, citation searching, acquisition, cataloging, and serial record keeping in order to obtain the information needed to design a computer system linking all of these functions. Several other libraries were consulted about their procedures, and librarians were asked for advice. While the analysis was going on NLM informed the medical library profession of its intention to publish a catalog with the help of MEDLARS and asked for preferences. On the basis of replies NLM decided to issue a biweekly serial that could be used by other libraries for cataloging and for selecting books for purchase.

The design of the system was completed in October 1965. Priority was given to the cataloging phase of the operation. Rather then write new programs the NLM staff modified several programs, adapting the MEDLARS input module to the specific requirement for displaying cataloging data. In January 1966 NLM began publication of the biweekly *National Library of Medicine Current Catalog*, one of the first regularly recurring, completely automated book catalogs in the world. The first issues listed by author and title the books and serials that had been acquired by the Library from December 1965 to January 15, 1966. Cumulations were issued quarterly and annually. After 1966 biweekly issues included only material published during the current and preceding 2 years. NLM also produced catalog cards, containing approximately the same information as the printed catalog. The Library estimated that American medical libraries could save a total of $4 million a year if they adopted the *Current Catalog* for use in procurment and cataloging.

After a few years' experience NLM concluded that a monthly catalog would better serve the profession than a biweekly. It discontinued the biweekly issue at the end of 1969. Some libraries, however, still felt the need for biweekly lists. Beginning in July 1970 the Medical Library Association arranged to receive proof sheets twice a week from NLM, print copies, and distribute them to subscribers. Later the semiweekly gave way to weekly proof sheets.

The Library began the monthly catalog in January 1970. The monthly was short-lived owing to the development of an on-line bibliographic retrieval system named AIM-TWX which led to MEDLINE and to CATLINE. The latter

possessed a base of catalog data that could be searched by libraries through computer terminals, starting in 1973. The monthly issue of the *Catalog* was then superfluous and it was discontinued at the end of 1973, leaving the quarterly and annual issues.

Indexing by Contractors

When indexers began to prepare citations for MEDLARS, they assigned many more subject headings than for the old *Index Medicus*. As a result they indexed fewer articles per hour, and a backlog of unindexed articles began to pile up. The Library hired additional employees, it asked indexers to work overtime, and it modified the procedure. These steps increased production, but still the backlog grew. Although the number of articles indexed rose from 144,057 in fiscal year 1964 to 168,310 in FY 1967, the backlog jumped from approximately 12,000 to about 70,000.[11]

Indexers had to have an excellent knowledge of science, be very intelligent, be nearly fluent in foreign languages, and have good judgment. It was difficult for the Library to recruit persons with such unusual abilities because salaries were too low. NLM had set up a training program for indexers, but this did not fill vacancies.

The Library, therefore, considered the possibility of having some of the indexing done under contract. A pilot study in 1966 showed that the idea was practical. The following year NLM contracted with Keio University in Japan to index articles in Japanese, the editor of the *Israel Journal of Medical Sciences* to handle articles in Slavic languages, and the Parkinson Information Center at Columbia to index certain domestic journals. To make sure that the work was done properly the Library trained the contractors' employees, reviewed the indexes, and when necessary, revised them. During 1967 12,300 indexed citations, less than 8 percent of the total, were produced outside of NLM, but the following year commercial contractors at home and MEDLARS partners abroad began to contribute a large proportion. The backlog shrunk and disappeared, and soon all articles were being indexed currently. In 1969 the number of articles indexed by U. S. contractors and foreign MEDLARS centers outnumbered the articles indexed at NLM. By 1976 only 15 percent of all articles, or 38,400 out of 255,000, were indexed in the Library. Thereafter, on orders from the Director, 25 percent of all indexing was done at home.

In 1976 about 100 indexers and revisers, most of whom were employed by contractors or foreign partners, produced citations for the MEDLARS data base. This was more than 10 times the number of persons who indexed for the

Indexed articles	FY 1968	'69	'70	'72	'74	'76
U. S. contractors	59,000	76,200	75,500	120,700	74,000	100,000
MEDLARS centers abroad	22,000	34,900	43,600	72,800	106,200	116,600
NLM	112,000	99,400	90,900	39,900	44,100	38,400
Totals	193,000	210,600	210,000	233,400	224,300	255,000

old *Index-Catalogue* and *Index Medicus* from the 1880's to the 1920's. One monthly issue of *IM* in 1976 contained more citations (approximately 25,000) than the entire first volume in 1879 (approximately 18,000).

THE LIBRARY AS PUBLISHER OF *Cumulated* AND *Abridged Index Medicus*

In 1959 the Library and the American Medical Association had begun to publish the *Cumulated Index Medicus* as a joint venture. The Library, at the time, was using data processing equipment and an automatic camera to produce copy for printing the journal. This publication system was as primitive, compared with a computerized system, as the horse and buggy was to the automobile. When NLM ascended out of the mechanized stage into the computer stage, it had the potential to publish many more bibliographies each year.[12]

Among the ideas for new bibliographies was the thought that the Library could easily relieve the American Medical Association of the burden of completing each volume of the *Cumulated Index Medicus*. Director Cummings wondered if the AMA would not prefer to divest itself of its share of the work rather than expend part of its energies in completing, handling, and selling the volume. Finally in the summer of 1965 he met with Hugh H. Hussey, Jr., director of the division of scientific activities of the AMA and a Regent of NLM, and volunteered to assume responsibility for the entire production of *CIM*. Hussey agreed tentatively. Shortly thereafter Morris Fishbein, associated with the AMA publications for many years, visited the Library and completed the arrangements. Beginning with volume 6, 1965, NLM became sole publisher of the massive reference work. The four-volume set of 5,697 pages was processed in 120 hours over a period of 2 weeks utilizing the computer and GRACE.

The concept of an abridgement of the *Index Medicus* was another of the ideas that arose. Scott Adams recommended an abridgement containing references to articles on clinical medicine of interest to practicing physicians. The Library offered to publish an *Abridged Index Medicus* jointly with the AMA. In January 1965 Leonard Karel and his staff in the Bibliographic Services Division compiled a sample issue of the proposed journal containing 166 subject pages and 88 author pages, listing 3,660 citations from 216 journals. The association examined the sample, gave suggestions for improvement, and agreed to appoint a committee to draw up specifications for an abridged *IM*.

But by this time MEDLARS was operating, the Library was having difficulty maintaining its schedule, indexing was falling behind, operators were being trained, and the computer group had more than enough work turning out *Index Medicus*, *Cumulated Index Medicus*, and recurring bibliographies. The staff had to suspend work on the abridged *IM*.

In 1969 Clifford Bachrach, successor to Karel, and later editor of *Index Medicus*, returned to the abridgement. After much study to determine which high-quality periodicals would be most useful to practicing physicians, the staff and consultants selected 100 English-language journals from 2,300 journals being indexed in *Index Medicus*. Using MEDLARS they produced a pilot issue

in August 1969. The American Medical Association conducted a market survey and concluded that there would not be sufficient subscribers to warrant publication. But Bachrach was more optimistic and went ahead to prepare the first regular monthly issue of *Abridged Index Medicus* in January 1970. The *AIM* attracted sufficient subscribers to justify continued publication. Each year approximately 33,000 articles were listed in *AIM*, about 13 percent of the number in *Index Medicus*.

MEDLINE AND OTHER LINES

In 1967 Director Cummings engaged the nucleus of a new group whose mission was to study the ways by which modern methods of communication could be applied in the Library. The group shortly became the Lister Hill National Center for Biomedical Communications. Ralph Simmons of the center set up facilities for experimenting with computer on-line retrieval systems. This led to the development by a contractor, System Development Corporation, of a practical on-line bibliographic system named AIM-TWX, from *Abridged Index Medicus*, used as a data base, and Teletypewriter Exchange Network, the communication system. AIM-TWX was opened to a select group of users across the country in June 1970. During a trial period of several months users became enthusiastic over the speed with which it supplied bibliographic information.

Guided by experience gained during the test, Davis McCarn of the center and the contractor planned an on-line system that would accommodate 10 times as many searches as MEDLARS each year at one-tenth the cost. For the data base they selected citations to articles in 1,200 of the approximately 2,200 journals that were covered by *Index Medicus*. These citations amounted to about 60 percent of the total number, they included those most frequently sought, and provided a manageable base.

The operation of AIM-TWX had indicated that the cost of communication between the terminal and computer might be twice as much as the cost of the computer search, and that the communication cost would increase as the distance to the terminal increased. The staff were concerned that the expense might prevent many potential customers from using the new system. In order to make the data base as accessible to as many libraries as possible, NLM decided to subsidize the basic communication network. With assistance from the National Bureau of Standards, the staff sought the cheapest means of communication. For the first few months of operation they depended upon the Western Union Datacom System supplemented by phone lines leased from American Telephone and Telegraph Company. They then contracted with Tymshare for use of that firm's commercial communications network of high speed transmission lines connecting more than 50 cities in the United States and Europe. Libraries paid only the cost of telephone service to the nearest Tymshare city, from which they were connected to the contractor's computer in Santa Monica, California.

The new service named MEDLINE, from MEDLARS onLINE, began trial

runs in the Library on October 18, 1971, and was opened to a selected group of institutions in December. Among the original users were NLM's regional medical libraries and large medical school libraries. Later other schools, research institutions, hospitals, clinics, and independent medical libraries were admitted to the system. Libraries did not have to pay for use of the new bibliographic service, but in return for free access to MEDLINE they had to agree to provide service to persons who were not among their usual clientele.

As had been anticipated the new on-line system was used much more extensively than the MEDLARS demand search service. It provided bibliographies within a few minutes, in contrast to the demand search which took 3 or more weeks. The MEDLINE terminal showed the patron his citations, and thus gave him the opportunity to modify his request if he wished to obtain references more pertinent to his need. A year after MEDLINE began 150 institutions were connected to the system. Twenty-five libraries, on the average, were using it simultaneously, making 10,605 searches a month, or approximately 140,000 a year. About two-thirds of the patrons were satisfied with the bibliographies that appeared on their terminals; the remainder desired long bibliographies (more than 100 citations) which were printed off-line at NLM and mailed to them.

In February 1973 the Library stopped using the SDC computer in Santa Monica and provided MEDLINE service from Bethesda. The following month NLM arranged with the State University of New York at Syracuse, SUNY, to provide MEDLINE service through the Tymshare network. The SUNY computer could handle 40 searches simultaneously, nearly doubling the capacity of MEDLINE and assuring that the service would be maintained if the NLM computer shut down for some unforeseen reason.

Initially the MEDLINE data base was a selected bibliography designed for the majority of users, and it omitted a large proportion of the references in *Index Medicus*. To satisfy researchers who wanted every citation on a subject, NLM placed the *Index Medicus* references that had been left out of MEDLINE into a new data base called COMPFILE, from COMPlement FILE. Into COMPFILE were also inserted citations from *Index to Dental Literature* and *International Nursing Index*. COMPFILE was made available to searchers in February 1973. By that time the on-line system was receiving so much use that the Library had to restrict access to COMPFILE to 2 days each week. COMPFILE was eliminated in 1974 when all the citations in *Index Medicus* were placed in MEDLINE.

To keep the MEDLINE file relatively current, containing only articles published within 2 or 3 years, NLM periodically removed older citations and placed them in BACK files, as BACK 66, holding the references from the period January 1966–December 1968. The back files were accessible for searching off-line.

The Library found that some users of MEDLINE were interested in only the most up-to-date articles in their field. Lister Hill Center therefore devel-

oped a data base containing citations from the forthcoming monthly issue of *Index Medicus*. Each month users could receive citations weeks before the issue was printed and distributed by the Government Printing Office. This data base named SDILINE, from Selective Dissemination of Information onLINE, was made available in September 1972.

The on-line retrieval system was so successful that the Library staff incorporated all manner of useful data into computer files. By 1976 almost 3.5 million citations were in the data bases.

Name	Scope
AVLINE	Citations to audiovisual teaching packages used in health sciences education from 1974 on.
CANCERLIT	References and abstracts of articles on cancer from 1963 on. Originally called CANCERLINE.
CANCERPROJ	Descriptions of projects in cancer research for the present and preceding 2 years.
CATLINE	Reference to books and serials cataloged at NLM from 1965 on.
CHEMLINE	Chemical dictionary containing names and information on hundreds of thousands of substances.
EPILEPSYLINE	Citations and abstracts of articles on epilepsy in *Excerpta Medica*, from 1947 on.
MEDLEARN	A computer-assisted instruction program used in teaching persons to operate NLM's on-line system.
MEDLINE	Citations to articles and selected books from January 1978.
BACK 75	MEDLINE citations from January 1975 to December 1977.
BACK 72	MEDLINE citations from January 1972 to December 1974.
BACK 69	MEDLINE citations from January 1969 to December 1971.
BACK 66	MEDLINE citations from January 1966 to December 1968.
MESH VOCABULARY	Medical subject headings file, used for indexing, cataloging, and searching.
NAME AUTHORITY (MEDNAM)	Authority list of names and companies, used by NLM catalogers.
RTECS	Registry of toxic effects of chemical substances, an on-line quarterly compilation of data starting in 1976. The hard copy version was prepared by the National Institute for Occupational Safety and Health.
SDILINE	MEDLINE citations for the current month.
SERLINE	Bibliographic information on all serials ever cataloged by NLM.
TOXLINE	Citations and abstracts of published studies relating to toxicology, from 1977 on.
TOXBACK 74	TOXLINE citations from 1974 through 1976.
TOXBACK 65	TOXLINE citations from 1965 through 1973 plus citations from the private file of W. J. Hayes.

Patrons referred to the MEDLINE file far more frequently than any other file, communicating with it approximately 71,000 out of 77,000 connect hours the system was in use during 1976. CATLINE was the second most frequently

used file, but most of its usage occurred within NLM. TOXLINE was second only to MEDLINE in outside usage.

As more and more libraries hooked onto the bibliographic network, the Library purchased faster and larger computers. The IBM 360/50 used initially was replaced by a 370/155, this by a 370/158, and followed in 1977 by a twin 370/158 multiprocessor. These improvements permitted NLM to give the best service possible, to make additional files available, and to allow more libraries to search simultaneously. Paralleling improvements in the computer system was the upgrading of the retrieval program.

Extracting citations from the MEDLINE and other data bases was far different from obtaining them from the old *Index-Catalogue*, *Index Medicus* and *Current List*. The person sitting at the terminal and desiring citations from MEDLINE needed to know the procedure, which could be learned in a short time, and the strategy of locating citations indexed under the Library's medical subject headings list, which required, for proficiency, many hours of training and experience. From the opening of the MEDLINE system, NLM offered a course of 3 weeks duration for librarians. The course provided intensive training in the content of the data bases, the use of MESH, indexing practices, cataloging practices, and the use of the name authority file. The student spent approximately one-third of the time searching the bases gaining practical experience. The course for TOXLINE operators was shorter, generally of 3 days length.

In 1976 NLM developed a brief self-instructional course named MEDLEARN for beginning operators to study before coming to Bethesda for training. MEDLEARN required only half a day or less for completion, yet instructors found that it greatly increased the effectiveness of the main course. By 1977 the Library had trained approximately 750 operators to use MEDLINE, and almost 600 to use TOXLINE, CHEMLINE, and related files.

As in earlier days the Library had shared with institutions in other countries its printed *Index-Catalogue*, and in recent times its MEDLARS tapes, so now it invited its international partners to utilize the on-line system. By 1980 Canada and Mexico in North America, France and Italy in Europe, Iran in the Near East, and South Africa far away in the Southern Hemisphere linked themselves to the NLM computer in Bethesda through commercial communication lines. France extended the on-line service into Spain, Belgium, and Switzerland. Japan and Australia placed MEDLARS data bases on their own computers and provided on-line service to institutions in their own countries. Sweden, Germany, and United Kingdom also used their own computers and stretched the service into the Scandinavian countries, Poland, Netherlands, East Germany, Austria, and Belgium.

An important difference between cooperation earlier and in the 1970's was speed. In Billings' day at least 1 or 2 years elapsed between the time an article was indexed at the Library, the citation published in *Index-Catalogue* and the latter shipped to a European agent and distributed to users. If the citation had to wait in the file, because of the place of its subject heading in the alphabet,

15 or 20 years could elapse before it reached a user. Now the average length of time between the arrival of a journal and the appearance of the citation in the data base ready for users was only 80 days.

From the beginning of its existence the Library had given its services as freely as its resources would allow. It developed the MEDLARS demand search service and the MEDLINE system, and made them available to qualified users without charge. But the Library's funds were limited, and it could not continue to pay all the expenses indefinitely. After discussions in meetings of the Board of Regents about funding, Director Cummings ordered that users be billed for a portion of the communication costs. Beginning in August 1973, users paid $6 per terminal connect hour, and 10¢ a page for off-line prints. The cost was raised to $8 an hour in February 1975. On July 1, 1975, the Regents changed the rate structure to $15 an hour for service between 10 a.m. to 5 p.m., and $8 an hour from 5 to 8 p.m., and 3 to 10 a.m.

Physicians, nurses, researchers, other health workers, and students learned quickly of the great convenience, usefulness, and speed of NLM's on-line service after it became generally available in 1972. The number of searches increased from an estimated 22,000 in fiscal year 1972 to approximately 165,000 in FY73, 278,000 in FY74, 402,000 in FY75, and 579,000 in FY76. By the end of 1976 approximately 550 institutions were linked to the Library's computer. In 1978 NLM provided a million searches from all data bases, more than half of all the searches made in the United States in all fields of science and education. MEDLINE was the first large-scale successful on-line library-based bibliographic system, and the first international telecommunications-based science information network.[13]

MEDLARS II

Computer firms were continually improving their products. By the time MEDLARS went into operation it was evident that it would be obsolete within a few years. In the summer of 1966 Director Cummings contracted with Auerbach Corp. to draw up specifications for a new system, MEDLARS II, that would outperform MEDLARS, and in addition would accommodate elements of the cataloging process and the keeping of serial records, permit on-line retrieval of citations, include a drug information module, and store and retrieve graphic images. Cummings appointed a task force composed of NLM, NIH, and other government agency employees to assist in determining the Library's needs.[14]

In 1967 the Library requested proposals from industry. The Library's specification described what the new system should do. Firms were to state how the system would be developed, recommend a computer, and estimate the cost of developing the system. Seven firms delivered proposals.

On June 11, 1968, Cummings contracted with Computer Sciences Corp. to design, develop, and support the programming of MEDLARS II for $2,037,505 (this did not include the cost of an IBM computer that NLM planned to pur-

chase). Development of the system was to take place in three phases and be completed by December 1971. The heart of the new system was to be a set of interrelated computer programs called COSMIS, computer systems for medical information services.

As the months passed by the contractor was unable to keep up to the schedule. Furthermore costs escalated. In the spring of 1969 the Board of Regents Subcommittee on Research and Development, whose function was to advise Cummings, met with the contractor's staff to try to locate the problem. Receiving the subcommittee's report, Cummings persuaded the contractor to change the MEDLARS team. Ralph Simmons, who had been overseeing the development of NLM's on-line retrieval system, spent weeks working out the provisions of a new contract which Cummings signed with CSC on June 20, 1969. The new contract stated explictly the roles and interactions of the NLM and contractor teams, it gave new cost estimates, and contained penalties for cost overruns. Cummings set up a small unit to monitor the project and placed Simmons at its head, with authority to report directly to him.

Still the contractor fell behind the planned schedules. Simmons became pessimistic about the contractor's ability to meet deadlines. Regents Alfred R. Zipf, of the Bank of America, and Bruno W. Augenstein, of Rand Corp. received critical reports from members of their firms' computer staffs, whom they asked to check on the project. Cummings met with top management of the contractor to persuade them to hasten the work. But MEDLARS II proceeded slowly and on April 19, 1971, Cummings cancelled the contract.

In the meantime the System Development Corp. under contract had developed the Library's experimental on-line bibliographic retrieval system, AIM-TWX. A test of the system was to be started shortly. On June 9, 1971, Cummings contracted with System Development Corp. to complete MEDLARS II. The plan was to design the system around the structure and logic of AIM-TWX, adding an improved file generation and maintenance system and a new set of programs for photocomposition. The scope of some of the earlier objectives was reduced.

Over a span of 3½ years the contractor designed and developed the system. When completed in 1974 MEDLARS II contained a seven-level vocabulary (MESH) file, a journal file, current citation file, MEDLINE file, and other files. Davis McCarn and the computer staff tested the system during the latter months of 1974 and accepted it on behalf of the Library on January 3, 1975. The new system possessed all the capabilities of the original MEDLARS, it was faster, it was cheaper per unit cost of processing, it permitted higher standards for data, and it was more responsive to interactive searching and retrieval. New files with different record formats could be designed and implemented without interfering with other activities. The scope and variety of data bases and publications could be amplified more readily, and components of the system could be installed easily in other libraries.

In the summer of 1979 Director Cummings appointed Joseph Leiter to lead

a team whose task it would be to prepare specifications for a new computerized system, MEDLARS III, capable of managing and delivering a wider range of bibliographic information, data, and documents, faster and more rapidly than MEDLARS II Eventually MEDLARS II would follow the original MEDLARS into oblivion, after years of service as the backbone of medical communication in the United States

Notes

[1] In 1947 Scott Adams, then The Acting The Librarian, organized a meeting of librarians at the Pentagon to discuss the conflict in subject headings in the *Quarterly Cumulative Index Medicus, Current List*, and *Index-Catalogue* During lunch, Director McNinch mentioned to the group that the Statistical Department of the Surgeon General's Office was using IBM machines, and he wondered if it was possible for such equipment to be used in medical indexing He took the group to see the keypunch, card sort, and other machines in operation McNinch s suggestion and the tour of the Statistical Division may have been one of the roots pf the mechanization of *Current List*

The conclusions of the Welch Medical Library Indexing Project, 1948 to 1953, also suggested that some of the operations could be done using business machines

[2] The Council on Library Resources, Inc , was organized in September 1956 as a nonprofit body The establishment of the council was made possible by a grant from the Ford Foundation of $5 million to be expended over a 5-year period for "aiding in the solution of the problem of libraries generally, and of research libraries in particular " A copy of the Library's Proposal is in MS/C/295

[3] Information on the mechanization project may be found in The National Library of Medicine Index Mechanization Project, July 1, 1958–June 30, 1959, ' *Bull Med Lib Ass* 49 Part 2 of number 1, Jan 1961, 1–96, records of the Board of Regents, Sept , 1957–Apr 1961, Out line of a Proposal Made by the National Library of Medicine to the Council on Library Re sources, Inc , Feb , 1958 MS/C/47, annual reports of the Library, 1957–1961, Frank B Rogers, Tape-recorded comments on Index Committee May 24, 1979 NLM

[4] Correspondence between Rogers and officials of the AMA, a copy of the agreement between the PHS and AMA, and other pertinent documents are in MS/C/295 See also annual reports of the Library, 1961–1963

[5] A medlars is a fruit that resembles a crab apple and may be used in preserves In earlier times it was used in medicine, according to Thomas Cogan's *Haven of Health* (London, 1584) "Medlars are cold and drie in the seconde degree, they streine or binde the stomacke, and therefore they are good after meales, especially for such as bee over laxative, being much eaten they engender melancholie, and bee rather meat than medicine, as Galen saith Yet of the stones or kernelles of Medlars, may be made a very good medicine for the stone, as Matthio writeth The stones of medlars made in powder, driveth out the stone of the reynes, if you take a spoonefull thereof in white wine wherein the rootes of perselie have bene boyled "

Information on the development of MEDLARS may be found in many sources, among them General Electric Co , Final technical report for MEDLARS preliminary design, Jan 31, 1962, Archival Coll NLM *The Principles of MEDLARS* (NLM, 1970) *The MEDLARS Story at the National Library of Medicine* (NLM, 1963) Charles J Austin, *MEDLARS, 1963–1967* (NLM, 1968) *NLM News* records of the Board of Regents articles, including F B Rogers "The National Library of Medicine's Role in Improving Medical Communications " *Amer J Med Electronics* 1 230–41 (July–Sept 1962), S I Taine, 'The Medical Literature Analyses and Retrieval System," *Bull Med Libr Ass* 51 157–67 (1963), Winifred Sewell, ' Medical Sub ject Headings in MEDLARS," *Bull Med Libr Ass* 52 164–70 (1964), S Adams and ɔ I Taine, "Searching the Medical Literature, ' *JAMA* 188 251–4 (April 20, 1964), L Karel, C J Austin, M M Cummings, 'Computerized Bibliographic Services for Biomedicine," *Science* 148 766–772 (1965) Tape recorded reminiscenses of Frank B Rogers, May 24, 1979, and of Winifred Sewell, Mar 12, 1979, NLM Information about the financing of MEDLARS by the National Heart Institute was obtained from James Watt

[6] A list of recurring bibliographies, with names of sponsoring organizations, may be found in each issue of *Index Medicus* and *Monthly Bibliography of Medical Reviews* Information on the bibliographies may be found in *NLM News*, annual reports of the Library, and records of the

meetings of the Board of Regents Charlotte Kenton, "The Recurring Bibliographies Program of MEDLARS," *Bull Med Libr Ass* 54 135–7 (1966) S Adams, "MEDLARS and the Library's role as publisher," *National Library of Medicine Programs and Services,* F Y 1976, pp 5–10 Information was also obtained from Scott Adams and Clifford Bachrach

[7] Information on the demand search service may be obtained from writings by the NLM staff, including F Wilfrid Lancaster, *Evaluation of the MEDLARS Demand Search Service* (1968), "Evaluating the Performance of a Large Computerized Information System," *JAMA* 207 114–120 (1969), and, with Grace Jenkins, "Quality Control Applied to the Operation of a Large Information System,' *J Amer Soc Information Sci* 21 370–71 (1970) Data was also obtained from annual reports of the Library, and persons associated with MEDLARS Lists of subjects of some early demand searches are in *NLM News,* July through November 1964 Titles of literature searches are listed in the monthly issues of *Index Medicus,* 1967 onward Policy is in the records of the Board of Regents

[8] Information on decentralization of MEDLARS may be found in records of the Board of Regents, *NLM News,* and annual reports of the Library

[9] Statistics on journal acquisition and selection may be found in annual reports of the Library Leonard Karel, "Selection of Journals for Index Medicus," *Bull Med Lib Ass* 55 259–78 (1967), contains many references to published and unpublished sources Information was also obtained from Clifford Bachrach, editor of *Index Medicus* Policy is in the records of the Board of Regents

[10] Statistics on cataloging may be found in annual reports of the Library Narrative information may be found in articles by NLM catalogers, *NLM News,* and Emilie Wiggins' unpublished manuscript, 'Cataloging at the National Library of Medicine " Information was also provided by Carolyn Davis See also records of the Board of Regents

[11] Information on difficulties in indexing and on indexing under contract was obtained from Stanley Jablonski and Lloyd Wommack, both of whom were project officers on contracts Statistics were obtained from annual reports of the Library Policy statements are in the minutes of the Board of Regents

[12] Information on the *CIM* and *AIM* was obtained from Martin Cummings, Scott Adams, and Clifford Bachrach

[13] For the development of AIM-TWX see the chapter on the Lister Hill Center Information on MEDLINE and other data bases may be found in articles by members of the staff, records of the Board of Regents, *NLM News,* on-line services reference manuals, and Library network/MEDLARS technical bulletins Statistics may be found in annual reports of the Library Information was also obtained from Grace McCarn, Scott Adams, Lloyd Wommack, Donald Hummel, George Cosmides

[14] Information on MEDLARS II may be found in Auerbach Corp , Functional system specifications for the National Library of Medicine , July 1, 1967 (copy in archival collection), records of the Board of Regents NLM *News,* annual reports of the Library, and articles, including Robert V Katter, K M Pearson, Jr , "MEDLARS II, A Third Generation Bibliographic Production System" *J Libr Autom* 8 87–97 (1975), Davis B McCarn, J Leiter, Online Services in Medicine and Beyond, *Science* 181 318–24 (1973), D B McCarn, 'National Library of Medicine-MEDLARS and MEDLINE," in Belzer, Holzman, and Kent, *Encyclopedia of Computer Science and Technology,* v 11, pp 116–52 (N Y 1978) The on-line services reference manuals and Library network/MEDLARS technical bulletins contain much detail Information was also obtained from Martin Cummings, Ralph Simmons, and Joseph Leiter

XXI

The Library's Program for Awarding Grants

MARTIN MARC CUMMINGS, DIRECTOR 1964—

FOLLOWING the resignation of Frank Bradway Rogers from the directorship on August 31, 1963, Surgeon General Luther Terry asked Scott Adams to accept the post of Acting Director and to sit on a committee to nominate a new Director.[1] The committee, chaired by James Hundley of the PHS, considered nine persons from within the service and 19 from without. It finally selected Martin Marc Cummings, chief, Office of International Research and associate director for research grants, NIH. Terry appointed Cummings as the new Director of the Library. After accepting the post Cummings remained at NIH finishing his work while spending considerable time at the Library overseeing the final stages of the MEDLARS publication system. He became Director officially on January 1, 1964.

Cummings was born in Camden, New Jersey, on September 7, 1920. He received his B.S. degree from Bucknell in 1941 and M.D. degree from Duke in 1944. At Duke he became interested in diseases of the chest, particularly tuberculosis. This led him to accept a Public Health Service internship. He was assigned to the Boston Marine Hospital where, during his second year, he received a commission in the service and was placed in charge of the Tuberculosis Section.

In 1946 the PHS provided Cummings with specialized training in bacteriology and tuberculosis at the Michigan State Health Department, and overseas at the State Serum Institute of Denmark. It then assigned him to the Communicable Disease Center, Atlanta, to establish a tuberculosis research laboratory. At the neighboring Lawson Veterans Administration Hospital he had the opportunity to treat tuberculosis in veterans, and in 1949 he joined the staff to head the Tuberculosis Service and organize a laboratory for tuberculosis studies. Concurrently he taught medicine at Emory University School of Medicine.

The Veterans Administration asked Cummings to move to Washington in 1953 to become director of research services. Concurrently he lectured on microbiology at George Washington University School of Medicine. He also represented the Veterans Administration in meetings of the National Advisory

Martin Marc Cummings, appointed Director of the Library in 1964.

Health Council and thus became acquainted firsthand with the operations and administrators of the National Institutes of Health.

Wishing to return to research, in 1959 Cummings accepted the position of professor and chairman of the department of microbiology at University of Oklahoma. With assistance with grants from NIH he upgraded the department, but before long was lured back to Washington by James Shannon, Director of NIH, to head NIH's Office of International Research.

Upon assuming the directorship of the Library, Cummings moved rapidly to improve the scientific quality of MEDLARS, and have the recently developed computerized bibliographic system utilized and evaluated nationally and internationally. He began to broaden the Library's mission. Within a few years he obtained legislation for a grants program, inaugurated a research and development program, obtained authorization for a new building, organized a toxicology information program, directed the acquisition of a medical audiovisual organization, changed the Library's role in continuing education from passive to active, and encouraged broadening of the mission of the History of Medicine Division. He attracted experienced, intelligent and energetic associates to manage the new programs. He was successful in his relationships with his superiors in higher echelons of the Department and in the legislative branch, who respected his leadership of the Library. He served as Director of the Library longer than anyone other than his hero, John Shaw Billings.

Cummings' work in the Public Health Service, Veterans Administration, and University of Oklahoma was reflected in 68 articles and chapters he wrote

on tuberculosis, sarcoidosis, microbiological technique, and other medical topics. He also coauthored a text, *Diagnostic and Experimental Methods in Tuberculosis*. From the National Library of Medicine he wrote on a variety of subjects, including NLM programs, library operations, biomedical communications, history, and administration.

Among the honors bestowed on Cummings for leadership in library affairs were six university degrees, the Superior and Distinguished Service awards of the Department of Health, Education and Welfare, the Distinguished Service Award of the College of Cardiology, an honorary fellowship in the College of Physicians of Philadelphia, an honorary membership in the Academy of Medicine of the Institute of Chile, and the Rockefeller Public Service Award, the most prestigious recognition that a Federal civil servant could receive.

Beginning of the Grants Program

It was inevitable that the Library would become involved with grants after it became a part of the Public Health Service and closely associated with the National Institutes of Health. The NIH had begun to award grants to assist research with a tiny sum of money in 1938. After World War II Congress increased the funds astronomically, from less than $1 million in 1946 to $63 million in 1956 to $177 million in 1958. Every institute in NIH awarded grants for stimulating and supporting research in its area.

In 1959 the Library's Board of Regents learned that NIH was considering granting funds to two medical schools for the purpose of training librarians. During the Board's first meeting in 1960 Michael De Bakey, Surgeon General Leroy Burney, Director Rogers, and other members discussed the possibility of NLM's awarding grants for training librarians, research in history of medicine, preparing special bibliographic reviews, and other purposes. Rogers then decided to have plans drawn up for a program under which NLM would assist other medical libraries to improve their facilities and services.[2]

In the summer of 1960 Rogers asked the General Counsel of the Department of Health, Education, and Welfare if the Public Health Service Act permitted the Library to award grants.[3] The counsel ruled that the act did not, and Rogers started on the long road that would lead to authority and funds.[4] He had been looking for a person to become deputy director to assist with the management of the current work, now he also needed the deputy to plan "extramural" activities. He brought Scott Adams back from the National Science Foundation to the Library in this position, and assigned Estelle Brodman as Adams' associate. After Brodman resigned in 1962 to become librarian of Washington University Medical School, Daniel Bailey assisted Adams.

While facilities for medical research, education, and health care had been greatly expanded and improved since the mid-1940's, most medical libraries had been ignored by the schools and institutions they served. Federally sponsored research in the Veterans Administration, National Institutes of Health, universities, and institutions had created a continuing overload on libraries in

the 1950's. Libraries had not had sufficient funds to acquire, process, and store the large amount of books and journals wanted by users. Libraries had not been planned with sufficient storage space. Many were overcrowded, and some had had to store publications in warehouses, whence it took hours for retrieval. There was a shortage of professional medical librarians. Relatively few libraries were able to serve efficiently and rapidly as conduits for the transmission of information between researcher and applier. A Senate document in 1960 reported that all medical schools needed urgently an "improvement of their libraries, which are essential to the functions of education, research, and good medical care."[5]

Adams and Brodman had no difficulty in identifying deficiencies in libraries. They outlined a program to support traditional publication media (journals, reviews, and translations), to assist abstracting and indexing services, to further the training of medical librarians, and to strengthen the facilities, resources, and services of medical libraries through which information was made available locally to researchers. They also proposed support of investigations into the principles on which new and improved systems of communication might be built. To accomplish these goals, they drafted programs in the areas of publications and translation; fellowships, library facilities and resources; education and training; and research and development. The Board of Regents approved the scope of the program in November 1960, and a request for funds was included in the preliminary budget for fiscal year 1963.[6]

Adams and Brodman continued to compile information to reinforce the Library's request that it be given authority and funds to assist other medical libraries. They wrote reports and articles, and Brodman arranged a contract with Harold Bloomquist of Harvard Medical School to survey medical libraries and to describe what improvements were needed.[7]

Translations

In the meantime events at the National Institutes of Health resulted in the transfer of a small grants program to the Library. In July 1956, directed by the Senate Committee on Appropriations to make "available to American scientists the full findings of Russian scientists," the National Institutes of Health in cooperation with the National Science Foundation set up the Russian Scientific Translation Program. Scott Adams, librarian of NIH at the time, directed the program under which Russian medical and related publications were translated, reviewed, and abstracted in English. The work was done in Poland and Israel, some of it financed by grants and contracts, some by funds available through Public Law 480, the Agriculture Trade Development and Assistance Act of 1954, amended in 1958. Under this law foreign currencies that accrued to the credit of the United States from the sales of surplus agricultural commodities could be used to "collect, collate, translate, abstract, and disseminate scientific and technological information."

Adams left the NIH library in 1959 to take charge of the National Science

Foundation's foreign science information program. His departure led to a debate by NIH, PHS, and NLM about the future of the Russian scientific translation program. The portion of the program financed by Public Law 480 funds was transferred to the Library in August 1959; the portion paid for by grants was retained by NIH with the expectation of transferring it when the Library moved to its new building in Bethesda. But before the move took place the transfer was made on July 1, 1961, even though the Library did not have legislative authority to make grants.[8] Director Rogers felt that the use of grants to finance translations was not proper, and in 1962 he directed that they be replaced by contracts.

Progress Toward a Law

The grants for translation had no effect on the efforts to obtain authority. Adams and Brodman drafted and redrafted specifications for legislation, and compiled supporting documents. Surgeon General Luther Terry, a member of the Board of Regents and a supporter of the program, approved the specifications, but then there arose in his office a disagreement over the scope of the PHS's mission in medical communications. Legislation needed by the Library could not be written until Terry's staff felt they were on firm ground. Furthermore, it appeared that some of the Library's proposed plans might duplicate or impinge on missions of other organizations within the service. The National Institutes of Health, in particular, was entering the field of science communication and might limit the Library's activities. To obtain the views and ideas of all the organizations in the service on communications, the Surgeon General convened a conference on the subject.[9] Finally Terry's staff defined the activities in which the PHS could engage. They drew a line between the work of NLM and NIH and pointed out the areas in which the Library could give grants under authority of the Public Health Service law. On March 29, 1963, Terry delegated authority to the Library to support training, research fellowships, and research grants.[10] But the Surgeon General's staff was still not completely satisfied about the limits of the authority that the service, and thus the Library, possessed to give grants in the field of medical communication. At last the Secretary of HEW asked the Comptroller General of the United States for his interpretation. On March 4, 1964, the Comptroller ruled that the PHS law permitted the Surgeon General to delegate authority to the Library to make grants for activities relating to the communication of results of medical research.[11]

In the meantime Rogers had retired and been succeeded by Martin Cummings, who believed strongly in a grants program. In January 1964 Cummings and Surgeon General Terry talked with Senator Lister Hill about their hope of gaining such a program for NLM. Senator Hill liked the concept and asked Cummings to have specifications drafted for the legislation. Two months later, following the Comptroller's decision, Cummings began to mobilize a staff to develop and manage a full grants program. He recruited Marjorie Wilson from

NIH, Carl Douglass from the National Institue of Arthritis and Metabolic Diseases, and Mary Corning from the National Science Foundation, as the nucleus. He reorganized the Library's divisions into two groups, one headed by Wilson to operate the Extramural Program, or EMP as it was frequently called, one headed shortly thereafter by Joseph Leiter to operate the Intramural Program. He set up a Publications and Translations Division, headed by Corning, and a Research and Training Division, headed by Douglass, and placed them in the former. He placed the traditional library divisions and a new Data Processing Division in the latter.[12]

The Publications and Translations Division was to make contracts, grants, and Public Law 480 agreements for translation and publication of medical writings overseas and in the United States. The Research and Training Division was to make contracts and grants for research in the management of biomedical literature, for training librarians and other specialists in the communication of medical knowledge, and for providing scholarships in history of medicine and other fields. The only part of the Extramural Program that functioned was the Publications and Translations Division, continuing the work that had begun several years before financed by appropriated and PL 480 funds.[13] The other part of EMP remained in the planning stage, waiting for funds that the staff hoped would be appropriated soon.

Grants for History of Medicine

Money and authority for the first grants awarded by the Library arrived unexpectedly. On February 28, 1964, Cummings appeared before a House Subcommittee on Appropriations to testify on the PHS appropriation bill. Representative John Lesinski wondered if it might not be possible to rediscover forgotten, useful remedies by delving into the past, and he suggested that funds be given to the Library to undertake research into history of medicine.[14]

John B. Blake, chief of the History of Medicine Division, quickly planned a program of in-house and grants activities that could be carried out for $180,000. The Committee on Appropriations added this sum to the Library's budget.[15] Congress passed the appropriation bill, and the President signed it on September 19.

The Library allotted $120,000 of the appropriation to history grants, and $60,000 to programs of the History Division. The Library set up procedures to process grant applications and arranged to accept applications in the history of life sciences from NIH, which had been administering them. The Secretary of HEW on October 2 designated the appointed members of the Board of Regents as the Advisory Council to review and recommend applications. The Library now awarded its initial grants, six for research, one for a fellowship, and two for training programs, all in history of medicine.[16]

The Medical Library Assistance Act

The Library still did not have authority to award grants in all areas needed by medical libraries. The Bureau of the Budget and the Office of Science and

Technology opposed new legislation because they did not think it was necessary. They wanted NLM to apply its authority as a part of the Public Health Service to award grants, and they wanted the Library to use pending legislation which would be administered by the Office of Education, designed to assist libraries in general.

The legislation that ultimately gave NIH authority to award grants began in early 1964 when Cummings talked with Senator Lister Hill about NLM's hopes to assist other libraries. Senator Hill asked Cummings to visit him in Alabama during the congressional Easter recess to discuss the plans in detail. Cummings and Wilson spent two and a half days with Hill at the University of Alabama Medical School going over the proposed extramural program. The Senator liked the conception. He asked Cummings for a draft of a bill, and he suggested that he enlist the aid of Representative Oren Harris.

During much of the remainder of 1964 Wilson, Douglass, and their associates continued to develop the program, working with representatives of medical schools, dental schools, pharmacy schools, hospitals, and government health agencies to catalog the deficiencies and needs of medical libraries. They drew ammunition from the report of Harold Bloomquist, from the report of the President's Commission on Heart Disease, Cancer, and Stroke, and from conferences on the importance of libraries in research, training, and the everyday practice of medicine.[17]

Wilson also spent considerable time with Elizabeth Chase, a DHEW attorney, outlining a bill. In the autumn of the year a series of meetings was held in the Surgeon General's office to coordinate the terms and conditions of the proposed Medical Library Assistance Act with all other segments of the PHS. In December Senator Hill called Cummings and Wilson to his office and informed them that he intended to introduce the legislation in the next session of Congress. He did this on January 19, 1965. Representative Harris and later Representative John Fogarty introduced parallel bills.[18]

Rarely did legislation receive such wide and unanimous support in the health professions. Medical, dental, pharmaceutical, veterinary, optometry, library, and specialized organizations testified in favor of the proposed law at Senate hearings in June and House hearings in September. Medical schools, universities, the American Public Health Association, American Association of Colleges of Pharmacy, American Nurses' Association, American Hospital Association, and other groups sent messages of support to congressional committees. James Shannon, Director of NIH, had pessimistically estimated that it would take 4 years for passage of legislation, but Cummings, Wilson, and Douglass were so persuasive that the legislation moved through Congress without difficulty and was signed by President Johnson on October 22, 1965.[19]

The Grants Programs

After enactment of the law Wilson, Douglass, and David Kefauver collaborated with the PHS General Counsel in writing regulations to implement the legislation. The staff drafted and published informational materials, policy

guidelines, and application forms and other necessary documents. The Board of Regents appointed a Subcommittee for Extramural Programs to facilitate review of the policy and regulations. The Board approved the drafts on March 21–22, 1966, the PHS and DHEW followed, and the *Federal Register* published them on July 13.

Wilson and her associates developed a budget, planned for short- and long-range programs, established advisory committees, recruited employees, appointed consultants, and carried out all the other activities necessary to prepare for the award of grants. They drew up agreements with the Association of American Medical Colleges to establish functional guidelines for the construction of health service libraries, and with the Institute for the Advancement of Medical Communication to develop objective standards based on the services to users by which to measure library performance. They held many meetings with representatives of institutions planning to apply for grants.

The law specified that a Medical Libraries Assistance Advisory Board be established to review and approve grants. The Surgeon General designated the Board of Regents as this Advisory Board. The Board was aided in its deliberations by reports of committees, appointed by Director Cummings, that provided initial review of applications.

The Medical Library Assistance Act of 1965 had a life of 5 years. It authorized an appropriation of $105 million for programs to finance construction of medical libraries, train librarians and other information specialists, expand and improve medical library resources, stimulate research and development in medical library sciences, support biomedical publications, establish regional medical libraries, and set up branches of NLM if necessary.[20]

The staff began implementing the provisions of the act with one exception: the construction of medical libraries. The Bureau of the Budget was not convinced that the Library's estimate of the need for construction was realistic. It asked the Office of Science and Technology to prepare an independent estimate. The office hired a contractor to design a national library network and information system, which was more than the Bureau had asked for. When the contractor completed its report the Library and Regents agreed with some portions but disagreed with the concept, which called for an expensive, federally operated system of medical libraries. The Bureau, satisfied with the Library's viewpoint, released the funds for construction.

For the construction of libraries the act authorized an expenditure of $10 million each fiscal year from 1967 to 1970, or a total of $40 million. Congress appropriated only $11.25 million. With this money NLM provided funds to nine medical schools, to Auburn University School of Veterinary Medicine, and to Southern College of Optometry. Grants to medical schools ranged from $536,331 to Brown University to $1,765,636 to Jefferson University. The 11 schools acquired 334,121 square feet of library space having a capacity of 1,305,000 volumes. While 11 schools were helped, NLM estimated that from 25 to 40 other institutions needed funds to improve their library facilities.

Library of Wayne State University Medical School, a regional medical library erected with assistance from a construction grant.

The Library did not retain management of the construction program very long. On April 1, 1968, NLM was transferred from the PHS Surgeon General's Office to the National Institutes of Health. James Shannon, Director of NIH, on October 3 appointed a task force to consider the advisability of placing all of NIH's construction grant programs in one NIH division. The task force recommended that this be done. On December 26 Shannon delegated authority for medical library construction grants to NIH's Bureau of Health Manpower. This action removed the everyday operation of the construction grants from NLM, but the latter still participated in the program. It defended the budget for library construction grants, it provided the Bureau with technical guidance, and the Board of Regents cooperated with the Bureau's National Advisory Council in reviewing and approving all NIH construction grants involving libraries.

For research and development in the library field Congress appropriated $6 million of the authorized $15 million. The Library grouped proposals for R&D grants into three categories: library services, operations, and manpower; biomedical communications; and history of life sciences. Two million dollars were awarded for 14 projects in the first category, $3 million for 43 projects in the second, and $1 million for 46 projects in the third. A wide variety of endeavors were financed, among them the development of an on-line computer serials control system, a study of communication patterns among researchers, development of standard nomenclature, evaluation of self-instruction materials, and language analysis for information retrieval.

Resource grants were designed to help medical libraries acquire needed publications and equipment, process library materials, and adopt new technologies. It had been estimated by Cummings that the Nation's medical libraries

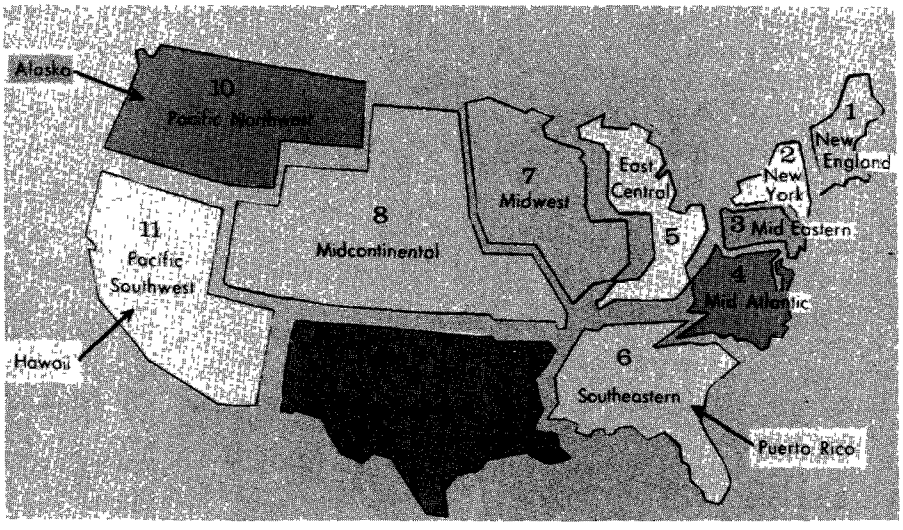
needed $100 million for these purposes. The act authorized the expenditure of $15 million to provide grants, but Congress appropriated only $11.8 million. These grants were looked upon as a means of stimulating private support for libraries. To accomplish this the act provided a formula for determining the amount of each grant, the amount depending upon the funds that the institution had been devoting to its library. The NLM also adopted a policy of giving priority to libraries that served the most users. Because of these two criteria, the largest grants went to the largest libraries, since these had the largest resources and the most customers. Assisted by resource grants were 402 libraries, 192 of which were in hospitals, 93 in medical schools, 29 in pharmacy schools, 16 in dental schools, 16 in societies, 7 in veterinary medical schools, and the remainder in other kinds of institutions. The grantees spent approximately one-half of the resource money for publications, one-quarter for employees, one-sixth for equipment, and the remainder for other purposes.

Congress authorized $5 million but appropriated only $4.5 million for training grants. The Library awarded grants to library interns who needed fundamental training, to established librarians who desired training in modern techniques of communication, and to persons who wanted to pursue advanced training in library science. Grants supported candidates for master's degrees in biomedical communication and candidates for doctor's degrees in health information research. One specialized program that received support provided instruction for editors of medical publications. Approximately 350 persons benefitted from these grants, receiving training that enabled many of them to step upward into key positions in libraries.

The Library dispensed an appropriated $2.3 million, $2.7 million less than authorized, to assist biomedical publications. These funds supported 43 projects for the preparation and publication of monographs, critical reviews, histories of medicine, and works dealing with libraries and biomedical communications; for the compilation of secondary literary tools such as atlases, catalogs, and bibliographies; for the translation of foreign medical books; and for temporary support of journals with innovative approaches.

The act authorized $2.5 million to support physicians, dentists, and other health professionals while writing definitive works needed in medicine and related fields. The Library received less than one-tenth of this, $200,000, to underwrite these "special scientific projects," as they were called. The Library used these funds to award grants to 10 fellows, who prepared studies on topics such as the discovery, regulation and use of drugs, and interorganizational aspects of urban community health.

The most revolutionary grant was for the establishment of regional medical libraries. The Library was authorized to award funds to a number of institutions in return for their assistance in serving patrons within their regions. This provision was placed in the law as a result of ever-increasing demands for NLM services during the previous two decades. The number of requests for interlibrary loans, for example, had become so voluminous NLM either had to



The Regional Medical Library Network.

expand or persuade other libraries to share the load. The latter could be done by offering funds to strategically placed large libraries if they would agree to provide service to patrons and to smaller libraries within their own and neighboring states.

The idea of regional library cooperation was not unique to NLM staff members, but they saw the need for such cooperation early, and they developed the concept into a practical, nationwide system. The Regional Medical Library system as it finally evolved, was composed of four tiers of libraries. The first tier was made up of thousands of community hospital libraries, junior college libraries, and other local libraries that would provide primary service. NLM would help hospitals establish and strengthen libraries through its grants program. The second tier was composed of approximately 125 resource libraries, generally medical school or society libraries, that would assist local libraries when the latter did not have books or journals requested by patrons. The third tier was composed of 11 regional medical libraries with extremely large collections and facilities, capable of reinforcing the resource libraries in their areas. The fourth tier was NLM, the library of last resort, ready to supplement the collections and services of regional libraries.

Initial planning of the system, both regionally and nationally, was difficult because of the dearth of information about resources and services. With the assistance of medical associations NLM collected statistical data for each state, including the number and percent of professional health workers, distribution of health schools, facilities of medical school hospitals, and resources of major medical libraries. Tentative plans for possible systems were then drawn up.

It was estimated that funds available under the MLA act were sufficient to

support only 10 regional libraries (NLM also acted as a regional library). Therefore each regional library would have to serve a relatively large proportion of the Nation's health workers. The Francis A. Countway Library of Medicine, of the Boston Medical Library and Harvard University, submitted the first application for a regional grant. In October 1967 NLM awarded $104,872 (more later) to Countway to enable it to service the New England region, composed of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island, through local medical libraries. Almost 3 years later, in July 1970, NLM awarded the final grant to the Health Sciences Library of the University of Nebraska Medical Center to enable it to serve the midcontinental region, comprising Colorado, Kansas, Missouri, Nebraska, South Dakota, Utah, and Wyoming. Each of the 11 libraries managed and coordinated services within its region and participated with other regional libraries and with NLM on continuing plans for the entire system.

Congress authorized an expenditure of $12.5 million for regional libraries but appropriated only 38 percent of that sum. Grants to libraries ranged from $1.02 million to Countway, serving New England, to $178,000 to the University of Texas Southwestern Medical School serving users in five states.

All-in-all, between FY 1966 and FY 1970 Congress appropriated a total of $40.8 million for the grants program, approximately 39 percent of the authorized $105 million. With those funds the Library was able to assist 604 projects for the improvement of biomedical information, but there were scores of other worthy projects that could not be aided.

The grant program was an experiment. For the first time the government, through NLM, helped medical libraries develop themselves, and form and cooperate in a national network. The trial was successful. The health professions were unanimous in asking Congress to renew the legislation, and Congress did not hesitate to do so.

Extensions of the Medical Library Assistance Act

Through experience the extramural staff expected that some parts of the program would be improved if the Library were given authority to award grants on a different basis or for different reasons. In 1969, when Cummings requested Congress to extend the life of the act, these improvements were considered by those who drafted the new legislation.

The program had been successful in upgrading medical libraries, and several Congressmen willingly sponsored bills to prolong the law. One bill proposed to continue the act for 3 years, without changes in the provisions. Three other bills would have extended the act for different lengths of time, with changes. The Administration recommended an extension of 1 year in order to allow the Department of Health, Education, and Welfare an opportunity to review all grant programs, as directed by President Nixon, in order to determine whether it would be more economical or efficient to consolidate closely related programs. But both Houses of Congress preferred and passed a 3-year extension with a

few changes. The President approved the Medical Library Assistance Extension Act of 1970 on March 13, 1970.[21]

The Extension Act of 1970 provided modest increases in authorized funds for medical library construction, manpower development, resource grants, and regional libraries. It authorized appropriations of $23.5, $25.5, and $27.5 million for the first, second, and third years, compared with $21 million per year under the original law. The total authorized for the 3-year period was $76.5 million; Congress actually appropriated $19.506 million. The act gave Director Cummings leeway to finance desirable projects that might arise unexpectedly by permitting him to transfer 10 percent of the funds from one program to a different program, as long as the amount transferred did not exceed 20 percent of the amount in the receiving category.

Before the Extension Act of 1970 had run its course, Cummings requested that the law be renewed again. He suggested an extension of 5 years and minor modifications in the provisions. In 1972 Congressmen introduced bills on behalf of the Library, Senator Edward Kennedy sponsoring a measure to renew the law for 1 year. Witnesses who testified at hearings recommended that the grants program be continued for periods ranging from 3 to 5 years. The Senate subcommittee handling the legislation compromised on an extension of 4 years. The Senate passed a bill in September 1972, but Congress adjourned before the House had time to vote, and the measure expired.[22]

In the spring of 1973 several representatives and senators introduced bills designed to carry on the Extramural Program. Both Houses of Congress agreed on legislation and the President signed the Health Programs Extension Act of 1973 on June 18, 1973. This law continued the Library's authority to award funds for all programs, except construction, for 1 year, through June 30, 1974. The act authorized an appropriation of $8,442,000, Congress gave $7,029,000, and NLM awarded $6,649,808 to grantees.[23]

To prevent the act from expiring in the short span of a year, Cummings quickly asked for another continuation. In January 1974, with 5 months remaining, the House passed Representative Paul Rogers' bill to extend a number of health laws, among them the MLA act. The Senate passed an amended version of the bill in May. The House and Senate versions differed in the amount of appropriation, length of extension, and other provisions, but the branches of Congress compromised and passed the Health Services Research, Health Statistics, and Medical Libraries Act of 1974, signed by the President on July 23, 1974.[24] This law extended the grants program for 2 years, and it included a provision that the program would continue for a third year unless Congress decided otherwise. It repealed authority for construction. The law authorized appropriations of $17.5 million for FY 1975, $20 million for FY 1976, and $20 million for FY 1977. It included an important new provision that gave the Director more flexibility in the use of funds by merging all appropriations into one and permitting him to allocate funds among the various grant programs as circumstances warranted.

Progress of the Grants Programs, 1970–1976

In the renewal of the MLA legislation, Congress permitted the Library to broaden the scope of research and development grants by awarding funds to finance the cost of exhibiting and evaluating new devices or methods under operating conditions, so that practical ones could be recognized and adopted quickly by libraries. Desiring to focus research on promising areas, NLM set up review groups in 1974 and 1975 to discuss trends in information science and establish desirable goals for researchers. The participants believed that computers would be utilized more and more in transferring information. Buttressed by this opinion the Extramural Program thereafter encouraged projects that would lead to improvements in the storage and retrieval of biomedical information and to the rapid communication of data from biomedical researchers to physicians and educators. From the beginning of the Extramural Program to June 30, 1976, NLM awarded $11,150,000 to support 339 research projects. Of these sums, $5,150,000 was awarded for 263 projects under the extension acts, 1970 to 1976.

Under the extension acts the Library adopted the philosophy of awarding resource grants primarily to strengthen or establish community hospital libraries, particularly to make them active participants in the regional medical library network. Under the original act funds could be awarded only for the purpose of improving or expanding libraries: the extension act permitted funds to be awarded to create libraries. Under the original act the amount of a grant awarded to a library depended upon the size of that library's operating budget for the previous 3 years; the more a library spent the more it could receive. This provision funneled more money to the well-endowed libraries, less to the poor. The extension act repealed this provision, allowing small, poor libraries to be benefitted. All institutions that received grants had to promise to help support themselves with other funds.

The extension act set up two types of resource grants, the resource improvement grant and the resource projects grant. The former was a 1-year, non-renewable grant of $3,000, awarded to institutions, such as community hospitals, to enable them to establish libraries. It was also awarded to small institutions to help them acquire books, journals, and other materials. The resource projects grant was a 1- to 3-year grant ranging from $1,000 to $200,000 a year, to stimulate libraries to improve or expand services. Recipients used these grants for a variety of activities, including the development of automated systems for library technical services, and the setting up of learning resource centers containing audiovisual materials, computer-assisted instruction programs, self-teaching modules, and other new devices. By the end of June 1976 the Library had awarded 2,588 resource grants with a value of $23,605,000. Of these 2,223, totaling $11,805,000, were awarded under the MLA extension acts.

The first extension act, 1970, increased the authorized appropriation for construction grants to $11 million for FY 1971, $12 million for FY 1972, and

$13 million for FY 1973. It also modified provisions of the original law. But the erection of libraries was expensive, austerity had arrived, and no money was appropriated for the purpose. The second extension act, 1973, did not continue NLM's authority to provide grants for construction, and the extension of 1974 repealed the authority.

The first extension act authorized NLM to support regional libraries with contracts as well as grants. Director Cummings had requested this change because the Library staff had learned, after starting the regional library network, that it was difficult with grants to bring about uniform practices, such as the formulation of MEDLARS searches and delivery of documents and photocopies, in 10 different institutions. The use of contracts permitted NLM to divide the funding of regional libraries into a service component, funded by contracts, and a research and development component, funded by grants. Under contracts all 10 libraries provided similiar services under uniform policies, while simultaneously using grants they enjoyed considerable freedom in developing their resources and facilities. Furthermore contracts permitted NLM to coordinate the planning of the network. At first some regional libraries were unhappy over the switch from grants to contracts, but within a year or two they came to prefer contracts for support of services.

After the initial extension act was passed, NLM began to phase out grants for financing traditional education in librarianship. The Library decided to do this after surveys indicated that the shortage of medical librarians had decreased but that advanced training of librarians was desirable. Instead the Library began to assist health scientists to receive instruction in the use of computers in medical research, education, and health care. The first grants under this policy were awarded in 1972. Scores of institutions expressed interest in the new training grants program. Up to the end of fiscal year 1976 NLM awarded grants totaling $9,256,000 for the training of 650 persons. Approximately half of this, $4,756,000 was awarded under the MLA extension laws for the training of 300 persons.

Under the extension acts the Library continued to support health scientists in preparing scholarly book-length works on subjects of broad interest. The works of the grantees covered a wide range. Some of the topics were: the pathophysiology of respiratory disease; the causes and treatment of infectious diseases in humans; a systems analysis of health systems; a study of graduate education in occupational medicine; the development of medical education in the United States; and analysis and interpretation of the worldwide literature on malignancies occurring in the generation system or resulting from the reproductive process. By June 1976 NLM had awarded $691,000 to assist 28 scholars. The extension acts contributed $491,000 to 21 scholars.

The largest category of publications supported from 1965 to 1976 was secondary literature aids, such as atlases and bibliographies. The second largest was works on history of medicine. In 1974 the EMP shifted emphasis in assistance from secondary literature aids to critical reviews and biomedical mon-

ographs which identified the current state of research or practice in a certain field. At the same time the EMP decided to give priority to small grants and to writings requiring only publication costs. More grants were awarded for publication under the extension acts than under the original MLA act. By June 1976, 238 grants in the amount of $5,191,000 had been awarded since the beginning of the program, 195 valued at $2,891,000 under the extension acts.

The legislation that served as the foundation of the Library's grants program was referred to more than once as a "landmark."[25] "The act was well conceived," stated one librarian, "and in the short time of its existence, the beneficial effect is everywhere apparent."[26] The president of the American Optometric Association commented: "The Medical Libraries Assistance Act has been of immense benefit to schools and colleges of optometry, as well as other repositories of health and medical resources material."[27] The initial decade of the Library's effort to aid other medical libraries was an outstanding success. "The National Library of Medicine has made remarkable progress in its efforts to bring the Nation's medical library resources up to desirable levels," wrote a witness to the events.[28] A prominent dentist stated: "The programs of assistance for research, regional medical libraries, library resources, scientific publications, and training of personnel for the new technologies in the fields of bio-medical communication and information sciences have assisted immeasurably in improving the critical situation with regard to information handling and dissemination."[29] By 1976 thousands of hospital, medical school, society, and other health libraries had been strengthened, but many still waited for aid to improve themselves so they could provide the most rapid, complete service to users.

From the beginning of the program until the end of fiscal year 1976, the Library awarded grants as follows:

Program	Number	Amount
Construction	11	$11,250,000
Training	148	10,309,000
Special Scientific Projects	28	691,000
Research	339	11,150,000
Publications	238	5,191,000
Resource	2,625	23,605,000
Regional Medical Library*	89	18,714,000
Totals	3,478	$80,910,000

*Includes funding by contract.

Notes

[1] Adams was born on November 20, 1909. After graduating from Yale in 1930 he taught for a year and then entered the book trade. From 1939 to 1942 he attended Columbia University School of Library Science and also supervised the acquisition division of the Teachers College Library, Columbia. From 1942 to 1945 he supervised the order-catalog department of Providence, Rhode Island, Public Library. In 1945 he came to the Army Medical Library as chief of acquisitions, in January 1947 was promoted to the post of The Acting The Director (surely the oddest title ever in AML), and in October 1949 became assistant to the Director. He went to the National Institutes of Health as librarian in 1950, where he also organized and managed

the Russian Scientific Information Program, to the National Science Foundation as director of the Foreign Science Information Program in 1959, and returned to NLM as deputy director for Extramural Programs in 1960 After retiring from NLM in 1970 he worked for the International Council of Scientific Unions and the Foreign Secretary, National Academy of Sciences, as their representative on the Joint ICSU/UNESCO UNISIST study He then assisted Unesco, the National Science Foundation, and the Department of State on a variety of assignments relating to the initiation, development and management of the UNISIST program He also served as chairman of the Committee on International Scientific and Technical Information Programs of the National Academy of Sciences during its efforts to define national interests in the international exchange of scientific information He participated in bilateral activities through the academy, and the Agency for International Development relating to the development of national scientific information policy in Latin America, Taiwan, USSR, and Egypt

[2] Information on the NLM grants program may be found in tape-recorded recollections of Martin Cummings, Frank B Rogers, Scott Adams, Marjorie Wilson, and Carl Douglass Information was also obtained from Jeanne Brand, Mary Corning, and Arthur Broering Annual reports of the library, and *NLM News* contain data on the programs The most informative documents are those of the Board of Regents, particularly the transcripts of meetings

[3] Memo, Director NLM to Surg Gen , July 28, 1960, sub Request for opinion of General Counsel on legislative authority for proposed programs of National Library of Medicine

[4] Memo, Director NLM to Surg Gen , Oct 8, 1960, sub Legislative authority for extramural programs, NLM

[5] Federal Support of Medical Research Report of the Committee of Consultants on Medical Research to the Subcommittee on Departments of Labor and Health, Education, and Welfare of the Committee on Appropriations, United States Senate, 86th Cong , 2d sess , 1960 This report recommended that aid be extended to medical libraries

For deficiencies in medical libraries see J E Deitrick and R C Berson, *Medical Schools in the United States at Mid-century* (N Y , 1953) Scott Adams, "Medical Library Resources and their Development," *J Med Educ* 38 20–27 (1963), "Medical Libraries are in Trouble," *Libr J* 88 2615–21 (1963), "Hospital Libraries Underdeveloped Base for Continuing Education," *Hospitals* 38 52–4 (June 16, 1964)

[6] Records of the Board of Regents, particularly the meeting of Nov 5, 1960, in which Adams discussed his and Brodman's proposed grants programs The National Library of Medicine Proposed Extramural Program, Mar 29, 1961 F B Rogers, "The National Library of Medicine's Role in Improving Medical Communication," statement to the Subcommittee on Departments of Labor, and Health, Education, and Welfare of the Appropriations Committee, U S House of Representatives (1962) copy in MS/C/295 "The National Library of Medicine and the Library Component in Communication," a report prepared for the House Committee on Interstate and Foreign Commerce (March 1963) copy in MS/C/295 Also, Rogers' statement in 87th Cong , 2d sess , Departments of Labor, and Health, Education, and Welfare Appropriations for 1963, part 2, pp 746–58

[7] H Bloomquist, "The Status and Needs of Medical School Libraries in the United States," *J Med Educ* 38 145–63 (1963)

[8] Memo, Acting Surg Gen to Bureau and Division Chiefs, PHS, July 1, 1961, sub Transfer of responsibility for Russian scientific translation program

[9] *Surgeon General's Conference on Health Communications, November 1962* (DHEW, PHS, 1963)

[10] PHS Delegation of Authority No 40, Mar 29, 1963

[11] Letter, Joseph Campbell, Comptroller General of the United States, to Secretary DHEW, Mar 4, 1964 Letter, Martin Cummings to F Ellis Kelsey, Special Assistant to the Surgeon General for Scientific Communication, May 13, 1964 Records of the Board of Regents

[12] Associate directors for the Extramural Program were Marjorie P Wilson, March 1964–January 1968, David F Kefauver, January 1968–March 1970, Leroy L Langley, March 1970–February 1973, Ernest M Allen, March 1973–

[13] Details of the Scientific Activities Overseas (Special Foreign Currency Program), in which several segments of the Public Health Service, among them the Library, were involved may be found in the annual hearings of the PHS before the House Subcommittee on Appropriations Information on the Library's role may also be found in the parts of the hearings devoted to the Library

Titles of works translated and published under the Foreign Currency Program may be found in annual reports of the Library

[14] Representative Lesinski's remarks may be found in 88th Cong , 2d sess , Hearings before a Subcommittee of the Committee on Appropriations Department of Health, Educa-

tion, and Welfare, Part 2, Public Health Service, pp 599–602

[15] 88th Cong , 2d sess , Bill H R 10809, making appropriations for FY 1965, introduced Apr 10, 1964, pp 34–35 Report 1316, to accompany H R 10809, Apr 10, p 37

Blake's program may be found in the hearings cited in the previous note, pp 600–602

[16] A list of the nine initial awards are in the annual report of Library for FY 1965

[17] President's Commission on Heart Disease, Cancer, and Stroke, *A National Program to Conquer Heart Disease, Cancer, and Stroke* (GPO, vol 1, 1964, vol 2, 1965) Among other influential reports was the *Surgeon General's Conference on Health Communications, November 1962* (DHEW, PHS, 1963)

[18] 89th Cong , 1st sess , Hearings on S 597, June 14 and 15, 1965 Hearing on H R 3142 and H R 6001, Sept 14, 1965, Serial 89–23

89th Cong , 1st sess , Bill S 597 "To amend the Public Health Service Act to provide for a program of grants to assist in meeting the need for adequate medical library services and facilities " Bill H R 3142 introduced by Harris Jan 19 Bill H R 6001 introduced by Fogarty, Mar 19 Senate Report 756 to accompany S 597 House Report 1026 to accompany H R 3142

[19] Public Law 89-291, An act to amend the Public Health Service Act to Provice for a Program of Grants to Assist in Meeting the Need for Adequate Medical Library Services and Facilities Usually referred to as the Medical Library Assistance Act of 1965

[20] The authority to set up branches of NLM was placed in the law by the House to make certain that states, as Alaska and Hawaii, that might not be served by a regional library could be served by an NLM branch library

For an excellent assessment of the grants programs see Martin Cummings and Mary Corning, "The Medical Library Assistance Act an analysis of the NLM Extramural Programs, 1965–1970, ' *Bull Med Libr Ass* 59 375–91 (1971)

[21] 91st Cong , 1st sess , Bill H R 11223 introduced by Harley Staggers, May 13, 1969 Bill S 2549, providing for a 5-year extension, introduced by Ralph Yarborough, July 7, 1969 Bill H R 11702, for a 1-year extension, introduced for the Administration by Harley Staggers, May 27 Bill S 2239, for a 1-year extension, introduced for the Administration by Peter Dominick, May 23 House Report 91-313, June 17, 1969, to accompany H R 11702 Senate Report 91–480, Oct 16, 1969, to accompany H R 11702 See debates in *Congressional Record*

Legislative History of the Medical Library Assistance Extension Act of 1970, P L 91-212, contains bills, reports, excerpts from *Congressional Record*, and the law NLM

[22] Bill S 3752 introduced June 26, 1972, passed by the Senate, Aug 16, passed again as an amendment to S 3716, Sept 20 Senate Report 92-1004 to accompany S 3752

[23] 93d Cong , 1st sess , Serial 93-33, 1973 Health Programs Extension Act of 1973 Hearings Committee on Interstate and Foreign Commerce, House of Representatives on H R 5608 and S 1136 (and all identical bills) Bills to extend through fiscal year 1974 the expiring appropriations authorizations in the Public Health Service Act, the Community Mental Health Centers Act, and the Developmental Disabilities Services and Facilities Construction Act, and for other purposes, Mar 27, 28, 29, 1973

Programs for Health Services Research, Health Statistics and Medical Libraries Hearings on H R 7274 and H R 6387, H R 6586, and H R 6590 May 10, 11, and 14, 1973 Serial 93–32

Health Programs Extension Act of 1973 Public Law 93–45

[24] 93d Cong , 2d sess , Bill H R 11385, to amend the Public Health Service Act to revise the programs of health services research and to extend the program of assistance for medical libraries House Report 93–757 to accompany H R 11385

93d Cong , 2d sess , Bill S 2996 Health Legislation, 1974, Hearing Subcommittee on Health Committee on Labor and Public Welfare, United States Senate on S 2996 H R 10957, Feb 19, 1974 Senate Report 93–764 and Report 93–768 to accompany Bill H R 11385

House Report 93–1170, the conference report to accompany H R 11385 Public Law 93–353, Title II

[25] See, for example, statement by Robert C Berson, executive director, Assoc Amer Med Colleges, in House of Representative hearings on the MLA Act, Serial 91–93

[26] Ursula H Anker, librarian, Albany Medical College, quoted in reference above

[27] Communication by Robert E Day, president, Amer Optometric Assn , in Senate Report 93–764

[28] Ernest B Howard, executive vice president, Amer Med Assoc , quoted in House of Representative Hearings, Serial 91–93

[29] Letter by C Gordon Watson, executive director, Amer Dental Assn , in Senate Report 93–764

XXII

The Specialized Information Services

The Drug Literature Program

THE rapidly increasing literature about drugs in the years following World War II, the difficulty that researchers and physicians faced in obtaining data quickly on new medicines or on compounds tested as medicines, and the need for immediate warning about harmful drugs such as thalidomide, convinced Senator Hubert Humphrey, among others, that some means, perhaps a "National Drug Information Clearinghouse," was needed to collect, organize, and disseminate information on the subject. The director of Humphrey's subcommittee, visited the Library several times to discuss the matter with Director Rogers, Winifred Sewell and others. Deputy Director Adams spent much time at the Senate Office Building assisting the staff. In 1962 Humphrey asked Rogers to prepare a study on "The Nature and Magnitude of the Drug Literature." Sewell, who had been librarian of Wellcome Research Laboratories and Squibb Institute for Medical Research before coming to NLM, and was editor of *Unlisted Drugs*, wrote the report which emphasized the wide dispersion of material on drugs. Senator Humphrey, who had been a pharmacist before entering public life, used this report to buttress his proposal for the establishment of a special program in the Library to cope with the literature. The following year the President's Commission on Heart Disease, Cancer and Stroke also recommended that a National Drug Information Clearinghouse be established in NLM.[1]

Elsewhere the chief proponent for a drug information center was F. Ellis Kelsey of the Public Health Service. Kelsey, whose wife Frances O. Kelsey had helped keep thalidomide off the U.S. market, helped evolve a plan for the collection, organization, and dissemination of data on drugs. The plan advocated a division of work between the Food and Drug Administration, NIH, and the Library. The FDA would collect and disseminate information on unpublished work, NIH would support research and development to improve methods of handling chemical and biological data, and the Library would be responsible for published literature. Kelsey hoped to be placed in charge of the Library's program, with a large staff and considerable funds. But the amount of money and number of employees eventually allotted were considerably less than Kel-

sey expected. He died suddenly, and the leadership of the emerging program passed to others.

In the autumn of 1964 the Administration placed funds in the 1966 budget to establish a coordinated system for collecting, organizing, and disseminating information on drugs within the Department of Health, Education, and Welfare. One million dollars was allotted to the Library for development of a drug information clearinghouse, $2.5 million was pinpointed for the Food and Drug Administration, and $1.5 for NIH.

Informed of the approaching appropriation, Director Cummings placed Sewell in charge of the program. She drew up plans to extend the level of NLM's activities in drug literature, using approximately two-thirds of the appropriation for development of an in-house program and the remainder for grants and contracts. Six functions were anticipated: collection of all published literature on drugs; expansion of the number of publications covered by MEDLARS in the drug field, improvement of drug terminology in MESH so that articles on drugs could be indexed more accurately; expansion of reference and search services to researchers and to those engaged in regulatory work; providing of abstracts, translations, and bibliographies of articles about drugs; and research in communication of information on drugs to the biomedical community.

When funds became available Sewell began to engage a staff of pharmacologists, biochemists, medicinal chemists, and information specialists. She made arrangements for the Library to acquire more drug literature, particularly that supplied by card and microfilm services which had been previously excluded by the acquisition policy, and to subscribe to drug information services oriented primarily toward industry. Drug journals published throughout the world were examined to determine which should be added to the journals already being indexed for MEDLARS. Pharmacological terminology in MESH was improved so that drug articles could be indexed more precisely. Professional societies cooperated in the development of MESH by appointing panels of specialists to give advice on terminology. The American Hospital Formulary Service and the Library agreed to employ the same terminology insofar as feasible. At NLM's suggestion the Pharmaceutical Manufacturers' Association sent librarians to assist in the development of the Library's drug information program in exchange for access to MEDLARS, which at the time was available only to nonprofit organizations.

The DLP desired to index articles on drugs in a much more detailed manner than the usual medical article, so that regulatory agencies, researchers, pharmacists, physicians, and others who needed precise information about therapeutic use, pharmacologic action, and chemical composition of a compound could obtain it quickly. Moreover, it was important that the indexing be related to a specific chemical entity. At the time, Chemical Abstracts Service, under contract to National Science Foundation, was endeavoring to place on computer tape the registry numbers and detailed chemical descriptions of the millions

of compounds indexed in *Chemical Abstracts*. Since the Cancer Chemotherapy National Service Center, the Food and Drug Administration, and the Drug Literature Program were all interested in a subset of this data base, the three groups agreed to extend the funding for this contract and have Chemical Abstracts Service register selected drugs and chemicals found in specific sources designated by the three groups. The tape, delivered in 1968, covered about 31,000 compounds in the fields of drugs, cosmetics, food additives, and other products. The data were also produced as *Desktop Analysis Tool for the Common Data Base* (six volumes), distributed by the National Technical Information Service.

It had been the intention of the Drug Literature Program to use the *Chemical Abstracts* data for synonym matching, to aid NLM indexing, and possibly to assign chemical class terms for MESH automatically. Computer programs for an auxiliary chemical module were partially written to enable this name matching process to proceed, but they were never completely tested and implemented owing to the redirection of emphasis during the development of MEDLARS II.

The Drug Literature Program's first bibliography was a monthly compilation of information on the adverse effects of drugs for the FDA. In July 1966 the DLP turned to MEDLARS to produce a pilot issue of *Toxicity Bibliography*, a list of reports on toxicity studies, adverse drug reactions, and poisoning in man and animals compiled from approximately 2,500 journals. After receiving suggestions for improvement of the bibliography from toxicologists, pharmacologists, pharmacists, and clinicians to whom the publication was sent for review, DLP modified the format and produced a second pilot issue in the spring of 1967. Following further modifications, the Library published the bibliography on a regular quarterly basis from 1968 until 1978.

The Toxicology Information Program

While the Drug Literature Program was evolving in the Library, the related subject of toxicology was receiving much publicity throughout the United States. Reports of harmful effects of chemicals in food, water, and the environment, along with the publication of articles and books such as Rachel Carson's *Silent Spring* aroused the public's interest and alarm. In 1964 James A. Shannon, Director of NIH, convened a group of NIH's pharmacologists to study the effects of environmental chemical contaminants upon life. The President's Science Advisory Committee, impressed by the NIH study, recommended the establishment of a National Toxicological Information System.[2] President Lyndon Johnson accepted the recommendation and assigned to the Department of Health, Education, and Welfare the responsibility for developing a computer-based file of toxicological information. From the Secretary of DHEW the responsibility passed down to the Surgeon General and finally to the Library.[3]

Director Cummings was concerned that NLM did not have the funds and specialized manpower to develop the large information service visualized by

his superiors in NIH, PHS, and DHEW, but he accepted the responsibility with the understanding that the Library would receive adequate resources. The Surgeon General transferred funds and four positions from his office to NLM to enable the program to begin. In December 1966 Cummings appointed Charles N. Rice, a chemist with industrial, academic, and governmental experience, to organize the program. Rice prepared a plan that was implemented after approval by a DHEW Departmental Toxicological Information Coordination Committee. Because the activities of the Drug Literature Program were similar to the new Toxicological Information Program, the former was placed under Rice's supervision on May 17, 1967. The name Specialized Information Services was coined to cover both units.

The DLP had focused primarily on acquiring, indexing, and compiling drug information. Since these activities overlapped ongoing library operations, some members of the staff were gradually transferred to sections of the Library responsible for these activities. Finally in 1970 the DLP was abolished leaving the Toxicology Information Program as the major element in the Specialized Information Services.

Development of the Toxicology Information Program

Shortly after the Toxicology Information Program was established, Cummings requested the National Research Council-National Academy of Sciences to form an advisory committee, generally referred to as TIPCOM. Composed of several scientists prominent in toxicology and related fields, TIPCOM provided advice on the scope and priorities of the program.

Since the number of persons in TIP was small, much of the development, compiling, arranging, and other work had to be done by contractors, leaving the staff free to plan and manage. Rice negotiated contracts with University of Pittsburgh, University of Pennsylvania, and commercial firms to obtain several products, among them a directory of toxicology information resources in government agencies, industrial companies, and universities; a roster of experts in the various areas of toxicology; a data bank of user needs of toxicological information and data; and the design of a computerized data storage and online retrieval system for toxicology.

Director Cummings had expected to receive an increase in funds and positions each year to build the large program envisioned by the originators. However within a year or two it became apparent that the increase would not materialize:[4]

Fiscal Year	1967	'68	'69	'70	'71	'72	'73	'74	'75	'76
Anticipated funds	0.5	2.3	5.9							
Obligations, millions	0.051	0.586	1.380	1.240	1.311	1.315	1.533	1.747	1.881	1.9
Anticipated personnel	20	41	57							
Actual personnel	10	18	18	18	17	17	16	17	17	17

Therefore, the ongoing broad program covering many facets of toxicology could not be continued. The Library had to choose narrower but attainable goals that

would allow TIP to function within its limited resources and to perform useful services as quickly as possible. Under Henry M. Kissman, a pharmaceutical chemist and information specialist, who arrived from the Food and Drug Administration in June 1970 to direct TIP, the primary objectives became: the operation of services to provide toxicological information and data to the scientific community; an increased collaboration with other government agencies which possessed data and information relevant to TIP's subject area or could use the services of TIP; and a continuation of the development of computerized toxicological data banks.

TIP provided services through publications, query-response, and the operation of a variety of on-line retrieval files and systems. The first of TIP's publications was a *Directory of Information on Resources in the United States: General Toxicology* (1969) prepared by the National Referral Center for Science and Technology at Library of Congress. Others included *Drug Interactions, an Annotated Bibliography with Selected Excerpts*, prepared by Paul de Haen, Inc.; *Index to the Report of the Secretary's Commission on Pesticides and their Relationship to Environmental Health*, prepared by Sharon Valley using a whole text data processing system; *Abstracts on Health Effects of Environmental Pollutants*, a monthly abstract journal initiated by TIP and published by Biosciences Information Service of Biological Abstracts.

The query-response service was brought about by an agreement between the Library and the Atomic Energy Commission to establish the Toxicology Information Response Center at the Oak Ridge National Laboratory. The center drew on the resources of the Library and Oak Ridge to provide answers to questions from users. The answer generally consisted of a bibliography compiled by computer searching of on-line files such as MEDLINE and hand searching of conventional sources like *Chemical Abstracts*, *Biological Abstracts*, and *Science Citation Index*.

Some of the queries received by the response center required considerable time and labor to answer. The Board of Regents approved Kissman's recommendation that searches completed within 2 hours be free, but those over 2 hours be charged $15 for each additional hour, the money reverting to the Oak Ridge Laboratory to help offset the cost of the service. Some of the bibliographies compiled by the center were considered to be of such wide interest that they were published.

The Library's first whole text computerized search system was developed under the direction of Donald J. Hummel in TIP using *Health Aspects of Pesticides Abstracts Bulletin* and the facilities of a contractor, Mead Data Central Corp.. This served as a prototype for a nationwide retrieval service named TOXICON, developed with the aid of a contractor, Informatics, Inc.. TOXICON, an acronym for toxicology information conversational on-line network, was demonstrated by Specialized Information Services in April 1972. Regular service to subscribers was inaugurated on October 1 through the commercial Tymshare network. TOXICON at first contained citations from *Toxicity Bib-*

Several of the publications provided to scientists working in the fields of pharmacology, toxicology, environmental pollution, and related disciplines by the Library's Specialized Information Services.

liography, Health Aspects of Pesticides Abstracts Bulletin, Chemical-Biological Activities, Abstracts on Health Effects of Environmental Pollutants, and a private collection of citations on pesticides compiled by Whalen J. Hayes. Later, citations from other files and services were introduced into the system. In 1973 the name TOXLINE, for toxicology on-line, replaced the name TOXICON. The following year the system, which had been operated by a contractor outside of the Library, was brought inside since NLM could now handle whole text search capabilities.

Following the successful establishment of TOXLINE, Bruno M. Vasta began to develop a companion file, the toxline chemical dictionary, based upon the Chemical Abstracts Service registry numbers contained in TOXLINE. This file contained chemical identification data extracted and reformatted from data supplied by Chemical Abstracts Service, including generic and trivial names, registry numbers, and molecular formulas. These data, considered proprietary by CAS, required royalty payments based upon use. The file was tested as a prototype while running with TOXLINE in the National Aeronautics and Space Administration RECON satellite system and later was improved and renamed CHEMLINE when the service was offered directly from the Library.

In 1974 Michael Oxman and the TIP staff began to develop an on-line interactive computer-based data retrieval system that would provide access to chemical, physical, toxicologic, pharmacologic, use, and manufacturing data on hundreds of selected chemicals. The toxicology data bank, as the compilation was named, became available to U. S. subscribers of the Library's on-line computer services in November 1978.

TIP collaborated with Federal agencies and NIH Institutes in designing and developing other on-line bibliographic and data files. These included CANCERLIT and CANCERPROJ, with the staff of the National Cancer Institute; EPILEPSYLINE, with the staff of the National Institute of Neurological and Communicative Disorders and Stroke; and RTECS (registry of toxic effects of chemical substances) with the staff of the National Institute for Occupational Safety and Health.

The most widespread collaboration of the Specialized Information Services occurred in the Toxicology Information Subcommittee of the DHEW Committee to Coordinate Toxicology and Related Programs. This committee, organized by the Assistant Secretary for Health, was composed of representatives of 13 organizations within DHEW and liaison representatives from 13 other Federal agencies. Headed by Kissman, the information subcommittee drew a list of desirable projects to be undertaken by TIP. When the Assistant Secretary was able to obtain funds, TIP began the most urgent project. One of these was the laboratory animal data bank, LADB, a computerized repository of evaluated baseline data on many strains and species of animals such as mice, rats, rabbits, dogs, and monkeys used in research. Battelle Columbus Laboratory collected the data under contract from institutions throughout the United States, and the Library made the data available through an on-line retrieval and statistical analysis system designed for use by scientists, breeders, and managers of laboratory animal research. Formal training in computer retrieval logic was not necessary for use of this system. Another important project was a periodical that provided news of toxicity tests being carried out or considered by companies, universities, and government agencies. TIP collected the information and sent it to National Technical Information Service, which published it in a monthly bulletin titled *Tox-Tips* (from toxicology testing-in-progress). In a third project, reports about planned and ongoing research in toxicology were ex-

tracted from the data bank of the Smithsonian Science Information Exchange and published through NTIS as the monthly *Toxicology Research Projects Directory*.

In the 1960's when the Library was given responsibility for the Drug Literature and Toxicology Information programs, Director Cummings expected to receive authority to hire the relatively large number of professional employees and to receive the large annual appropriations envisioned by those who conceived the programs. Instead he was given authority to hire only a few scientists, and he received only a relatively small amount of money for the work. As a result, the Specialized Information Services had facilities and personnel to carry out only a fraction of possible worthwhile projects and at times was able to undertake an important proposal only by obtaining funds and borrowing positions from collaborators. The staff of the service demonstrated ingenuity and skill in accomplishing so much with limited resources.

Notes

[1] Information on the Drug Literature and Toxicology Information programs may be found in records of the Board of Regents, annual reports of the Library, NLM *News*, and articles published by members of the staff. Information was also obtained from Martin Cummings, Winifred Sewell, Charles Rice, George Cosmides, Henry Kissman, Donald Hummel, Sharon Valley, Arthur Wykes, and Donald Walker. 88th Cong., 1st sess., Committee Print, *Drug Literature. Report prepared for the Study of "Interagency Coordination in Drug Research and Regulation" by the Subcommittee on Reorganizations and Internal Organizations of the Senate Committee on Government Operations A factual Survey on "The Nature and Magnitude of Drug Literature" by the National Library of Medicine*. Aug. 30, 1963.

[2] *Handling of Toxicological Information. A Report of the President's Science Advisory Committee* (Washington, The White House, 1966).

[3] Memo, Philip Lee, Asst. Sec. for Health and Scientific Affairs to Sec. DHEW, Sub. Development of Toxicological Information System, Jan. 31, 1967.

[4] Obligations and personnel are from annual reports of the Library. Anticipated funds and personnel are from memo, Surg. Gen. William Stewart to Sec. DHEW, sub: Development of toxicological information system, Dec. 12, 1966.

XXIII

The Lister Hill National Center for Biomedical Communications

Research and Development in the Library

FROM the time of Director Cummings' early days in the Library he was captivated by the idea of converting the institution from a traditional medical library into an active information center. He felt that rapid communication involving radio, television, telephone systems, computers, and other devices was the way of the future in libraries, that research ought to be carried out to test new networks for communicating biomedical information and to evaluate information retrieval techniques, graphic storage and retrieval, computer software for information retrieval, and other devices and systems. He was given an opportunity to express his views in 1965 when Surgeon General Luther Terry, concerned about the role of communications among the many new health programs, asked the Board of Regents for a statement of the Library's policy. The policy, drafted by members of the staff and the Board, stated that the Library should, among other things "support experimental programs, both intramural and extramural, to test multiple approaches to meeting the needs for biomedical information . . be a national resource for information systems research and development relevant to human health . . . serve as a clearinghouse and coordinating agency for information systems R and D within the Public Health Service."[1]

While the policy was being drafted, the Department of Health, Education, and Welfare asked all of its agencies to draw up their plans for the next 5 years, fiscal years 1966 through 1970. In its forecast the Library outlined the task it hoped to accomplish through the establishment of a Center for Biomedical Communications, housed in a new building, staffed by scientists carrying out research and development in information systems, and developing and demonstrating methods for the continuing education of workers in the health professions.

In the meantime Cummings talked to Representative John Fogarty and Senator Lister Hill, whom he knew, about the possibility of obtaining authority and facilities to carry out research. They encouraged him to seek permission

from Congress, and Fogarty promised to support a bill to appropriate funds if authority were obtained. At Fogarty's suggestion Cummings conferred with Representative Paul Rogers about the need for research, and also met with members of the pertinent subcommittee staff.

As a result of these discussions the House Subcommittee on Reorganization issued in 1966 a report recommending that the Library establish a research center in biomedical communications, coordinate all health communication activities in the Public Health Service, establish a national biomedical information clearinghouse and referral service, and have transferred to it the Medical Audiovisual Branch, at that time a part of the PHS's Communicable Disease Center in Atlanta, Georgia. And most importantly the House and Senate Subcommittees on Appropriations recommended that NLM receive $118,000 and four new positions to begin R&D.

With the funds Cummings engaged Ruth Davis of the Department of Defense as the Library's associate director for research and development. She arrived on April 24, 1967, and for a while worked alone, laying the foundation for the program. During the second half of 1967 she recruited several engineers and scientists to serve as the nucleus of the R&D staff. She and her associates began to draft plans for a biomedical communications network, to be developed over the following 5 years.

The Lister Hill National Center for Biomedical Communications

Parallel with Cummings efforts to gain authority and funds for a R&D program was his attempt to obtain a building to house a research staff, facilities, and employees hired within recent years. In the interval since the Library building had been occupied in 1962, NLM had expanded its activities. It had acquired the computer-based MEDLARS system, a grants program, a drug literature program, and a toxicology information program. Three hundred and forty employees were squeezed into space designed for 250 Areas in the stacks intended to house books had been converted into offices. Space for the Extramural Program staff had been rented in a structure in Bethesda. The R&D employees that Cummings hoped to hire would have overflowed from the Library building.

In early 1967, after Congress had indicated that it would appropriate funds for research, Cummings engaged the firm of O'Connor and Kilham, designers of the Library building, to draw up a preliminary plan for an annex to house the Library's recent activities. And since the Library's interior had been modified from the original design by the installation of computers and other equipment, the firm was also asked to plan a renovation of the existing structure, when and if an annex were built.

The architects presented three possibilities, an annex the height of the Library building, one with a tower 15 stories high, and one with a tower of medium height. The annex would be close to but not against the south side of

the Library, be connected at the underground levels, and have underground parking. Following the transfer of the National Medical Audiovisual Center to NLM on July 1, 1967, Cummings asked O'Connor and Kilham to prepare another feasibility study that would explore the alternatives of providing space for the center in the annex, or expanding the center's facility in Atlanta, Georgia.

The following year Senator Lister Hill closed his long career in public life. After coming from Alabama to Washington as a Representative in 1923, he had served in the House until 1938 and then in the Senate. He had sponsored more influential health laws than any legislator in this century, including the Hospital and Health Center Construction Act, the Comprehensive Health Planning and Public Health Services Act, the National Library of Medicine Act, the Medical Library Assistance Act, the Regional Medical Programs Act, and the Hill-Harris Act of 1963.[2]

Learning of Senator Hill's decision to retire, Cummings suggested that he be remembered for his role in improving health care by having the annex named in his honor. Through Joseph F. Volker, a friend and a constituent of Hill, his suggestion was relayed to Senator John Sparkman, Hill's colleague, and to Alabama Representatives. They were enthusiastic about the idea.

A short time later on June 20, 1968, the NLM staff, Board of Regents, Secretary Wilbur Cohen, Senators, Representatives, and friends held a reception for Senator Hill in the Library. Senator Sparkman, the main speaker, emphasized the fitness of naming the annex the Lister Hill National Center for Biomedical Communications, "to perpetuate the name of the man who has done so much for the health of the nation, who has exhibited an abiding concern for . . . libraries in general and the National Library of Medicine in particular." Upon Senator Sparkman's suggestion Cummings and Scott Adams drafted a resolution embodying the sentiments expressed at the reception, and Senator Sparkman introduced this into Congress as a joint resolution on July 19. It was passed unanimously by the Senate, passed unanimously by the House on July 24, and signed by President Johnson on August 3.[3]

Cummings redesignated the Library's R&D program as the Lister Hill National Center for Biomedical Communications. Secretary Cohen of HEW assigned to the center its functions, the most important of which were: to design, develop, construct, and manage a biomedical communications network; to apply advanced technology to improve biomedical aspects of biomedical communications, information systems and networks; and to represent DHEW in biomedical communication activities.[4]

Planning the Biomedical Communications Network

In drafting the development plan the R&D group obtained advice from medical societies, professional associations, the Library's Board of Regents, and consultants to determine the needs of the medical community and establish priorities. It tried to envision the ways in which television, satellites, films,

computers, lasers, and other devices could be applied to medical communications. It supplemented its own thinking with surveys made under contract by research institutes and university groups.

When completed in June 1968 the plan outlined the logical, orderly production of a biomedical communication network during the next 5 years. It envisioned a national network composed of Library, Specialized Information Service, Specialized Education Service, Audio and Audio-Visual Service, and Data Processing and Transmission components. The network was to be managed by a staff of 64 persons with a budget of $16 million by fiscal year 1974. But Congress never appropriated funds for such a network; by 1974 the staff comprised 20 persons and the budget $2,931,000, and by 1976, 24 persons and $1,475,000.[5] Under the circumstances the only policy the Library could follow, dictated by relatively low funds, was to have the Lister Hill Center manage the research and development of parts of the network, with much of the work being done by contractors, and, after the systems had been demonstrated and evaluated, turn them over to others for operation.

During its formative years the center staff engaged in a variety of tasks. They compiled an inventory of all the projects sponsored by DHEW involving the use of communication and information science technology. They set up a DHEW Scientific and Technical Information Publication Data System. They compiled a data bank, the medical resources file, containing all manner of statistics of use to Federal agencies, the biomedical community, and for use in planning the biomedical communications network. They were given the responsibility of evaluating the decentralization of the MEDLARS system. They monitored the Library's contract with the Interuniversity Communications Council, the purpose of which was to determine how biomedical information might best be distributed over a network to physicians, hospitals, and schools. They helped evaluate the proposals for development of MEDLARS II. They pioneered in the development of individualized biomedical communication modules, containing a projector-viewer and tape recorder, for use in the education of students and the continuing education of physicians. But during the first decade their major activities became the development of a time-shared, on-line retrieval system for searching data bases of citations to medical literature; the illustrative application of biomedical communications to education through the development of an interactive television network and a computer-assisted instructional network; and the demonstration of the usefulness of satellite communication in medical education and treatment.

AIM-TWX

The technology that permitted persons at a distance from a computer to communicate directly with the computer had been worked out only a few years before the Library began research in biomedical communications. As Davis and her associates drew up the Lister Hill Center's technical development plan,

they included in it an on-line bibliographic retrieval system that would make the MEDLARS data file available to physicians nationally through the use of remote terminals. To work on this system Davis brought from the Defense Intelligence Agency Ralph Simmons, who had been in charge of the development of an on-line system for the Air Force. Simmons assisted with Lister Hill Center's development plan, but his main task was setting up a Remote Information Systems Center, a room containing terminals connected to data bases on computers in other locations. In the center MEDLARS operators familiarized themselves with the equipment and techniques for querying other data bases. Simmons and those associated with him used the terminals to learn about various data banks, models, programs, and programming languages of possible use to NLM. Using the computer of one contractor, System Development Corporation, located in Santa Monica, California, and the firm's on-line, time-shared retrieval system named ORBIT, the staff experimented with a small data base of citations to neurology articles and books.[6]

Simmons was certain that a system could be developed that would permit researchers, educators, librarians, and practicing physicians to communicate with MEDLARS. But the questions were, could it be done with the relatively small amount of money that was available, and would the benefits be worth the cost and time. The staff estimated the potential benefits by an analysis of the use of other systems, particularly the system opened by the State University of New York at Syracuse, SUNY in December 1968 using a MEDLARS data base. These estimates convinced them that MEDLARS would be searched by many more users if an on-line system were available. But as valuable as a system might be for NLM patrons, it had to be developed at a low cost or not at all.

A relatively cheap communication link between the computer and terminal had to be found. Existing remote access systems communicated with their computers through special terminal equipment connected to leased telephone lines or teletypes and telephone lines. These communication methods were too expensive for NLM. The staff decided that the Teletypewriter Exchange System, TWX, could be utilized in place of telephone lines. TWX terminals had been installed in more than 500 libraries for transmission of interlibrary requests, and these could also be used for retrieval without purchasing additional terminal equipment.[7] Other remote access systems had tried the TWX network as a communications link, but in such a way that users had to lease new equipment or special devices to place on their teletypewriters.

The MEDLARS data base contained more than 1 million citations, too many at that time for use in an available remote access system. An analysis of the *Abridged Index Medicus* base, containing approximately 100,000 citations from the most widely used journals in clinical medicine, indicated that it would be manageable and useful, particularly if supplemented by citations from additional journals. The *AIM* base was chosen for the proposed on-line system.

The *AIM* data base and the TWX network provided two components of an

experimental system. The third component, the computer, was chosen after consideration of three alternatives. One alternative was a contract with SUNY to provide access to its computer system through the TWX network. NLM discarded this idea because it felt that the system could not be used over the entire nation unless it were improved substantially. Another alternative was to move the ORBIT or SUNY system to the Library and use the Library's computer. But transfers of the system would have been expensive, and operation within the Library would have interfered with the operation of MEDLARS. The third alternative was to provide service through System Development Corporation in Santa Monica, using the corporation's time-sharing computer, the TWX communication system, and the *AIM* data base. A contract with SDC would also give NLM a head start, for the corporation had already accumulated considerable experience with remote access systems while developing one for the Air Force.

In the autumn of 1969 the Library engaged SDC to provide an experimental on-line retrieval system called AIM-TMX that would enable NLM to test the feasibility, use, and acceptance of such bibliographic service. The bibliographical information published during the preceeding 5 years in over 100 journals of clinical medicine was stored in SDC's computer in California. The retrieval program was named ELHILL, for Lister Hill. NLM selected a group of hosptials, medical libraries, MEDLARS search centers, NIH institutes, and other users willing to cooperate in the experiment. The Library inaugurated the service in June 1970. Users could call the computer each day between 11:30 a.m. and 3:30 p.m. Eastern time from TMX terminals or from computer terminals connected to telephone lines. As many as 18 searchers could use the system simultaneously. The users paid the cost of calling the computer, NLM paid other costs. The Library kept the AIM-TWX data base available for users until Nov. 22, 1972 and then replaced it by a much larger data base, MEDLINE.

The Experimental Computer-Assisted Instructional Network

The success of the AIM-TWX network, which linked institutions all over the country to the Library's computer through economical communication lines, suggested to the LH staff that the same kind of network could be used for other purposes. One of these was a network of educational institutions joined through telephone lines and Tymshare to a computer in which instructional programs would be stored.[8]

A few institutions had already written programs for their students. Massachusetts General Hospital employed its computer to teach students by simulating disease syndromes, biomedical models, and clinical encounters. The Ohio State College of Medicine computer courses assisted first- and second-year medical students, nurses, nursing students, optometry students, graduate students, and physicians in community hospitals. The University of Illinois Medical Center's computer programs offered simulated clinical encounters which

allowed free vocabulary entry and an interactive file of multiple choice questions.

In 1972 Harold Wooster, the LH project officer, contracted with these three institutions to permit other schools to connect with their computers and employ their courses. Arranging for the teaching computers and the communications network, Tymshare, was only half of Wooster's task. The other half was publicizing the experiment and finding institutions willing to try computer-assisted instruction, CAI. Lister Hill paid for the use of computer facilities, the users bore the cost of communication to the nearest Tymshare city and provided their own terminals.

Massachusetts General Hospital opened its computer to the network on 8 a.m., July 1, 1972. Ohio State connected its computer in September, and Illinois in January 1973. By February 1973 students in 45 institutions were learning various subjects with the help of computers. In May the Lister Hill Center held a meeting of users to evaluate the experiment and determine the direction it should take. Institutions were almost unanimous in their enthusiasm for the network. It was estimated that 70 percent of the audience were medical students, 5 percent were physicians, and the remainder were nurses, dental students, and other health workers.

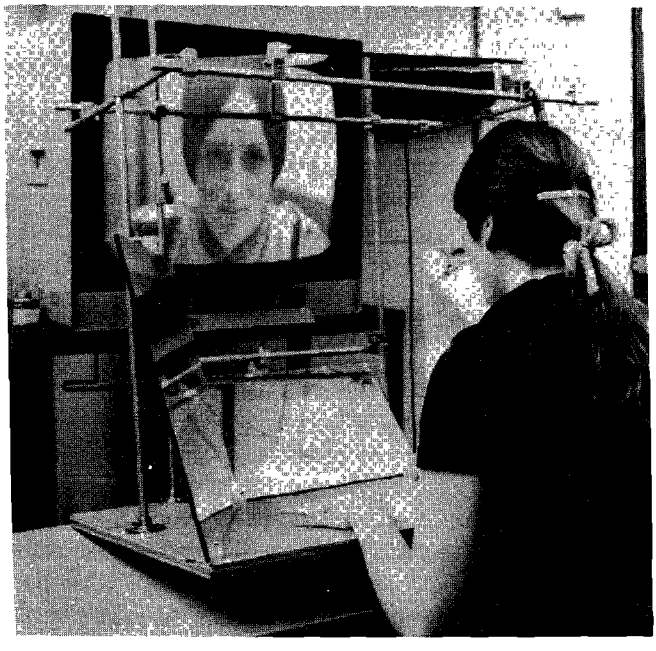
Through 1973 LH financed the cost of the computers and the Tymshare network. At its peak the network provided 3,000 connect hours a month to 100 users. Wooster calculated that the Library was paying $18.77 for each connect hour. The ever increasing cost became so great that the Library felt compelled to ask users to share the expense. Beginning in February 1974 institutions were charged $2.50 for each connect hour. In July the charge was increased to $5.

The intention of Lister Hill had been to start and test the utility of CAI, not to operate an instructional network indefinitely. The experiment completed, Lister Hill prepared to close the network on May 30, 1975. Users had found CAI so valuable that they begged Lister Hill to continue financing it, but the Library did not have the funds—it had already paid $677,494 to Massachusetts General, Ohio State, and Illinois. Fortunately on June 1 users were able, with further assistance from LH, to start managing and financing their own health education network.

The New Hampshire-Vermont Medical Interactive Television Network

By the time the Lister Hill Center came into existence, educational television, ETV, was well established. Approximately 120 stations were operating in the United States. The Lister Hill staff saw the potential usefulness of ETV in medicine, and it entered the field by contracting with Rand Corporation for a study of costs of ETV stations and the percentages of physicians within reach of those stations.

In the meantime an event took place that led LH to sponsor a large-scale



Speech therapy session on the New Hampshire Vermont Medical Interactive Television Network (Interact).

test of ETV in medicine. In 1968 NIH's National Institute of Mental Health financed a two-way closed circuit television hookup between Dartmouth Medical School and Mary Hitchcock Memorial Hospital, Hanover, New Hampshire, and Claremont General Hospital, 30 miles away, to see how effectively psychiatrists in a medical school could examine patients in a distant small community hospital. The system was interactive; that is, persons at both ends communicated with each other. The experiment worked so well that Dean Seibert, assistant dean of community affairs of Dartmouth, talked with Ruth Davis about the possibility of LH's financing a network to explore the uses and benefits of interactive television in the rural areas of New Hampshire and Vermont. Since this fitted into the center's plans, and the Board of Regents had requested that priority be given to the application of biomedical communications in education, Davis agreed and placed Harold Wooster in charge of the project.[9]

Lister Hill engaged a research firm to study the proposed network, eventually named Interact. After the firm reported that Interact was technically feasible, the LH staff had to decide what proportion of their relatively small funds they should allot to the project. This amount was not sufficient to finance the entire network, but it was enough to test a smaller system involving four

types of institutions: medical schools, hospitals, community colleges offering courses in health care, and prisons.

Construction of a four-station duplex network, with three mountain relay points, began in 1971. In the network were Dartmouth Medical School, University of Vermont Medical School, Claremont General Hospital, Central Vermont Hospital, Rockingham Memorial Hospital, Claremont Vocational Technical College, and Windsor State Prison. The stations began operating in 1972 and were augmented by other facilities in 1973. Practicing physicians used Interact to continue their medical education and to seek advice on diagnostic and patient care problems. Professors at the medical schools taught student nurses in the hospitals and students in health care courses at the Vocational Technical College. Physicians in community hospitals participated in surgical rounds and conferences at university hospitals. Participants benefited from a variety of programs presented over the network approximately 40 hours a week. Lister Hill provided funds until the concept had proved practical and then withdrew in 1975, leaving the operating network in other hands.

Medical Assistance and Education via Satellites

The responsibility of Lister Hill to improve biomedical communication by means of advanced technology was carried out, as funds permitted, mainly through the use of satellites. The National Aeronautics and Space Administration launched the first communication satellites in 1960. They were spheres 100 to 135 feet in diameter, circling the earth at altitudes of 600 to 6,700 miles, with reflective surfaces that bounced radio signals back to sending stations. These "passive" communication satellites were followed by craft that contained receiver and transmitters, powered by solar cells, that amplified and returned radio signals. In 1963 NASA sent aloft the first satellite to relay a live television program from Europe to America.

The round satellites were soon replaced by cylinders, orbiting at higher altitudes, remaining in a stable position by spinning. They relayed telephone, teletype, and television transmissions across the ocean. A further improvement was a spin-stabilized machine in an orbit approximately 22,000 miles high traveling at a velocity that kept it over a certain area of the Earth. Satellites at this altitude could see about one-third of the globe. In 1966 NASA sent into a 22,300 mile high orbit the first of the Application Technology Satellites, ATS-1. The ATS satellites were geostationary, hovering over a spot instead of an area, and their antennas maintained a fixed orientation toward the Earth, allowing radio beams to be directed with precision.

During the planning of the Library's research and development program the Lister Hill staff considered satellites to be one of the means by which medical information would be disseminated over a large geographical area. The staff visualized a satellite communications system that could be utilized for the education of medical students, the continuing education of physicians, and even the education of the public. This system would be composed of a national

The Native Health Clinic, Galena, Alaska ATS-1 antenna at left

network, regional networks, and interconnections between regional networks. The Library asked Comsat Corporation to estimate the cost of designing and developing the system. Comsat replied that it would cost about $6 million, not counting yearly operating expenses. Since the total Lister Hill budget at that time was only about one-sixth of this sum, the scale of the plans had to be reduced drastically

Lister Hill carried out its first experiment in satellite communication in April 1970 With the assistance of ATS-1, LH tested a four-way voice conference network joining the Library, University of Wisconsin, University of Alaska, and Stanford University. This satellite network was also used to demonstrate the transmission of electrocardiograms, the sending of photographs by means of a photo facsimile system, and the relay of questions to and answers from a computer.[10]

These tests prepared the way for the development of a communication network for supplying medical information to remote villages in Alaska. By means of the ATS-1 satellite, equivalent to a transmission tower 22,000 miles high, two-way conversations were made possible between a physician in the Indian Health Service hospital in Tanana and health aides in 26 remote villages. The aides, who had been trained to provide primary health care in their com-

munities, were supplied with VHF transmitters and receivers. With this equipment they were able to talk to the physician daily to report on or obtain advice about the treatment of sick villagers. In emergencies the aides used the system to call for a plane to carry patients to a hospital.

This satellite network was also shown to be useful for teaching medicine to students, nurses, and health aides in remote locations, as well as permitting physicians, separated by long distances, to consult with each other. Satellite communications were a major improvement over shortwave radio in arctic regions since radios were inoperable much of the time because of ionospheric disturbances.

In May 1974 NASA launched ATS-6, a much more complex, versatile and powerful satellite. The ATS-6 enabled two-way television communication to be carried on between the Tanana hospital and village aides. The aides were supplied with simple and relatively inexpensive ground terminals capable of receiving and sending video and audio signals. A physician at Tanana could now see patients through television, diagnose their illnesses, and give instructions to the attending health aides. In May 1975, with the Alaska health experiment proved to be practical and valuable, Lister Hill withdrew, and the state took over maintenance of the network.

Satellite ATS-6 was also utilized to set up a network for medical instruction in the states of Washington, Alaska, Montana, and Idaho. The area of these four states comprised 22 percent of the territory of the Nation but were populated by only about 6 million people. In 1971 the University of Washington Medical School had begun an experiment in decentralized medicine in this region. Named WAMI, from the initials of the states, the program had several objectives in health care and education, among them an increased opportunity for medical education without the construction of additional medical schools.

In 1973 the Lister Hill Center contracted with the University of Washington to explore the use of satellites in the WAMI program. Courses taught at University of Washington Medical Center in Seattle were beamed to the universities of Alaska, Montana, and Idaho for an audience of first-year students. Upon completion of the year the students enrolled at University of Washington for the remaining 3 years. Clinical instruction was transmitted from the medical center to third- and fourth-year students in clerkships at the Family Medicine Clinic in Omak, Washington. The WAMI project demonstrated the possibilities of sharing educational facilities within a large area. The two-way video, audio, and data communication network allowed instructors and students separated by long distances to participate in a coordinated medical education program.

In January 1976 NASA launched the Communications Technology Satellite, CTS, developed by Canada and the United States. At that time CTS was the world's most powerful and versatile communications satellite. In addition to industrial firms and universities, it was used by several agencies of the Public Health Service, including the Library, for medical education, dental education, teleconferences, training seminars, and health consultations. CTS permitted

expansion of the WAMI program, provided the Lister Hill staff with an engineering laboratory for experiments and demonstrations, and had other uses.

For the Library's CTS network the Lister Hill staff designed, developed, and installed six sophisticated Earth terminals at locations as far apart as Fairbanks, Alaska, and Bethesda, Maryland. This network operated for 818 days, logging 2,083 broadcast hours before making its final telecast on June 27, 1979. During the course of its operations more than 16,000 persons appeared before the cameras. The June telecast ended a decade of satellite experiments by the Lister Hill Center, demonstrating the wide range of health communications services that could be offered by this medium.

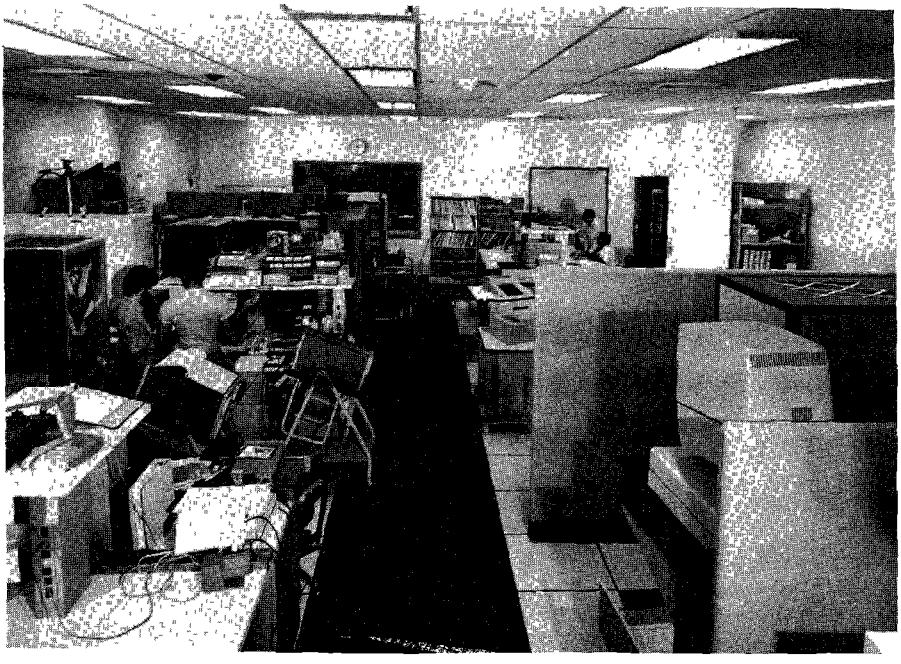
Construction of the Lister Hill National Center for Biomedical Communications

In the spring of 1970 Congress appropriated $900,000 for architectural and engineering designs of the Library's annex, the Lister Hill National Center for Biomedical Communications, but the Office of Management and Budget would not release the funds until 2 years later, January 1972. The General Services Administration negotiated a contract with the firm of Carroll, Grisdale and Van Alen which, over the next 2 years, produced plans for a 10-story annex with three underground levels containing approximately 200,000 gross square feet of space for 428 employees.[11]

Each year at budget time Cummings asked for money for construction, and each year he came away empty handed. Other buildings needed by NIH, PHS, and DHEW received priority. He became pessimistic about the Library's chances of ever receiving an appropriation. Slowly, however, he was gaining support. Members of the Board of Regents, very knowledgeable about Library affairs, lost patience with the pace of events and asked Congressmen from their states for help. Mrs. Frances Howard, sister of Senator Hubert Humphrey, who knew about the shortage of space from personal observation, introduced Cummings to several Congressmen to whom he explained the need for an annex. Representatives Paul Rogers, Robert Michel, and Daniel Flood; Senators Humphrey, Edward Kennedy, Warren Magnuson, and Norris Cotton, all influential in health legislation, were coming to the rescue of the Library.

Not knowing that funds were on the verge of being appropriated, Cummings became very discouraged. Feeling that he could not contribute further to the development of the institution he decided to retire from the Federal service. He notified the staff and his superiors of his intention of leaving and had tidied up his official business when he received word that Congress was going to appropriate funds. Pleasantly surprised, he cancelled his retirement party and looked forward to the construction, completion and occupancy of the Lister Hill building.

Congress appropriated $26 million in January 1976 for construction of the center and renovation of the Library building. During the spring and summer of 1976 the National Capital Planning Commission approved the architects'



The Communications Research and Development Facility of the Lister Hill National Center for Biomedical Communications.

plans, the Library met the requirements of the National Environmental Protection Act, and the General Services Administration awarded the contract to George Hyman Construction Company on a low bid of $13 million.

Excavation of the site and construction took place without unusual incidents or delays, and the building was ready for occupancy in May 1980. The staff of the extramural program moved from a rented office building in Bethesda, employees of the National Medical Audiovisual Center moved from their quarters in Atlanta, and the Lister Hill group, Toxicology Information Program, and other units shifted from the Library building. The Lister Hill National Center for Biomedical Communications was dedicated on May 22 with Senator Hill in attendance.

Notes

[1] Information on the LHNCBC may be found in publications by staff members, fact sheets, records of the Board of Regents, annual reports of the Library, and *NLM News*. Information was obtained from the above, and from Martin Cummings, Harold Wooster, and Harold Schoolman.

[2] Some account of Senator Hill's activities in sponsoring legislation on behalf of medicine may be found in *Congressional Record*, Oct. 8, 1968, pp. S12254–S12259; Oct. 9, S12325; Oct. 12, S12735–S12754; Nov. 1, E9565.

[3] *NLM News*, August 1968. Senate Joint Resolution 193. Public Law 90–456. Directors

of the center have been Ruth Davis, August 1968–November 1970, Davis McCarn (Acting Director) November 1970–May 1971, Albert Feiner, May 1971–September 1974, Robert Bird, September 1974–December 1976, Kenneth M Endicott (Acting Director) January 1977–June 1977, Lionel Bernstein (Acting Director) July 1977–July 1978, Director August 1978

[4] F R Doc 68–13778, Nov 14, 1968

[5]

Fiscal Year	1967	'68	'69	'70	'71	'72	'73	74	75	76
Obligations millions			0 828	0 911	1 366	1 883	1 949	2 931	2 234	1 475
Personnel, June 30	1	10	12	10	14	15	17	20	22	24

Source Annual reports of the Library

[6] Information on the development of AIM-TWX may be found in records of the Board of Regents, articles by members of the staff, Library network/MEDLARS technical bulletins, On-line services references manuals, and *NLM News* Information was also provided by Ralph Simmons

[7] NLM acquired TWX facilities in the spring of 1966 to cooperate with the Medical Interlibrary Communication Exchange System, MICES, in servicing interlibrary loan requests

[8] Information on the CAI network may be found in records of the Board of Regents, articles by members of the staff, annual reports of the Library, and H Wooster, "The LHNCBC Experimental CAI Network, 1971–1975 an Administrative History," in Edward C DeLand, ed , *Information Technology in Health Science Education*, 119–42, see also publications cited in this article Tape-recorded autobiography of Harold Wooster, Feb 23, 1979

[9] Data on the New Hampshire Vermont medical TV network may be found in records of the Board of Regents, *NLM News*, annual reports of the Library, articles by staff members, and Dean J Seibert, Interact—a Decade of Experience Using Two-way Closed Circuit Television for Medical Care and Education Contract no 2-LM-4-4704, April 1977

[10] For details of the satellite experiments see annual reports of the Library, records of the Board of Regents, articles by members of the staff, *NLM News*, contractor's reports, and Lister Hill Center reports George Thoma also provided information

[11] Information on the events leading up to the appropriation for the Lister Hill Building were obtained from Martin Cummings

XXIV

The National Medical Audiovisual Center

The National Medical Motion Picture Archives

THE National Medical Audiovisual Center was a child of World War II. During the conflict the Public Health Service set up in Atlanta, Georgia, an organization called the Office of Malaria Control in War Areas, whose task was to suppress malaria around military bases and war industry plants.[1] The office grew, became very good at its job, and was given responsibility for controlling other diseases. To reflect the increased responsibility the Public Health Service changed the office's name to Communicable Disease Center, and later to Center for Disease Control.

At the beginning, the Office of Malaria Control had to train the men it hired, all unfamiliar with the methods of suppressing the disease. It acquired a cameraman-director to make instructional films showing the techniques of larviciding, ditchdigging, dynamiting, and other control measures. This means of teaching proved so useful that the organization hired additional motion picture makers. Eventually the small film company evolved into a Medical Audiovisual Branch, producing filmstrips, videotapes, and other audiovisual materials for the entire Public Health Service.[2]

It was through motion pictures that the Library first became associated with the center. At least as early as 1944 the Library considered collecting medical motion pictures, but the institution was being modernized, and there were other tasks much more important to be carried out. The idea of a movie collection arose occasionally thereafter, but no action was taken until 1953 when Director Rogers initiated a survey of the subject. He discovered that no organization in the United States collected old medical motion pictures. The earliest films had already disappeared, either thrown away or disintegrated, and those produced within the last generation or two would eventually be lost if they were not harvested and preserved.

The Library did not have equipment, space, and employees for proper maintenance and operation of a movie collection; nevertheless Rogers thought it was important to begin acquiring films for the experience to be gained thereby. He laid down the following policies. The Library would act as a central repository for documentary medical movies, but it would not produce, distrib-

ute, or evaluate them. Films would be available to individuals who came to the Library, but the Library would not act as a theater, showing movies to groups of persons. Reference service would be provided. Films would not circulate.

Rogers appointed Muriel Weins film curator. He also appointed an advisory committee for the first year of operation. The Library circularized its intention of establishing a movie archives, and gifts of film began to arrive from medical organizations, pharmaceutical firms, government agencies, film producers and distributors, and individuals. One hundred and twenty-one reels were acquired in 1954 and 311 in 1955. During the first 5 years of collecting NLM purchased only two films, one on Harvey's discovery of circulation of blood, the other on cardiac surgery. By 1961 there were more than 600 items in the collection, now named the National Medical Motion Picture Archives, and there were promises of many others.

During these years NLM found out that it had greatly underestimated the resources needed to maintain a film collection. Old movies had been made on nitrate base film that deteriorated with age and could ignite spontaneously. NLM had no place to store dangerous film and had to borrow space in the Library of Congress' film vault at Suitland, Maryland. For the proper operation of the archive special equipment was needed for editing, cleaning, splicing, and rewinding film, for transferring 35 mm to 16 mm film, and for transferring images from nitrate to safe acetate base film. NLM did not have funds for the equipment and to hire personnel.

Rogers sensed a growing interest in the application of audiovisual materials to medicine, but he did not want the Library to be drawn into this field willy-nilly. He felt that the institution had its hands full with the development of MEDLARS, the move to the new building, the advent of an extramural program, and in trying to control published literature. During the summer of 1961 he visited the Public Health Service's Communicable Disease Center and reached an agreement with the Director to transfer NLM's films to the CDC's Audiovisual Branch, soon renamed the National Medical Audiovisual Facility. The collection of 665 films was sent south in January 1962.

The Library and movie archives remained apart for several years, then began to come together. The reunion started in 1966 when a House subcommittee examined the organizational structure of the Public Health Service. James Lieberman, Director of NMAF, desired to transfer his agency to some other part of the PHS, where it could obtain a larger appropriation and broaden the scope of its program. A subcommittee staff member asked Director Cummings if it would be logical to place the facility in the Library. After several conferences it was agreed that the work of the organization could dovetail with the programs being carried on in Bethesda. As a result the Secretary of DHEW ordered the transfer to take place on July 1, 1967, and changed the name to National Medical Audiovisual Center.

The NMAC motion picture staff shooting a training film.

THE NATIONAL MEDICAL AUDIOVISUAL CENTER

At the time of its transfer to the Library,[3] the center included the largest medical motion picture studio in the United States, a completely equipped television production center, a studio for the production of graphic and photographic art useful in medical teaching and communication, a repository for still pictures, and an international center for distribution of motion pictures and other audiovisuals. It was staffed by approximately 130 persons and had operating funds of more than $2 million.[4] About half of NMAC's funds were channeled into the production of motion pictures, television programs, and other audiovisuals. Some of these were made for such government agencies as the Communicable Disease Center, National Center for Air Pollution Control, National Institute of Neurological Diseases and Blindness, and National Center for Urban and Industrial Health, which used them for education and dissemination of information. Some were made to be sold or loaned to schools of medicine, dentistry, osteopathy, podiatry, veterinary medicine, pharmacy, nursing, and to hospitals for use in teaching. A large proportion were on subjects of everyday health, such as the importance of brushing teeth, and were aimed at the general public and high school audiences.

An NMAC television workshop in which students were instructed in the art of designing audiovisual products.

About one-fifth of NMAC's resources were spent acquiring, distributing, and cataloging audiovisuals, and providing reference service. The center maintained the International Index of Medical Film Data, the centralized source information bank on audiovisuals in the field. This index contained information on more than 26,000 citations and was growing by several thousand each year. The center published the *National Medical Audiovisual Center Catalog* and catalogs in special fields as heart disease, cancer, and stroke. It loaned more than 73,000 audiovisuals in 1967, and this number increased annually. It maintained a still picture collection of more than 100,000 items: in 1967 more than 8,400 searches were made in this collection for patrons. NMAC continued to acquire old movies for the National Archives of Medical Motion Pictures: in 1967 the Archive contained 1,500 films.

Approximately 6 percent of NMAC's funds were devoted to studies of and development of the application of audiovisuals to education. The center provided instruction for a group of students enrolled in a graduate program in biomedical communication offered by Tulane University in association with other colleges. The staff gave advice on the effective use of audiovisuals to U.S. and foreign hospitals, health organizations, and schools of medicine, dentistry,

veterinary medicine, and nursing. Members of the staff lectured at meetings, seminars, and symposiums. The center conducted workshops and conferences in Atlanta and elsewhere to encourage medical organizations and schools to produce and use audiovisuals. Staff members visited schools that asked for advice on the design of classrooms in which audiovisuals were to be employed. They prepared conceptual designs of classrooms and audiovisual departments for institutes intending to construct such facilities.

NMAC also carried on special programs, the most important of which was the community medical television system, CMTS. This was a prototype closed circuit system for the Atlanta area, developed by the center in cooperation with a dozen hospitals. Live and taped programs were televised, and several grand rounds and conferences were presented weekly.

Redirecting NMAC to the Goals of the Library

Shortly after NMAC became a part of the Library, Director Cummings sent a small task force of consultants and staff members to Atlanta to examine the operations of NMAC in detail and advise him how they could be coordinated with those of NLM. Believing that the operations of NMAC should be directed mainly toward the support of education in the health sciences, Cummings appointed an advisory group of educators to help develop plans. At his request the chairman of the Board of Regents appointed a subcommittee to give advice on policies, programs, and priorities. The Regents also authorized the establishment of a committee to provide NMAC with technical advice. To this committee Cummings appointed experts from various fields, among them Margaret Bourke-White, noted photographer, and Gerald G. Graham of the Canadian National Film Board.

Following the recommendations of the committees, Cummings drew up certain guidelines for the audiovisual center: all programs should be directed toward professional health education, including continuing education; emphasis should be given to the acquisition, cataloging, and distribution of audiovisuals; production should be deemphasized; NMAC indexing and cataloging should be coordinated with that of NLM; fundamental research and development would be the responsibility of the Lister Hill Center, research in the application of audiovisuals would be the proper area for NMAC. And since the community medical television system was now fully developed, it should no longer be financed by NMAC but transferred to a local medical group as soon as possible (Emory University Medical School volunteered to become the operator of the system).

The audiovisual center was slow in realigning itself as instructed by Cummings' guidelines. By 1969 the Board of Regents subcommittee had become concerned, particularly about the continued high level of production of films, filmstrips, and videotapes. Furthermore funds were not sufficient to maintain high production and also handle the increasing number of loans, up from 2,404 in 1948 to more than 100,000 in 1969. Following recommendations of the Board,

Cummings ordered a drastic reorganization, shifting emphasis from the production of audiovisuals toward acquisition, distribution, training, consultation, research, and development. Reorientation was practically complete by mid-1970 and the center was headed in the direction desired by the Director and Board of Regents.

Finding it difficult to coordinate the activities of two organizations more than 600 miles apart, Cummings considered moving NMAC to Bethesda. But this would have caused hardship for many families of employees, forcing them to leave their homes in Atlanta and find new homes in the Washington area. He compromised by postponing the move until the anticipated Lister Hill building would be constructed adjacent to the Library. This delay of several years duration (funds had not yet been appropriated for the building) gave employees ample time to seek positions elsewhere in Atlanta if they wished to do so, and it gave the Georgia Congressional delegation time to attempt to delay or rescind the move.

The Learning Resources Program

In May 1971 Cummings arranged a joint venture with Kenneth M. Endicott, director of NIH's Bureau of Health Resources Administration, to form the Office of Audiovisual Educational Development, later renamed the Learning Resources Program. To the partnership the Bureau contributed funds and experience while NMAC contributed facilities and the services and expertise of its staff. Working together the two partners were able to accomplish much more than each could have done singly. Within a year the collaboration had proceeded to the point where almost half of NMAC's capabilities were directed toward Learning Resources Program projects.

The learning resources projects were conceived by schools or organizations, not by NMAC or the Office of Audiovisual Educational Development. NMAC and OAED financed the projects through contracts and, upon request, gave advice. Priorities for projects were set by an NMAC-OAED priority review committee. Among the contractors was the New York University School of Medicine, which developed instructional materials for an interdisciplinary curriculum in forensic pathology; the Pacific Medical Center School of Medical Science, which developed self-instructional materials for an undergraduate medical curriculum in ophthalmology, and the Tissue Culture Association, which developed basic curriculum definition and prototype instructional materials in cell biology.

NMAC Activities and Products

The National Medical Audiovisual Center alone and in cooperation with the Learning Resources Program undertook many projects, but despite their diversity these fell into several general areas: clearinghouse, evaluation, distribution, media development, advisory service, workshops and seminars, and applied research.

Audiovisuals being available through many outlets, NMAC set up a clearinghouse of information and of products. Under sponsorship of the Library, the Association of American Medical Colleges collected data on approximately 6,000 audiovisual educational materials, chiefly motion pictures currently in use and available nationally. Likewise, the American Association of Dental Schools provided data on about 1,500 items.

The evaluation of these audiovisuals was important in directing teachers and students toward the best. Even though produced with good intentions, not all audiovisuals possessed high instructional value. The quality of movies and other AV's made by medical schools, hospitals, medical organizations, government agencies and commercial firms ranged from excellent to poor. Just as critics evaluate plays, novels, television programs, concerts, and other artistic products for general audiences, so did NMAC scientific referees evaluate audiovisuals for their specialized audiences. The technical quality and instructional design of audiovisuals were evaluated by the NMAC staff. Under the leadership of Harold Schoolman, the content was evaluated by panels of experts from various health professions provided by national organizations and schools. In 1973 NLM contracted with the Association of American Medical Colleges and American Association of Dental Colleges to choose the hundreds of reviewers, organize them into panels, and oversee the evaluation process.

While the clearinghouse and evaluation activities were going on, NMAC published a list of the materials. Led by Schoolman, the Library's staff began to prepare a system named AVLINE, from audiovisuals on-line, for storage and retrieval of the information. Thousands of motion pictures, videotapes, and slide/sound sets were evaluated. Hundreds were approved for inclusion in AVLINE and were cataloged, indexed, and entered into the computer. The Library also set up a computerized file named AVPROC, for audiovisuals in process, containing thousands of titles waiting for review.

A 4-month test of AVLINE began on May 1, 1975, with a limited data base of 260 citations in the neurosciences. Each item had been assessed for technical quality, validity of content, and instructional design, and was available nationally. Thirty-one institutions made demand searches during the test period. Several months later several hundred titles were made available to teachers, students, and physicians, and thereafter between 100 and 200 titles were added to AVLINE each month.

In addition to providing information through its clearinghouse, NMAC became a national distribution center. Each year it produced movies and other audiovisuals for sale or loan to medical schools, libraries, and organizations. Learning through its evaluation and clearinghouse activities of the existence of high quality audiovisuals that were not widely distributed, NMAC acquired the items and made copies available. Audiovisuals produced or acquired by NMAC were distributed in three ways: movies were loaned for short periods; videotapes were duplicated free for users, the user providing blank tape; slide sets, filmstrips, instructional packages, and many movies were sold at low cost.

During fiscal year 1976 the center received approximately 60,000 requests, almost all for motion pictures, and loaned about 53,000 items.

NMAC also became an advisor to those who wished to produce or utilize audiovisuals. Schools knew the value of teaching aids but seldom had experience in designing facilities wherein students could study audiovisuals or faculty members could make them. In 1971 the center installed a demonstration area in which there were different types of carrels, student learning stations, and recommended audiovisual systems. By examining and trying the different facilities visitors could decide what equipment, furniture, and work areas could be afforded by or was best suited for their institutions. During the decade after NMAC became a part of the Library, hundreds of representatives of American and foreign institutions came to Atlanta to inspect the demonstration area and to consult with staff members. Representatives of NMAC visited hundreds of schools, hospitals, and organizations to give advice on the design and operation of audiovisual systems, to assess facilities and recommend improvements, and to help plan and produce programs.

The center presented many workshops and conferences in Atlanta and other cities each year. Hundreds of teachers and librarians attended to learn how to manage audiovisual collections, to design learning spaces for users, to produce audiovisuals, and to become familiar with other facets of the subject. In 1970 the center began to sponsor an annual Conference of Directors of Biomedical Communications, attended by scores of persons.

The center developed and encouraged the development of instructional audiovisuals for use in health fields. Some of the work was carried out in-house, some was done in collaboration with schools and organizations, but most was done by schools and organizations under contract. NMAC learned by experience and advocated the value of teams in designing and developing items, each team consisting of a subject matter specialist, an education specialist, and an audiovisual specialist.

The center rounded out its activities by undertaking research into educational methodology as it applied to audiovisual media. The staff undertook a number of projects, among them comparisons of various methods of instruction, experiments with different formats of visual abstracts of audiovisual materials, studies of learning styles and methods for accommodating these styles to students, the development of learning packages based on problems, and a study of instruction management procedures and associated cost factors.

During the first decade that NMAC was associated with the Library audiovisuals had an increasing influence in making health sciences education more responsive to the needs of students and practitioners. It was too early to judge the changes that would take place when the use of audiovisuals would become routine, but indications were that education would become more of an individual experience, that students would have greater flexibility scheduling their

studies, and would learn at their own pace and in their own manner. The textbook and lecture, the monograph and journal, used by students and practitioners during the first century and a half of the Library's existence was slowly being joined by new educational media.

Notes

[1] A history of the early years of the Communicable Disease Center may be found in: Mary H. McClanahan, The Origin and Administrative Development of the Office of Malaria Control in War Areas, Masters thesis, Emory Univ., 1958.

[2] Information on NMAC may be found in publications by staff members, *NLM News*, annual reports of the Library, fact sheets, records of the Board of Regents and Board of Regents Subcommittee on NMAC. Information was also obtained from Martin Cummings, Charles Bridgman, Charles Herbert, Harold Schoolman, and Robert Sumpter.

[3] Directors of NMAC were: James Lieberman, July 1967–June 1970; Jerome Barnett (Acting Director), June 1970–October 1970; Charles Bridgman, November 1970–September 1973; George Mitchell, September 1973–September 1977; Myron Adams, October 1977–February 1979; Charles Farmer, March 1979–February 1980; William Cooper (Acting Director), March 1980–October 1980; James Woods, November 1980–.

[4] The amount of obligations and number of employees were:

Fiscal Year	1968	'69	'70	'71	'72	'73	'74	'75	'76
Obligations millions	2.255	2.350	2.320	2.295	3.235	3.453	4.518	4.049	3.567
Personnel June 30	127	122	109	105	105	103	100	101	101

Source: Annual reports of the Library.

XXV

Extensions of Traditional Library Services

THE additions of MEDLARS, the Lister Hill Center, the grants program, the National Medical Audiovisual Center, and the Specialized Information Services to the basic library structure were the major events within the National Library of Medicine during the 1960's and 1970's, but other important activities occurred during this period.

The Library strengthened its resources in subjects allied to medicine in order to improve its ability to render services to all health practitioners. An increased emphasis on dental literature was catalyzed by two regents: George W. Teuscher, dean of the School of Dentistry at Northwestern, and Russell A. Dixon, head of the School of Dentistry at Howard. Teuscher and Dixon heightened Cummings' awareness of the needs of the dental profession, and in July 1965 he recruited Kenneth C. Lynn, a PHS dental officer, as NLM's coordinator for dental affairs. Lynn helped define the scope and coverage of the dentistry collection, made arrangements for the American Dental Association to cooperate in refining the MESH terminology, assisted in organizing conferences on continuing education in dentistry, represented the Library at dental meetings, reviewed NLM publications relating to dentistry, and furthered the interests of the dental profession in other ways. The new emphasis on the subject also benefitted from the advice of Dixon, whom NLM retained as consultant-in-residence on dental affairs. Through its agreement with the American Dental Association, NLM was provided with the services of two dentists, Faith Stephan and Raquel Halegua, who indexed for *Index Medicus* and *Index to Dental Literature* and developed the dental vocabulary for MESH. Within a relatively short time the Library was providing greater support than ever before for the dental profession.[1]

Improvements in the collection of veterinary literature were stimulated by James Steele, the chief veterinary officer of the Public Health Service. Steele, talking to Cummings, emphasized the importance of NLM to his profession, and pointed out that neither NLM nor the National Agricultural Library completely satisfied its needs. Cummings conferred with Foster Mohrhardt of the Agricultural Library, and the two agreed that their institutions would cooperate in developing the scope and coverage of their veterinary health sciences collections, so that between them they would cover the subject completely, with

minimum duplication. Cummings recruited Fritz P. Gluckstein as coordinator of veterinary affairs. Gluckstein, a veterinarian, who had been chief of the Microbiology Branch, Science Information Exchange, Smithsonian Institution, came to NLM in January 1966. He brought to the Library a philosophical point of view that permitted the institution to serve veterinary medicine without becoming involved in subjects properly belonging to Agriculture, and he made a careful study of the scope and coverage policy, differentiating the literature that the Library of Medicine and the Agricultural Library should each acquire. The Library set up a panel on veterinary medicine composed of representatives of NLM, the National Agricultural Library, and the American Veterinary Medical Association to develop an authoritative, precise vocabulary of veterinary terms for use by both libraries and for MESH. As the Library's support of the veterinary profession improved, more and more veterinarians came to rely on NLM for information.[2]

To accommodate writers, historians, literature researchers, and others who needed library facilities for long periods of time, Cummings in 1964 expanded the offices set aside for them in the stacks. This had been desirable earlier but not possible because of lack of space in the old building. Among the first to use the facilities were Stanhope Bayne-Jones, writing about the history of preventive medicine in the Army during World War II; James P. Leake, revising manuals on smallpox and vaccination; Bess Furman Armstrong, compiling a popular history of the Public Health Service; and Robert Pollitzer, the WHO expert on plague. A few years later the Library established a formal Scholars-in-Residence Program. Appointments were made by the Board of Regents. Researchers were provided with offices and reference assistance. The first scholars were Fred L. Soper, epidemiologist, former director of Pan American Sanitary Bureau and WHO Regional Office for the Americas, studying the evolution of international health, and Harry F. Dowling, former professor at George Washington University and University of Illinois medical schools, author of works on drugs, researching the history of drug regulations.[3]

The continued expansion of the mission, personnel, and facilities of the Library made necessary major and minor changes in its organizational structure. Molded by Rogers in 1960 into five operating divisions and an Office of the Director, the structure was revised again in 1962 following recommendations of the Study Group on Mission and Reorganization of the Public Health Service. In 1964 as a result of a decision of the Comptroller General and the opening of MEDLARS, the staff rewrote NLM's functional statement and divided the operations among seven divisions. The following year a management analysis, requested by Cummings, led to a major reorganization; the five service divisions were grouped into an Intramural Program (later Library Operations) and three new grants divisions in an Extramural Program, each program under an associate director. In 1967 the two programs were joined by the Toxicology Information Program (later Specialized Information Services), the Research and Development Program (later the Lister Hill Center), and the National Medical

Audiovisual Center, all under associate directors. On April 1, 1968, the Library, which had been under the Office of the Surgeon General of the Public Health Service since 1956, was made a component of the National Institutes of Health. The five programs, along with the Office of the Director and Office of Computer and Communications Services, remained the basic units of the organization, alterations thereafter consisting of shifts and regroupings, additions and deletions of groups, and changes in name.[4]

Continuing Education

Before midcentury county medical societies and hospital staffs played the major role in stimulating the continuing education of physicians although large medical societies such as the American Medical Association, American College of Surgeons, and American College of Physicians held annual meetings for the purpose. In the 1950's and 1960's medical school facilities increasingly cooperated in the process of continuing education by presenting courses for practitioners. In 1955 the Council on Medical Education established an advisory committee on continuing medical education, which later reviewed programs on continuing education and accredited organizations that presented them.

Like every other medical library, NLM played a passive role in continuing education by providing literature to health workers keeping up with advances in their professions. Cummings took steps to change the role to an active one. He sought advice from those who had given thought to the subject, including Bernard V. Dryer, who had recently written *Lifetime Learning for the Physician*. In August 1965 he appointed a committee, headed by Carl Douglass, to consider the ways in which NLM could assist physicians, dentists, nurses, dietitians, medical librarians, and other health professionals desiring to further their education. A short time later he created a new position, continuing education officer, and brought Burnet Davis from the Public Health Service to fill the post. In November the interest of William Hubbard, Jr., and other Regents was reflected in a recommendation that NLM should develop and support, directly and through regional and local medical libraries, research, experiments, and demonstrations to improve techniques for the continuing education of health workers.

To obtain suggestions for a program, Douglass and Davis organized a meeting of leaders in medical education in January 1966. Following this meeting NLM moved ahead internally and externally. Within, it began to arrange conferences with professional societies, and it installed facilities for self-instruction in the main reading room. The first of these was an audiovisual carrel equipped with rear-screen motion picture projectors and earphones. The collection of audiovisuals was broadened and placed in the carrel. A year later a television set with earphones was installed, and videotapes, including those from the Network for Continuing Medical Education, were made available. The area was finally enlarged to contain three soundproofed carrels where patrons could study using the latest audiovisual equipment and a wide variety of instructional

One of the Library's learning resource carrels, in which patrons could view and listen to a wide variety of medical and audiovisual materials, including 35 mm slide/audiotapes, video cassettes and 16 mm films.

materials. These carrels not only served local users, they provided NLM with experience and served as demonstration models for other libraries.

While facilities in the Library motivated health workers in the Washington area to continue their education, encouragement to persons elsewhere was rendered through the grants program. Grants for resources stimulated libraries of community hospitals, professional societies, and medical schools to acquire audiovisual programs, microfiche readers, slide projectors, microfilm readers, tape recorders, and other equipment and materials for regular and continuing education. Grants for research enabled medical institutions to develop techniques for reaching the practitioner through visual materials, programmed instruction, and other means.[5] Grants for training permitted staff members of libraries to seek instruction in the use of new learning materials and equipment, to serve practitioners better. Each regional library that was assisted under the grants program was expected to support continuing education within its region.[6]

In addition to awarding grants to encourage medical libraries to assist in continuing education, NLM also provided materials for, and it demonstrated the usefulness of modern communications systems in, continuing education. Through the National Medical Audiovisual Center it cooperated with professional societies, medical schools, and the Association of Professors of Gynecology and Obstetrics in developing audiovisual courses. It provided instruction in the production of high quality courses. It produced audiovisuals for distri-

bution at reasonable prices, and it compiled catalogs to assist users in locating appropriate instructional materials. The Lister Hill Center cooperated with schools and organizations, among them the Universities Associated for Research and Education in Pathology, in creating materials and models for regular and continuing education.[7] It demonstrated the use of a computerized instructional network linking schools, hospitals, and organizations. It applied satellites and broadband television in regular and continuing education. It developed the Knowledge Base Research Program, an interdisciplinary research program involving the design, demonstration, testing, and evaluation of computerized knowledge bases in specialized areas to achieve a more rapid transfer of new medical information to health professionals, particularly physicians.

Continuing education cut across most of the divisional lines in NLM's organizational structure. Therefore to oversee the program Cummings enlisted Ralph P. Christenson as successor to Burnet Davis, and in 1970 he appointed Harold M. Schoolman, former director of the Veterans Administration Education Service, as a special assistant and later as deputy director for research and education. Schoolman provided liaison between NLM and outside organizations and between NLM divisions in matters of continuing education.

Continuing education was in its infancy when the Library began its efforts to assist health professionals who desired to learn in their homes, offices, hospital libraries, or local medical libraries at their own pace, at times convenient to them. The Library attempted to respond to and to stimulate the recognition of the importance of the information component of all continuing medical education activities. It was the unresolved problems of continuing medical education that made the results of NLM's efforts less than was hoped for.[8]

International Cooperation

From the 1950's onward the institution was to render much more technical assistance to medical libraries in other countries than ever before. This was owing to several circumstances, among them the policy of the United States in assisting other nations, the development of rapid communication that brought countries of the world closer together, and the policy of the Library, from its infancy, to cooperate with and assist other libraries at home and abroad as far as its resources would permit. Relationships with other countries grew so numerous, diversified, and important that Cummings established the position of special assistant to the director (later assistant director) for international programs in October 1967, and appointed Mary Corning to the post. Corning carried out subsequent negotiations for the establishment of MEDLARS and MEDLINE in other countries and assisted in planning, developing, and coordinating NLM's international activities.[9]

Members of the staff assisted institutions in many countries with technical advice. In accordance with President Johnson's commitment to the government of South Korea, Scott Adams and two members of the Board of Regents, William

N. Hubbard, Jr., and Alfred A. Gellhorn, visited medical schools in Korea in May 1966 to survey library resources for an expanded program in medical education. Adams also visited Vietnam to review with officials of the Agency for International Development the implementation of plans for an enlarged medical library at University of Saigon. At the invitation of Mexican authorities Cummings flew to Mexico City in October 1967 to make a survey of facilities in preparation for the establishment of a national medical library. NLM helped by training Mexican librarians in MEDLARS operations and the latest techniques of document handling, and it provided materials and information not available in Mexico. In 1976 Secretary of Health Gines Navarro Diaz de Leon and Cummings signed a memorandum of understanding for cooperation between NLM and the recently created Centro Nacional de Informacion y Documentacion en Salud.

With the cooperation of NLM there was developed in South America a regional library of medicine. This began in 1965 when the Pan American Health Organization Advisory Committee on Medical Research recommended the establishment of a regional medical library under sponsorship of PAHO and the Pan American Federation of Associations of Medical Schools. The Biblioteca Regional de Medecina, BIREME, was set up at the Escola Paulista de Medicina, São Paulo, Brazil, with funds from Brazil, PAHO, Commonwealth Fund, and Kellogg Fund. NLM donated literature from its own resources and through its credits with the U. S. Book Exchange, it trained BIREME's staff in modern library management and technical operations. It detailed Leonard Karel to the center in 1967 as interim director and provided Loren R. Newburn of NLM's Bibliographic Services Division as deputy director. By 1978 BIREME had a staff of 71, and it provided reference service, interlibrary loans, special bibliographies from a subset of the MEDLARS data bank, and training to Latin American medical libraries. Thus through the technical assistance of NLM groundwork was laid in South America for a major regional biomedical and health information resource.

Among other countries with which NLM cooperated were Iran, whose authorities were assisted by Corning in setting up a national library, and Australia, visited by Cummings to advise on the feasibility and design of a proposed life sciences information network.

The Library became an active participant in international organizations. Cummings served as a special consultant to the World Health Organization. Cummings and Corning represented NLM at meetings of the Pan American Health Organization Scientific Committee for BIREME. NLM Deputy Director Melvin S. Day served as the U. S. member of the UNESCO/UNISIST Advisory Committee of the UN Environmental Program International Referral Service and chairman of the Organization for Economic Cooperation and Development Environmental Information Panel. The Library became a member of the International Council of Scientific Unions' Abstracting Board, with Corn-

ing as its representative, and it hosted the 1976 meeting of the board in Bethesda.

From the 1880's when the Library had become prominent internationally through the distribution of *Index-Catalogue* and *Index Medicus*, it had responded to requests for services from institutions in other countries. The volume of services rendered abroad increased greatly until 1969 when, faced with severe limitations of funds and personnel, the Library was forced to restrict delivery of services to foreign countries. Two years later it resumed delivery of two services, the providing of audiovisual materials and photocopies of articles, but with charges of fees to cover costs.

The Library provided services to developing countries, where modern medical knowledge was scarce owing to the lack of facilities and resources, under an agreement with the State Department's Agency for International Development. Beginning in 1964 NLM undertook to deliver up to 30,000 services a year to AID's Washington staff, mission staff, and approximately 50 developing countries in Africa, Latin America, Asia, and the Near East. In some years NLM provided more than 20,000 services to AID nations, including photocopies of articles, reference services, MEDLARS bibliographies, and subscription to *Index Medicus, NLM Current Catalog,* recurring bibliographies, and other publications. The Library continued these services until 1978 when AID's funds for the purpose were exhausted.

The Library sought exchanges of medical literature with institutions in other countries much more vigorously than ever before, with the result that the number of exchange partners increased several fold. By the mid-1960's NLM was sending publications to almost 900 institutions in approximately 80 countries, including AID nations. NLM contributed *Index Medicus, NLM Current Catalog,* recurring bibliographies and other material, receiving in return thousands of books, periodicals, and theses, written in many lanugages, some of which would have been otherwise difficult to procure.

An increasing number of library administrators, physicians, study teams, and official delegations came from other countries to NLM for information, advice, and tours. In 1969, 35 countries were represented among visitors. In 1973, 225 persons from foreign nations passed through the doors. In 1975 more than 1,000 arrived, including groups from Japan, Sweden, Pakistan, Germany, Algeria, Iran, Mexico, USSR, Trinidad and Tobago, and Egypt.

The Special Foreign Currency Program

In the late 1950's NLM began to participate in a different kind of international cooperation brought about by the enactment of Public Law 480, the Agriculture Trade Development and Assistance Act of 1954. This law authorized the sale of surplus farm commodities to friendly nations for currencies that had to be spent within those nations. In 1958 an amendment to the act authorized U.S. government agencies to spend these currencies in having scientific and

technical information translated or abstracted in English. In 1959, through an Executive Order, the National Science Foundation was given the responsibility of developing a translation program. The Foundation negotiated contracts with scientific organizations in Poland and Israel to translate works for several government agencies. Each agency was allotted a certain number of pages: NLM's quota was approximately 3,350 pages each year.

Estelle Brodman, in charge of NLM's segment, and members of the Library staff, with advice from scientists, physicians, and librarians, chose the books and journals to be translated. Initially, the NLM program was devoted primarily to the translation of Russian literature. After the translations were completed, published (not all translations were published), and shipped to the United States, NLM distributed copies to several hundred libraries. Other copies were offered for sale through the Department of Commerce. Soon after receiving the program the Library added Yugoslavia to the countries providing translations.

Beginning with fiscal year 1962, the Library received its own Public Law 480 funds. These amounted to an equivalent of $732,820 in FY 1962, and between $500,000 and $600,000 a year from FY 1963 to FY 1966. The Library continued to cooperate with the National Science Foundation, transferring funds to the Foundation for contracting overseas. In 1965 Corning renegotiated the agreement with the Foundation so that the Library could negotiate directly with contractors if it desired.

Originally the program was concerned with the translation of foreign language biomedical literature into English and the distribution of the translations to American libraries. In 1964 Mary Corning became head of the program and began to broaden its scope to include abstracting, indexing for MEDLARS, publication of conference proceedings, collaborative medical audiovisual demonstration projects, and the preparation of handbooks, dictionaries, histories of medicine, and critical reviews. Eventually the Special Foreign Currency Program came to relate to all functions and missions of the Library.

One of Corning's first acts was to arrange for European scientists to prepare digests of articles on drug research appearing in foreign language journals. The work was done by a team of scientists headed by Leo Wislicki at Hadassah Medical School, Israel, and the digests were published in a trial periodical *Drug Digests from the Foreign Language Literature* from 1965 to 1968. In cooperation with the Food and Drug Administration, NLM also contracted with Wislicki's group to abstract articles on drugs from journals not covered by the FDA's *Clinical Experience Abstracts*. The abstracts were published in the FDA journal from 1965 to 1971. In addition the Library obtained the services of Ino Sciaky and other dentists at Hadassah School of Dental Medicine to abstract articles from foreign dental journals, the abstracts being published in the American Dental Association's *Oral Research Abstracts*, from 1965 to 1971.

Corning also reached an understanding with the Polish Ministry of Health

and the Principal Medical Library, Warsaw, for the preparation of critical reviews by Polish physicians. Critical reviews, as conceived by NLM, were thorough analyses of scientific fields written by leaders in the fields describing the current state of the fields and suggesting areas of research. The first reviews, *The Application of Metabolic and Excretion Kinetics to the Problems of Industrial Toxicology* by Jerzy K. Piotrowski, and *Myoplastic Amputation and the Use of an Immediate Prosthesis* by Marian Weiss and associates, were published in 1971.

The Library had to overcome several problems in arranging programs with physicians and scientists in countries with different environments and political systems thousands of miles away. One problem was funding. In 1966 NLM began to use "bloc" financing for activities in Israel. Instead of administering and financing each project individually, Corning arranged with Moshe Pyrwes, editor of *Israel Journal of Medical Sciences*, to act as prime contractor or principal investigator and oversee all projects in his country for a certain period of years. Bloc funding possessed several advantages; it decreased administrative and paper work, relieved NLM of the problem of locating competent scientists in Israel, provided continuity in the projects, and provided stable funding over a long period of time. In 1971 after several years of negotiation, Jeanne Brand, Corning's successor, negotiated a bloc agreement in Poland, Janusz Jeljaszewicz of the Coordinating Commission for Polish-American Scientific Collaboration serving as principal investigator.

During the early years only three countries were involved in the program, Poland, Israel, and Yugoslavia. Corning, Brand, Leroy L. Langley, and G. Burroughs Mider of the Library, as well as William G. Anlyan, Robert H. Ebert, William N. Hubbard, Jr., Morris Tager, Stewart Wolfe, Alfred A. Gelhorn, and Max Michael of the Board of Regents visited health officials and scientists in these countries, seeking to improve ongoing projects and looking for opportunities for new projects. Library emissaries also visited other countries, inviting health officials to cooperate in projects of mutual benefit. In 1972 Brand negotiated research agreements in Egypt, and broadened the translation and printing activities in Tunisia, Pakistan, and India.

In some of the nations the special funds used for the programs eventually ceased to be available. When this occurred, the programs did not die but were continued under the auspices of joint cooperative agencies. In 1973 P.L. 480 funds for Israel were depleted but were replaced for 6 more years by funds from the United States-Israel Binational Science Foundation. In 1973 P.L. 480 money also became exhausted in Yugoslavia, but financial support was provided by the United States-Yugoslavia Joint Board on Scientific and Technical Cooperation. In 1974 Egyptian P.L. 480 funds ended, but the program continued first under sponsorship of the Joint Working Group on Medical Cooperation and in 1975 under an agreement on health cooperation between the governments of Egypt and the United States. In 1976 P.L. 480 funds ran out in

Poland, but the program was extended until 1985 under auspices of the Marie Sklodowska-Curie Joint Fund of the United States-Polish Joint Committee for Cooperation in the Field of Health.

Through FY 1976 the equivalent of $8.5 million was obligated for NLM's Special Foreign Currency Program. The Library's partners produced 47 books (original writings and translations), 72 chapters and aticles, thousands of abstracts, and engaged in other activities. The program was valuable in disseminating information which would not otherwise have been accessible in the United States because of language limitations and communication gaps.[10]

Upholding the Right of Scholars to Copy Writings

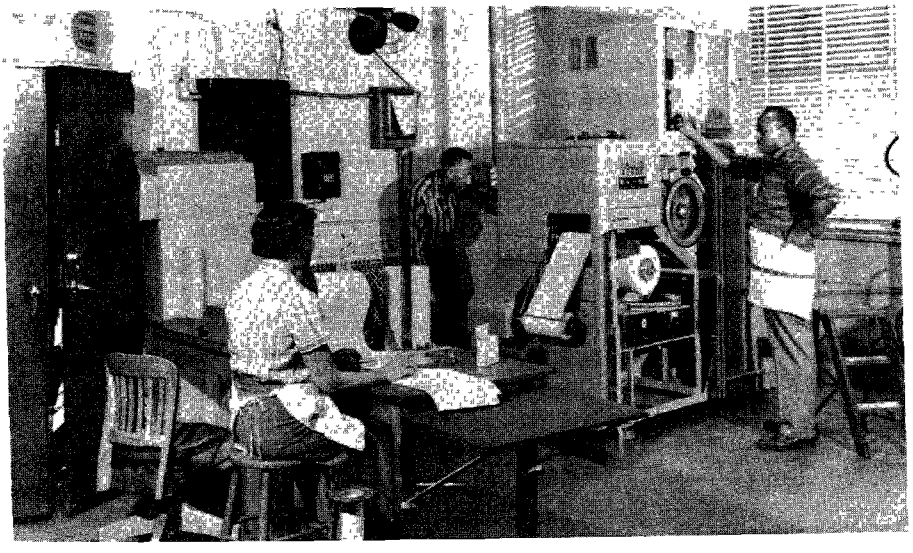
The Library had started to microfilm articles for patrons in 1937, but the demand did not become large until World War II. Then, as the number of microfilmed articles climbed into the thousands, and as copies of entire journals were filmed, there arose a concern about possible violation of copyright laws, even though copying was necessary to assist research and medical care in the Armed Forces and to provide all the information the Allied Forces requested. Director Jones drew up the following rule to protect the Library:[11]

> Except when the order is accompanied by the written permission of the copyright owner, the Army Medical Library will not reproduce books protected by copyright or entire periodical issues, nor will it reproduce excerpts from periodical issues within 6 months of their publication date.

After the war was over the demand for film dropped for a time, then began to rise. When Joseph McNinch became Director in 1946 he gave no thought at first to the legal questions involved in microfilming and photocopying published material. "It was not long," he recalled, "before I became aware of this most difficult problem. It was brought to a head when it was discovered that we had copied not a few pages but a complete copyrighted book."[12]

McNinch learned that the Library of Congress was thinking of approaching publishers for the purpose of arranging agreements covering photoduplication and he considered doing this with publishers of medical literature. He did not follow through for two reasons: first, the Judge Advocate's office told him that steps were being taken to permit firms to bring suit against the government in the Court of Claims for copyright infringement, but there would be little likelihood of suit because damages would be negligible; secondly, Morris Fishbein, chairman of the Honorary Consultants Committee on Copyright, pressed the viewpoint that circulation of the so-called "Gentleman's Agreement" among medical publishers would be more effective than trying to secure releases.[13]

Through McNinch's term, 1946–1949, and Rogers' term, beginning in 1949, the amount of copying increased. The old V-mail equipment, used since World War II, became obsolescent. In the meantime commercial machines capable of producing high-quality prints rapidly had been developed. After looking over models on the market, Rogers in the spring of 1957 rented a Copyflo machine that replicated 32 pages of text a minute from microfilm by a xerographic



The Copyflo machine producing a long roll of photocopied articles from microfilm. Frank Shiflet, right, and Daniel Calloway operate the machine; Louise Goins cuts a roll of photocopies into pages.

process. Representatives of the Joint Congressional Committee on Printing and Binding came to the Library to see the Copyflo perform and approved the rental, later the purchase, of the machine.

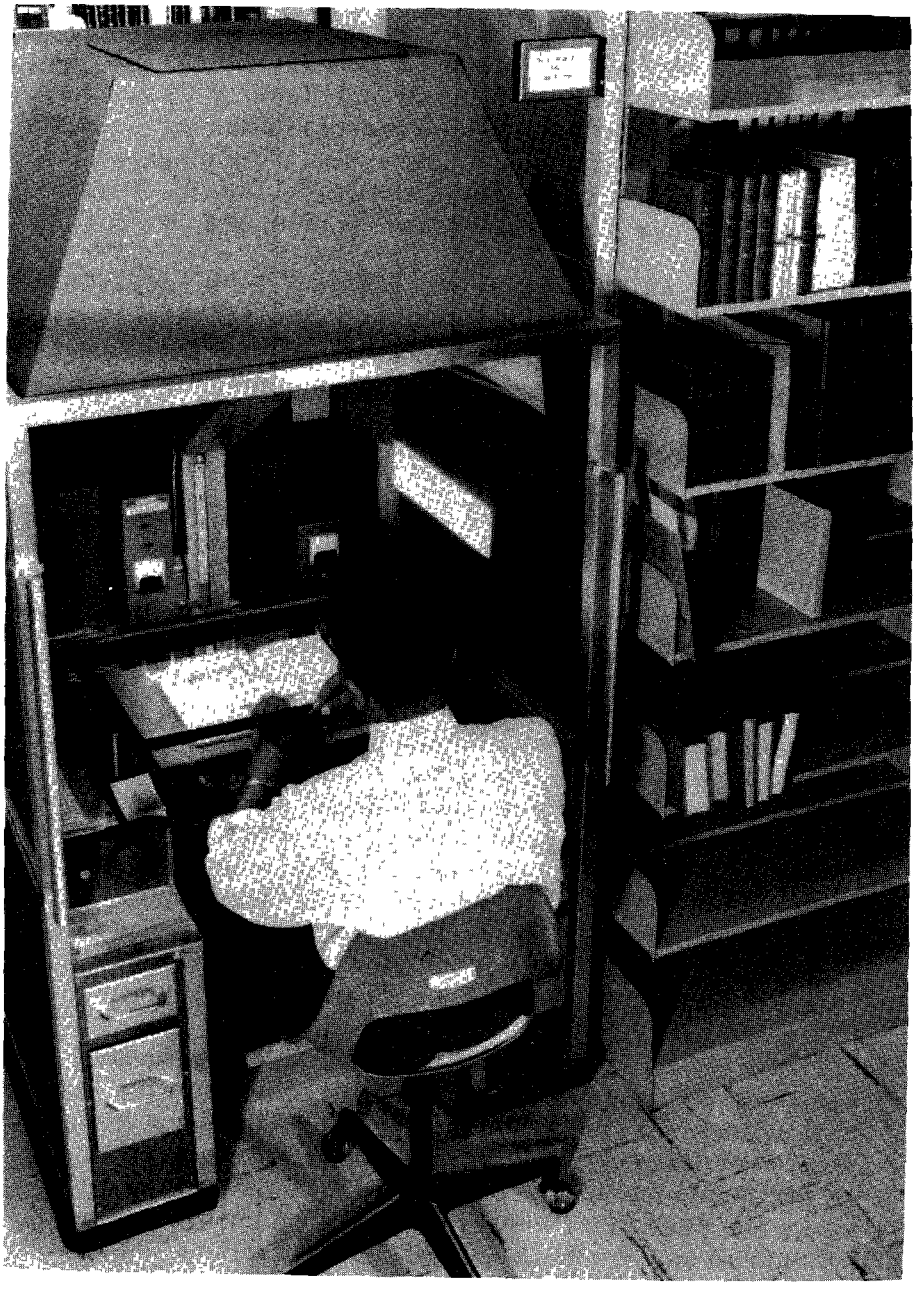
After the institution was designated by Congress as a *national* library, Rogers made a thorough examination of the interlibrary loan and photoduplication services, and decided to rationalize and codify the loan policy. The Library would no longer lend publications to individuals, only to other libraries. It would not lend volumes of journals, instead it would provide photoprints of articles without charge. It would continue to lend books to other libraries, and the borrowing institution would have to pay only return postage. These new regulations would force readers in other areas to patronize their local medical libraries, leaving NLM to provide publications not obtainable locally; it would encourage the growth of local libraries; it would save wear and tear on volumes of journals; it would retain journals in the Library where they would always be available for the use of other readers and for copying purposes; the cost would be no greater than the cost of maintaining fiscal accounts on purchases of photoprints; it would reduce the expense of the borrowing library. After much discussion among the staff and Board of Regents, Rogers initiated the new policy on September 1, 1957.

In promulgating the new policy Rogers laid down the following rules: the Library would copy no more than one article from an issue or three from a volume of a journal; it would not copy an article longer than 50 pages; it would

not make multiple copies of an article; it would copy no more than a few pages from a book. Exceptions to the regulations would be made only by approval of the Director or Librarian. Each photocopy would contain this statement in the margin: "This is a single photostatic copy made by the National Library of Medicine for purposes of study or research in lieu of lending the original." Thus the Library attempted to formulate policy with due regard to the provisions of the copyright law. Rogers hoped that the regulations would lessen risks of infringement, but he also felt that eventually there would come a test of the issues in the courts.[14]

After the policy had been in effect for a few years William H. Kurth made a survey of the interlibrary loan operation through June 1961, a period of almost 4 years. During this period there were 325,262 loans, 301,528 or 93 percent of which were articles satisfied by photocopies. Utilizing punched cards Kurth examined the borrowing libraries in terms of geographic location, type, and frequency of borrowing. He gathered statistics on the frequency of requests for certain periodicals, the relationship of photocopied articles to citations in *Index-Medicus*, and the age of the periodicals. His data indicated that the interlibrary loan operation was successful in meeting a large proportion of loan needs across the country. It reinforced the Library's decision to divide the serial collection in the new building by shelving older, less-used periodicals on the lowest stack level, and the recent, frequently used journals in a readily accessible area on the highest stack level. It presented data useful to the staff in other ways.[15]

Endeavoring to reduce the time from the arrival of a loan request to the dispatch of a photoprint or book to a minimum, the staff studied the flow of work. It sought new equipment to hasten and improve the quality of photographing, developing, and printing. A major innovation was the development of a moveable camera for use in the stack area of the new building. Originally in the copying operation, volumes containing articles to be photographed were brought from the shelves to a centralized group of microfilm cameras. These volumes were temporarily out of circulation, and furthermore there was considerable labor involved in moving, sorting, and reshelving them. Rogers and Scott Adams decided to move the camera instead of the books. With assistance of technicians from the National Bureau of Standards and other agencies, a camera, bookholder, lights, controls, and an operator's chair were installed in a little cubicle on wheels that could be pushed back and forth along an aisle. Electricity to operate the lights and controls came through an extension reaching to metal rails on the ceiling. Shortly after the Library moved into the Bethesda building five movable cameras were put into operation. Journal volumes containing articles to be copied were placed on a special shelf at the end of each range within reach of the camera operator. The operator picked the volume off the shelf, photographed the article and replaced the volume on a second shelf for reshelving. The movable cameras made photocopying cheaper, faster, and less laborious than the old procedure.



The moveable camera developed to overcome the disadvantages of trucking books from the stacks. The camera housing was designed by the National Bureau of Standards. George Queen operates the filming unit, a Kodak Recordak Micro-file.

In the meantime the book industry was showing increasing concern over the amount of photocopying being done in libraries. The American Text Book Publishers Association held a meeting in New York City to which Adams was invited to present data from NLM. Using figures from Kurth's survey, Adams demonstrated that only two book publishers owned any of the 100 most heavily photocopied journals on Kurth's list. These data tended to show the divergence between commercially oriented and scientifically oriented sponsors of publishing.

Subsequently Adams invited the vice president of Williams & Wilkins, publishers of medical journals, to the Library to explore grounds of common interest and to demonstrate the degree of controls that NLM had voluntarily adopted. Soon after, William N. Passano, president of the firm, visited the Library and talked to Director Cummings about photocopying. In Passano's view the Library was infringing on his firm's copyright by photocopying articles from Williams & Wilkins journals, but he offered to permit the practice to continue if a royalty of 2 cents per page per copy were paid. Cummings pointed out that the "Gentleman's Agreement" had generally been accepted as a basis for permitting libraries to make single copies of articles for scholars and that no royalty was required by law or custom. Cummings also felt that although NLM could probably afford to pay the royalty smaller libraries could not. And finally he was concerned that the demand for royalties might escalate from 2 cents to 5 cents or 10 cents per page.

On February 27, 1968, Williams & Wilkins filed a petition in the United States Court of Claims against the government, alleging that the National Library of Medicine and the library of the National Institutes of Health had infringed on the company's copyright by photocopying articles from their journals. The case of Williams & Wilkins Company v. the United States was tried on September 9, 1970, before Commissioner James F. Davis of the Court. The firm was represented by a lawyer very knowledgeable in the subject, Alan Latman, who had prepared the report on "fair use" for the Copyright Office series of studies toward revision of the copyright law.

The suit had implications for other programs of the Library. Filming entire works for preservation could constitute infringement, and Cummings consulted with the Library of Congress and National Agricultural Library about the possibility of an amendment to the copyright bill before Congress which would permit the three national libraries to copy publications for preservation. The planned graphic image program, in which publications would be filmed, the film stored, and printed out for interlibrary loan purposes could be affected. Facsimile transmission of publications might not be permissible. Computer-based information systems and audiovisuals might run into trouble.

Cummings, Adams, Albert Berkowitz of NLM, and Seymour Taine of the NIH Library were among the witnesses for the United States. The government claimed that NLM had the right to copy any document that reported research paid for by public funds (a portion of the copied articles described research

supported by Federal grants). But the government's defense relied chiefly on the judicially-created doctrine of "fair use."

Commissioner Davis presented his report to the Court of Claims on February 16, 1972, recommending that the case be decided in favor of Williams & Wilkins. The government filed an exception to Davis' report. The publisher then approached libraries with a plan that called for an increased institutional price and with it a license to make single-copy reproductions of all articles. In addition the publisher asked for a 5 cents fee for each page copied for interlibrary loan. The Library was willing to pay the increased institutional price but without reference to license or royalty.

On November 27, 1973, the Court of Claims overturned Commissioner Davis' report by the narrow margin of four to three and ruled that the making of a single photocopy of a journal article did not violate copyright laws. The court believed that research would suffer if photocopying were banned, since "the supply of reprints and back numbers is wholly inadequate," and it was "unrealistic to expect scientific personnel to subscribe regularly to large numbers of journals which would only occasionally contain articles of interest to them." As expected Williams & Wilkins appealed the verdict to the U. S. Supreme Court. The Court listened to arguments in the case on December 17, 1974. On February 25, 1975, eight justices (one recused himself) rendered a split decision, four to four, thereby affirming the decision of the Court of Claims.

In this long legal battle NLM championed the rights of every noncommercial library in the nation. Some members of the staff worked an extraordinary number of hours compiling data to reinforce the Library's position and in acquainting lawyers with library traditions, techniques and operations. To Cummings it was the most trying event during his term as Director. For years he devoted half of his time to the case. It sapped more of his energy than all other problems combined, and he felt that it triggered the heart attack that sent him to the hospital in 1973.

The Library won this ground-breaking case by the narrowest of margins. The Court of Claims emphasized the complexity of the litigation stating, "the issues raised by this case are but part of a larger problem which continues to plague our institutions . . . how best to reconcile on the one hand the rights of authors and publishers under the copyright laws with, on the other hand, the technological improvements in copying techniques and the legitimate public need for rapid dissemination of scientific and technical literature . . . our holding is restricted to the type and context of use by NIH and NLM as shown by this record." This suit emphasized the need of revision of the copyright law. In the opinion of the Court of Claims the decision was a "holding operation" in the period before Congress passed a law covering photo and mechanical reproductions made possible by recent technology.[16]

The Supreme Court decision was followed approximately 2 years later by a new copyright law that revised the old law of 1909. This general revision had

begun in 1955, had been the subject of a bill introduced in the House and Senate in 1965, and had been the subject of extensive hearings before being enacted by both houses and signed by President Gerald R. Ford on October 19, 1976.[17] The new law recognized the principle of "fair use" as a limitation on the exclusive rights of copyright owners and established general standards to be applied to the interpretation of "fair use." The new law confirmed the practices that NLM had been following since it began photocopying in the late 1930's.

Microfilming Books and Journals for Preservation

The cost of preserving perishable literary works has bothered librarians ever since libraries began. At times it has seemed as though some librarians were more concerned about preserving the books and serials entrusted to their care than in seeing them well used. Yet it is important that librarians, particularly the librarian of a national library, make certain that scarce writings, at least, be preserved for posterity.[18]

The National Library of Medicine possesses many works, copies of which are held by few or no other libraries in the country. Unfortunately a large proportion of these publications have been deteriorating. This was owing to repeated handling, interlibrary loan transit, and photoduplication; to the dry heat and dust in the old building; to sulfur dioxide in the atmosphere around Washington from the combustion of coal and oil; and to the nature of the paper itself. Mass produced chemically digested woodpulp paper entered commerce around 1870. Almost all of the books and journals published after that time were printed on woodpulp paper. This paper is inherently weak because of the short fibers in wood pulp and because of residual acid from the manfacturing process. Within a short period, in terms of human existence, a very large proportion of NLM's publications will disintegrate.

For years the librarians had been thinking about preserving the text of fragile publications by microfilming but had held back because of the expense. In 1954 Director Rogers asked his division chiefs to survey the collections to ascertain the books and journals most in need of preservation. The following year he instructed the photoduplication staff to begin photographing deteriorating publications when they were not making photocopies for interlibrary loan. For several years thereafter microfilming for preservation proceeded at an uneven pace, decreasing as the number of interlibrary loan requests increased and vice versa. Usually, some hundreds of thousands of pages, mostly serials, were filmed each year.

In 1964 members of the staff inspected the collections to ascertain the degree of deterioration. They estimated that the shelves held 350 million pages, 325 million of which had been printed after 1870 on woodpulp paper. Thirty-seven million pages were considered to be fully deteriorated, and this number would increase to 262 million by 1989. Deterioration was proceeding faster than microfilming.

Director Cummings asked the National Bureau of Standards for advice to enable NLM to improve the quality of microfilming. Edward Forbes and Thomas Bagg of the Bureau inspected the Library's equipment and procedures. They recommended improvements and drew up specifications for preservation filming.[19]

Cummings requested funds to enable the Library to increase the pace of preservation microfilming. The administration removed the item from his budget, but sympathetic Congressmen added money for the purpose to NLM's appropriation for fiscal year 1966.[20] The Library accelerated the pace of microfilming in its own building, and it contracted with commercial firms to assist, the first firms being University Microfilms and Microcard Corporation. By 1976 NLM and its contractors had microfilmed approximately 18 million pages. Since the Library at that time received approximately 18 million pages each year, the rate of filming could not catch up with the backlog of deteriorating publications.

However, the future of textual preservation may not be as gloomy as the above figures indicate. Earl Henderson and George Thoma of the Lister Hill Center saw the possibility of assisting preservation and interlibrary loans through electronic technology and began development of a system that would electronically transfer textual and graphic images onto high density optical disks, from which the images could be retrieved on a viewer or on paper. This system will provide the opportunity to investigate the extent to which optical disks may be employed to preserve the texts of NLM's perishable books and journals and to assist NLM's interlibrary loan service.

Collecting Modern Manuscripts

John Shaw Billings and the Directors who succeeded him occasionally purchased or were given manuscripts of historical value. The manuscripts, shelved among the books, were listed in the *Index-Catalogue* under the names of the author or compiler and were followed by the notation MS. Billings also knew the usefulness to historians of the correspondence of noteworthy physicians—he tried unsuccessfully to purchase the letters of John Morgan, founder of the first medical school in the colonies—but he and his successors had too little money, too few assistants, too many publications to acquire, and too much service to render, to seek and collect correspondence systematically. No separate collection of manuscripts, except that of early Western and Oriental writings, existed in the Library until the 1960s.[21]

The foundation of the modern manuscripts collection was laid in 1961 when John Blake, chief of the History of Medicine Division, presented to Director Rogers a plan for obtaining the personal correspondence, diaries, laboratory notebooks, and other writings of physicians, researchers, administrators, and, in some cases, the records of medical organizations.[22] Rogers agreed but could not promise funds to hire a manuscripts librarian for at least 2 years.[23] Blake, in the meantime, began to acquire papers whenever the opportunity arose, among them letters and other manuscripts of Chauncey D. Leake, Victor Ro-

binson, Esmond Long, and Henry L. Coit. These records were stored in the stacks awaiting the eventual arrival of a qualified person for the job.

In 1965 Blake received funds to engage a manuscripts librarian, Manfred Waserman. Waserman began to organize, and arrange the documents, removing duplicates and out-of-scope material. He compiled finding aids. He processed new collections. He cataloged hundreds of volumes of lecture notes, recipe books, diaries, journals, commonplace books, and manuscript items that had come to NLM during the past century. He processed the old Library correspondence of Billings and other former directors. One of the larger tasks undertaken was the cataloging of approximately 2,000 individual historical letters which had accumulated over the previous decades. Some of these had been given to the Library as gifts, some had been obtained for their autograph value or purchased for their medical history content, and some had been withdrawn, for one reason or another, from the Library's archival collection.

In 1966 Peter D. Olch arrived to act as deputy chief of HMD, to begin a systematic effort to acquire the papers of contemporary leaders in medicine, and to start producing and collecting oral histories. A policy was drawn up concerning in general the kinds of persons, out of the hundreds of thousands in the life sciences, whose papers would be sought and preserved for posterity. Among those who responded were William S. Middleton, Stanhope Bayne-Jones, William B. Bean, John B. Youmans, the estate of Alan Gregg, Milton Senn, Lois Murphy, Fred Soper, the Association of American Medical Colleges, Sydenham Hospital of Baltimore, American Association of Thoracic Surgery, Alpha Omega Alpha Honor Medical Society, and Interurban Clinical Club.

At first the requests brought reasonable quantities of correspondence and other records. But in 1971 one donor shipped 264 cartons containing approximately 120,000 items, many of which did not have any historical value, and which took more than a year to process. It was then decided that the Library would never again take possession of large collections sight unseen but that Olch or Waserman would visit prospects and examine records before accepting them to make certain that the Library would receive only worthwhile material.

As medical librarians elsewhere in the country learned of the existence and scope of the manuscript collection, they called on HMD for advice. Waserman assisted with the Lister Hill papers at University of Alabama Medical School, the Bailey K. Ashford papers at University of Puerto Rico, and the archives of the Society for Research in Child Development. Olch and Waserman advised the Alan Mason Chesney Medical Archives of Johns Hopkins Medical Institutions.

By 1976 HMD had obtained 236 new groups of records of individuals and organizations. The acquisitions ranged in size from a few items to accumulations filling about 80 manuscript containers stretching over 35 linear feet. As the Library's holding grew historians, writers, students, and editors in increasing numbers used the material to prepare articles, obituaries, book-length biogra-

phies, and theses, and the Modern Manuscripts Collection came to be one of the attractions of the History of Medicine Division.

Recording Autobiographies

In 1963 Martin Cummings, at that time director of NIH's Office of International Research, was interviewed by Harlan Phillips, who was gathering information for a historical study. The questions and answers were tape-recorded and transcribed, producing an "oral history." Cummings was impressed by the potential usefulness of such interviews to historians, and 2 years later, after he had become Director of the Library, he considered the possibility of introducing oral history into the institution.[24]

To obtain an overall picture of the utility, scope, and cost of, the facilities and personnel required for, and the technique of producing oral histories, Cummings invited five experienced practitioners of the art to NLM for a conference. Afterward he requested John Blake to add an oral history program to the History of Medicine Division.

The Library contracted with Harlan Phillips to interview notable physicians and scientists selected by Cummings and his associates. Phillips began by obtaining a lengthy autobiography of Stanhope Bayne-Jones, educator, microbiologist, and administrator, tape-recorded over a total period of 52 hours. Later Phillips conducted audiotaped interviews with Ward Darley, Lister Hill, Michael Heidelberger, and Albert Szent-György. In conjunction with interviews the staff endeavored to acquire the subjects' correspondence and other papers for the manuscript collection.

The Library contracted with historians studying modern aspects of the life sciences, in return for copies of their recordings and transcripts. In this way NLM obtained interviews bearing on the recent development of the Food and Drug Administration, on the contemporary practice of homeopathy, on the history of the child development movement, and on other subjects. The Library obtained other oral histories by gift and purchase.

In 1966 Peter Olch took charge of the oral history program. Over the succeeding years he interviewed Albert Baird Hastings, William S. Middleton, Donald D. Van Slyke, Owen Wangensteen, Shields Warren, Emile Holman, and other persons.

The steps in the production of an oral history included: preparation for the interview by studying the subjects' career in detail, an interview generally of several sessions, typing the interview from the tape recording, proofreading the typed draft, an editing of the draft by the subject, final typing, indexing, and, in some cases, binding. The entire process was slow, labor-intensive, and expensive. Finally Olch and Blake began to wonder if it would not be preferable to concentrate HMD's limited resources on the collecting and processing of the personal papers of leading physicians rather than on oral histories. In 1975 after much deliberation, an evaluation of the project by consultants, and a

review by the Board of Regents, HMD discontinued the production of oral histories, except when they would serve to supplement the papers of an individual or organization. At the time the collection comprised about 11,000 pages transcribed from approximately 520 hours of interviews with 140 persons.

Cooperation Among Federal Libraries

The leaders of the Library of Congress, National Agricultural Library, and National Library of Medicine had consulted and exchanged information for a century, among them Billings with Ainsworth Spofford of Library of Congress, McCulloch and Jones with Herbert Putnam of LC, Jones with Ralph Shaw of National Agricultural Library, McNinch with Luther Evans of LC, and Rogers with Foster Mohrhardt of NAL and with Verner Clapp of LC. Formal relations between the three national libraries increased after midcentury and gradually encompassed other Federal libraries and information groups as cooperation offered the promise of increased efficiency in comparable operations.[25]

In 1962 the Federal Council on Science and Technology set up an interagency Committee on Science Information, later renamed the Committee on Scientific and Technical Information or COSATI. COSATI concerned itself with the coordination of the various programs within Federal agencies. To do this it appointed task forces and panels to study such matters as the assessment of specialized information centers, the funding of the Science Information Exchange, promulgation of standards for descriptive cataloging of technical reports, microfiches for the storage and dissemination of reports, the creation of a clearinghouse for Federal scientific and technical information, and the establishment of a governmental depository library system.

In early 1966 the Office of Science and Technology invited Cummings to attend COSATI meetings as an observer. Later that year the Secretary of the Department of Health, Education, and Welfare appointed him as the Department's representative on the group. He soon found himself on the COSATI steering committee, the COSATI international panel, a panel concerned with establishing policies for machine-readable information distribution, and a task force on national information systems. Other members of the Library staff were asked to serve on various panels. During this period Cummings was concerned with important innovations in the Library—the starting of the research and development program that was to become the Lister Hill Center, the planning of MEDLARS II, and the development of the grants program and the Toxicology Information Program. Because of the inordinate amount of time that he, along with seven of his staff, was spending on COSATI affairs, he asked to be replaced as the DHEW representative. G. Burroughs Mider, deputy director of the Library, took his place on the committee.

COSATI provided a useful forum for the exchange of ideas and data among Federal libraries and information groups. In its conception of a national information system, it proposed that NIM be the agent for the construction of a national medical library network and be designated to coordinate and approve

the handling of information within the area of medicine. But COSATI's plans never progressed very far because it had no authority to redirect program emphasis or enforce common standards within agencies. It was disbanded in 1973 when the advisory functions of the Federal council were transferred to the National Science Foundation.

The most successful cooperation on a national scale was brought about by the directors of the three national libraries: Quincy Mumford of the Library of Congress, Foster Mohrhardt of the National Agricultural Library, and Cummings. They began to meet occasionally in 1964 to discuss the possibility of cooperation and of avoiding redundancy in their operations. In March 1965 they set up the Federal Library Committee, composed of directors of the three national libraries and a librarian representative of each executive department. The committee carried on its work through task forces, the most important of which was the Task Force on Automation and Other Cooperative Services. The major effort of the task forces became the development of a computer-based national serial record data bank, and machine-readable catalog formats.

In 1973 the three national librarians reorganized the committee, increased its membership to 41, and set a schedule for regular monthly meetings. The committee's deliberations touched on all areas of interest to Federal libraries, and within these areas they recommended policies and other measures for improvement. It was difficult for three national libraries, each of which had developed along its own lines, to reach unity in their operations, but through the committee they slowly approached this goal.

Interns and Associates

In the early 1950's Director Rogers became concerned over the national shortage of qualified librarians capable of moving into responsible positions in modern medical libraries. He and his staff drew up plans to offer a year of on-the-job training and intensive academic study to persons holding the master of library science degree. The educational-vocational experience would enable the interns to build careers in medical librarianship and would develop them to hold positions of responsibility in medical institutions. The maximum number of interns that the Library could train annually was three. This would provide fewer qualified medical librarians than was needed, but it was all that the Library, with its limited funds, manpower, and space could accept.[26]

The Library announced the start of the intern program through its monthly *National Library of Medicine News* in January 1957. At that time NLM was the only medical library in the United States offering such an education, and many persons leaped at the opportunity of moving ahead in their profession. The three who were selected by a screening committee began their apprenticeship in September 1957.

The program was directed by a committee composed of divisional chiefs and the executive officer, with the Director's assistant serving as chairman. The course, designed to provide interns with a broadly based work experience,

consisted of rotating assignments in the Library's operating divisions, seminars, lectures, elective projects, attendance at local and national meetings of professional librarians, university courses, and visits to medical and research libraries and information centers.

Scores, perhaps hundreds, of medical schools, hospitals, Federal agencies, medical society libraries, and other health libraries needed specially qualified librarians, and NLM's supply of three each year was insignificant compared to the demand. Rogers and the Board of Regents desired to train a much larger group, but there was no money for the purpose. When Rogers placed estimates for funds for intern training in the budget, the items were eliminated at higher levels, and he had to use unexpended personnal funds for the purpose. The Library looked forward to the time when the grants program, then being planned, would provide for the establishment of training programs elsewhere.

In addition to the Intern Program the Library offered advanced training for its own employees. They were invited to attend intern lectures in the building. Employees who wished to attend courses in languages, library science, or other pertinent subjects were sent to the Department of Agriculture Graduate School, The Catholic University, and other universities in the Washington area.

The development of MEDLARS in the early 1960's brought the first phase of the intern program to an end. At the conclusion of the September 1963–August 1964 session the Intern Program was suspended. Because of need in other libraries for persons capable of working with automated systems, particularly MEDLARS, NLM began to offer training in indexing, searching, MESH, and concepts of information storage and retrieval. Librarians came from other areas of the country and from foreign nations to attend these classes. When AIM-TWX, MEDLINE, and other on-line systems were developed, instruction was expanded to include these.

In 1966 NLM resumed a modified Intern Program, naming it the Library Associates Program. The purpose was now to "train personnel in the skills required for effective operation of communication services for the biomedical community." In keeping with NLM's increasing functions the program included instruction in the various operations of computerized bibliographic systems, audiovisual techniques, biomedical communications, specialized information services, and grants. As the program developed members of the Library staff served as training coordinators, the first of whom was Scott Adams, followed by a former intern Maxine Hanke.

By this time NLM's grants program was operating, and a number of medical libraries and library schools were receiving funds to present advanced training programs. The annual production of their graduates did much to alleviate the shortage of well-trained librarians for medical institutions.

During the first 20 years of the programs (1957–64, 1967–79), 66 persons received advanced training at NLM. The programs carried prestige, and librarians regarded graduates very highly. Upon completion of their training the

graduates had no difficulty obtaining positions in the profession, and rapidly assumed posts of responsibility in library management or systems design. Approximately three-fourths of them remained in the library field, one-half in medical libraries. More than a third elected to remain at NLM for at least a year, many moving into positions of responsibility, as coordinator of the Regional Medical Library Program, chief of the Technical Services Division, head of the Acquisition Section, and on-line training coordinator.

The Gillmore Bequest

During World War I Captain Robert Tracy Gillmore, Medical Officers Reserve Corps, died while serving in the Army at Fort Oglethorpe, Georgia. After his death his wife, Emma Wheat Gillmore, also a physician, joined the Public Health Service for the duration of the war. Some 20 years later Emma Gillmore began to think about the disposition of her estate. The Gillmores had had no children, and she had no relatives. At first she placed $5,000 in a trust fund and willed this to the Library. "It would give me personal pleasure," she told Librarian Jones, "to feel that upon my death this trust fund . . . would be turned over direct to the . . . Library . . . [to be] used in whatever way desired, unrestricted in every sense of the word."[27] Later she changed her will, appointing the Surgeon General of the Army an executor and bequeathing practically all of her estate to the Library.

Emma Gillmore died in Sydenham Hospital, New York City, August 15, 1948. The Government received $23,434.75 in 1951 to be used by the Library "in the name of my late husband, Robert Tracy Gillmore, and myself, Emma Wheat Gillmore." In 1964 Director Cummings arranged with Surgeon General of the Army Leonard D. Heaton to draw on the fund to help provide the building with something greatly needed; a meeting place for societies and for conferences of groups associated with the Library. A large storage room was remodeled into an auditorium and a study, both named in memory of John Shaw Billings. In addition the bequest was used to produce dioramas of the four buildings that had housed the Library since the Civil War, to engage artists to paint portraits of former directors McNinch and Rogers, and to purchase rare books for the History of Medicine Division.[28]

The latter included two publications from the 16th, 11 from the 17th and 12 from the 18th centuries on medicine or related subjects. The most important work was a unique manuscript by Conrad Gesner, a notebook in which he jotted down his impression of famous physicians, naturalists, and other scientists whom he met between 1555 and 1565, and in which more than 200 of these persons wrote short passages and their autographs.

Emma Wheat Gillmore never saw the building in Bethesda, but her gift of furnishings has been appreciated by the tens of thousands of listeners in the Billings auditorium, of the paintings by all who have visited the reading room, and of the books by many scholars.

THE BILLINGS AND BICENTENNIAL CELEBRATIONS

In 1965, a century after John Shaw Billings entered the Army Surgeon General's office, his work in transforming the small reference collection of books and journals into a national library was commemorated by the observance of a Billings Centennial. On June 17 members of Congress, officials of the government, and leaders in medicine, librarianship, and communication met at the Library.[29]

The afternoon session, scheduled to be held out-of-doors in front of the building, was forced into the main reading room by rain. There Norman Q. Brill, chairman of the Board of Regents, presided. After a welcome by Director Cummings, Surgeon General Luther Terry introduced Representative John E. Fogarty who spoke on "Medical Libraries and Medical Research." Wilbur J. Cohen, Undersecretary of the Department of Health, Education, and Welfare, introduced Representative Leo W. O'Brien who delivered an address on "Medical Libraries and Medical Education" on behalf of Representative Oren Harris, who was unable to attend. Anthony J. Celebrezze, Secretary of the Department of Health, Education, and Welfare, introduced Senator Lister Hill who talked about "The Medical Library Crisis-Billings to MEDLARS."

Following the speeches guests toured the Library and viewed an exhibit of Billings memorabilia, ranging from diplomas, photographs, books, personal letters, newspaper clippings, literary articles, official documents and lecture notes to the early Hollerith punch card tabulation equipment (the foundation of the International Business Machines Corporation) developed at Billings' suggestion.

The evening program, held in the Billings auditorium, featured talks about Billings by Jean A. Curran, professor emeritus of history of medicine at State University of New York; Bess Furman Armstrong, former Washington newspaper correspondent and author of a history of the Public Health Service; and Frank B. Rogers, one of Billings' successors as Director of the Library.

As a lasting memento of the occasion the Library issued all of the addresses in a volume, *John Shaw Billings Centennial,* and published a facsimile copy of an outline of an autobiography that Billings began in 1905 but never completed.

In a private ceremony preceding the centennial, a link from the old Library to the new was provided by Colonel Robert Howe Fletcher, grandson of Robert Fletcher, Billings' friend and collaborator in the Library and in the production of *Index Medicus* for a third of a century. Colonel Fletcher presented to NLM literary manuscripts, articles, and memorabilia of his grandfather, including the medal awarded by the Royal College of Surgeons of England in 1910.

Several years after the Billings celebration, it occurred to Mary Corning that the Bicentennial of the United States was approaching, and that it would be appropriate for the Library to contribute to the anniversary. She suggested to Cummings that NLM sponsor a Festschrift assessing 200 years of biomedicine and health, and prognosticating the future. Cummings and she then planned a series of events involving a Colloquium and Festschrift.[30]

The "Colloquium on the Bicentennial of Medicine in the United States" was held on May 6 and 7, 1976. Topics included medical education, public health and preventive medicine, medical care, select specialty areas, biomedical communications, the Federal role in medical education and research, and U. S. medicine as seen from abroad. Several hundred physicians, scientists and educators from the United States and other countries attended; essays were presented, reviewed by a special discussant, and then discussed by the audience.

On the evening of May 6, a special Board of Regents dinner attended by 225 guests took place in the main reading room, the first time such a banquet was held in the building. The guests of honor included those who had assisted in developing the Federal health effort and NLM's role in biomedical communications. The closing lecture by Philip Handler was presented in the National Museum of Science and Technology on May 7, and was followed by a reception and buffet. Among the congratulatory messages received by the Library were those from President Ford, and Senators Humphrey, Magnuson, and Kennedy. The colloquium was described as "a great tribute to American medicine."

The lectures presented at the colloquium were published in a two-volume set, *Advances in American Medicine: Essays at the Bicentennial,* by the Josiah Macy, Jr. Foundation in cooperation with the Library. Three special presentations not included in *Advances* were published by NLM in a volume, *Epilogue: Essays at the Bicentennial of Medicine in the United States.* The Library also issued a special annual report devoted to its development and history, *Communication in the Service of American Health . . . a Bicentennial Report of the National Library of Medicine.*

For more than the first century of its existence the National Library of Medicine was a traditional library, acquiring, cataloging, storing, and lending literature. Then in less than a decade it mechanized and computerized its bibliographic functions, and in another decade it began to utilize television, satellites, and audiovisuals. In years to come, it will use every other means of communication that is available. The Library of the future may be one in which there will be no readers, only literature, equipment, and staff, information being delivered to users in homes, offices, hospitals, laboratories, institutions, and student areas through rapid communications. What John Shaw Billings said a century ago is true today and will continue to be as long as the institution stands:[31]

> I may say that the future prospects of the Library are excellent. It is not dependent on the skill or energy, or goodwill, of any one man, it is becoming more and more known to, and more and more used by, the members of the medical profession, and so long as they are interested in it, the necessary appropriations will be made and the skilled force employed to increase, preserve, and catalogue it. The service rendered by a number of those employed in the

Library is not a mere matter of money—they are deeply interested in their work and proud of the results, and they can and will carry it on and instruct others who will come after them and do likewise

Notes

[1] Information on the Library's increased emphasis on dental literature was obtained from Kenneth Lynn, Martin Cummings, records of the Board of Regents, and *NLM News*

The first dentists on the Board of Regents were Basil G Bibby, professor of dentistry, University of Rochester, 1956–1959, and Maynard K Hine, dean, School of Dentistry, Indiana University, 1959–1963

[2] Information on the renaissance of veterinary medicine in NLM was obtained from Fritz Gluckstein, Martin Cummings, records of the Board of Regents, annual reports of the Library, and *NLM News*

[3] Information on scholars-in-residence was obtained from John Blake, records of the Board of Regents, *NLM News*, annual reports of the Library, and records of the program

[4] Information on reorganizations within the Library were obtained from library manuals of operations, Public Health Service manuals, annual reports of the Library, and *NLM News*

[5] See, for example, the article by R B Livingston and C F Bridgman, "Progress Report on the Neurosciences Study Plan," *Trans Am Neurol Ass* 94 165–7 (1969)

[6] R Q Marston, W D Mayer, "The Interdependence of Regional Medical Programs and Continuing Education," *J Med Educ* 42 119–25 (1967)

[7] The Universities Associated for Research and Education in Pathology produced several publications, among them K Brinkhous and J Johnson, *Thrombus*, 1972

[8] Information on continuing education was obtained from Harold Schoolman, Martin Cummings, Kenneth Lynn, Carl Douglass, and also from *NLM News*, records of the Board of Regents, annual reports of the Library, and articles, including M K Schindler, R K Goldstein, J Port, "Organizing Library Audiovisual Services to Support Continuing Education," *Mount Sinai J Med* 46 357–9 (1979), and "Library Mobilization for Continuing Education," *Bull Med Lib Ass* 68 240–2 (1980), both of which describe a program at Mount Sinai supported by a grant for NLM

[9] Information on international cooperation was obtained from Mary Corning, Martin Cummings, James Barry, deputy associate director of library operations, Brenda Swanson, chief of Selection and Acquisition Section, and Galina V Zarechnak, program officer in international programs Consulted also were records of the Board of Regents, annual reports of the Library, *NLM News*, and articles by Corning, especially "International Biomedical Communications ," *Health Commun Informatics* 6 212–42 (1980), and "The United States National Library of Medicine's International Relationships," *Med Inform* 5 3–20 (1980)

[10] Information on the Special Foreign Currency Program was obtained from Jeanne Brand, Mary Corning, documents in the files of the program, records of the Board of Regents, and annual reports of the Library

A list of titles of publications produced from 1974 onward under the Special Foreign Currency Program may be found in annual reports of the Library A complete list of all publications from 1965 onward may be obtained from NLM

[11] Memo, Jones to Lt Col M Ladd, May 30, 1944, with attachments, memo, Jones to editor, Army Medical Bulletin, June 9, 1944, with attached policy regarding microfilming NLM

[12] Statement by Joseph H McNinch, May 1979 NLM

[13] McNinch, *Proceedings Fourth Annual Meeting of the Honorary Consultants* (1947) p 13 S Adams, Report on Six Month Project Schedule, April 19, 1948, p 2 file Activities of AML, MS/C/309

The so-called "Gentlemen's Agreement" was written in 1935 by the National Association of Book Publishers and the Joint Committee on Materials for Research (representing libraries) It stated in part that a library could make a single photographic reproduction of a part of a volume for a scholar who stated that he desired the reproduction solely for research in lieu of a loan of the volume

[14] Board of Regents, 1957 The policy was the subject of the entire June 1957 issue of *NLM News* Information was also provided by Frank B Rogers

[15] The results of Kurth's pioneering study were presented in a 49-page pamphlet, *Survey of the Interlibrary Loan Operation of the National Library of Medicine* (Public Health Service, 1962)

[16] Much was written in journals and news-

papers about this landmark suit NLM has a large file of clippings, articles and correspondence, and the published papers and documents filed before the courts Information on this suit was also obtained from Albert Berkowitz, head of the Reference Services Division, who testified in the case, Martin Cummings, and Scott Adams

[17] Public Law 94-553, 90 Stat 2541

[18] The act that established NLM specified that it had to preserve library materials pertinent to medicine

Information on preservation may be found in annual reports of the Library, NLM *News*, and minutes of the Board of Regents Additional information was obtained from Thomas Bagg, Martin Cummings, and Albert Berkowitz, chief of the Reference Services Division

[19] Edward J Forbes, Thomas C Bagg, *Report of a Study of Requirements and Specifications for Serial and Monograph Microrecording for the National Library of Medicine*, NBS Report 9446, 1966

[20] 89th Cong , 1st sess , Departments of Labor, and Health, Education, and Welfare Appropriations for 1966, part 2, pp 760, 770 776–8

[21] Information on the modern manuscript collection was obtained from John Blake, Manfred Waserman, Peter Olch, and documents in HMD

The early manuscripts were described by Dorothy M Schullian and Francis E Sommer in *A Catalogue of Incunabula and Manuscripts in the Army Medical Library* (1950)

[22] Memo, Blake to Rogers, Nov 8, 1961, sub Establishment of Manuscripts Section

[23] Memo, Director NLM to Chief, HMD, Nov 13, 1961, sub Collecting manuscript materials

[24] Information on the oral history program was obtained from documents in the files of the History of Medicine Division, and from Peter Olch, John Blake, and Martin Cummings

[25] Information on COSATI and the Federal Library Committee was obtained from Martin Cummings, James Barry, records of the Board of Regents, *NLM News*, and annual reports of the Library A statement of the reorganization and functions of the committee is in *Federal Register*, vol 38, no 106, June 4, 1973, p 14729

[26] Information on the training programs may be found in records of the Board of Regents, *NLM News*, annual reports of the Library, and a report by Louise Darling, "National Library of Medicine Library Associates Program in Medical Librarianship and Biomedical Communications," (1980) Information was also obtained from Frank B Rogers, Scott Adams, and Maxine Hanke, director of the Mid-Atlantic Regional Medical Library Program See also Estelle Brodman, "Continuing Education for Medical Librarianship,' *Bull Med Lib Ass* 48 408–412 (1960)

[27] Letters, Gillmore to Jones, Dec 6, 1937 MS/C/346

[28] Lloyd B Embry, Washington, D C , painted the portrait of McNinch Frederick C Trucksess, University of Colorado Department of Fine Arts, painted the portrait of Rogers

The volumes carry this bookplate National Library of Medicine/Bethesda, Maryland/Purchased From The/Robert Tracy Gillmore/and/ Emma Wheat Gillmore/Bequest

[29] *John Shaw Billings, an Autobiographical Fragment, 1905, A Facsimile copy of the Original Manuscript* (1965) *Catalog of an Exhibit, June 17–30, 1965, John Shaw Billings Centennial John Shaw Billings Centennial addresses presented June 17, 1965, in commemoration of the 100th Anniversary of Dr Billings' appointment to head the Library of the Surgeon General's Office, U S Army* Correspondence, clippings, programs, and other material relating to the centennial may be found in MS/C/261

[30] Information on the bicentennial celebration was obtained from Mary Corning *NLM News*, June 1976, and correspondence in the Library

[31] John S Billings, 'The Conditions and Prospects of the Library of the Surgeon General's Office, and of its Index-Catalogue," *Trans Ass Amer Phys* 6 251–7 (1891) *Boston Med Surg J* 125 344–6 (1891) *Med News* (Phila) 59 350–3 (1891)

Appendices

For at least half a century, at one time or another, members of the staff thought about compiling a full-scale history of this institution, but some event always intervened to prevent them from doing so. I was fortunate in being asked to write this account, and I am indebted to Martin Cummings, Director, NLM, and to John Blake for being allowed adequate time and support for the task. It may be too much to expect that a history of this scope is free from error, but I trust that my mistakes are not so serious as to be misleading. It is my hope that the publication of this history will coincide with the 25th anniversary of the passage of the National Library of Medicine Act, a milestone in the affairs of the Institution.

Honors

Members of the staff of the National Library of Medicine have received many honors, including Department of Health, Education, and Welfare superior service awards, citations from associations, honorary degrees, university alumni awards, Public Health Service commendations, medals, certificates, plaques, diplomas, prizes, honorary corresponding memberships in learned societies, and election to the presidencies of professional groups. The Library presents two honors to members of the staff, the Regents' Award and the Director's Award.

Regents' Award for Scholarship or Technical Achievement

1970 Jaroslav Nemec for bibliographical scholarship, particularly for publication of *International Bibliography of Medicolegal Serials.*

1971 Stanley Jablonski in recognition of his outstanding skill as a lexicographer, particularly for publication of *Illustrated Dictionary of Eponymic Syndromes and Diseases and their Synonyms.*

1972 Thelma G. Charen, for conceiving, developing and implementing the MEDLARS indexing manual and training program.

1973 Manfred J. Waserman for initiative and accomplishments in historical research utilizing unique material in the National Library of Medicine's manuscript collection.

1974 Sharon L. Valley for initiative and creativity in developing unique toxicology information products and services.

1975 John Cox for exceptional technical and managerial contributions to the development and implementation of MEDLARS II.

1976 Myron J. Adams, Jr., in recognition of his originality and creativity in improving the learning process for health professionals.

1977 Emilie V. Wiggins for her efforts in making the NLM catalog file conform fully

to Anglo-American rules, and for her massive restructuring and modernization of the *NLM Classification*.

1979 Tamas E. Doszkocs in recognition of his technical creativity in developing two experimental on-line bibliographic search tools.

1980 Mary E. Corning for her book *A Review of the United States Role in International Biomedical Research and Communication: International Health and Foreign Policy.*

Director's Award for Outstanding Contribution to the Library's Programs

1969 Ralph A. Simmons in recognition of his superior handling of the extremely difficult contractual arrangements pertaining to the development of MEDLARS II.

1970 Jerome Barnett for management of the reorganization of the National Medical Audiovisual Center and administration of the center.

1974 Henry M. Kissman, Mary E. Corning, Norman P. Shumway, for exceptional achievements and contributions to the Library.

1975 Melvin S. Day for effective leadership and management.

1976 Albert M. Berkowitz for leadership and administrative skill in serving the diverse needs of the users of the Library.

1977 Mary E. Corning, John B. Blake, Peter D. Olch for their participation in the "Colloquium on the Bicentennial of Medicine in the United States," sponsored by the Josiah Macy, Jr. Foundation.

1978 Clement P. Fowler for the design, direction, and coordination of the exhibit on Health Sciences Communications Technology.

1979 James J. Hartman for his outstanding performance in providing a sound personnel management program for the Library.

1980 Joseph Leiter for leadership in heading the task force developing plans for MEDLARS III.

Selected Statistics of the National Library of Medicine

Fiscal Year to June 30	1957	1958	1959	1960	1961	1962	1963	1964	1965
Appropriations[1]	1,315	1,450	1,526	1,566	1,738	2,066	3,335	4,074	3,958
Size of collections[2]	922,079	938,768	957,345	975,870	992,224	1,009,228	1,021,784	1,039,692	1,058,428
Requests filled for readers in the Library[3]	33,919	40,275	39,094	39,768	43,510	47,605	70,791	84,267	81,842
Reference services provided[4]	9,546	8,396	9,588	9,241	10,254	10,345	13,418	20,154	20,931
Requests for interlibrary loans filled	18,735	60,302	73,147	96,042	109,803	113,918	135,344	131,039	149,055
Serial titles received[5]		11,700	12,862	13,835	14,082	14,875	13,888	15,358	16,557
Recurring bibliographies									6
Authorized staff[6]	223	225	224	224	224	234	242	268	291
Total Grant and contract awards									
Instructional media produced by NMAC									
Audiovisual loans filled									

STATISTICS

The published annual reports of the Surgeon General's office began to mention the Library's appropriation in 1871, the growth of the collection in 1872, and other information thereafter. Beginning in 1923 statistics on binding were added, in 1925 the number of readers registered, number of interlibrary loans, and number of borrowing libraries. At the end of fiscal year 1944 the Library began to issue its own reports, and eventually to place in them a wide variety of statistics, including acquisitions (number of searches, orders placed, new serial titles added, discontinued serial titles, total current serial titles received, serial pieces processed, other publications processed, obligations for publications, obligations for rare books, duplicate shipments made and received, duplicate pieces shipped and received, etc.); growth of collections (number of theses, pamphlets, bound serial volumes, microforms, audiovisuals, pictures, and manuscripts added; numbers of books added by era; total volumes; total of nonbook materials, etc.); cataloging (number of catalog cards made, cards filed, volumes shelflisted, volumes withdrawn, pictures cataloged, etc.); binding (number of volumes sent to binder, volumes returned from binder, volumes bound at NLM, volumes repaired at NLM, pictures mounted, obligations for binding, etc.); circulation (number of requests received for interlibrary loan, loan requests filled by photocopy and by original, requests received and filled for readers in library, requests unfilled for various reasons, etc.); reference services (number of requests received by telephone, by mail, and from readers in library, number of requests from government employees, number of readers registered, etc.); photographic services (number of pages mi-

Selected Statistics of the National Library of Medicine (Continued)

1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Sept 30 1976
9,685	20,192	21,674	18,160	19,573	21,436	24,127	25,150	26,329	28,850	35,637
1,084,932	1,116,565	1,164,633	1,193,299	1,231,612	1,263,881	1,323,394	1,363,694	1,399,852	1,338,667	1,396,924
94,125	94,815	99,009	87,154	82,655	88,302	78,676	76,708	70,980	82,934	126,394
22,718	26,852	26,792	25,857	23,163	22,041	24,535	26,075	29,173	31,286	44,700
152,610	148,942	129,372	119,283	102,596	104,439	121,938	126,051	141,232	175,856	260,178
18,482	19,650	18,459	19,448	20,964	22,161	23,132	23,787	24,642	25,228	18,326
9	10	11	16	18	23	24	24	24	28	28
352	397	536	470	475	467	469	466	466	458	472
56	340	485	478	464	528	450	239	200	155	133
		157	81	70	50	50	55	34	71	84
		92,731	79,251	72,865	85,000	60,000	64,500	56,000	58,050	53,227

crofilmed, number of photostats, of glossy prints, etc.), history of medicine (acquisitions, cataloging, volumes bound, pages microfilmed, modern manuscripts cataloged, reference questions answered, etc.), bibliographic services (number of articles indexed, recurring bibliographies, journals indexed, abstracts entered, etc.), number of on-line searches for all data bases, number of off-line prints for all data bases, grants (number of new grants, active grants, allocations for various grants programs, etc.), titles of NLM publications available from the Government Printing Office, and the number of each printed for sale, personnel (ceilings, resignations, transfers, etc.), National Medical Audiovisual Center (number of motion pictures, videotapes, slide series, filmstrips, and other materials produced and distributed, etc.), and financial resources and allocations.

Certain statistics are available elsewhere. Those on the growth of the collections may be found in the letters of transmission at the front of each volume of the *Index-Catalogue* beginning with series 1, vol 16, 1895, skipping series 2, vols. 1 and 2, and resuming with vol 3, 1898 The numbers given in the *Index-Catalogue* are, presumably, as of the date of the letters of transmission, they sometimes differ from those in the annual reports, which are for June 30, the end of each fiscal year. Appropriations may be found in appropriation acts, and in the annual *NIH Almanac*. The *Almanac* also lists the number and amount of research grants, number and amount of research contracts, and personnel from 1968 onward, data on the Library Building, general information about NLM, and chronologies of important events and legislation

Notes to Selected Statistics

These statistics are copied from the published annual reports except those for audiovisuals, which were supplied by NMAC, and for grants/contracts, supplied by EMP

In consulting any annual report to obtain statistics, the reader should also look at the reports for the following two years because they may give revised numbers

A transitional quarter of a year, covering the months of July, August, and September, was added in 1976 to make the new fiscal year end on September 30 Therefore the figures for 1976 cover a period of 15 months

[1] A breakdown of financial resources, including reimbursements, supplemental appropriations, obligations, and allocations may be found in the annual reports for each fiscal year

The appropriation of $21,674,000 for 1968 included $1,762,000 transferred along with NMAC from the Communicable Disease Center

[2] For statistical purposes the Library's holdings were divided into book material and non-book material The former comprised bound monographs (subdivided into chronological eras), bound serials, theses, and pamphlets The non-book material included pictures, modern manuscripts, microforms, audiovisuals, and other forms The figures given here are for book material Each year some pieces were withdrawn from the collection, so that the net gain was slightly less than the number of volumes added

The size of the collections for 1961 was revised in 1962, 1968 in 1969, and 1975 in 1976 The revised figures are given above The decrease in 1975 resulted from the withdrawal of almost 60,000 theses from the collection

[3] Requests filled for readers, 1957–1963, do not include HMD, from 1964 they include HMD

[4] Reference services provided, 1963–1965, do not include HMD

[5] The figures for serial titles received in 1968 and 1969 are from the annual report for 1970

[6] The authorized staff refers to the number of full-time permanent employees The actual number of persons on duty was almost always

lower than the authorized strength. The Library also employed part-time and temporary workers.

The large increase in the authorized staff during 1968 resulted from the transfer of the National Medical Audiovisual Center to the Library, and augmentation of the computer staff.

In the annual reports statistics for the History of Medicine Division are given separately. I have added the statistics from HMD to those from the other Library Divisions to obtain totals for; requests filled for readers, reference services provided, and requests for interlibrary loans filled.

Members of the Board of Regents

Name	*Address*	*Dates on Board*
Ismael Almodóvar	President, University of Puerto Rico	1978–1982
William G. Anlyan	Dean, School of Medicine, Duke University	1968–1972 Chairman: 1971–1972
Vice Adm. Willard P. Arentzen	Surgeon General, USN	1976–1980
Bruno W. Augenstein	Vice President for Research, The Rand Corporation	1967–1971
William O. Baker	Chairman of the Board, Bell Telephone Laboratories	1969–1973
William B. Bean	Professor and Chairman, Department of Internal Medicine, University of Iowa	1957–1961, 1965–1969 Chairman: 1960–1961
Basil G. Bibby	Professor of Dentistry, University of Rochester	1956–1959
Lt. Gen. Richard L. Bohannon	Surgeon General, USAF	1963–1967
Daniel J. Boorstin	Librarian of Congress	1980–
Norman Q. Brill	Professor and Chairman, Department of Psychiatry, University of California, Los Angeles	1961–1965 Chairman: 1964–1965
Vice Adm. Robert B. Brown	Surgeon General, USN	1965–1969
Leroy E. Burney	Surgeon General, USPHS	1956–1961
Harve J. Carlson	Director, Division for Biological and Medical Sciences, NSF	1962–1972
Thomas C. Chalmers	President and Dean, Mount Sinai School of Medicine of the City University of New York	1978–1979
John D. Chase	Chief Medical Director, VA	1974–1978

Eloise E. Clark	Assistant Director for Biological, Behavioral, and Social Sciences, NSF	1973–
Vice Adm. J. William Cox	Surgeon General, USN	1980–
Susan Y. Crawford	Director, Archive-Library Department, American Medical Association	1971–1975
James Crutcher	Chief Medical Director, VA	1978–1979
Gwendolyn S. Cruzat	Professor of Library Sciences, School of Library Science, University of Michigan	1980–1984
Jean A. Curran	Advisor, Charities Trust of Bigham Associates Fund, New England Medical Center	1956–1959
Vice Adm. Donald L. Custis	Surgeon General, USN. Chief Medical Director, VA	1973–1976, 1980–
Worth B. Daniels	Professor of Medicine, Georgetown University	1956–1957; 1961–1962. Chairman both terms
Eugenie Mary Davie	Former Vice President American Heart Association	1958–1961
Nicholas E. Davies	Piedmont Hospital Atlanta, Georgia	1978–1981
Vice Adm. George M. Davis	Surgeon General, USN	1969–1973
Michael E. De Bakey	Chairman, Department of Surgery, and Chancellor, College of Medicine, Baylor University	1956–1960 Chairman: 1959–1960
Russell A. Dixon	Dean, College of Dentistry, Howard University	1963–1967
Robert H. Ebert	Dean, Harvard Medical School	1967–1971 Chairman: 1970
S. Paul Ehrlich, Jr.	Acting Surgeon General, USPHS	1973–1974
H. Martin Engle	Chief Medical Director, VA	1966–1970
F. Emmet Ferguson, Jr.	Ferguson-Houston Colon-Rectal Clinic, Jacksonville, Florida	1978–1982
James C. Fletcher	President, University of Utah	1970–1971
Thomas Francis, Jr.	Professor of Epidemiology, School of Public Health, University of Michigan	1956–1960
Herman H. Fussler	Director, University of Chicago Library	1963–1967

Alfred A. Gellhorn	Vice President for Health Affairs and Director of the Center for Biomedical Education, City College of the City University of New York	1962–1966
Henry N. Harkins	Professor and Chairman, Department of Surgery, University of Washington School of Medicine	1962–1966
Lt. Gen. Silas B. Hays	Surgeon General, USA	1956–1959
Lt. Gen. Leonard D. Heaton	Surgeon General, USA	1959–1969
Bernice M. Hetzner	Professor of Library Science, University of Nebraska Medical Center	1971–1975
S. Richardson Hill, Jr.	President, University of Alabama in Birmingham	1978–1980 Chairman: 1979–1980
Maynard K. Hine	Dean, School of Dentistry, Indiana University	1959–1963
Rear Adm. B. W. Hogan	Surgeon General, USN	1956–1961
William N. Hubbard, Jr.	President, The Upjohn Company	1963–1967, 1972–1976 Chairman: 1965–1967, 1974–1976
Hugh H. Hussey, Jr.	Director, Division of Scientific Activities, American Medical Association	1960–1964
Edward J. Huth	Editor, Annals of Internal Medicine	1979–1983
Saul Jarcho	New York Academy of Medicine	1961–1965
Lt. Gen. Hal B. Jennings, Jr.	Surgeon General, USA	1971–1973
Rear Adm. E. C. Kenney	Surgeon General, USN	1961–1965
Thomas E. Keys	Librarian, Mayo Clinic	1958–1962
Jack M. Layton	Dean, College of Medicine, University of Arizona	1969–1973 Chairman: 1972–1973
Champ Lyons	Professor and Chairman, Department of Surgery, Medical College of Alabama	1956–1959 Chairman: 1958–1959
Mary Louise Marshall	Librarian, Tulane University School of Medicine	1956–1958
J. Stanley Marshall	President, Florida State University	1971–1974
Angelo M. May	Physician, San Francisco	1971–1975

William D. Mayer	President, Eastern Virginia Medical Authority	1980–1984
Walsh McDermott	Professor and Chairman, Department of Public Health and Preventive Medicine, Cornell University Medical Center	1964–1968
John P. McGovern	Professor and Chairman, Department of History of Medicine, Graduate School of Biomedical Sciences, University of Texas	1970–1974 Chairman. 1973–1974
Maj. Gen. Joseph H. McNinch	Chief Medical Director, VA and Former Director, NLM	1963–1965
John W. Mehl	Acting Director, Division for Biological and Medical Sciences, NSF	1973
Doris H. Merritt	Dean, Office of Research and Sponsored Programs, Indiana-Purdue University at Indianapolis	1978–1980
Max Michael, Jr.	Executive Director, Jacksonville Hospitals Educational Programs, Inc.	1968–1972
William S. Middleton	Chief Medical Director, VA	1957–1963
Charles E. Molnar	Director, Computer Systems Laboratory and Professor of Physiology and Biophysics and Electrical Engineering, Department of Physiology, Washington University	1980–1984
L. Quincy Mumford	Librarian of Congress	1956–1974
Marc J. Musser	Chief Medical Director, VA	1970–1974
Lt. Gen. Paul W. Myers	Surgeon General, USAF	1978–
Maj. Gen. Oliver K. Niess	Surgeon General, USAF	1958–1963
Maj. Gen. D. C. Ogle	Surgeon General, USAF	1956–1958
Lt. Gen. Robert A. Patterson	Surgeon General, USAF	1972–1975
Lt. Gen. Charles C. Pixley	Surgeon General, USA	1977–
Lt. Gen. Kenneth E. Pletcher	Surgeon General, USAF	1967–1970
Isador S. Ravdin	Professor of Surgery, University of Pennsylvania	1956–1958 Chairman. 1957–1958
Julius B. Richmond	Surgeon General, USPHS	1977–1981
Cecil G. Sheps	Professor of Social Medicine, University of North Carolina at Chapel Hill	1978–1980

Kathryn M. Smith	Dean, School of Nursing, University of Colorado	1966–1970
Benjamin Spector	Professor of Bioanatomy, Tufts University	1956–1957
William W. Stadel	Director, Mental Health Services, San Diego, California	1957–1961
Robert M. Stecher	Cleveland Metropolitan General Hospital, Cleveland, Ohio	1960–1964
Jesse L. Steinfeld	Surgeon General, USPHS	1970–1973
William H. Stewart	Surgeon General, USPHS	1965–1969
Morris Tager	Professor and Chairman, Department of Microbiology, Emory University	1964–1968
Lt. Gen. Richard R. Taylor	Surgeon General, USA	1973–1977
Luther L. Terry	Surgeon General, USPHS	1961–1965
George W. Teuscher	Dean, Dental School, Northwestern University	1968–1972
Lt. Gen. Alonzo A. Towner	Surgeon General, USAF	1970–1972
John L. Townsend	Chairman, Department of Medicine Howard University	1979–1983
William L. Valk	Professor and Chairman, Department of Sugery, University of Kansas	1960–1964
Theodore Van Dellen	Northwestern University	1959–1963
Joseph F. Volker	Chancellor, University of Alabama System, Birmingham	1974–1977
Ernest H. Volwiler	Chairman of the Board, Abbott Laboratories	1956–1960
Frederick H. Wagman	Director, University of Michigan Library	1967–1971
Ethel Weinberg	Associate Dean, Medical College of Pennsylvania	1974–1976
Warner L. Wells	Department of Surgery, School of Medicine, University of North Carolina	1959–1963 Chairman: 1962–1963
Kelly M. West	Professor of Medicine and of Continuing Education, University of Oklahoma	1978–1979 Chairman: 1978–1979

James F. Williams II	Medical Librarian, Vera P. Shiffman Medical Library, Wayne State University	1977–1981
Martha E. Williams	Professor of Information Science, College of Engineering, University of Illinois	1978–1982
John T. Wilson	Assistant Director for Biological and Medical Sciences, NSF	1956–1962
Stewart G. Wolf, Jr.	Regents Professor of Medicine and Psychiatry, Oklahoma Medical Research Foundation	1965–1969 Chairman: 1967–1968
Barnes Woodhall	Vice Provost, Duke University Medical Center	1964–1968
Alfred R. Zipf	Executive Vice President, Bank of America	1966–1970 Chairman: 1969–1970

SELECTED CHRONOLOGY OF THE NATIONAL LIBRARY OF MEDICINE*

1818 Congress established the permanent Medical Department of the United States Army. Joseph Lovell, appointed Surgeon General, soon began to purchase reference books and journals for his office. Pp. 1

1840 The Library's earliest known list of publications was drawn up, a manuscript notebook entitled "A Catalogue of the Books in the Library of the Surgeon General's Office, Washington City, 1840." Pp. 5

1864 The first printed catalog, a pamphlet, listing 485 titles, including about 50 journals, totaling approximately 2,100 volumes, was issued. Pp. 19

1865–1895 In 1865 Surgeon General Joseph Barnes placed John Shaw Billings in charge of the collection. In 1895 Billings retired from the Army and Library to direct the Department of Hygiene at the University of Pennsylvania, and later the New York Public Library. Pp. 25

1866–1887 The Library and Army Medical Museum were housed in Ford's Theatre, where President Lincoln had been assassinated on April 14, 1865. Pp. 27

1869 The Library published its first bibliographies: *List of Works on Cholera in the Library of the Surgeon General's Office . . ., List*

*This chronology is an expanded version of the one prepared by Manfred Waserman which appeared in *Bull. Med. Lib. Ass.* 60: 551–8 (1972).

	of Works on Yellow Fever . . ., and List of Works on Military Surgery	Pp. 33
1871	The decision was made to develop the collection into the "National Medical Library."	Pp. 34
1872	*Catalogue of the Library of the Surgeon General's Office* . . . In this catalog, listing about 13,000 titles, Billings placed an alphabetical index of subjects, foreshadowing his monumental *Index-Catalogue*.	Pp. 79
1873–1874	The institution was now the largest medical library in the United States. Its catalog required three printed volumes, listing about 50,000 titles.	Pp. 86
1876	Billings published the *Specimen Fasciculus of a Catalogue of the National Medical Library* to show his plan of indexing and cataloging the collection to librarians, physicians, Army medical officers, and government officials.	Pp. 119
	Robert Fletcher joined the Library staff.	Pp. 123
1879	*Index Medicus; a Monthly Classified Record of the Current Medical Literature of the World* began in January. Compiled under the supervision of Billings and Fletcher (and later, other members of the staff), it continued until 1926 (except 1900–02).	Pp. 132
1880	The first volume of the *Index-Catalogue of the Library of the Surgeon General's Office* was published.	Pp. 129
1883	Surgeon General Robert Murray consolidated the Army Medical Museum and the Library into a single entity called the "Museum and Library Division," and placed Billings in charge of the division.	Pp. 162
1885	President Chester Arthur approved a bill authorizing a new building "for the safekeeping of the records, library, and museum of the Surgeon General's Office . . . to be constructed . . . in the vicinity of the National Museum and Smithsonian Institution," on March 2.	Pp. 164
1887	The Library and museum moved from Ford's Theatre to the newly constructed building on the Washington Mall.	Pp. 168
1891	Fielding Hudson Garrison joined the Library staff as a clerk. He remained with the Library until 1930, when he went to Johns Hopkins.	Pp. 195
1895	The final volume of the first series of the *Index-Catalogue* was published. The first series contained 176,364 author entries, 168,557 subject entries for books and pamphlets, and 511,112 subject entries for articles.	Pp. 176
1895–1897	Lt. Col. David Lowe Huntington, Librarian.	Pp. 185
1897–1902	Maj. James Merrill, Librarian.	Pp. 186
1902	Maj. Walter Reed, Librarian.	Pp. 187
1903–1913	Lt. Col. Walter Drew McCaw, Librarian.	Pp. 189

1912	Fielding Garrison published his list of "Texts Illustrating the History of Medicine . . .," later revised by Leslie T. Morton, *A Medical Bibliography (Garrison and Morton)* . . .	Pp. 196
1913	Fielding Garrison published *An Introduction to the History of Medicine,* which went through several editions.	Pp. 198
1913–1919	Col. Champe Carter McCulloch, Librarian.	Pp. 219
1919	Col. Paul Frederick Straub, Librarian.	Pp. 239
1919	Brig. Gen. Francis Anderson Winter, Librarian.	Pp. 241
1919–1925	Brig. Gen. Robert Ernest Noble, Librarian.	Pp. 242
1922	The old name "Library of the Surgeon General's Office" was replaced by a new name, "Army Medical Library," on January 10.	Pp. 243
1925–1927	Lt. Col. James Matthew Phalen, Librarian.	Pp. 243
1927–1932	Col. Percy Moreau Ashburn, Librarian.	Pp. 244
1927	*Index Medicus* was merged with the *Quarterly Cumulative Index,* forming the *Quarterly Cumulative Index Medicus,* published by the American Medical Association with financial assistance from the Carnegie Institution.	Pp. 249
1932–1936	Maj. Edgar Erskine Hume, Librarian.	Pp. 259
1933	The Library received the William F. Edgar bequest.	Pp. 276
1936–1945	Col. Harold Wellington Jones, Librarian. At his suggestion the old title "Librarian" was changed to the new title "Director" in May 1944.	Pp. 271
1937	Microfilming of literature for patrons was started in the Library. The camera was provided, and the service managed, by a volunteer, Atherton Seidell, a Washington chemist. This "Medicofilm" service lasted until 1942.	Pp. 279
1940	Atherton Seidell organized "Friends of the Army Medical Library," which existed until 1945.	Pp. 279
1941	The *Current List of Medical Literature* began publication January 1. It was financed and edited by Atherton Seidell, under sponsorship of the Friends. The *List* was a rapid finding aid to current articles, microfilm copies of which were available at a nominal cost. The Library assumed publication of the *List* in September 1945.	Pp. 281
1942	The government leased a portion of the Dudley P. Allen Memorial Library Building from the Cleveland Medical Library Association, and the Library transported its rare books there for protection during the war. In 1945 the Cleveland Branch was renamed the History of Medicine Division. The Division remained in Cleveland until 1962, when it moved back to the Library.	Pp. 296
	The library organized its own microfilm operation, named "Photoduplication Service."	Pp. 300

1943 The Library was inspected by a team of professional librarians, the cost being borne by the Rockefeller Foundation. Directors followed the team's recommendations, embodied in *The National Medical Library; Report of a Survey of the Army Medical Library*, in modernizing the institution. Pp. 292

1944 The "Association of the Honorary Consultants to the Army Medical Library" was organized. The association advised and assisted the institution until 1952. Pp. 302

1945 In August the first number of the *Army Medical Library Newsletter* was published. Later it was renamed the *Army Medical Library News*, and eventually the *National Library of Medicine News*. Pp. 332

1945–1946 Col. Leon Lloyd Gardner, Director. Pp. 311

1946–1949 Col. Joseph Hamilton McNinch, Director. Pp. 313

1947 The Army Medical Museum moved from the building, and the Library expanded into the vacant space. Pp. 343

1948 The preliminary edition of the "Army Medical Library Classification" was produced. The *Classification* was published in 1951, and subsequent editions appeared periodically. Pp. 322

1949–1963 Col. Frank Bradway Rogers, Director. Rogers was the last of the long line of Army medical officers who directed the Library. Pp. 315

1949 The institution published its first annual catalog, *Army Medical Library, Author Catalog, 1949*. From 1950 until 1965 the AML and Library of Congress cooperated in producing annual and cumulated volumes. Pp. 323

1950 *A Catalogue of Incunabula and Manuscripts in the Army Medical Library*, by Dorothy M. Schullian and Francis E. Sommer, was published. Pp. 329

1950 The *Current List of Medical Literature* was revised, enlarged, and changed from a weekly to a monthly periodical in July. Pp. 325

1951 The Library compiled its first policy manual on scope and coverage. Pp. 321

1952 Director Rogers formed the "Friends of the Armed Forces Medical Library," an organization of volunteers. The Friends went out of existence in 1956. Pp. 335

1952 The Secretary of Defense placed the institution under the Army, Navy, and Air Force, and renamed it the Armed Forces Medical Library, on March 4. Pp. 351

1954 The institution published the *Subject Heading Authority List used by the Current List Division Armed Forces Medical Library*. Pp. 328

1955 The Task Force on Federal Medical Services of the second Hoover

Commission released a report recommending that the institution be designated the National Library of Medicine Pp 352

1955 The Library discontinued the *Index-Catalogue* with volume 11 of series 4. Citations to monographs were selected from the large backlog of accumulated cards and published in a special three-volume fifth series in 1959 and 1961 Pp 324

The Armed Forces Institute of Pathology moved from the building The Library now had the entire structure for its use Pp 347

The Library began to microfilm deteriorating publications for preservation of the text Pp 458

1956 On March 13 Sen Lister Hill and Sen John F Kennedy submitted to Congress Bill S 3430 "to promote the progress of medicine and to advance the national health and welfare by creating a National Library of Medicine " Pp 353

President Eisenhower on August 3 signed legislation transforming the Armed Forces Medical Library into the National Library of Medicine, and placing it in the Public Health Service Pp 355

1957 In April the Board of Regents of the Library selected a site on the grounds of the National Institutes of Health in Bethesda as the location for a new building Pp 356

Director Rogers initiated a new loan policy stating, partially, that the library would no longer lend to individuals only to other libraries, and that it would provide photocopies of articles without charge in lieu of volumes Pp 453

The Library began its Intern Program designed to give qualified librarians advanced training to enable them to assume posts of responsibility in medical institutions Pp 463

1958 Director Rogers and editor Seymour Taine began development of a mechanized system for producing the Library's publications Pp 365

1959 A groundbreaking ceremony was held on June 12 to mark the start of construction of the building in Bethesda Senator Lister Hill dug the first earth. Pp 356

In July the Public Health Service and American Medical Association signed an agreement under which NLM would publish a monthly bibliography, *Index Medicus*, designed to replace NLM's *Current List* and AMA's *Quarterly Cumulative Index Medicus* The first number of *Index Medicus* was produced by the new mechanized system, and issued in January 1960 Pp 367

Part of the Russian Scientific Translation Program was transferred from the National Institutes of Health to NLM in August The remainder was transferred in 1961 Pp 396

1960 The *National Library of Medicine Medical Subject Headings* was published Revisions were issued periodically thereafter Pp 328

The Library initiated development of a computerized bibliographic system named MEDLARS (medical literature analysis and retrieval system). Pp. 368

1961 Dedication ceremonies for the new building were held in the main reading room on December 14. Pp. 357

1962 On March 3 the first books were moved from the old building in Washington to the new building in Bethesda. The last book was shelved in the new building on May 3. Pp. 359

The new building opened its doors to the public on April 16. Pp. 359

1964 Martin Marc Cummings, Director. Pp. 393

MEDLARS began regular operations. The first bibliography produced by the system was the January number of *Index Medicus*. Pp. 372

The Library began to accept requests for demand searches produced by MEDLARS. The service was changed in 1973 to an online service, MEDLINE. Pp. 376

The new, high speed phototypesetter named GRACE, graphic arts composing equipment, developed for NLM, began regular operations, producing the August number of *Index Medicus*. Pp. 373

The old Library-Museum Building on the Mall in Washington was designated as a Registered National Historic Landmark. Pp. 360

The Library began to decentralize MEDLARS by awarding a contract to University of California at Los Angeles to serve as a search center. Pp. 378

The Library received the bequest of Emma Wheat Gillmore. Pp. 465

1965 The first recurring bibliography produced by MEDLARS, *Index to Rheumatology*, was published in January. Pp. 375

The Billings Centennial was celebrated at the Library on June 17. Pp. 466

On October 22 President Lyndon Johnson approved the Medical Library Assistance Act, authorizing NLM to aid the Nation's medical libraries in expanding their services to the health community. Pp. 399

The Drug Literature Program was started. Pp. 411

1966 NLM began to publish the *National Library of Medicine Current Catalog*, one of the first regularly recurring completely automated book catalogs. Pp. 381

The Toxicology Information Program was established. Pp. 413

The British MEDLARS center began to operate. This was the first center outside of the United States. Pp. 379

1967 The Drug Literature Program and the Toxicology Information Program were combined to form the Specialized Information Services. Pp. 414

The National Medical Audiovisual Center was transferred from the PHS's Communicable Disease Center to the Library on July 1. Pp. 434

The Library selected the Francis A. Countway Library as the regional medical library to serve the New England states. Countway was the first of the 11 libraries in the regional medical library network. Pp. 404

Director Cummings established the Library's Research and Development Program. Pp. 419

1968 The old Library-Museum Building was demolished so that the site could be used for construction of the Hirschhorn Museum and Sculpture Garden. Pp. 360

The Library was transferred from the Office of the Surgeon General of the Public Health Service to the National Institutes of Health on April 1. Pp. 445

On August 3, President Lyndon Johnson signed Public Law 90-456 designating the proposed NLM annex as the Lister Hill National Center for Biomedical Communications. Pp. 420

1970 In January MEDLARS produced the first regular monthly number of *Abridged Index Medicus*, designed to present citations on clinical medicine to practicing physicians. Pp. 383

On March 13 President Richard Nixon approved the Medical Library Assistance Extension Act, extending the original law for 3 years. This was the first of the extension acts, the others being enacted in 1973, 1974, 1977, and 1978. Pp. 404

The Library opened the AIM-TWX on-line retrieval service to a selected group of users in June. This service permitted users to communicate with MEDLARS. It was replaced by MEDLINE in November 1972. Pp. 422

1971 MEDLINE was opened to a selected group of users in December. Pp. 384

1972 TOXICON, the on-line service covering the areas of pharmacology and toxicology, was opened to regular subscribers on Oct. 1. It was the forerunner of TOXLINE, 1973. Pp. 415

1975 The Library accepted MEDLARS II from the contractor on January 3. Planning for the second generation of MEDLARS had started in 1966. Pp. 388

On February 25 the U.S. Supreme Court upheld the right of the Library and other noncommercial libraries to provide single copies of articles to scholars. Pp. 457

1976 The Library celebrated the Bicentennial of the United States of America. Pp. 466

1979 MEDLARS III task force was established, the first step in NLM's objective to develop a coherent library automation program to satisfy NLM's operational and service requests in the future. Pp. 389

1980 The Lister Hill National Center for Biomedical Communications was dedicated on May 22, with Senator Hill and other prominent persons in attendance. Pp. 431

Biographies of Staff Members

When I began to write this history I hoped to place in the text or notes a biographical sketch of each person who contributed to the development and excellence of the Library. Gradually I learned that we had practically no information about the first generation of staff members, the ex-soldiers who came from battlefields and hospital posts to operate the Library, or about the second generation, the contemporaries of Fielding Garrison and Albert Allemann. While the early librarians were assiduous in accumulating biographical information about others, they seldom retained information about their associates. Of Wise, Roehrig, Steigers, Neumann, Tibbets, Israeli, Shaw, Stone, Fogarty, Hall, Bickel, Stockman, and many others who labored conscientiously to assemble this Library, and to whom all users of its collections and great bibliographies are indebted, we know very little. Much of what I uncovered is incorporated into the text or notes.

When I reached the recent period I found the situation different. There was adequate biographical information concerning staff members. But there are and have been so many worthy persons associated with this institution during the past third of a century that inclusion of sketches would have turned this history partially into a biographical dictionary. Furthermore I could not have completed this work in a reasonable length of time if I had also written hundreds of biographical sketches. With regret I decided that the biographical information already in print would have to suffice. Data on recent staff members may be found in *A Biographical Directory of Librarians in the United States and Canada, American Men and Women of Science, Who's Who in the East, Who's Who in America,* other biographical dictionaries, and biographies and obituaries in professional journals.

Sources of Information on the History of the Library

The earliest correspondence and other records concerning the books and journals purchased for the Surgeon General and officers of the Army Medical Department, the literature that formed the foundation of the National Library of Medicine, are in the National Archives. In the Archives is also the correspondence between the Directors of the Library and the Surgeons General

concerning appropriations, legislation, facilities, *Index-Catalogue*, personnel, the original Library-Museum Building in Washington, and other library matters.

The earliest records in the National Library of Medicine consist almost entirely of letters addressed to, and copies of letters sent by, John Shaw Billings. Some of the copies are complete letters that Billings wrote for his clerks to transcribe and mail. Other copies are abbreviated, sometimes scrawled so rapidly that they are almost undecipherable. I assume the clerks, familiar with Billings style, transcribed these into readable letters. I have not referred to the outgoing as "copies" or "rough drafts," but as "letters" that Billings sent.

Fielding Garrison thought that Billings "was a poor letter writer—too busy most of the time . . ." (letter, Garrison to George H. Simmons, May 11, 1915: MS/C/166). With deference to Garrison, who had the advantage of a firsthand association with Billings, I have come to a different opinion. Billings letters were intended as communications, not literary productions, and as such they are informative, concise, and unambiguous.

Not many records of Billings and his successors remain to tell us of activities in the old buildings from the 1860's to the 1950's. The small group of librarians was too busy operating the institution and providing service to consider the needs of future historians. They saw no reason to maintain and store correspondence and other records; and as years passed by there was scarcely space for medical books and journals, let alone space for out-of-date records. Correspondence, memos, and other papers were thrown away as soon as they were no longer required for administrative or legal purposes.

The records of the Billings era, 1865–1895, fill 28 manuscript boxes in NLM's History of Medicine Division. Billings took his personal and nonlibrary correspondence with him when he left Washington, and it remained at the New York Public Library, where he was director, after he died in 1913. Billings' 15 successors at the Library left relatively few records—the total accumulation from 1895 to 1963 fills only 70 manuscript boxes, a few bound volumes, and a run of letterpress books.

It is important to remember that the earliest correspondence now in the Library referring to a certain subject, such as interlibrary loans, may not have been the first correspondence on that subject. The first may have been thrown away a century ago, and we only assume that what remains is the first. Billings may have started interlibrary loans and other activities a few years earlier and under other circumstances involving different persons than existing records indicate.

The Army Medical Museum and Army Medical Library were closely related in the Surgeon General's Office, in Ford's Theatre, and in the Library-Museum Building in Washington. Some of records of the museum concerned the Library and vice versa. When the museum moved in 1947 it took its early records with it. These are now maintained in the Otis Archives of the museum, at Walter Reed Medical Center.

The Library has a number of its older records, including notebooks listing

acquisitions, 1870's–1940's; titles of journals received, starting in 1869; names of recipients of volumes of the *Index-Catalogue;* orders to booksellers in various years of the 20th century; volumes sent on interlibrary loan for several years; and registers of visitors to the Library, mainly from 1888 onward.

The most important modern records are those of the Board of Regents. Minutes of the Board have been prepared for every meeting. Stenographic transcripts have been made of most meetings and tape recordings of some. Documents with background information have been prepared and distributed prior to many meetings. The accumulated records of the Board are available at the Library.

Writings from the Library on medical literature, medical bibliography, and a wide variety of other topics, began with Billings in the 1870's. He was interested in many things. A list of his publications comprises 171 titles. His own view of his works is reminiscent to all who write: "I am one of those unfortunate scribblers," he said, "who never get an article written to suit them, and when I see one of my papers in print I always see some changes which I wish to make" (letter to T. F. Rodenbaugh, July 22, 1882). Frank B. Rogers, one of Billings' successors, brought many of his articles together in *Selected Papers of John Shaw Billings* (1965), which also contains a bibliography of Billings' publications.

Shortly after Billings died in 1913 his family asked Fielding Garrison to write a biography. Garrison's *John Shaw Billings, a Memoir,* published in 1915 at the family's expense, is a primary source of information on the Library. But Garrison wrote the book so rapidly that he scarcely had time for reflection, and for this reason the book lacks details of the Library that would interest us, details so easy for him to have obtained but now beyond recall.

Many of the books and articles published by Fletcher, Garrison, McCaw, McCulloch, Ashburn, Neumann, Hume, Jones, and other members of the Library family are mentioned in the notes of this present history. Almost all of their writings may be located through *Index Medicus* and *Index-Catalogue.* A partial list of writings about NLM is in Manfred Waserman's "Historical Chronology and Selected Bibliography relating to the National Library of Medicine," *Bull. Med. Lib. Ass.* 60:551–8 (1972).

In 1960 the Library began placing in its annual report a bibliography of writings by staff members. These bibliographies were continued in the annual reports each year with the exception of 1967–1969 and 1972. After the Library became attached to NIH in 1968, a list of writings by NLM employees was also placed in NIH's annual *Scientific Directory . . . Annual Bibliography.* Articles published by staff members and others after MEDLARS began to produce bibliographies were listed in Literature Search 76-34, "The National Library of Medicine: selected references for the biomedical literature," prepared by Leonard J. Bahlman, containing 471 citations, January 1966 through July 1976; and Literature Search 78-21, prepared by Sheila Proudman, 69 citations, August 1976 through July 1978.

Information, mostly statistical, about the Library was included in the annual

reports of the Surgeon General's office from about 1870 onward. In 1944 a separate annual report of the Library was prepared in typescript and kept at the institution. The Library's report for FY 1944–45 was published in *Bull. Med. Lib. Ass.* No report was prepared for FY 1945–46. Reports for fiscal years 1947 through 1950, consisting of abridgements of divisional reports, were prepared in mimeograph form; copies are in NLM. Beginning in 1950 the Library published annual reports for distribution.

The monthly *Army Medical Library Bulletin*, begun in November 1945, became the *Armed Forces Medical Library Bulletin* in June 1952, the *National Library of Medicine Bulletin* in October 1956, and the *National Library of Medicine News* in January 1964. An index 1966 onward is the publication office.

Several works written by persons outside of the Library contain information on various aspects of NLM. Daniel S. Lamb, pathologist of the museum for half a century, produced "History of the United States Army Medical Museum, 1862 to 1917, compiled from the official records." He issued this compilation in mimeographed form, apparently for his friends in the museum and Library. Copies are rare; one is in HMD, NLM. Robert S. Henry's *The Armed Forces Institute of Pathology, Its First Century, 1862–1962* (1964) contains information on the Library, particularly on the buildings shared by the museum and Library. George J. Olszewski's *Restoration of Ford's Theatre* (1963) does not discuss the Library, but it does present an interesting, illustrated account of the building that housed the Library for 20 years. Marilyn Casey Bracken wrote her Ph.D. thesis, "An Analysis of the Evolution of the National Library of Medicine; implications for the development of scientific and technical information networks," at American University in 1971. This thesis, a copy of which is in NLM, contains statements and views of members of the Library staff.

ACKNOWLEDGEMENTS

"There are many things of which the Librarian and certain members of the staff alone know the inside story" (Librarian Harold W. Jones and *Index-Catalogue* editor Claudius F. Mayer, ca. 1944). The accuracy and coverage of this present history has benefitted from having pertinent portions of the "inside story" recounted by these present and former directors and staff members: Scott Adams, Clifford Bachrach, Thomas Bagg, Albert Berkowitz, John Blake, Arthur Broering, Thelma Charen, Mary Corning, Martin M. Cummings, Carl Douglass, Stanley Jablonski, Thomas E. Keys, Joseph Leiter, Frank Libersky, Joseph McGroarty, Joseph H. McNinch, Peter Olch, Frank B. Rogers, Charles N. Rice, Stella Schehl, Winifred Sewell, Ralph Simmons, Norman Shumway, Kanardy L. Taylor, Manfred Waserman, Warner Wells, Emilie Wiggins, Marjorie Wilson, Harold Wooster, and Wyllis E. Wright.

The following members or former members of the Library staff or Board of Regents cooperated in the preparation of this history by providing assistance, information, or advice; or helped assure accuracy of the text by reading all or portions of the manuscript: Scott Adams, Ernest M. Allen, Robert B. Austin,

Thomas Bagg, Clifford Bachrach, James Barry, William B. Bean, Albert Berkowitz, John Blake, Jeanne Brand, Charles Bridgman, Estelle Brodman, Arthur Broering, Daniel Carangi, Kenneth Carney, James Cassedy, Thelma Charen, Carol Clausen, Karin Colton, Mary Corning, George Cosmides, Susan Y. Crawford, Martin M. Cummings, Carolyn Davis, Melvin Day, Patrick Dore, Carl Douglass, Howard Drew, Max H. Fisch, Debra K. Gilbert, Roger Gilkeson, Robert F. Gould, Fritz Gluckstein, Maxine Hanke, Dorothy Hanks, Earl Henderson, Charles Herbert, Williamena Heinwich, Donald Hummel, Betsy Humphreys, Stanley Jablonski, Lucinda Keister, Jerome Kerkhof, Thomas E. Keys, Sheldon Kotzin, Peter Krivatsy, Joseph Leiter, Frank Libersky, Senta Lowenstein, I. Nathaniel Markfield, Grace McCarn, M. Ruth MacDonald, Joseph McGroarty, Joseph H. McNinch, Robert Mehnert, Peter Olch, John A. Oley, Frank Poh, Marguerite Pusey, Charles N. Rice, Frank Bradway Rogers, Stella Schehl, Harold Schoolman, Dorothy M. Schullian, Winifred Sewell, Sherry Shiebel, Norman Shumway, Ralph Simmons, Kent Smith, Norman Smith, Gaston St. Denis, Robert Sumpter, Brenda Swanson, Seymour I. Taine, Kanardy L. Taylor, George Thoma, Irene Underwood, Sharon Valley, Donald Walker, Manfred Waserman, Warner Wells, Emilie Wiggins, Marjorie Wilson, Harold Wooster, Lloyd Wommack, Wyllis E. Wright, Arthur Wykes, and Galina Zarechnak.

Information was also provided by the following persons not associated with NLM: Patricia Garrison Boorman; Lt. Col. Jeffrey M. Cook, USA; Joan Erickson, University of Iowa, Michael B. Gregg, USPHS, Joseph E. Jensen, librarian, Medical and Chirurgical Faculty of the State of Maryland; Elizabeth Medinger; Col. Harold P. Tasker, USA; Gerard F. White; L. E. Wikander, librarian, Williams College; Ann Hesslop Zebratt, Army Medical Museum.

Abbreviations

The following abbreviations have been used in the notes and text.

AFIP: Armed Forces Institute of Pathology
AML: Army Medical Library
AMM: Army Medical Museum
CPP: College of Physicians, Philadelphia
GPO: Government Printing Office
HMD: History of Medicine Division
JH: Johns Hopkins, Welch Medical Library
LC: Library of Congress
LHNCBC: Lister Hill National Center for Biomedical Communications
MS/B/-, MS/C/-, MS/fB/-: Manuscript collection call numbers, NLM
NA: National Archives
NLM: National Library of Medicine
NMAC: National Medical Audiovisuals Center
NYPL: New York Public Library
SGO: Surgeon General's Office

Index

E

F

G

M

N

P

S

T

*U.S. GOVERNMENT PRINTING OFFICE: 1985--480-985/NP