
THE PHYSICIAN AS BIBLIOGRAPHER*

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WHEN Dr. Carlson graciously invited me to speak at this conference on "The Physician as Bibliographer," it was not until after I had accepted that it began to dawn on me that I might have a problem: the title implies as given something which is yet to be established, namely, that the physician *is* a bibliographer. That perceptive critic, Dr. S. N. Gaño, who is well known to many in this audience, has pointed out that before long the physician need only ask his friendly librarian to push the correct buttons on the computer terminal to provide the bibliography so "indispensable in giving prestige to books and articles." For those who wished to appear scholarly, an appropriate percentage of the citations could be in foreign languages, with at least three from the 18th century. For surgeons they could all be in English and no more than five years old.¹

I must, however, differ from my learned friend, for in truth I do not consider the list of references appended to an article as, in fact, a bibliography. A bibliography is also to be distinguished from a catalog, which lists the holdings of a particular person or institution. Rather, a bibliography, as used here, is an independent list of writings selected and arranged in some purposeful fashion, whether by author, subject, or other elements.

Physicians, as such, are not bibliographers: they are trained for other tasks. For centuries, however, there has been a small number of physician-bibliographers, beginning with Galen, who compiled a bibliography of his own writings. This morning I shall mention a few of those who have concerned themselves with the whole field of medicine and describe briefly some of their work.²

*Presented as part of a *Conference on Books and The Physician* held by the Committee on Library of the New York Academy of Medicine March 13, 1984.

We may begin with Symphorien Champier's *De Medicina Claris Scriptoribus*, printed in Lyons in 1506. The work lists leading physicians in a roughly chronological order within each of five categories, gives a few biographical notes and the titles of some of their writings, but offers no attempt at completeness or precision and no further bibliographical detail. Champier made quite a reputation for himself in his own time, but a more recent critic has concluded that he exhibited "an utter disregard of literary conscience and historical truth."³ Other than being the first in print, his list is of little bibliographic or historical merit.

From Champier we may turn with pleasure to Conrad Gesner, 1516–1565. A medical graduate of Basel, Gesner practiced his profession, prepared a magnificent multivolume treatise on zoology, corresponded widely, and compiled the first universal bibliography, published in 1545. Including a supplement published in 1555, it listed some 15,000 books in Latin, Greek, and Hebrew by some 3,000 authors—about 20 to 25% of European printing production to that date. For each printed work it regularly gives the author's name, an accurate title, the place and date of printing, and format. Brief notes on authors and contents, and names of printers, editors, and translators are often supplied. Gesner included both classic authors—there are 10 pages on Galen—and the moderns, like Vesalius, whose *Fabrica*, published two years before, is described in detail. The *Bibliotheca Universalis* is arranged by author, but Gesner also prepared a subject index divided into 21 different categories. Unfortunately, the index for medicine was never completed and published. Gesner has justly been called the first bibliographer by profession and the creator of modern bibliography.⁴ Surely he ranks high among the greatest of physician-bibliographers.

With some regret I pass silently over Gesner's many worthy followers until reaching Albrecht von Haller. Born in 1708, Haller took his medical doctorate at Leiden, practiced briefly in his native Bern, taught at Göttingen from 1736 to 1754, and then returned to Bern, where he lived until his death in 1777. Physiologist, botanist, poet, prodigious correspondent, and a marvel of industry, Haller throughout his career systematically read and abstracted the literature of medicine. As one historian of bibliography has written, Haller "could no more keep from producing bibliographies on subjects which interested him than could Gesner."⁵ For both of them, knowing a subject meant knowing its literature and attempting to make it available to others. Thus, his great eight-volume *Elementa Physiologiae* contains a 100-page list of books

consulted, a veritable bibliography of physiology. His edition of Herman Boerhaave's *Methodus Studii Medici* is replete with bibliographic indications. But it is for his four great *Bibliothecae* that he is principally celebrated as one of the greatest of physician-bibliographers. Covering anatomy, botany, surgery, and practice of medicine and extending in all to 10 substantial volumes, they comprise a comprehensive bibliography of medicine to his time of outstanding accuracy with perceptive critical commentary throughout, based on his own reading and notes. It has been said, in contemplation of these bibliographies and his other works, that Haller was perhaps the last person who was able to know the entire literature of medicine.

Each of Haller's four bibliographies is arranged chronologically and has an author index. There is, however, no subject approach, for which we turn our attention to the work of Wilhelm Gottfried Ploucquet. Born in 1744, Ploucquet received his M.D. at Tübingen in 1766, where he later served as professor of medicine from 1782 to 1814. Although he published works on legal medicine, nosology, and other topics, he is best known for his subject bibliography. The first edition appeared in eight volumes from 1793 to 1797. By the time this was completed, he had so many additional citations he published a supplement in four volumes, 1799 to 1803. But by 1806 he had another 40,000 references. Rather than bring out a second supplement, he decided to combine the whole into one alphabet, which would be easier to search and cheaper to buy. Through various printing economies, he was able to publish his complete bibliography of more than 200,000 citations, the *Literatura Medica Digesta*, in four volumes. Though Ploucquet had not the genius, learning, or scientific accomplishments of a Haller and has never had nearly the acclaim, for the scholar searching out material on any particular subject in medicine his bibliography is far more useful. Admirably organized and with a depth of analysis that has never since been approached for early publications, it is still the most useful subject bibliography in the field of medicine up to the end of the 18th century.

Through prodigious effort, Haller and Ploucquet, each in his own way, covered the entire literature of medicine up to his own time. But, as Ploucquet saw, the tremendous growth of publication would make this increasingly difficult for a single person to accomplish and, indeed, they were the last to do so. As a good scholar of Hippocratic medicine, Ploucquet summed up the problem in his first aphorism of bibliography,

still valid today: "*Vita brevis, libri multi, nummi parci, tempus arctum*" (Life is short, books many, money scarce, time limited).⁶ To solve the emerging problems of bibliography as the 19th century advanced, new answers were needed.

This brings us to the man whom some would call the greatest medical bibliographer of all, John Shaw Billings. Born in Indiana in 1836, Billings graduated from the Medical College of Ohio in 1860. His thesis on the surgical treatment of epilepsy exhibited already his strong interest in books and the literature of medicine, a penchant for tabular analysis and display, and a well developed critical judgment. After the Civil War broke out, Billings joined the Union army. In December 1864 he was assigned to the surgeon general's office in Washington, where he remained for the next 30 years.⁷

During the war, the army medical department decided to collect specimens and case reports to establish a museum and to prepare a medical and surgical history of the conflict. This necessitated expanding the small library at the surgeon general's office, a task that was assigned to Billings along with the compilation of numerous reports and the auditing of endless accounts.

The choice could not have been better. Billings was a tireless worker with a genius for organization and a passion for reading and books. His student excursion into medical research had involved the collection and analysis of case reports from the literature, which reinforced his sense of the value of good libraries. In his own persistent way he set about building the library, first to serve the museum and then to serve the nation. By the time he retired he had turned a collection of less than 2,500 volumes into one of nearly 200,000.

Billings knew that a library, to be useful, must be cataloged, and there were several excellent printed catalogs of other libraries to serve as models. Some of them were valuable bibliographic tools as well as guides to particular collections, but they listed journals by title only, and made no attempt to index the articles they contained. Yet journals had become by the 1870s both numerous and of the first importance for conveying new medical and other scientific information. Although German and other European abstract and review journals were by then providing much bibliographic information on current material, there was no single reasonably complete or convenient index to the vast accumulation published over the past 60 or 70 years since Ploucquet had ceased his

labors. There were many, like Oliver Wendell Holmes, who saw the need for indexing the medical literature, but who also saw that it would require an “immense labor” and “a large amount of money.”⁸

What Billings proposed to do, as exemplified by a *Specimen Fasciculus* issued in 1876, was to prepare a catalog of the National Medical Library, as he called it, that would include, in a single alphabet, a subject and author catalog of monographs and journal titles comparable to the existing catalogs of other libraries, but to add to this a subject index to journal articles selected from the library’s already extensive and rapidly growing holdings. He achieved this by organizing a system for carrying out much of the task with clerical labor and by developing a medical lobby that would help persuade Congress to foot the bill. One might say that he created the bibliographic factory.⁹ The result was the magnificent and monumental *Index-Catalogue of the Library of the Surgeon General’s Office, United States Army* [series one], published in 16 massive volumes between 1880 and 1895.

As Billings pointed out, the *Index-Catalogue* was not a bibliography of medicine but a catalog of the collection of a particular library. However, that collection was so comprehensive that, including the second series published after Billings left the library, the *Index-Catalogue* stands as the most complete guide to 19th century medical literature and as one of the few indispensable guides—along with Haller and Ploucquet—to that of earlier centuries.

It was in a way ironic that Billings should have set his *Index-Catalogue* in motion just as the golden age of bacteriology dawned. The *Specimen Fasciculus*, it will be recalled, appeared in the very same year, 1876, as Robert Koch’s first classic paper on the life cycle of the anthrax bacillus, demonstrating for the first time in accordance with what came to be known as Koch’s postulates, that a specific bacterium was the cause of a specific disease. When Billings wrote his thesis, he cited cases from as far back as the 17th century since they were just as valid for his purpose as those of a more recent period. What Billings created in the *Index-Catalogue* was just the kind of retrospective bibliography that greatly facilitated that type of literature research. Billings tended to believe that specific cases and clinical observations were the most valuable part of the medical literature. Medicine was changing in the 1870s, but not yet with sufficient rapidity to render much of the older literature obsolete from a practical point of view. After the 1870s change came with increasing rapidity, so that keeping up with new developments became ever more important. The

Index-Catalogue, which took 16 years to get from A to Z, could not handle this. Thus, Koch's classic paper on the etiology of tuberculosis, published in 1882, appeared properly in the *Index-Catalogue* at the first opportunity under "Tubercle (Bacillus of)" but not until 1893. His earlier paper on the anthrax bacillus had to await the first volume of the second series, published in 1897.

This is the problem that *Index Medicus* was intended to solve: it would serve as a sort of monthly supplement to the *Index-Catalogue* listing current literature, both monographs and journals, under broad subject headings with an author index for those who needed the latest information promptly.

Index Medicus, though it first appeared the year before the *Index-Catalogue*, was clearly an offshoot of the latter. There may be, I believe, some question as to whether it was as entirely Billings' idea as the *Index-Catalogue* obviously was, and it was the latter that Billings' contemporaries like William Osler and William Welch praised as his great achievement. Today these two indexes may be viewed from a different perspective. The *Index-Catalogue* filled the huge gap in the bibliography of 19th century medical writings. As such, it was in the tradition of older bibliographies, which aimed at making available for use the accumulated literature of the past. *Index Medicus* pointed toward a solution to the principal bibliographical task of the future, which was to provide an accurate, comprehensive, and timely guide to what was being published now.

After Billings retired in 1895, the library continued on the path he set, publishing the second series of the *Index-Catalogue* and editing *Index Medicus*.¹⁰ As the years rolled by, both publications ran into increasing difficulties. When the second series of the *Index-Catalogue* was completed in 1916, the then librarian Champe Carter McCulloch was ready to end it, and even its editor, Fielding H. Garrison, was of two minds. But McCulloch made the mistake of asking a number of medical institutions and prominent physicians for their opinions. Not surprisingly, since it cost them nothing, they all requested that it be continued, and McCulloch felt he had to go on. When the third series was completed in 1932, the next librarian was ready to call it quits. This time the surgeon general was reluctant and sent out another circular letter with the same results. So, in the 1936 volume one of the fourth series appeared. *Index Medicus*, meanwhile, had struggled along until 1927, when it merged with the smaller but overlapping *Quarterly Cumulative Index to Current Medical*

Literature started by the American Medical Association in 1916. As the *Quarterly Cumulative Index Medicus* it continued as a joint venture until 1932, when the AMA took it over completely.

By the late 1930s the Army Medical Library was in a parlous state. Its limited resources were being drained to publish an expensive bibliographic work that was of increasing irrelevance to the vast majority of the library's potential users, and its collections were not being adequately maintained. This was due in part to the depression but, even more perhaps, to the army policy that required rotation of officers out of Washington after a few years. As army medical officers, library directors came without training or experience for the job and by the time they had learned it they were sent off to another post. Under such circumstances they could not construct long-range programs and put them into effect.

Two events early in the 1940s combined to change this. The first was the introduction of microfilm into federal libraries at the urging of chemist Atherton Seidell as a means of making library materials available at a distance without shipping out the originals. Under his leadership the newly created Friends of the Army Medical Library began issuing in January 1941 a weekly pamphlet, the *Current List of Medical Literature*, to publicize the microfilm service and what was available. The system proved to be immensely valuable during World War II and *Current List*, which was both cheap and timely, became an increasingly popular bibliographic tool. Also, because of the war, Colonel Harold Wellington Jones, director of the library since 1936, who was scheduled to retire in December 1941, was induced to stay on. This gave him the extra years needed to begin pushing the library into the modern era. Notable was the survey of the library undertaken at Jones' request by the American Library Association in 1943. Its report urged the necessity of modernizing many of the library's practices and severely criticized the *Index-Catalogue*.

After Jones retired at the end of the war, the surgeon general was persuaded to appoint an able and vigorous young medical officer, Joseph H. McNinch, to take on the library and carry forward the work of administrative reform. Though not prepared to be it himself, McNinch saw that the library needed a career director and persuaded the army to agree. He helped select his successor, Major Frank Bradway Rogers, also an army surgeon, and sent him to library school. In October 1949, at the age of 34, Rogers became the first director of the Army Medical Library who had been trained for the job and the first since Billings who had any reasonable expectation of making it a career. McNinch later recalled, "I

did have opposition to the selection of Major Rogers on the ground that he was too young, but was able to point out that the famous and eminent John Shaw Billings was in his 30s 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."¹¹

Both McNinch and Rogers wanted to develop a new and improved index out of the *Current List* and let the *Index-Catalogue* rest in peace. A committee of consultants, after long deliberations, eventually, if reluctantly, agreed. Librarians before had concluded that the *Index-Catalogue* had outlived its usefulness, but it was left to Rogers to carry the decision out. The old *Index* still had its devotees, and it was not an easy task.

Let us recall briefly a few of the other major but more positive changes of those eventful years. Beginning in 1949, a new version of the *Current List* was worked out. This required the development of a new subject heading authority list, culminating in the first publication of the now familiar *MeSH* (Medical Subject Headings) in 1960. A mechanized system using punch cards and a Listomatic camera for publication of the library's index brought data processing machinery to the library for the first time. After nearly 10 years of trying, Rogers was able to reach an agreement with the AMA, which was still publishing the *Quarterly Cumulative Index Medicus* although it was no longer quarterly, cumulative, or even up to date, and eliminate the wasteful duplication between *QCIM* and *Current List*. A new *Index Medicus* prepared at the library by the mechanized system appeared in 1960.

Meanwhile, Rogers was already thinking ahead to the use of computers. Aably abetted by Seymour Taine in this as in the development of the mechanized system, Rogers wrote the specifications for the MEDLARS (Medical Literature Analysis and Retrieval System), selected the contractor, and pushed the project forward until his resignation in 1963, shortly before the system became operational. In all these advances Rogers played a strong personal role based on careful study and understanding of the theory and technique of bibliography as well as a firm grasp of administration. I should like to quote the conclusion of Wyndham Miles, historian of the National Library of Medicine:

At the time of the completion of MEDLARS there was no other publicly available fully operational electronic storage and retrieval system of its magnitude in existence. . . .

[T]he 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. . . . Its success marked a milestone in the evolution of modern libraries.¹²

Early in the 16th century Symphorien Champier brought the printing press to the service of medical bibliography with his pioneer if faulty list of medical writers. Conrad Gesner greatly improved the art of bibliography by his comprehensiveness, accuracy, standardized descriptions, contents analysis, and the breadth of his interests and intellect. The tradition of comprehensive bibliographies prepared by individual scholars culminated in the 18th century with the great works of Haller and Ploucquet. In the 19th century Billings solved the main problems of medical bibliography by bringing the resources of government and a powerful capacity for organization to bear on the growing mass of medical publications. In our own day, Rogers brought medical bibliography into the computer age. I believe his name should be added to the select ranks of notable physician-bibliographers—Gesner, Haller, Ploucquet, Billings—who have through their industry, learning, and organizational ability provided their professional colleagues with basic guidance through the labyrinths of published medical information.

NOTES AND REFERENCES

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2. For the history of medical and general bibliography through the nineteenth century I have relied primarily on Brodman, E.: *The Development of Medical Bibliography*. Baltimore, Medical Library Association, 1954 and Malcès, L. N.: *Bibliography*, Hines, T. C., translator. New York, Scarecrow, 1961. I have also consulted Fulton, J. F.: *The Great Medical Bibliographers: a Study in Humanism*. Philadelphia, University of Pennsylvania Press, 1951. In addition, I have examined all bibliographies mentioned and used most of them regularly for a number of years.
3. Fulton's account of Champier is characteristically generous, that of Lynn Thorndike and some others decidedly less so. The quotation is from Thorndike: *A History of Magic and Experimental Science*. New York, Macmillan [v. 1-2] and Columbia University Press [v. 3-8], 1923-58, vol. 5, p. 126.
4. Malcès, op. cit., p. 22.
5. *Ibid.*, p. 65.
6. Ploucquet, W. G.: *Literatura Medica Digesta*. Tubingen, Cotta, 1808-09, vol. 1, p. vii.
7. On Billings, see, in addition to Brodman and Fulton, Billings, J. S.: *Selected Papers*, Rogers, F. B., comp. Baltimore, Medical Library Association, 1965; Blake, J. B.: *Billings and Before: Nineteenth Century Medical Bibliography*. In: *Centenary of Index Medicus 1879-1979*, Blake, J. B., editor. Bethesda, Md., Nat. Library Med., 1980, pp. 31-52; Miles, W. D.: *A History of the National Library of Medi-*

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8. Holmes discussed indexing, Billings, and the *Specimen Fasciculus* in *Medical Libraries (1878)*, in his *Medical Essays 1842-1882*, Boston and New York, Houghton, Mifflin, 1892, pp. 401-07.
 9. See Brodman for a discussion of Billings' work as the "industrial revolution" of bibliography.
 10. For the development of NLM and its indexes after 1895, I have relied primarily on Rogers, F. B.: "Index Medicus" in the Twentieth Century. In: *Centenary of Index Medicus*, pp. 53-61; Rogers: *The Origin of MEDLARS*. In: *A Celebration of Medical History*, Stevenson, L. G., editor. Baltimore, Johns Hopkins University Press, 1982; *Bull. Hist. Med.* (Suppl., n.s. 6), pp. 77-84; Miles: *History of NLM*, pp. 185-391.
 11. Miles, op. cit., pp. 314-15.
 12. *Ibid.*, pp. 374-75.