
Introduction

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ONE OF THE MOST pressing problems of our time is the maintenance of command over the ever-swelling flood of informational materials, many in new media, that threatens to inundate the scholar, research worker, student, and the library. The mass of printed matter alone is so vast that a complete inventory has not been achieved by any country.

Each year, hundreds of millions of dollars are spent by government agencies, industries, universities, and other organizations for research in science, technology, the social sciences, and humanities. The results of that huge program of experimentation and investigation appear in a variety of forms: in tens of thousands of articles in scientific and technical journals, in thousands of research reports of restricted circulation, in microfilm, microcard, and microprint series, in books and pamphlets commercially and privately printed, in near-print publications, in tape recordings, in motion pictures. The rate of production is steadily accelerating, and each year research becomes more specialized.

The volume of informational materials is increasing faster than our ability to deal with it. As a result the dangers are clearly present of overlapping and duplicating research, of failure to have available pertinent records at critical times, and of serious waste of funds and of expert manpower. It is quite within the realm of possibility that our natural survival could depend on thorough and effective organization of essential knowledge.

The extent of the problem may be estimated from statistics of publication in chemistry alone. In 1951 *Chemical Abstracts* published 50,657 abstracts of periodical articles and announced the publication of 1,959 new books of chemical interest. Obviously, no one busy

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chemist could read and digest more than a fraction of this production or even be able to examine the titles relating most specifically to his area of specialization. The more general references were likely to be read only in abstract form, or not at all.

Research, especially in science and technology, advances swiftly, and its literature may become obsolete or obsolescent in a period of a few months. Consequently, to be of maximum value, abstracting, indexing, or other finding aids must be provided with the utmost expedition. The tools of access are almost as important as the materials themselves, for without guides one would be hopelessly lost, and any potential gold would remain buried from sight.

The stage for this series of papers on the availability of library research materials is set by Alan T. Waterman in his article "Research and the Scholar." As Director of the National Science Foundation, Mr. Waterman sees the problem of controlling the flood of research materials particularly from the point of view of the scientist, but he is also well aware of its implications for scholarship as a whole. His informed and thoughtful comments provide a background for the more specific expositions which follow.

Robert B. Downs draws upon a rich background of experience and accomplishment for his paper "Problems of Bibliographical Control." Believing that effective national bibliographic organization must precede universal coverage, he points up the problem by treating some of the dilemmas confronting us in trying to achieve complete national bibliography for one country, the United States. He considers the systematic acquisition of foreign materials by libraries, the location of materials through union catalogs, union lists and other devices, and the provision of subject bibliography. On the whole, Mr. Downs's conclusions are more optimistic than might have been anticipated, but he leaves no doubt that much remains to be accomplished before we can claim the mastery over the mass of written and published materials implied by the term "bibliographical control."

As one writer commented recently, "The bibliography of serials contents is of a magnitude to dwarf the problem of monograph bibliography." In certain fields, periodical production far outweighs book production, and the journals are from one to five years ahead of the books in up-to-dateness. In every area, except perhaps the humanities and some of the social sciences, research workers rank the journals first in importance and value. This is the source of insistent demands for adequate indexing and abstracting services. This is the topic dealt with by Verner W. Clapp in his paper "Indexing and Abstracting

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Services for Serial Literature." Mr. Clapp is the compiler of an authoritative work relating in part to this matter, *Bibliographical Services, Their Present State and Possibilities of Improvement, Report Prepared as a Working Paper for an International Conference on Bibliography*, sponsored by Unesco and the Library of Congress in 1950, and he has been actively interested in the problem for a number of years. He traces the history of periodical indexes as a background to a consideration of the current status of indexing. Present indexing services, he shows, are less than satisfactory because of duplication, inadequate coverage in some fields, multiplicity of services, and high cost.

Since Vannevar Bush in 1945 stated his revolutionary concept of the Memex, for storing on microfilm and making instantly available millions of records, librarians, bibliographers, and scientists have been taking a new look at the subject of bibliographical control. The leader in practical realization of Bush's theoretical proposal is Ralph R. Shaw, a pioneer in the advocacy of machines for improving library routines. In 1949, he developed, under the sponsorship of the U.S. Department of Commerce's Office of Technical Services, a new "electronic brain," known as the "Rapid Selector." The machine, which has since been undergoing further refinements, holds great potentialities for bibliographical purposes.

Mr. Shaw outlines the nine basic processes which form the parts of any bibliographic system and the operations involved in each, and then considers "the possibilities for mechanization of each of the operations, the mechanical and electronic devices available or foreseeable, and the operations and levels of operation at which these are, or may be, applicable." The conclusion is reached that although numerous sophisticated devices offer promise in the area of bibliographical work, the indications are that there will be no widespread adoption of them by libraries in the near future.

A pioneer in another, but related, activity is Herman H. Fussler, who has been directly involved with questions of microreproduction of library materials for much of his professional career. When Mr. Fussler became head of the Department of Photographic Reproduction at the University of Chicago in 1936, microfilming was in its infancy, and he has been responsible for some of the principal technical advances, as well as for the application of microfilm to several large projects. His book *Photographic Reproduction for Libraries* is still a standard work in its field. Mr. Fussler, concerned with progress and prospects in methods of reproducing research materials by photographic means, reviews the techniques presently available or in the

process of being developed, and examines the comparative advantages and disadvantages of these various procedures. In this area, too, changes are rapid, and we can expect continued improvement in existing processes, and the appearance of new devices in the future.

Nonavailability of research materials may be caused by institutional and governmental rules and regulations. In libraries, restrictions are most likely to affect manuscripts and rare books, and may take such forms as limiting use to specified individuals and refusal to permit copying or publication. Governmental restrictions are most likely to be applied to materials for security reasons, and we find thousands of research reports in classified and confidential categories. Similar rules often govern reports prepared by business and industrial organizations. A minor restriction becoming more prevalent in libraries is the practice of charging a fee for the use of materials. Louis R. Wilson's and Jack Dalton's contribution considers several types of materials to which restrictive measures are applied in more or less degree.

Probably no other librarian in the United States or elsewhere has devoted more exhaustive study to the spatial problems of libraries than has Keyes D. Metcalf of Harvard University. As head of the world's largest university library, he has had to be constantly aware of space requirements for millions of books, hundreds of readers, and all the demands made by the steady growth of a great library. He inspired and was one of the founders of the New England Deposit Library, a pioneer attempt to provide centralized, cooperative, and economical storage for little-used books.

Mr. Metcalf provides a broad review of the factors governing spatial matters in the library building. While emphasizing the financial aspects, he considers the various types of buildings, the allotment and utilization of space to various library functions, equipment, cooperative acquisition and storage of materials, applications of microreproduction to the problem, and other phases of the question as they may affect both cost and availability of materials.

Acquisition activities of libraries are treated only incidentally in these papers, though the subject is, of course, basic to the theme of availability. Exchange of publications of a scholarly and research nature among universities, scientific societies, and other learned organizations has long been a major means of distribution. National and international exchanges are covered by Edwin E. Williams, author of several articles on the subject of exchanges as well as the *Conference on International Cultural, Educational and Scientific Exchanges*, the most comprehensive treatment of the subject to date.

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Free lending of research materials between libraries is another effective, though limited, means of distribution. Carl H. Melinat after giving a short historical background, has surveyed current practices and trends in interlibrary loans. Again, this is a subject principally of concern to the scholar and research worker, since materials loaned are usually highly specialized and limited in availability. The growth of microphotography and the more recent application of mechanical transmission devices to library purposes are causing gradual changes in the nature of interlibrary loans, but none of the technical developments are likely to supersede them completely.

The impression given by this series of articles is that the matter of making research materials more readily accessible to users is a primary concern of librarians, bibliographers, scientists, and publishers, and it is apparent from these papers that the problem is being attacked on many fronts. With so many minds engaged in seeking a solution, and with the progress already achieved, there are excellent reasons for believing that ultimately the dilemma caused by the increase of recorded knowledge at a more rapid rate than it can be organized and absorbed is on the way to being resolved.

These papers, with the exception of those by Melinat and Williams, were first presented in a symposium at the joint dedication of the new library buildings at the University of Georgia and the Georgia Institute of Technology, November 19-21, 1953.