The Place of the Small Library in the National Network*

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The most important thing that networks can do for small libraries is to induce them to make full and intelligent use of the national information resources available to them. In addition, networks and the extensive facilities and mechanisms that they command can help small libraries to process and organize the publications they collect.

Much has been said of the small library, but when compared to the plethora of submarginal scientific and technical libraries in the United States, many if not most of the "small" libraries are relatively luxurious. Perhaps a better title for this paper would be "The Place of the Staffless or Near-Staffless Library in The National Network." A huge number of libraries in industrial firms, in teaching hospitals, and in other seats of scientific and technical activity are not staffed by a few people but by one person, and that person is generally a clerk.

In November 1965, the Committee on Scientific and Technical Information (COSATI) of the Federal Council for Science and Technology issued a report (*1*) which was prepared for COSATI by the System Development Corporation, and contained the following paragraph on library statistics:

> "For 1964, it is estimated that there were some 17,000 libraries in the United States and Canada. Total library income for that year is estimated at $900 million. These libraries were staffed by approximately 70,000 qualified professional librarians of whom some 5% were employed by the Federal Government. If the American Library Association's standards for public, school and academic libraries were to be met, twice as many librarians would be required, along with enormously increased support. Yet the total of professionals graduated by the nation's library schools is hardly more than 3,000 a year."

If one simply divides the figure of 70,000 qualified librarians by 17,000 (the number of libraries) and then takes into account the proportion of the available librarians who are drawn off by large libraries in government, industry, the academic and private research and development communities, and by libraries dealing with nonscientific and technical subjects, it is clear that the staffless or nearly staffless library is likely to remain that way. If, as is frequently stated, scientific and technical literature and information are national resources which must be made freely and fully available, something must be done about this problem.

ROLE OF LIBRARIES IN THE INFORMATION CYCLE

About a year ago, the Auerbach Corporation completed an interview study, performed on behalf of the Advanced Research Projects Agency of the Department of Defense, to determine the information acquisition patterns of members of the DoD staff involved in research, development, test, and evaluation activities (*2*). One rather surprising finding of this study was that the majority of the interviewees made no use of the Defense Documentation Center (DDC), which is the prime collector and disseminator of unpublished research reports resulting from DoD projects. This finding was particularly surprising in view of the fact that one of the primary information media used by the group under study was reports.

The explanation is, of course, that only a minority of scientists and engineers who use DDC use it directly; most of them use it via their organizational libraries, and most are probably not aware that DDC is involved at all. We found essentially the same situation in a study done some years ago for the Atomic Energy Commission to determine the information-gathering patterns of scientists and engineers employed by AEC prime contractors (*3*). What was happening was that extensive use was being made by the prime contractors of the facilities and services of the AEC Technical Information Division, but it was being made by the contractors' libraries on behalf of the scientists and engineers they served.

In short, the primary users of large government information programs are likely to be librarians, who use them on behalf of their clients. The absence of the library to serve as intermediary in the flow of documents from the large information center to the scientist and engineer is likely to mean that the scientist and engineer will not make effective use of the center, and will be deprived of useful sources of work-related information.

Dynamic *vs.* Static Documentation. Another significant finding of the AEC study was that whenever information products and services were broadly and frequently publicized they were used, but when they were merely established and permitted to sit and wait for customers they were not used. This is not really new or surprising; it is an old story. Various information organizations in the United States and Europe have experimented with so-called aggressive documentation—going out and "selling" information and information services—and all have found that it greatly increases demand. The librarian, in acting as the intermediary in the acquisition of sources of information and in making them known via such devices as accession lists and selected reading lists, is serving the role of information salesman. The absence of a librarian

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to perform this function severely handicaps a group of scientists and engineers who are not familiar with the expanding number of useful tools and resources available to it.

The previously mentioned COSATI report on national document handling systems is but one of many proposals that have been put forward to tie together the multitude of information facilities and resources to ensure their maximum use and availability. Such library or information networks would be a formalization of the cooperation that has existed for many years among libraries, in the form of interlibrary loans, union catalogs, cooperative cataloging, union lists of serials, etc. With the proliferation of tools, resources, and programs, such formalization and coordination is indeed necessary. The ingredient that is missing from the various plans that have been advanced is a mechanism for ensuring that the information flowing through the network lines gets to the farthest and lowest reaches of the scientific and technical community—that we are not merely perpetuating a situation in which the rich get richer and the poor get poorer.

As things now stand, the prime beneficiaries of the information network schemes that have been advanced are the large libraries and large organizations. But what of the small organizations? What of the organizations that have only semblances of libraries if they have them at all? How are they going to tap into the growing national information facilities and resources? This problem of reaching organizations that have no personnel or mechanisms for collecting, organizing, and disseminating potentially useful sources of information could prove to be the stickiest part of the national information picture.

REACHING THE LIBRARYLESS ORGANIZATION

A good current illustration of the problem of getting scientific and technical information to organizations with staffless libraries or no libraries at all is found in the mission of the State Technical Services Act, which was passed by Congress in 1965 (*4*). The Act envisions a national network comprised of an agency within each state to coordinate statewide information resources, collect reports and other publications resulting from Federally sponsored research and development activities, and take whatever steps are necessary to make sources of potentially useful information generally available to business, commerce, and industry within the state. The Act, which is administered by the United States Department of Commerce, is keyed primarily to small- and medium-sized businesses.

A few years ago we did a study for the Department of Commerce and the European Productivity Agency to determine whether and how small- and medium-sized manufacturing firms in four industries obtain technical information and how they solve technical problems (*5*). Of the 400 firms visited, we found that practically none had any sort of library or even received any significant technical publications in their fields. Most, in fact, did not have any technically trained personnel to read the publications if they did receive them.

None of the 400 firms had any awareness of the technical advisory services of the Small Business Administration or the Office of Technical Services (now the Clearinghouse for Federal Scientific and Technical Information), which had as one of its basic missions the dissemination of Federally generated scientific and technical information to smaller firms. Their primary source of useful technical information and solutions to technical problems was the basic manufacturers from which they purchased their raw materials.

Investigating, we found that each of the basic suppliers named as sources of information and solutions by the 400 firms had an ornate system of technical services for their customers (*6*). Most used technical salesmen or sales engineers, who had a detailed knowledge of the industries they contacted. These salesmen paid regular visits to firms within their territories, delivering and explaining useful reports and trade literature and answering technical questions when they arose. Questions the salesmen or engineers could not answer were brought back to their home offices where they were turned over to appropriate industry specialists or, if necessary, were forwarded to the research and development department for solution. Frequently, the questions were completely unrelated to the products of the basic supplier. The simple theme was (and is) that if you want to sell your products they have to be made as easy and profitable as possible to use. Thus, there is, and has been for years, a highly successful, through uncelebrated, network of information services to small- and medium-sized firms in the United States. The administrators of the State Technical Services Act, and programs like it, would do well to emulate this network.

WHAT NETWORKS CAN DO

There are many things that a national network can do to serve the needs of small or staffless libraries. One of the first things a network can do is to let small libraries know what its products and services are. The second thing is to show these libraries how to acquire and make use of these products and services. The third thing a network can do for small libraries is to make certain that it is truly responsive to their needs and the needs of their clientele, and not merely try to force unassimilable literature and information services.

The tested notion of the field representative or sales engineer, who visits client libraries and organizations without libraries on a regular basis, conducts continuing market research, educates the client libraries and technical personnel in libraryless organizations, and helps these libraries and personnel not only to solve their information problems but also to recognize that they have them, is one of the best means of ensuring that the network concept permeates down to every potential client, regardless of his type and degree of need and his level of technical sophistication.

Where small and submarginal libraries are concerned, it is futile merely to set up a network of large regional libraries, announce their existence, and assume that they will be used by all who can benefit from them. This leads only to continued superior service for the larger,

wealthier consumer, and continued deprivation for the smallest and neediest consumer. By first making sure, via personal contacts, that the small information consumer is aware of the information resources and services available to him, the network can, in time, encourage him to use them effectively. By continually bringing him useful publications, bibliographies, announcements, etc., and explaining them, the network can in time induce the small library and the technical person without library services to ask for things and to become an active network participant and client.

There are, to be sure, exciting new information storage and retrieval devices, new communication devices, and a growing number of means of manipulating and transferring useful sources of information. But it is not enough merely to make libraries more efficient or to devise and install better or faster means of interlibrary communication. Far more important than how our library resources are connected is what goes through the lines and how it is used.

LITERATURE CITED

(1) Committee on Scientific and Technical Information (COSATI) *Recommendations for National Document Handling Systems in Science and Technology*. The Committee, Washington, D. C., November 1965. PB 168 267.
(2) Auerbach Corp., *DOD User Study, Phase I*. Final Technical Report 1151-TR-3, to the Advanced Research Projects Agency, The Corporation, Philadelphia, Pa., May 1965. AD 615 501.
(3) Herner and Co., *The Use of Atomic Energy Commission Technical Information Tools and Services*. Final Report to the U. S. Atomic Energy Commission, The Company, Washington, D. C., February 1962.
(4) Public Law 89-182, 89th Congress, S. 949, September 1965.
(5) Herner and Co., *Research, Problem-Solving and the Use of Technical Information in Small and Medium Sized Manufacturing Firms*. U. S. Department of Commerce, Washington, D. C., 1958. PB 131 578.
(6) *Ibid.*, *Technical Services to Small and Medium Sized Manufacturers by Basic Supplier Firms in the United States*. European Productivity Agency, Paris, France, 1959.

An Experimental Real Time Chemical Information System*

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A chemical information system is described which receives input queries from punched cards or remote teletypes; executes up to 25 queries on a time-shared basis; processes queries by molecular formula, structural formula or fragment, and descriptors; loads chemical records as a list structured file; adds new compounds by a registry number; and uses a specific disc loading strategy to optimize retrieval.

An experimental chemical information system has been developed at the University of Pennsylvania under contract to the U. S. Army, Edgewood Arsenal.

The system, which is under a two-phase development, operates in either a real time or batched mode. The first of these two phases has been completed and has resulted in a system which incorporates an IBM 7040 central processor, an IBM 1301 disc storage file, and can be queried (in real time) from a single remote teletypewriter. An expansion in both the number of remote inquiry stations as well as the query versatility is planned in the second phase of the development

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This paper describes the first-phase experimental system, which is currently in operation, and indicates how its present capabilities can be further expanded.

It is described as a real time chemical information system, which implies two distinguishing attributes—namely, real time and chemical information retrieval.

Real time may be defined in various ways in accordance with what is considered to be either a convenient or a requisite system reaction time for the user. In general, however, a real time system may be characterized in the following way. The query that is put to the system by the user is executed immediately, and responses are returned immediately to the user as soon as they are found. Reaction times from a few seconds to one minute are generally considered as tolerable.