Summer 1986

Special Libraries, Summer 1986

Special Libraries Association

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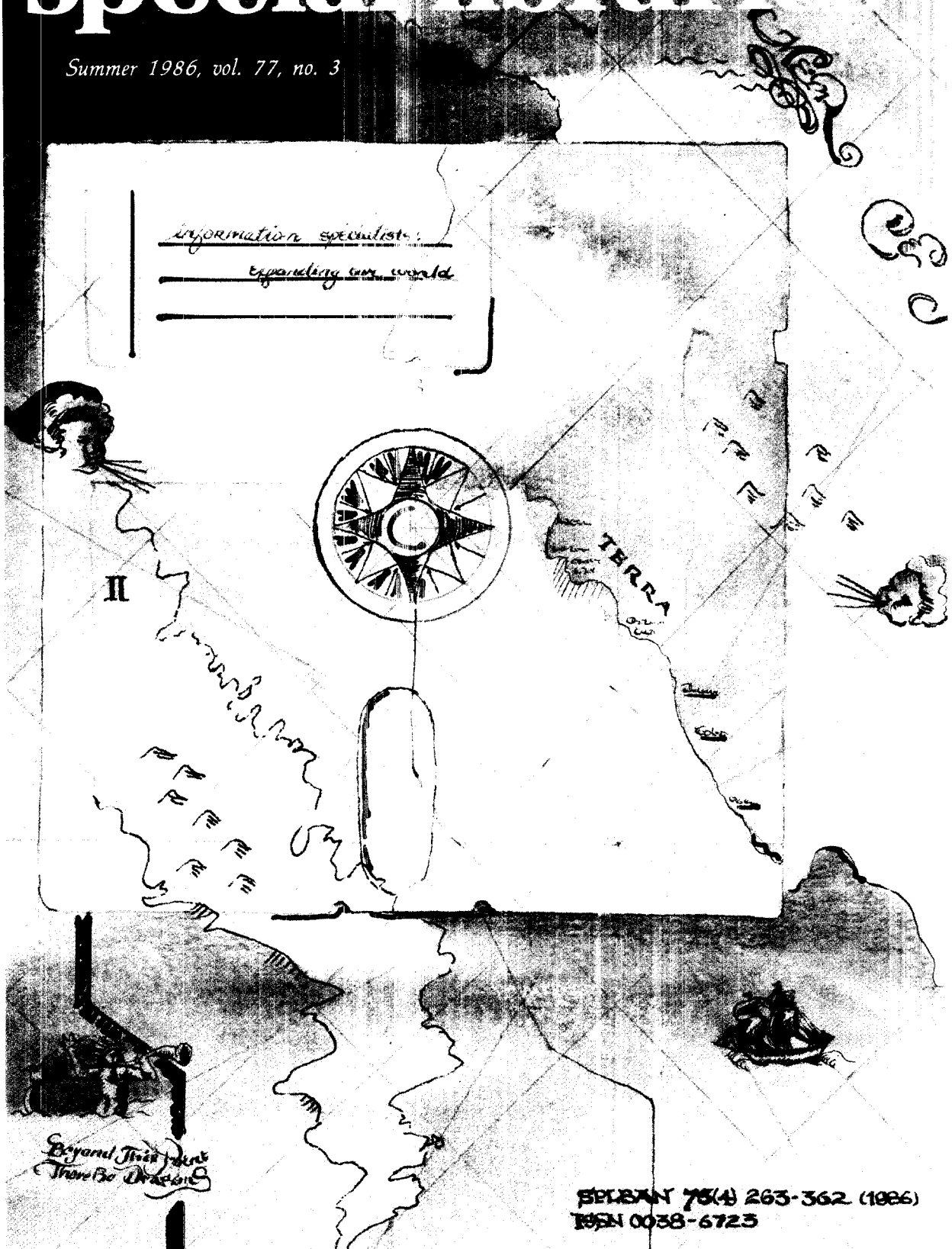
Summer 1986, vol. 77, no. 3



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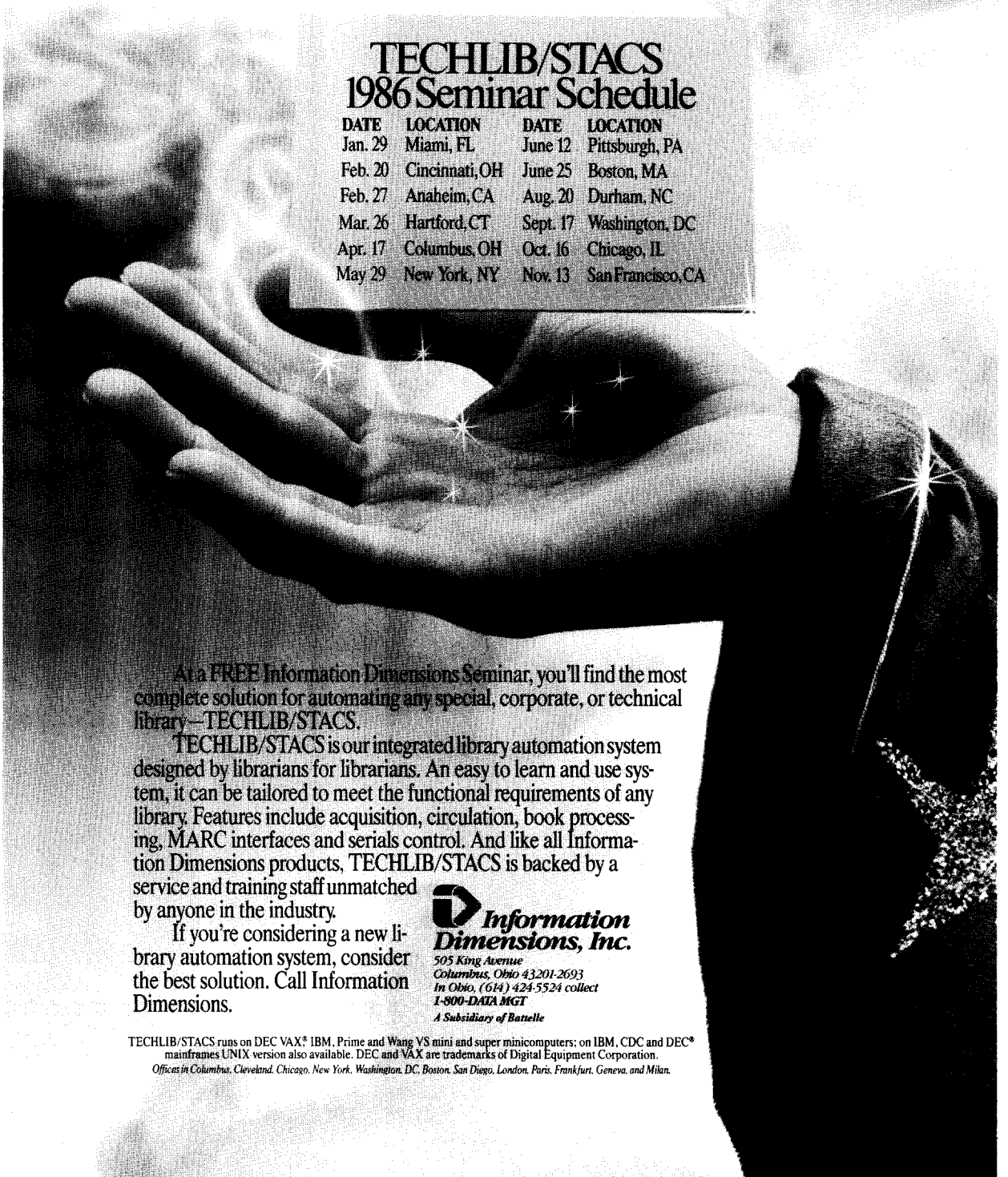

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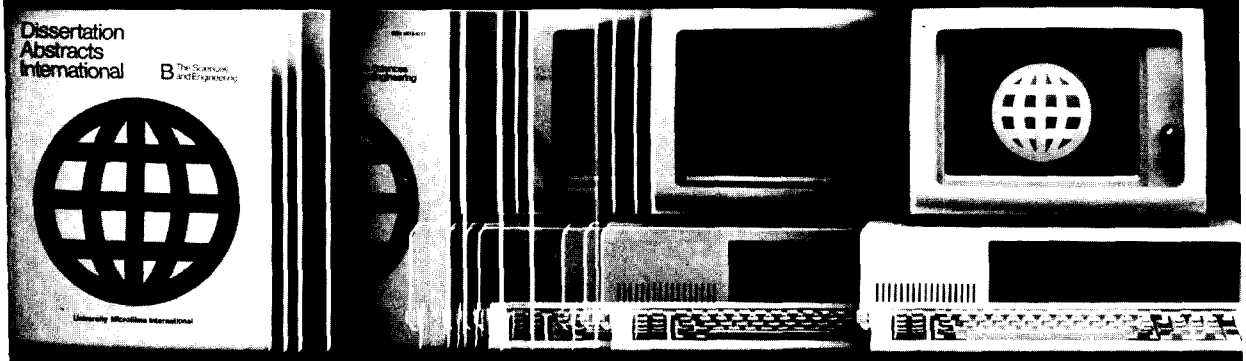

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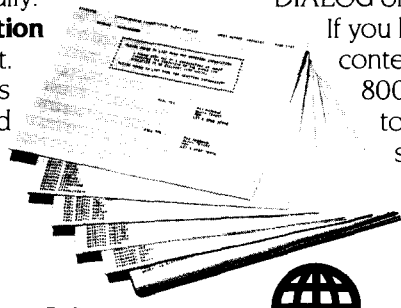

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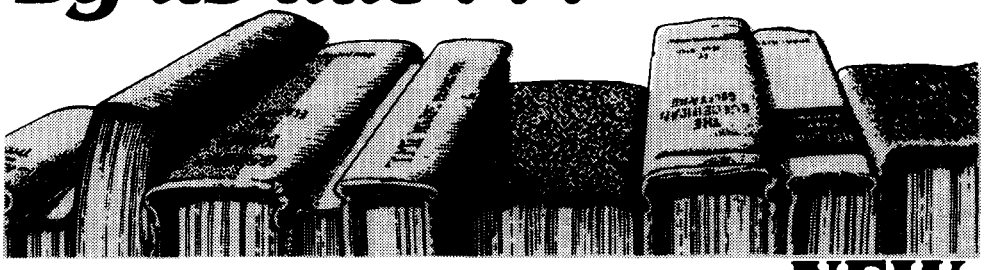

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Summer 1986 Vol. 77, No. 3 SPLBAN 75(4)263-362 ISSN 0038-6723

Cover design by Ruth Magann.

Editor: ELAINE HILL

Publisher: DAVID R. BENDER

Special Libraries is published by Special Libraries Association, 1700 Eighteenth St. NW, Washington, D.C. 20009 (202) 234-4700. Quarterly: Winter, Spring, Summer, Fall. Annual index in Fall Issue.

Second class postage paid at Washington, DC, and at additional offices. POSTMASTER: Send address changes to Special Libraries Association, 1700 Eighteenth St. NW, Washington, D.C. 20009.

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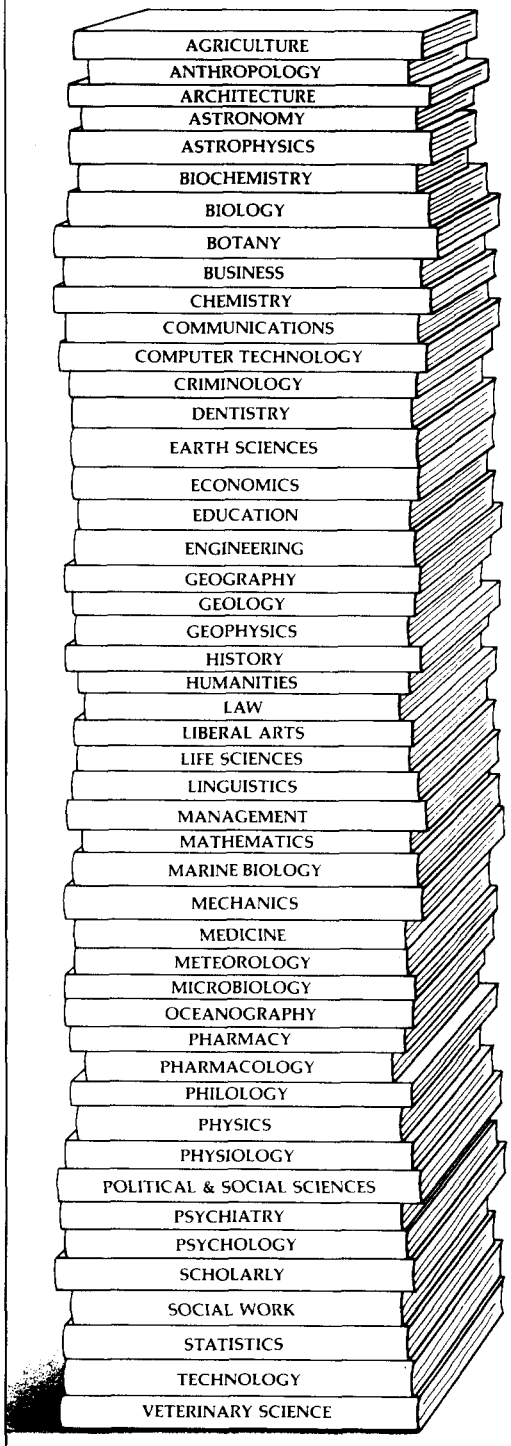

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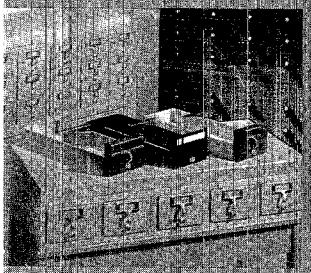

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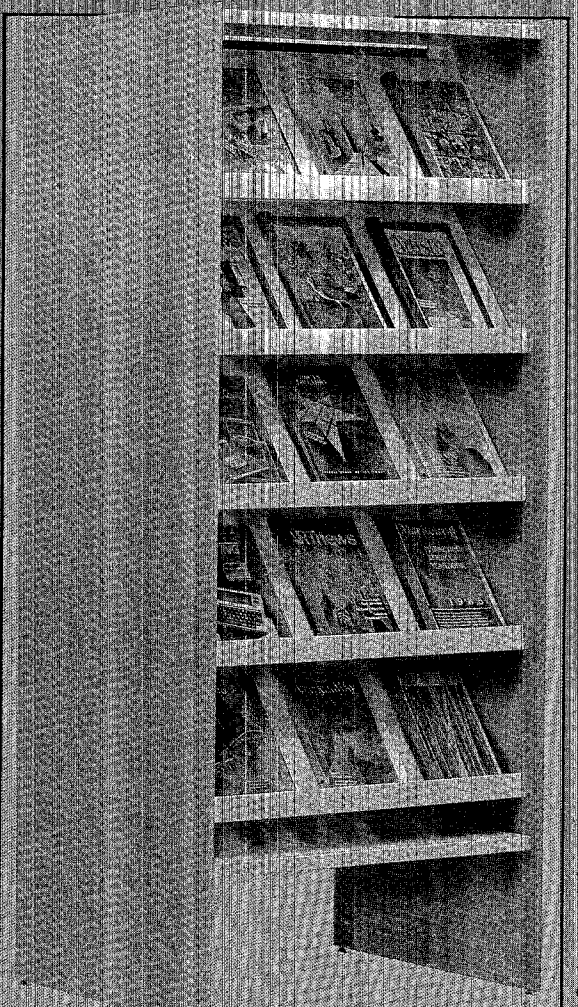

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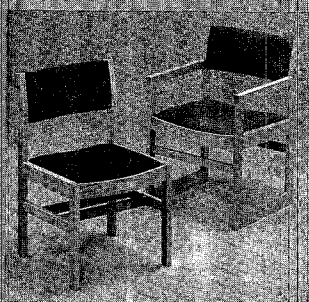

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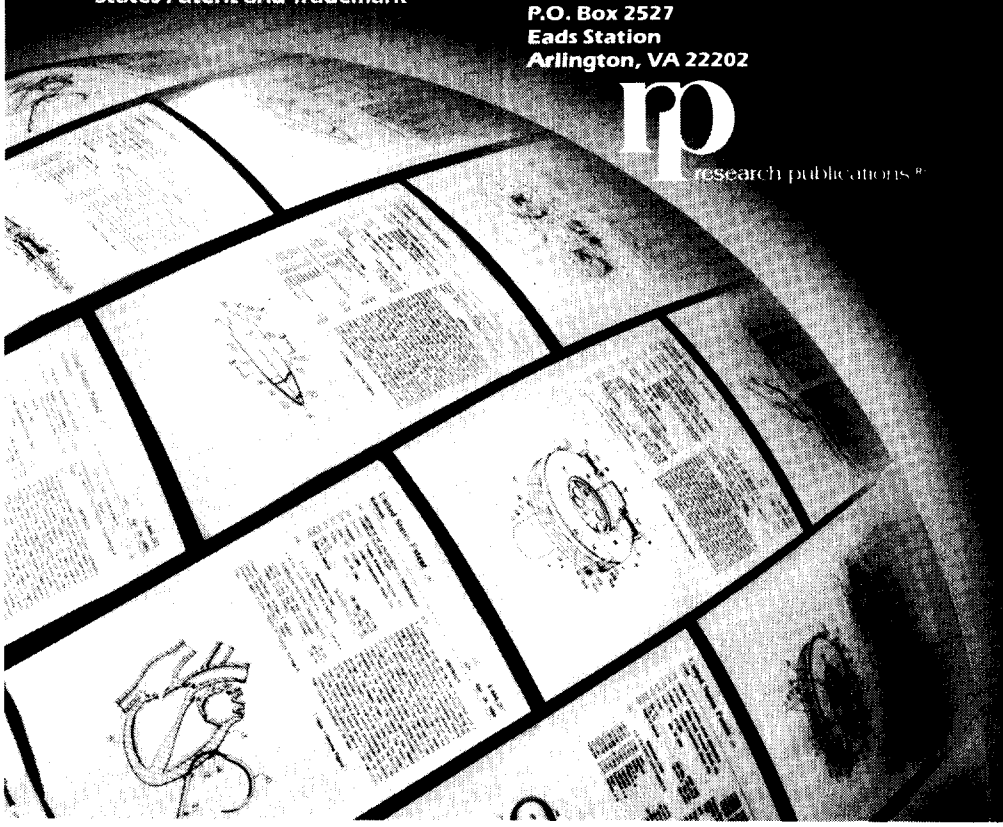

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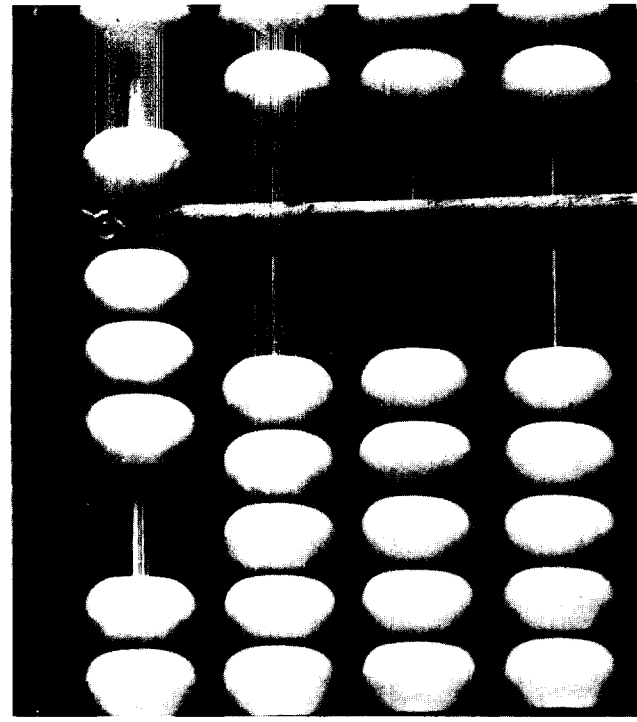

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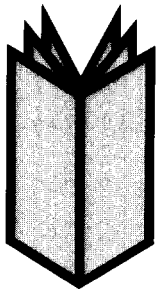

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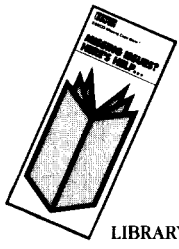

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Human Aspects of High Tech in Special Libraries

Julie Bichteler

■ **As special librarians devote more and more time to interacting with computers, it is appropriate to examine some of the possible effects of this changing work environment on these information specialists and their institutions. This paper reports on an investigation of selected library employees who spend a significant proportion of their time in on-line computer interaction. Interviews with the subjects elicited information concerning the intellectual, psychological, social, and physical aspects of their work. The study identifies some of the long- and short-term effects of the increasing applications of high tech in special libraries and offers some possible solutions to problems of technostress.**

SPECIAL librarians and other information specialists have been eager, for the most part, to embrace new technologies. Through our conferences, literature, continuing education programs, and experience, we have exhibited a great deal of interest and enthusiasm and have developed an increasing technical competence. The expansion and rapid advancement of the information technologies in recent years have offered exciting opportunities to improve library services and management and to streamline the many processes required for day-to-day operations. Although libraries, as well as other types of institutions, have made some mistakes along the way, we could probably agree that the high-tech library is clearly more efficiently run and offers more and better services to users than its traditional ancestor.

In recent years, however, a number of observers including psychologists, counselors, consultants, and others have investigated and commented upon some of the negative aspects of high tech. Fears, physical disorders, and social and psychological difficulties have been observed among those who spend much of their working day in interaction with computers. The term "technostress" has been used to describe these conditions.

In his interesting and very readable book, Brod defines technostress as:

> a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner. It manifests itself in two distinct but related ways: in the struggle to accept computer technology, and in the more specialized form of over-identification with computer technology (3, p. 16).

Technostress could, of course, result from problems with other complex technolo-

gies; in the present discussion, however, the context is limited to computers.

Librarians have also begun to be concerned about technostress, and in 1985 the Annual Clinic on Library Applications of Data Processing at the University of Illinois (*5*) addressed some of the fears, frustrations, and other problems arising from automation. This paper reports on an investigation of the problem of technostress among those who work in special libraries and related information environments.

The Phenomenon of Technostress

One of the obvious manifestations of technostress is the physical discomfort which results from using a terminal (VDT). Led by the work of European researchers, ergonomists have been concerned during the past decade with the design of the VDT and workstation and with the overall work environment. Studies in this country by the National Institute for Occupational Safety and Health have investigated health complaints (especially visual and musculoskeletal problems), job stress factors, working conditions, and psychological states of VDT operators (*4,13,15*). At SLA's 1984 annual conference in New York, the Information Technology and Engineering Divisions heard Bruce Miller of Indiana University offer practical recommendations to alleviate conditions which cause burning, twitching eyes; headaches; backaches; and pains in the neck, shoulder, and arms.

In addition to causing physical problems, extensive human/computer interaction frequently alters the nature of the job itself. People typically feel that they have less control over their work than formerly; they may find that "decision making" no longer requires human judgment but is simply the result of an information processing activity embedded in a computer program (*16*). Furthermore, when work is machine-paced, the worker has less opportunity for non-work-related movement and may feel physically constrained as well as socially isolated (*11*). Clerical workers, particularly, perceive greater fatigue and feel that computers increase the pace of their work. New opportunities for managerial supervision and surveillance allow mistakes to be more easily traced and output levels monitored (*4,13*). And when jobs are broken into smaller units to increase efficiency, workers may lose the sense of satisfaction gained from seeing the "big picture" and being able to follow a task from start to finish.

Jobs which once required several days are now expected to be done in hours. Working hours are extended because files and programs can easily be accessed at home during evenings and weekends, on business trips, and on vacations. This mobility of the office environment particularly affects managers.

When new computer systems are proposed or introduced in an organization, they may appear very threatening. Even the implementation of minor changes may be viewed as attempts to alter the status quo, and new computer systems are certainly not minor; thus, resistance frequently appears. Opposition to change may take several forms ranging from vocal disapproval, passive avoidance, and predictions of failure to overt hostility and malicious behavior intended to defeat the proposed change. Many technical workers, both clerical and managerial, fear that they may eventually be replaced by computers.

Technocentered individuals are those who have overidentified with computer technology to the extent that they have difficulty socializing with other people. They may prefer to interact with others in an algorithmic, yes-no fashion, and their personalities become more mechanized. They are typically highly competent, work well under pressure, and have a strong desire to excel. Technocentered workers pattern their behavior after the technology. According to their spouses, technocentered people are blunt, unemotional, noncommunicative, and insistent upon efficiency and order (*3*).

The policies, actions, and attitudes toward computers on the part of manage-

ment may be a source of technostress. Computers may be purchased for the wrong reasons—to enhance someone's image, to build egos, or to increase visibility. Managers may feel pressured to purchase and use computers and may suffer from the same fears and anxieties as others in the organization. Sophisticated software can take over many of the managers' decision-making and supervisory functions, causing them to feel less essential to the organization. Using a keyboard may seem demeaning, and managers may not know how to type. Managers, as well as other employees, may find it difficult to learn to use a new system.

Managers may not allow enough time for training, which often is superficial, without enough consideration for those who are hesitant or fearful. Documentation is often poorly written or inappropriate for the new user.

Methodology

In order to identify sources of technostress in a variety of special libraries and in a variety of tasks, participants were selected to represent many kinds of high-tech activities in special libraries in government, academia, business and industry, and private associations.

The "users" mentioned in the study refer to staff members of the library rather than end-users, although the latter certainly suffer from their share of anxieties and frustrations. Rather than making what is often a false distinction in special libraries among "professional" and "nonprofessional" employees, categories of users are those of Moran's straightforward classification based on two dimensions: user knowledge and task structure (*9*). User knowledge determines whether the user is a novice or an expert; task structure reflects the kinds of tasks in which the user is engaged. Here we may distinguish between (a) programmers and (b) nonprogrammers, who use software packages (for example, for word processing, statistical analyses, or database searching).

Individuals to be interviewed were selected from the membership of on-line user groups or through suggestions from library managers and personal acquaintances. Interviews with the 32 individuals chosen ranged in duration from one-half to one-and-one-half hours. The interviewees engaged in a wide variety of computer-based activities including bibliographic and numeric database searching, word processing, data input, programming, E-mail, in-house database creation and use, and management information systems.

Questions used in the interviews may be classed in the following areas. Some examples of topics in each area provide an overview of the type of information sought:

(a) Personal Data: whether expert or novice (determined by length of time in present or similar position); type of computer use (task structure); approximate hours per day spent in computer-related activities (working on-line and writing and documenting programs)

(b) Physical Health: visual problems, headaches, backaches

(c) The Nature of the Job: degree of the individual's control over the job; monitoring capabilities of management; software (whether appropriate and user friendly); workload; workpace; degree of challenge or boredom in job; paperwork required and generated; time available for creative thinking; career development opportunities

(d) Psychological and Social Aspects: resistance to new technology; changes in personalities of people heavily involved in high tech; social interaction and isolation

(e) Computers and Management: motivation for purchase of computers; encouragement of high touch interactions to compensate for high-tech utilization, as suggested by Naisbitt (*10*); man-

agers' concerns relating to computers in their own work; type of training and documentation available.

Questions were open-ended, and participants in the study felt free to add any observations they wished. The data were analyzed for problems and evidence of technostress.

Results

In general, the results indicate that special librarians are less affected by technostress than other working groups in our society that have been studied. As a whole, they felt that the computer enhanced and improved their work and that the enormous changes resulting from computer applications in their organizations were beneficial. They did, however, suggest several sources of technostress which affect them.

Personal Data: Of the 32 individuals interviewed, 29 (91%) would be considered expert users and 3 novice users. Based upon Moran's distinctions of task structure, 3 were programmers and 29 were nonprogrammers. Figure 1 shows the types of computer applications represented among interviewees, and Figure 2 shows the average amount of time spent in computer use each day.

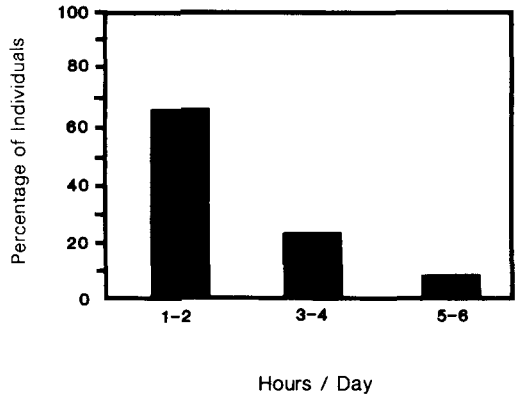

Figure 2. Average Time Spent Using Computers Daily

Physical Health: Very few individuals reported any health problems other than an occasional slight backache or headache. Occasional negative comments related to color moniters; for example, dark blue and black were hard to distinguish, which caused some eye strain.

The Nature of the Job: Database searchers who were interviewed enjoy their work, find it fun, creative, and challenging, and feel that their workload is appropriate. They do concentrate more

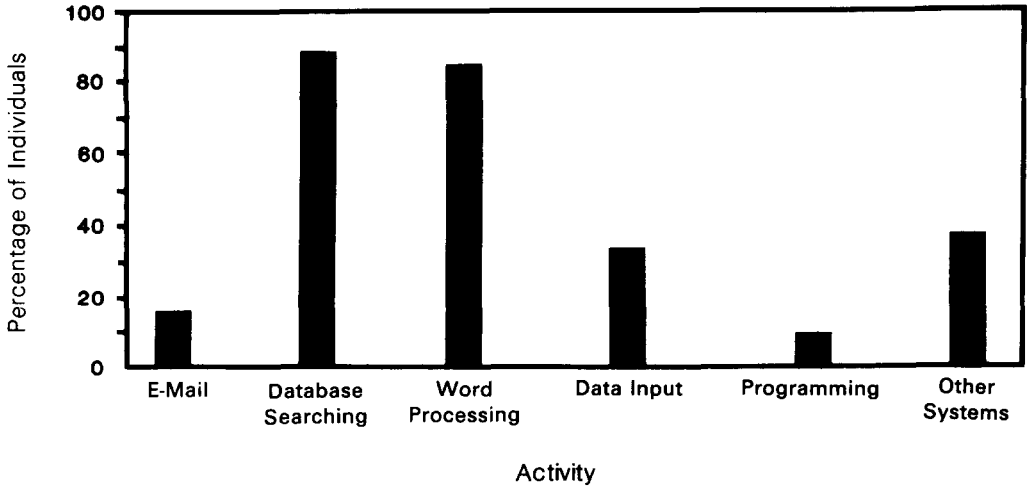

Figure 1. Types of Computer Applications in Special Libraries

while on-line than if they were performing a manual search, and they are very much concerned with finishing the search as quickly and efficiently as possible because of the cost. The most frustrating aspect of database searching, according to several librarians, is the level of users' expectations. Since the search is done "magically," the documents should also be available instantly. Small collections often lack the holdings to correspond with retrieved citations, and users are disappointed. Some users insist on a single term search which would result in too many citations, and some insist on a computer search when a manual search would be better.

In-house database systems seemed less successful. In one case, the problem was data analysis and input. Management felt that clerks were perfectly capable of these tasks but provided training only in the mechanics of the system:

> Without any theoretical concepts of retrieval and classification, they can't really understand database management. They don't see the necessity of uniform descriptors or the differences among "James Smith," "J. Smith," and "Jim Smith." As a result, retrieval is very frustrating, and the larger the database gets, the worse the situation becomes.

The clerks, on the other hand, have to initial each record input so mistakes could be easily traced. And they were under considerable pressure to "get the stuff in fast." Data entry operators in libraries agree with those in other institutions about the "mindless, boring" aspects of their jobs. And if they are good at their job, they may feel stuck in that position.

Word processing has changed the working style of many special librarians. Several commented that they compose on-line and no longer need a secretary for correspondence, as it's so easy to do. Memos and letters get out much faster than when a secretary had to type them. But in some institutions, librarians find it frustrating that the printers are remote from their offices. "You have to walk back and forth too much to get the hard copy." An occasional individual felt that word processing caused excess paperwork. "More reports are generated more frequently and are more comprehensive, and I'm under pressure to get them out faster, now that I have a micro." One librarian felt that with the advent of word processing, people have lost the impetus to be correct the first time; it's too easy to run the document through the machine over and over. People are more pushed to produce, and lead time is shortened. And in some cases work extends into evening hours because of the heavy demand for the equipment. "Access problems make it necessary to work at night; scheduling is a horrendous problem. As we depend more and more on the machine, we have to use it." Several people may want to use the word processor at the same time, and complaints are heard about inappropriate uses, such as a short one-time letter, when more complex jobs are waiting.

Programmer librarians reported the usual frustrations of programs bombing and lengthy debugging sessions. But they were generally very enthusiastic about the programming aspects of their work. It was the nonprogramming aspects that they found boring and mechanical, such as proofreading bibliographic data after input, a task which apparently could not be performed satisfactorily by clerical workers.

Psychological and Social Aspects: The three programmers who were interviewed all stated that their personalities had changed as they became more computer-oriented. They are more organized and feel themselves to be more efficient. "I'm impatient with unorganized, illogical people." "I feel that my mind works like a computer now." "My programming experience has changed the kind of response I expect from people. Circular reasoning drives me crazy." They find it hard to communicate with nonprogrammers and vice versa. One nonprogrammer librarian related at length the difficulties of communicating with the programmers in her company: "We can explain what we want, but the programmers don't

want to do it. They're used to dealing with scientific and mathematical data, not strings. And you can't talk to them like a normal person—you have to be totally precise and logical."

Some people feel more comfortable interacting with humans through a computer rather than by telephone or face-to-face. "I used to call my boss in Boston; now we prefer E-mail. You can be more precise and erase mistakes." One very interesting observation concerned the way the use of E-mail can change communication patterns among people: "Using E-mail, one talks a lot and then it's the other person's turn to talk a lot. Since we get used to operating in little wads of thought, when you see someone in person, you tend to say what you have to say all at once, and then it's the other's turn."

High tech in the library may affect patterns of social interaction in other ways. Pressure to utilize equipment efficiently and to stay on schedule reduces opportunities for conversation. On the other hand, when scheduling constraints are not a problem and when expensive database searching is not underway, the terminals may become the "chitchat station," as one librarian expressed it.

Many commented upon the fear, anxiety, and reluctance on the part of some people when dealing with computers. Older employees seem to have more difficulty learning new computer-based systems than younger ones. However, one library manager pointed out that in her institution, at least in the abstract, everyone wants to learn word processing since those are the more prestigious jobs; they offered the only path for advancement. Furthermore, "the two clerks who don't use the computer feel socially isolated since they can't contribute their 'war stories' about the computer. Psychologically, it would be valuable to train everyone."

A programmer librarian made the interesting observation that the fear and anxiety where computers are concerned even affect experienced database searchers when they have to deal with micros and new software: "Database searching becomes easy and mechanical with experience—a new software package on a micro is a different animal. You have to talk to a trained searcher the same way as to another person who has never used computers."

Computers and Management: Most people interviewed felt that both hardware and software were purchased after careful consideration and assessment of needs. In some organizations, however, a VDT on the desk is a status symbol and may be only a "decorative terminal." Several staff members in one institution had "never been seen using their micros," and in that same institution the head librarian commented that "Management pushes the use of computers here and buys PCs for people whether they need them or not." Complaints about the incompatibility between micros and the main frame blamed management for not carefully planning the system as a whole in advance. "We've become dependent on the company where we bought the first computer; we're almost forced to keep buying from that company to insure compatibility." Inaccessible and unhelpful sales representatives were another source of frustration.

The major source of technostress among those interviewed was the inadequate training that was provided for both hardware and software. Although training for database searching by the major vendors was quite satisfactory, training for other systems used by the library was frequently poor to nonexistent. The problem appears to be twofold: available documentation is often misleading, inaccurate, incomplete, or overly complex; and too little time is allowed for studying the documentation. "We use a self-paced training kit, but we ought to establish a structured time to use it systematically; learning is in bits and pieces." "We have good packages available, but there's no time in anyone's day to even look at them." "If I want to learn new software, I have to do it at home. I can't say 'I won't answer this reference question now; I'm studying

something'." In one library, several new users quit the current series of training sessions. They felt the pressure of their own jobs, which were not getting done, and just couldn't take any more time off. One librarian commented that with the nonexistent training in her company, one has to be very self-motivated. "The in-house documentation is very badly written. You have to hound programmers to ask questions—catch them when you can." And when the initial training is satisfactory, people are commonly not given enough time to practice what they have learned.

On the other hand, managers expressed the need for good training programs. They believe in one-on-one training to help alleviate anxiety, and, when possible, training when others aren't around so that the trainee is not embarrassed by mistakes. One trainer pointed out that people have to be led by the hand; they give up easily and don't want to read the documentation by themselves. Learning a new system takes time and concentration, and people are reluctant to go through the documentation step-by-step.

In the opinions of those interviewed, their management had not made any particular effort to counteract the possible negative effects of high tech by offering high-touch alternatives. Although in some cases many opportunities for high-touch interaction were in place (company sports activities, parties, picnics, happy hours, etc.), these were not seen as any direct response to the increased use of technology in the company. Nor did they see any need for further efforts in this direction.

Conclusions

Special librarians feel that the use of computers enhances rather than reduces control over their work and enables them to accomplish a variety of tasks more efficiently than they could without the computer. They would agree with Alcalay and Pasick (*1*) that the information explosion without computer capability would simply overwhelm their area and that computers bring order and accessibility to an otherwise uncontrollable deluge.

The low incidence of problems related to ergonomic factors is probably because employees in special libraries are, on the average, working on-line fewer hours per day and for shorter stretches of time than those in other types of jobs in our society. And the absence, generally, of a sense of social isolation and other psychological problems can be attributed to the same reasons, as well as to the fact that special libraries are often smaller operations with a given individual performing a variety of tasks. Thus, the warnings by Malinconico (*7*) and others apparently do not have serious implications for special libraries. On the other hand, special librarians who are also programmers appear to be as typically technocentered as those described in other studies, and many of their colleagues are just as affected by anxiety and fear of the computer as others in society.

Not surprisingly, special librarians find database searching to be a vital, creative, and enjoyable part of their jobs. Database searching, along with word processing, have brought about significant improvements in library services and operations. But in some institutions the logistic aspects relating to the scheduling and location of word processing hardware need to be examined and improved. Although database searching has been with us for many years, our clientele still seem to have unrealistic expectations of both the search itself and the provision of full text. As one librarian suggested, "We need to train our end-users as to what is feasible and what is not."

It is within the area of training where technostress is a real problem among special librarians. Inadequate or nonexistent training causes frustration and anger among many of those interviewed and reduces their working effectiveness. Expensive software is of little value if people do not have time to learn to use it properly. Managers who believe in the necessity of good training programs and

who do not hesitate to send their employees to lengthy vendor sessions for database searching must also make time for such programs inhouse. Brod (3, p. 180) poses several questions relating to the design of work structures to promote a balance appropriate between people and technology. Two of these questions seem particularly significant where training is concerned:

(1) Are workers' skills being fully used in their present jobs?

(2) Is sufficient information provided for maximum job effectiveness?

Until appropriate training is viewed as being just as critical to the operation of the special library as the right hardware and software, these questions cannot be answered in the affirmative.

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This paper is adopted from a talk presented at the 1985 SLA Conference in Winnipeg.

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Cooperation with the People's Republic of China

Linda J. Erickson

Barbara J. Ford

■ **The People's Republic of China is hungry for Western knowledge, and the China Society of Library Science is no exception. Last spring, CSLS invited a large delegation of librarians and information scientists to visit China for a consultative tour; the authors were members of this group of 67. One of the libraries visited, Chengdu Institute of Radio Engineering, is a special library which might be compared with American libraries specializing in electronics and telecommunications. This institute, as well as many other Chinese libraries, is actively seeking cooperative ventures with American libraries.**

FROM April 13 to May 3, 1985, a delegation of American librarians visited the People's Republic of China on a consultative tour of libraries. The group was invited by the China Society of Library Science and co-sponsored by CAST (China Association for Science and Technology). The delegation was led by Dr. Robert Stueart, Dean of the Graduate School of Library and Information Science at Simmons College. Several special librarians were included in the group, which was the first large delegation of librarians to visit the People's Republic of China.

As requested by the Chinese, delegates gave talks on topics such as automation of library services, cooperative systems and networking, conservation of rare and special materials, education and training of library staff, and library management. Another primary interest of the Chinese was to make contacts with American librarians and to develop formal or informal channels for resource sharing. Besides formal presentations by the delegation, there were opportunities for informal interchange with Chinese colleagues, many of whom spoke at least some English.

Specialized Libraries Visited

A variety of library facilities was visited by the academic and special librarians in the cities of Beijing (Peking), Xian, Chengdu, and Shanghai, including Beijing National Library, National Archives, Xian Jiaotong University, 4th Military Medicine College (Xian), Scientific and

Technical Information Research Institute of Sichuan, Shanghai Jiaotong University, and the Chengdu Institute of Radio Engineering. Each of these libraries expressed interest in U.S. materials and in sharing of resources. The visit to Chengdu Institute of Radio Engineering (CIRE) typified this interest.

Chengdu Institute of Radio Engineering

Chengdu Institute of Radio Engineering (CIRE) is one of China's earliest comprehensive institutes of electronic science and is one of China's key institutes of higher education. The Institute supports 12 departments, 5 research institutes, and 7 laboratory centers for education. Degree programs extend through the doctoral level, with about 320 graduate students.

The Library for the Institute contains more than 800,000 volumes including 70,000 bound volumes of periodicals and about 3,700 current subscriptions. Fields of subject specialization include electronics, telecommunications, automation, computer science, radar, telemetry and remote sensing, electronics materials, solid state devices, and optoelectronics. The Library holds a complete collection of IEEE Transactions.

Staffing for the Library is 58, with the traditional divisions of acquisitions, cataloging, circulation, reading, and reference. This library was typical of the Chinese libraries visited: stacks are closed (except to faculty and graduate students), so there are many reading rooms (9 with a total of 780 seats at CIRE). Reading rooms are always packed with students, and some even require reservations to obtain seating. The main reading rooms at CIRE are open for almost 80 hours per week.

The Library serves a community of 3,160 teachers and workers and 5,000 students and trainees. Bibliographic instruction includes classes for freshmen on use of the library, lectures to advanced and postgraduate students on the retrieval of scientific and technological information, and lectures on information retrieval for the teachers.

The book collection is shelved under three different classification schemes: International, Liu Guo Juan, and the Chinese Library Classification System. Since 1980 only the Chinese Library Classification system has been used. Card catalogs are divided into title, classified subjects, and (for foreign language books only) authors.

Interestingly, about one-third of CIRE's books are in foreign languages, primarily English, Russian, Japanese, German, and French. (During our travels in China, we were told that all college and university students study English.) Foreign-language periodical volumes outweigh Chinese-language periodical volumes by more than 2 to 1. CIRE has exchanged books and materials with more than 2,400 institutions in China and abroad.

In addition to touring the library stacks and reading rooms, the group was given the opportunity to tour the computer center. This was probably the most automated facility shown to the delegation. The institute is supported by a VAX 780 with 40 terminals, plus a PDP 11/64. The microcomputer lab contains a number of "Great Wall" brand micros that appear to be similar to IBM PC ATs. The computers are used for both education and research, and students were busy working on English-language BASIC, FORTRAN, and PASCAL programs.

CIRE'S Proposal to the Delegates

CIRE has devoted considerable effort to establishing international academic exchanges and cooperative relationships. The Library is extremely interested in establishing exchange and cooperation with American libraries, and presented each delegate with a proposal for material and personnel sharing along with a contract form in both Chinese and English. A copy of the proposal appears as Appendix A. None of the delegates had the

authority to authorize such an agreement, but the Chinese were assured that the delegates would share this proposal for cooperation with their fellow librarians. Anyone interested in developing such an agreement should contact Dr. Deren Gu, whose address appears at the end of this article.

Opportunities for Exchange of Materials

Resource sharing and exchange between Chinese and U.S. libraries has accelerated in recent years. The Chinese have great interest in English-language publications, and particularly those relating to science and technology. Any technical library able to exchange or supply these types of publications (perhaps in exchange for similar Chinese materials) would find eager recipients in Chinese libraries. Difficult to obtain materials such as in-house newsletters, bibliographies, or publications which are not commonly available would be of particular interest.

Most of the Chinese libraries put special emphasis on showing the visiting delegation their collections of foreign language materials, primarily English, Russian, German, and Japanese. We have certainly not observed such interest in Chinese-language materials in U.S. libraries, probably due to the fact that the majority of Americans are unfamiliar with and unable to read Chinese.

Opportunities for Personnel Exchange

In addition to materials, Chinese librarians are interested in exchange of personnel for studies and research and for general sharing of library experiences and practices. Chinese librarians are now permitted to travel to the U.S. and other areas and are eager to meet librarians and visit libraries. When invited to speak or participate, Chinese librarians are sent by their government to international meetings and conferences. Any U.S. librarians wishing to visit or work in Chinese libraries or teach in Chinese library schools would be well received. For example, four librarians from Washington State University will visit libraries in Sichuan Province this coming fall. WSU is responsible for payment of the librarians' travel expenses to get to China, but the Chinese government will pay living costs for the librarians while they are in China.

Contacts for Cooperative Efforts

Since the Chinese interest in cooperation is so great, any librarians interested in exchange of materials, people, or experiences should not hesitate to establish contact with the Chinese. Most large cities have a local branch of the U.S.–China Friendship Association that can be contacted. Additional sources of contact are listed below:

U.S.–China Education Clearinghouse
1860 19th Street N.W.
Washington, D.C. 20009
202/462-4811
or 389-6795

Committee on Scholarly Communication with the People's Republic of China
National Program for Advanced Studies and Research in China
2101 Constitution Avenue N.W.
Washington, D.C. 20418
202/389-6136

National Committee on U.S.–China Relations
777 United Nations Plaza, Room 9B
New York, N.Y. 10017
212/682-6848

Dr. Deren Gu, Director
Chengdu Institute of Radio Engineering
P.O. Box 83
Chengdu, People's Republic of China

American Library Association, International Relations Committee
Liaison with Chinese Libraries
50 E. Huron Street
Chicago, Il. 60611

Appendix A

Proposals Made by Chengdu Institute of Radio Engineering to Promote Interlibrary Exchange and Cooperation

In order to strengthen the friendship and promote the cooperation between the peoples of China and the United States in general, and between the libraries of the two countries in particular, the Chengdu Institute of Radio Engineering proposes the cooperation between the library of Chendgu Institute of Radio Engineering and your library in the following respects:

(1) Exchange of books and other media, including textbooks, university academic journals and other publications available.
(2) Exchange of visiting scholars to carry on further studies and/or do research. International travel and living expenses will be paid by the sending library.
(3) Mutual invitation of scholars and specialists to give lectures on special subjects and/or to attend symposiums.
(4) Exchange of experience in library and information sciences.
(5) Cooperation in any respect of common interest to both libraries.

If this proposal is acceptable, an agreement shall be concluded between the two libraries in this connection.

Linda J. Erickson, pictured at the "Forbidden City" in Beijing, is with Sandia National Laboratories, Albuquerque, New Mexico.

Barbara J. Ford, pictured at the Great Wall of China, is with Trinity University, San Antonio, Texas.

Microcomputers as On-Line Catalogs in Special Libraries

Julia B. Faust

■ **This article discusses the rationale for the conversion of a card catalog to an on-line system in a special library owning approximately 4000 titles. Equipment, software, and procedures are described. Pros and cons of the use of a microcomputer for such a project, as well as costs and personnel needs, are outlined.**

Rationale

WEST Suburban Hospital Medical Center is a 374-bed community teaching hospital nine miles west of Chicago. It offers residency programs in family practice and internal medicine, is affiliated with a medical school, and supports a baccalaureate program in nursing. In 1980 it became obvious to the professional library staff at West Suburban that the card catalog was not serving its intended purpose. Because of limited staff resources, location jackets were often incorrect and there was always delay in filing cards for new books. Despite the best efforts of the staff, the card catalog was not totally effective. Consideration was given to hiring part-time help in the hope that it would then be possible to maintain an updated, corrected catalog. This idea was discarded in favor of a plan to transfer the data in the catalog to an on-line system.

The best solution would have been to have terminals linked to a mainframe computer. The advantages of a mainframe are numerous and include faster response time, the potential for multiple users, and greater storage capacity. Since the money for this kind of system was not available, West Suburban purchased less expensive Apple computers. Due to its affiliation with a college of nursing, the library was able to take advantage of Apple's educational discount.

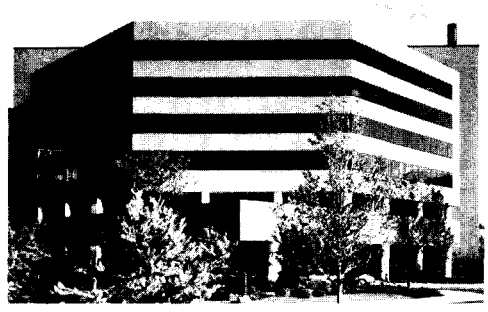
Equipment and Software

In February 1985, the professional library purchased an Apple IIe microcomputer, two disk drives, monitor, and printer. A standard data base management program was used, in this case DB Master Version IV (DB IV) by Stoneware Microcomputer, Inc. A different version of the software was purchased for the hard disk because version IV is not hard

disk compatible. Other small libraries have had success with other powerful data base management programs such as D-Base III and R-Base 5000.

Careful consideration should be given to the choice of the software; all have strong and weak points, and none is perfect. Important criteria for choosing a program are the lengths of the fields and the report-generating capabilities. Although DB IV allows searching on any field, the process is slow; therefore, the printed catalogs and reports are heavily used. Software support services should also be criteria in the software selection process primarily because they can be very important in the initial stages. A software package with either a local or toll free telephone number would be very helpful. During those months when West Suburban had numerous questions, dozens of long distance phone calls were made to California for help. The service from DB IV was very mediocre. Because it was necessary to use two different versions of the software (one for floppy disks and one for the hard disk), this library may have had more problems and generated more questions in the initial stages than other new users, but all software neophytes will have questions.

The first step in the conversion process was to transfer the acquisitions files to the on-line system. As the "bugs" were being worked out of the on-line order procedures, another Apple IIe was ordered and installed. This second microcomputer system has two disk drives, a 20 megabyte Corvus hard disk, monitor, and printer. The original intent was to have the two micros (which are located 50 feet from each other) directly linked but, in the absence of a computer expert in the institution, this turned out to be technologically too difficult. Therefore, the LTA now takes the floppy disks from the office to the public-access terminal and "dumps" all completed records to the hard disk. This takes only a few minutes and keeps the on-order data on the floppies small enough to work with on a daily basis while keeping the hard disk records complete.



West Suburban Hospital Medical Center

Two back-ups of the hard disk are kept. A replication program, Mirror by Corvus, was purchased; this copies the hard disk onto a video tape. Additionally, the floppies are kept so that the laborious task of transfering 5000 records from floppy to hard disk can be undertaken, if needed.

A "Speed Demon" card was purchased for each computer to decrease the on-line time needed when using either terminal. West Suburban estimates that its computing time has been cut by 25 to 30 percent following the use of these accessories.

Staff

Because of this library's lack of experience with data base management programs and because the staff was aware that, from the outset, the program would need to be used to the fullest, a consultant was hired to assist in formatting the data and teaching the intricacies and sophistications of DB IV. This consultant was also instrumental in keeping the format within the constraints necessary to "dump" data from one version of the program to another. Without an expert, the tasks of working with different versions of the software would have been insurmountable to the staff. Even with his advice, these problems took several extra weeks to solve.

At the outset a data format, or "template," was designed for each record. It

was decided that in this library it was not important for the screen to look like a catalog card. The record developed by West Suburban is three pages (screens) long and works well. (See Table 1) The money spent on software consulting saved West Suburban from making many mistakes and was well worth the expense.

For about six months, the library technician who had been maintaining the manual order files and "checking-in" the new books kept both manual and computer records for the library's orders. During this time, many small decisions were made concerning data entry, such as how capital letters and abbreviations would be used. Slowly, the departmental orders were transferred to the computer, and finally all manual records were discontinued. It took several months to feel comfortable with this on-line order and check-in procedure, but soon complete records, which included all cataloging information, were available.

After the data format had been designed and the system worked, a part-time, temporary data entry clerk was hired to enter the entire book and audio-visual collections into the data base. Because the total collection was small, every book was pulled and matched with its shelf list card, weeding the collection as items were entered. In order to save data entry costs, 1200 books were weeded from the collection and a book sale was held. By making both the book and the shelf list card available to the data entry clerk, most longstanding cataloging errors were corrected before the item was put in the computer. It took about 400 hours to pull, card, enter, and reshelve 4000 titles.

Expenses

For about $14,000, the conversion of this catalog to an on-line system has taken place. Because no huge purchases were ever made, it was possible to find special sources for much of the money. For instance, late in 1983 the library committee donated the funds for the office computer system and its software. The following year, they donated most of the money for the public access (hard disk) equipment. The Apple discount for schools also provided large savings, and some operating funds were diverted to this project because they represented the

Table 1. Card Catalog Template

ACC#- AUTHOR LAST-_____
AUTHOR FIRST- _____ TITLE- _____
T2- _____ T3- _____
NUM- _____ C#- _____ CU- _____ DATE- _____
DEPT- _____ LIB LOC- _____
SUBJ 1- _____ SUBJ 2-_____
SUBJ 3- _____ SUBJ 4-_____
SUBJ 5- _____ SUBJ 6-_____
AD- _____

ADD 1- _____ ADD 2- _____
ADD 3- _____ ADD 4- _____
ADD AU1- _____ AU1F- _____ ADD AU2- _____
AU2F- _____

CITY- _____ PUBLISHER- _____ DATE- _____
ISBN- _____ LC CALL#- _____ COST- _____
REC DATE (Y-M-D)- ____-____-____ PR#- _____ PO#- _____ STANDING?- _
ORDER DATE (Y-M-D)- ____-____-____ ORDER NOTE- _____
ON2- _____ JOBBER- _____ REC?- _
#COPIES- ____

savings in supplies formerly necessary for the card catalog. In addition, a small amount of income was generated during the course of the conversion project. A summary of the expenses and income for the total project can be found in Table 2.

Acquisitions

Book, journal, and audiovisual software orders for all departments in the institution are channeled through the library. Annually, about 700 new books are ordered for the professional library and about 425 for departmental collections. About 100 new audiovisual software titles are added to the library's collection and 20 audiovisual titles to departmental collections annually. Journals are not cataloged and, therefore, they had no bearing on this project. The use of the computer in the acquisitions process allows for one record to be established at the time the order is placed. Only that data which are known are put into the record: usually the author, title, and publisher plus local data such as purchase order and department or person for whom the order is being placed. When titles arrive, other information, such as cost and ISBN number, is added. In addition, corrections in the previous information are made as necessary, such as subtitles, author's first names, and the like. A unique accession number is also given to the material at this time. This, and the author's last name, are identified in the computer as "primary keys." All steps in this acquisition process are handled by a library technician. This on-line acquisition system far exceeds the "trouble-shooting" ability of the old manual system by improving the library's ability

Table 2. Income and Expenses of Card Catalog Conversion Project

Expenses		
Hardware		
Apple IIe and Accessories	$ 1,700.00	
Apple IIe and Accessories	1,700.00	
Corvus Hard Disk and Accessories	4,500.00	
Mirror Backup Equipment	800.00	
Speed Demons (2 @ $250.00 each)	500.00	
Total Hardware		$9,200.00
Software		
DB Master Version IV	300.00	
DB Master Hard Disk Version	500.00	
Total Software		800.00
Personnel		
Software Consultant	300.00	
Data Entry Clerk	3,800.00	
Total Personnel		4,100.00
Total Expenses		$14,100.00
Revenue		
Sale of Two Card Catalogs	$ 210.00	
Book Sale	140.00	
Total Revenue		$ 350.00

to track items which do not arrive or about which questions arise.

Cataloging

In this library, cataloging is done manually, usually using CIP information along with a Two Figure Cutter Table. OCLC or any other system could also be used. The cataloger puts the call number and subject headings in the book and it goes back to the LTA who completes the record in the data base. Once the cataloging information has been entered, the record is transferred to the public-access data base, which has hard disk storage capacity large enough for 8000 records. The office terminal operates only off of floppy disks—one for pending library orders, and one for other departments. Because the completed records are transferred to the hard disk, these two floppy files remain small and easy to use.

Public Access File

The public has access to all of the data on the hard disk. Each morning when the library is opened, the computer is "brought up" using a limited password which allows the public to see all data but not to change it in any way (even accidentally). The library staff can use this data base with another password which allows additions, changes, and deletions to be made. The public access catalog can be searched on any field but the search process is slow because of the size of the data base. Primary key searching is very fast but is not very useful to the public. A printer is available to patrons and staff who actually use the computer to search for item locations. This is a plus, but not a necessity, because so little searching is actually done on-line. The printer is necessary, however, to produce the lists of titles which have replaced the card catalog as the major access tool for the book collection.

Because book circulation statistics are very low, it is more cost effective to handle the entire circulation process manually. However, this does not allow the data base to reflect which items are actually available. Consideration was given to an automated circulation system, but was discarded because it would make more work for the higher paid technical staff and less for student help. A "Z-bar" system was also eliminated because this library's book circulation is only 125 titles per month.

Project Goals

The goals for the project to convert the manual card catalog to an on-line system were as follows: (1) to integrate the acquisitions, cataloging and technical processing of books and audiovisuals; (2) to conserve staff time for more service-oriented tasks; and (3) to provide improved access to the collection.

The first goal of the project was to integrate the acquisitions, cataloging, and technical processing of all books and audiovisuals for the institution. This has, indeed, happened and has resulted in better tracking of each title from the moment it is requested until it is put on the shelf. Only one "file" is maintained for each title. Many of the potential points at which errors could have occurred have been eliminated by discontinuing the various manual files which were previously necessary.

The second goal of the project was to conserve staff time for more service-oriented tasks. Indeed, staff time is still needed for acquisitions, technical processing, and file maintenance. However more LTA time is necessary with the on-line system; previously, students were heavily used for typing and filing order cards and for typing and filing catalog cards. This may have been one reason that so many errors were made in the manual files. The result has been an overall shift in how staff time is used and an overall saving of the more unskilled personnel time.

The third objective of this time-consuming project was to provide improved access to the library and all departmental collections. Because the card catalog was so mediocre, we could almost not fail to

succeed with this goal and, indeed, the on-line system now provides very current information to library users. The data base includes all A.V. holdings (which were not included in the card catalog) and when faculty members request that an item be put on reserve for a course they are teaching, the change is made immediately by adjusting the entry in one field of the record, instead of filing "jackets" on all of the catalog cards. So much time has been saved in the cataloging process that many smaller and more ephemeral titles make their way into the data base than did into the card catalog. This has increased the number of materials to which access is available.

Every week or two, depending on how many new titles have been added to the collection, a new computer list, or book catalog, is generated. Lists are printed by author, title, and/or subject. A separate list of audiovisual holdings is also made available and updated frequently. There are still library users who "panic" when they don't find a card catalog, but our clients are adjusting to printed lists instead of cards in drawers. In fact, most of our users never did use the catalog; they asked the staff where things were and this has not changed.

Advantages

In addition to the completion of the goals as established before this project began, the capability for generating useful reports from the data base has provided a valued side benefit. Report formats can be set up to produce, for individuals or departments, reports which list titles by combinations of fields. For instance, all audiovisual materials on a given subject or all titles on pathology and histology can be generated using the boolian "and" "or" search capabilities in the report format. West Suburban is just beginning to become skilled in the development and appropriate use of reports, but it appears that many valuable uses for these capabilities will evolve.

Disadvantages

Because the two computers have unequal storage capacity, the printing of lists of holdings must be generated from the public access location which contains the hard disk storage. It takes about two hours for the computer to sort the entire file by author, title, or subject, and it can take up to five hours for the list to be printed. This process ties up the computer for most of a day. Because our clientele uses the computer printouts or the expertise of the staff, rather than the computer, to find materials, this has not been a problem. The printer does make noise, but because it is a steady sound, most people are not bothered by it. Consideration is being given to purchasing a faster printer to alleviate the problem of tying up the terminal for long periods of time.

Another disadvantage of using a microcomputer in place of a card catalog is that on-line search capabilities are limited. Although boolian logic can be used to generate reports, it cannot be used in the on-line search process with a standard data base management program. It appears that, with the help of a good programer, sub-files containing predetermined access points could be set up which would improve this process. However the search time is very slow now, even without tampering with the search capabilities. No microcomputer with a data base management program can provide search capabilities like the giant bibliographic data bases to which we can subscribe such as BRS, DIALOG, SDC, MEDLINE, LEXIS, etc.

Conclusion

Many card catalogs in special libraries are not totally effective. Special librarians tend to be service oriented and, for many, cataloging and catalog maintenance are drudgery. In fact, in most special libraries, the card catalog is not very important because most clients "ask the librarian" rather than "look[ing] things up." Although access to the collection is impor-

tant, the staff time necessary to maintain even a small, mediocre card catalog is probably not a cost effective use of limited personnel. Even if cards are purchased already typed and alphabetized, they must be filed, pulled, and jacketed at different times in their lives. The microcomputer can provide a relatively inexpensive solution to the problem by providing one file which can combine the acquisitions process with an on-line catalog.

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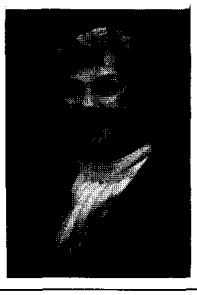

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Staff Opinions in Library Automation Planning

A Case Study

Debora Shaw

■ Staff at the Indiana State Library were surveyed regarding reactions to automation and expectations of an on-line catalog and circulation system. The surveys were conducted before automation planning and staff development committees were created, and again a year later. Opinions remained stable in many areas, but increases in staff involvement and automation's impact on staff attitudes were noted. Reactions to automation in general were positive in both surveys. By the second year, fewer respondents felt they could predict automation's impact on staffing, while more expected work to remain about the same. The number of responses to an open-ended question declined, with considerably more positive comments in the second survey.

INCREASINGLY, writers on library automation are emphasizing the importance of including people as well as equipment in the planning process. In a sense, this current awareness builds on the interest in changing jobs and organizational structure that occurred with the introduction of technical services automation, seen for example in Eleanor Montague's observations (*1*). More recently, Michael Malinconico's columns in *Library Journal* suggest considerations for library administrators, and Sara Fine's research on resistance to automation has added to our understanding of the topic (*2,3*).

For the library automation planner faced with the need to oversee the implementation of a system, however, there are few descriptions of how successful projects have developed or maintained effective communication with the library staff. The following is a description of one library's efforts to increase understanding of its automation needs and planning.

Background

The Indiana State Library in Indianapolis employs approximately 80 people, of whom about 45% are professional li-

brarians. The library's seven divisions are housed in a three-story building in the center of Indianapolis. Connected to Indiana's State Capitol and State Office Building, the library provides information and services for state legislators and state employees, as well as offers a number of other specialized services, notably materials for the blind and physically handicapped, support for genealogical and historical research, and support for public libraries in the state. A fairly decentralized structure has developed as staff in various divisions have sought to provide excellent service to their respective clientele.

Since the 1970s, the library has used OCLC for much of its cataloging and interlibrary loans. The general card catalog was frozen in January 1981 when a COM catalog was produced to provide catalog access. A printed subject catalog for the genealogy collection was produced at the same time. These catalogs, generated from OCLC tapes, included items cataloged from the mid-1970s through the date of catalog production. The listings were intended to be cumulated and reissued annually, with quarterly updates. A variety of technical and contractual problems disrupted this schedule—the nadir being a nine-month wait for any new catalog listing in 1982.

The library has access to external automated systems for reference service (Dialog as well as an Indiana database for U.S. Census information). In addition, the library director uses his personal microcomputer for budget planning, and state-wide public library statistics have been prepared on the state's mainframe computer since 1980. However, there was no general access to computers or automation during the period described by this report, and circulation was handled manually by each division of the library.

Automated support was requested to deal with heavy and increasing circulation in materials for the blind and physically handicapped, as well as problems of delays in the library's COM catalog and lack of library-wide knowledge about special collections. The state government approved preparing a request for proposals for a turn-key on-line catalog and circulation system. However, all activity was stopped in 1981 due to a budget freeze. The resulting sense of frustration was compounded by low staff involvement in automation planning. Staff morale was generally considered poor, and opinions about automation were presumed to be negative.

At the same time, it was necessary to involve the library staff both in selecting an automated system which would do the best possible job of meeting the wide variety of needs in the library and in encouraging staff acceptance of the system. With these goals in mind, four librarians worked with a consultant from the Indiana University School of Library and Information Science to develop a survey of staff opinion regarding automation.

It was hoped that soliciting staff opinions would help suggest areas of staff concern to be addressed in planning for automation and provide a benchmark with which to compare changes in attitudes during the automation process. A survey of all staff was conducted in 1983 and repeated a year later.

First Staff Opinion Questionnaire

The questionnaire primarily focused on attitudes toward automation and expectations of the library automation project. Impressions of staffing and training implications of the library automation plans were solicited, as well as "reactions to automation." Some background on respondents' division of work and experience with computers was collected in case it became necessary to target specific audiences, and people were asked to indicate which means of providing information on automation plans were desirable. An open-ended request for comments or observations concluded the survey form, which is reproduced, with the number of responses to each question, in Appendix 1.

The questionnaire was distributed in April 1983, with a cover letter from the library director. Response was voluntary,

and work time could be used to complete the questionnaires, which were returned anonymously. Fifty-nine responses were received from 77 employees—a response rate of approximately 77%.

Respondents indicated they would like to be involved in planning for an automated system through discussion sessions, serving on automation committees, and reviewing and commenting on automation priorities. There was significant interest in being kept informed on automation efforts, with training sessions, general meetings, circulation of automation plans, tours of other libraries, and vendor demonstrations receiving high ratings.

Automation Planning and Staff Involvement

The survey results were summarized at two open meetings for all library staff. Here the library director asked for volunteers to serve on two new, library-wide committees: a library automation planning committee and a staff development committee.

The director appointed all senior administrators to the library automation planning committee, and 14 other employees volunteered to serve on the committee. The committee organized subcomittees to investigate word processing options, and to review and update the statement of the library's requirements of an on-line catalog and circulation system.

These groups provided opportunities to learn about the complexity of automation needs and the relatively strict monetary constraints that determined what the library could afford. In addition, subcommittee members shared their tasks with staff from other divisions of the library, reducing some of the parochial attitudes which result from the decentralized organization. Eventually word processing recommendations were forwarded to the library director. Shortly thereafter the request for proposals was revised, approved through the state's review process, and released.

The eight-member, staff development committee concentrated initially on staff development for automation. The committee published an almost-monthly news memo to continue dissemination of automation plans begun at the open meetings. A question box was designed, and its contributions provided topics for the news memo. In addition, several programs were organized to acquaint staff with automation terminology, to visit the local public library's automated system, and to conduct demonstrations of microcomputers owned by staff members. One especially effective program involved a discussion by public librarians of their experiences during the installation of an on-line catalog and circulation system.

This process provided increasing staff awareness of the library's automation plans, particularly relating to word processing and the on-line catalog and circulation system. However, there was little tangible evidence of increasing automation. A terminal to reach the state's mainframe computer was installed in the library building, but no other computer equipment appeared.

Second Staff Opinion Questionnaire

In April 1984, one year after the first survey, a second testing of staff opinion was done. This questionnaire repeated many items from the first one, while incorporating some changes to reflect the then current situations with word processing and on-line catalog planning. There was relatively little turnover in staff, and four positions had been filled in the intervening year, leaving the surveyed population fairly stable. Fifty-seven responses were received from 81 employees—a response rate of 70%. The survey form, with the number of responses to each question, is reproduced as Appendix 2.

Comparison of Survey Responses

In comparing responses for the two surveys, statistically significant changes

occurred in respondents' perceptions of having been kept informed about automation efforts. As seen in Table 1, 95% of respondents to the second survey reported that they had been kept informed, compared with only 45% a year earlier. Several of the open-ended comments praised the staff development committee's work in this area.

An equally significant change appeared in perceptions of how staff attitudes were affected by automation. As the comparison in Table 2 shows, 27% of year one respondents felt automation had caused attitudes to deteriorate. One year later this had fallen to 4%.

The list of possible reactions to automation was divided into two categories: positive and negative. The negative reactions were further divided into groups roughly based on three of Kotter and Schlesinger's four most common reasons people resist change: different assessment of library's needs, low tolerance for change, and parochial self interest (*4*). These categories and the number of responses to each are given in Table 3. Although negative opinions had been expected, especially in the first survey,

Table 1. Staff Perceptions of Being Informed about Automation Plans

Do you feel you have been kept informed on the Library's automation plans?	1983	1984
yes	26	53
no	26	0
don't know	6	3

chi square = 36.073, degrees of freedom = 2, p < .001

Table 2. Effects of Automation on Staff Attitudes

How have library automation efforts to date affected staff attitudes?	1983	1984
attitudes have improved	10	21
automation efforts have had no impact on staff attitudes	14	15
attitudes have deteriorated	16	2
don't know	19	17

chi square = 14.816, degrees of freedom = 3, p < .01

Table 3. Staff Reactions to Automation at the Library

	1983	(N = 77)	1984	(N = 57)
POSITIVE REACTIONS TO AUTOMATION	176	(85.4%)	180	(87.8%)
Improve services	48	(23.3%)	47	(22.9%)
Good idea	38	(18.4%)	42	(20.0%)
Improve prestige	24	(11.6%)	24	(11.7%)
Work will be more interesting	22	(10.7%)	24	(11.7%)
Would help my career	22	(10.7%)	19	(9.2%)
It's about time	22	(10.7%)	24	(11.7%)
NEGATIVE REACTIONS TO AUTOMATION	30	(14.6%)	25	(12.2%)
Different Assessment of Needs				
Money better spent on other services	11	(5.3%)	4	(1.9%)
Costs too much	7	(3.4%)	7	(3.4%)
Not needed	1	(0.5%)	1	(0.5%)
Low Tolerance for Change				
Apprehensive	10	(4.9%)	8	(3.9%)
I would quit if the library automated	0	(0%)	0	(0%)
Parochial Self-Interest				
Work would be more boring	0	(0%)	1	(0.5%)
Who cares	0	(0%)	2	(1.0%)
Too much work	1	(0.5%)	2	(1.0%)
TOTAL	206	(100%)	205	(100%)

the vast majority of the responses (over 85%) was positive. The negative reactions were due mainly to a different assessment of the library's needs or a low tolerance for change. However, the only low tolerance for change reaction selected was "apprehensive," much less negative than the "I would quit if the library automated" reaction, which was not chosen by any of the respondents.

The second year's responses were slightly more positive, but the frequency ranking of each reaction remained remarkably stable. Reactions chosen most often were that automation would improve services and that it was "a good idea." The other positive reactions each accounted for about 10% of the responses. The major change from the first to the second survey was a decline in the proportion of respondents who felt that the money would be better spent on other services (down from 5.3% to 1.9%).

Expectations of how automation would affect jobs underwent some changes. In the first survey 42% of respondents thought staff would be transferred or laid off, while 34% did not know what implication automation held for staffing. One year later only 25% expected transfers or layoffs, but 73% were uncertain of staffing implications. This change was significant ($p < .01$)—probably reflecting the general improvement in State financial conditions, as well as uncertainty about the proposed automation project. A comparison of response rates to several of these questions is presented in Table 4.

Major changes in jobs were expected by 27% in the first year, with 32% expecting retraining. By the second year only 16% expected major changes, and 23% foresaw retraining ($p < .05$). Anticipated changes in job classifications or workload were not significant. The per-

Table 4. Expectations of Impact of On-line Catalog and Circulation System

	1983 (N = 77)		1984 (N = 57)	
Library services will be improved	44	(36%)	43	(39%)
faster	44	(36%)	35	(32%)
less personal	9	(7%)	11	(10%)
more complicated	12	(10%)	5	(5%)
about the same	5	(4%)	7	(6%)
don't know	5	(4%)	4	(4%)
deteriorated	0	(0%)	4	(4%)
slower	3	(3%)	0	(0%)
Changes in your job will be major	16	(27%)	9	(16%)
minor or none	25	(42%)	38	(68%)
Retraining will be required for my position	19	(32%)	13	(23%)
Your job classification will be upgraded	4	(6%)	1	(2%)
downgraded	1	(2%)	0	(0%)
Work will be about the same	16	(21%)	34	(48%)
more fun	21	(28%)	13	(18%)
less complicated	12	(16%)	9	(13%)
more complicated	14	(19%)	5	(7%)
less personal	2	(3%)	3	(4%)
don't know	10	(13%)	7	(10%)
My work load will increase	12	(21%)	10	(18%)
decrease	3	(5%)	3	(5%)

centage of respondents expecting job upgrades declined by the second year, while no one anticipated downgrading. Expectations of workload changes remained stable, with close to 20% expecting an increase and about 5% a decrease in workload.

Changes also occurred in perceptions of work with an automated system. The percentage who expected work to be "about the same" increased, while those anticipating work to be either "more fun" or "more complicated" declined.

Perceptions of automation's impact on library services did not change significantly. Most people felt services would be improved and faster, though the next two most frequent choices were "less personal" and "more complicated." A major shift occurred in the latter, with a drop from 10% to 5% of respondents expecting services to be more complicated. The idea that an automated system may not be as complicated as first thought parallels the assessment noted above—work may not be as complicated either.

A remarkable difference between the two surveys was the number of responses to the open-ended request to "share any comments or observations you have on automation at the State Library." Thirty-eight people (64%) commented on the first survey, often in carefully thought-out essays of two or three paragraphs, bringing out a variety of concerns. Only 26 people (46%) responded to the request for comments a year later, and 19 of the comments (73%) were primarily in response to the request for suggestions on staff development needs.

A summary of the comments is given in Table 5. Even with the decline in the number of people making general comments, the percentage of comments in most sections remained about the same. The major shift was from a focus on past problems at the library to expanding on the observation that staff are better informed.

Conclusion

Responses to the two surveys of Indiana State Library staff indicate major changes in sense of involvement and assessment of automation's impact on staff attitudes. At the same time, reactions to automation in general remained quite positive and relatively stable. By the second year fewer people expected that work with an on-line catalog and circulation system would be greatly different from existing operations.

Several changes occurred at the library during the year between the surveys, but respondents' comments indicate that the use of library automation planning and staff development committees were in part responsible for the changes observed. The use of written news memos, general meetings, and specialized subcommittees provided opportunities for staff to both expand their knowledge and contribute to the automation process.

Table 5. Summary of Staff Comments

	1983		1984	
Staff fears and need for training	15	(27%)	7	(28%)
Concern about specific library services	12	(21%)	4	(16%)
Past problems with automation at library	12	(21%)	0	(0%)
Questions of funding support or priorities	10	(18%)	6	(24%)
General positive comments	7	(13%)	3	(12%)
Staff are better informed	0	(0%)	5	(20%)
TOTAL	56	(100%)	25	(100%)

Appendix 1

Indiana State Library Staff Automation Survey, 1983

(with number of responses to each question)

Please check the appropriate answer(s) for the questions below.

1. In which division do you work?
   - 5 Administration/Business Office
   - 10 Blind & Physically Handicapped
   - 7 Catalog
   - 8 Extension
   - 7 Genealogy
   - 10 Indiana
   - 12 Reference & Loan

2. What priority would you place on the following functions the system might perform? (1 = highest priority, etc.)
   - 22 Record what's in circulation in DBPH
   - 1 Record what's in circulation from Reference & Loan
   - 17 Record all materials in the card catalog (on-line catalog)
   - 5 Provide additional access to special collections (newspapers, cemetery lists, etc.)
   - 6 Serials check-in and associated files
   - 1 Financial records
   - 0 Acquisitions
   - 6 Word processing
   - 2 Other _____

   (Number given is number of first priority rankings)

3. Please indicate if you have used or have seen used any of the following:

OCLC	Have used 44	Have seen used 5
Search Services (Dialog, INDIRS)	17	23
Microcomputer	14	13
Other library's on-line system	3	20
Video games	44	6
Other computer applications	14	17

4. Listed below are some reactions to automation. Please check all that apply to *your* feelings about an automated system at the Library.
   - 10 apprehensive
   - 38 good idea
   - 1 too much work
   - 24 improve prestige
   - 1 not needed
   - 22 work will be more interesting
   - 22 would help my career
   - 22 it's about time
   - 48 improve services
   - 0 work will be more boring
   - 0 who cares
   - 7 costs too much
   - 11 money better spent on other services
   - 0 I would quit if the Library automated

5. Do you feel you have been kept informed on the Library's automation efforts?
   - 26 yes
   - 26 no
   - 6 don't know

6. How have library automation efforts to date affected staff attitudes?
   - 10 attitudes have improved
   - 14 automation efforts have had no impact on staff attitudes
   - 16 attitudes have deteriorated
   - 19 don't know

The following questions deal with your expectations of what an automated system for the Library would be like.

7. As a result of the automated system (please check all that apply)
   - 6 staff would be laid off
   - 24 staff would be transferred to other divisions
   - 7 new staff would be hired for existing jobs
   - 10 new, specialized (high paid) staff would be hired
   - 24 don't know

8. The time required to get all library information into the system would be about
   - 2 6 months
   - 4 1 year
   - 14 2 years
   - 25 5 years or more
   - 14 don't know

9. How would existing files be converted for the automated system?
   - 4 conversion comes with the system
   - 29 present library staff
   - 18 special staff hired for the conversion
   - 8 don't know

10. After a transition period, Library services would be (check all that apply)
    - 44 improved
    - 5 about the same
    - 0 deteriorated
    - 5 don't know
    - 9 less personal
    - 44 faster
    - 3 slower
    - 12 more complicated

11. As a result of the automated system, changes in your job would be
    - 16 major
    - 22 minor
    - 3 none
    - 18 don't know

12. Would retraining be required for your position?
    - 19 yes
    - 21 no
    - 19 don't know

13. As a result of automation, would the classification of your position be
    - 38 the same
    - 4 upgraded
    - 1 downgraded
    - 16 don't know

14. After the system was installed, would your work be (please check all that apply)
    - 14 more complicated
    - 16 about the same
    - 12 less complicated
    - 21 more fun
    - 2 less personal
    - 10 don't know

15. Would your workload
    - 12 increase
    - 27 stay about the same
    - 3 decrease
    - 15 don't know

16. How would you like to be involved in planning for the automated system? (please check all that apply)
    - 19 Serve on automation committees
    - 19 Review and comment on automation priorities
    - 25 Participate in discussion sessions
    - 4 Other _____
    - 7 None
    - 16 Don't know

17. Would you like to be kept informed on automation efforts? (please check all that apply)

40	General information meetings	30	Circulate plans for automated system
26	Seminars/discussion groups	43	Training sessions
11	Suggested reading list	1	Other _____
29	Vendor demonstrations	0	Nothing
23	Newsletter/memo on automation	0	Don't know
29	Tours of other libraries		

18. Do you think the people will respond frankly to this survey?
    - 43 yes
    - 1 no
    - 15 don't know

19. Please share any comments or observations you have on automation at the State Library.

Appendix 2

Indiana State Library Staff Automation Survey, 1984

(with number of responses to each question)

Please check the appropriate answer(s) to the questions below.

1. In which division do you work?
    - 5 Administration/Business Office
    - 9 Blind & Physically Handicapped
    - 7 Catalog
    - 10 Extension
    - 9 Genealogy
    - 7 Indiana
    - 10 Reference & Loan

2. What priority would you place on the following functions for automation in the Library? (1 = highest priority, etc.)
    - 35 Record circulation from DBPH
    - 1 Record circulation from other divisions
    - 12 Record all materials in the card catalogs (on-line catalog)
    - 1 Provide additional access to special collections (newspapers, cemetery lists, etc.)
    - 1 Record serials holdings and check-in
    - 3 Record library orders and acquisitions
    - 3 Keep financial records
    - 4 Word processing
    - 1 Other _____

    (Number given is number of first priority rankings)

3. Please indicate if you have used or have seen used any of the following:

	Have used	Have seen used
OCLC	41	11
Search Services (Dialog, INDIRS)	17	22
Microcomputer	12	29
Another library's on-line system	13	25
Video games	40	10
Other computer applications	12	14

4. Listed below are some reactions to automation. Please check all that apply to *your* feelings about an automated system at this Library.

8	apprehensive	24	it's about time
42	good idea	47	would improve services
2	too much work	1	work will be more boring
24	improve prestige	2	who cares
1	not needed	7	costs too much
24	work will be more interesting	4	money better spent on other services
19	would help my career	0	I would quit if the Library automated

5. Do you feel you have been kept informed on the Library's automation efforts?
   - 53 yes
   - 0 no
   - 3 don't know

6. How have library automation efforts to date affected staff attitudes?
   - 21 attitudes have improved
   - 15 automation efforts have had no impact on staff attitudes
   - 2 attitudes have deteriorated
   - 17 don't know

Questions 7–15 deal with your expectations of what the minicomputer system (OCCS) for the State Library will be like.

7. As a result of the automated system (please check all that apply)
   - 0 staff will be laid off
   - 12 staff will be transferred to other divisions
   - 3 new staff will be hired for existing jobs
   - 7 new, specialized (high paid) staff will be hired
   - 35 don't know

8. The time required to get all library information into the system would be
   - 0 about 6 months
   - 7 about 1 year
   - 9 about 2 years
   - 33 5 years or more
   - 8 don't know

9. How would existing files be converted for the automated system?
   - 2 conversion comes with the system
   - 37 present library staff will do the work
   - 8 special staff will be hired for the conversion
   - 10 don't know

10. After a transition period, Library services would be (check all that apply)

43	improved	35	faster
7	about the same	0	slower
4	deteriorated	5	more complicated
11	less personal	4	don't know

11. As a result of the automated system, changes in your job would be
    - 9 major
    - 33 minor
    - 5 none
    - 9 don't know

12. Will retraining be required for your position?
    - 13 yes
    - 28 no
    - 15 don't know

13. As a result of automation, would your position be classified
    - 48 the same
    - 1 upgraded
    - 0 downgraded
    - 7 don't know

14. After the system was installed, would your work be (check all that apply)
    - 5 more complicated
    - 34 about the same
    - 9 less complicated
    - 13 more fun
    - 3 less personal
    - 7 don't know

15. Would your workload
    - 10 increase
    - 35 stay about the same
    - 3 decrease
    - 8 don't know

16. What are your impressions of word processing at the State Library?
    - 2 I don't know what word processing is
    - 29 I will need training for word processing
    - 25 it will be a help on my job
    - 0 it will slow down my work
    - 18 it will speed up my work
    - 35 it will be hard to find time for all who need access to the system
    - 25 some users may receive preferential access
    - 6 it really won't make any difference

17. Do you think people will respond frankly to this survey?
    - 46 yes
    - 0 no
    - 10 don't know

18. What topics would you suggest for future staff development activities, not necessarily related to automation? Some suggestions include burn-out, stress management, access to special collections, tours of the divisions.

19. Please share any comments or observations you have on automation at the State Library.

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Acknowledgments

Dr. Marcy Murphy of the School of Library and Information Science at Indiana University provided advice and guidance during the study and analysis of its results. The support of the Director and Assistant Director of the Indiana State Library, C. Ray Ewick and Jean Jose, is also gratefully acknowledged, as is the cooperation of the Indiana State Library staff, without whom the undertaking would not have been possible.

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The Wisconsin Small Business Development Center Information Service

A Model

Susan C. Awe

■ **The more than 40 Small Business Development Centers across the nation are required by federal legislation to provide a library or information service of current business information for the small businesses of their state. The Information Service of the Wisconsin SBDC has become a model small business information service for the nation. The objectives and tasks necessary to develop an information service are presented, and staffing and funding guidelines are provided for the initial two years. Other states can use this model to fill similar needs in their small business communities.**

Introduction

WISCONSIN is one of a select number of states pioneering an information transfer model to small business owners and managers. Historically, the lack of information is one of the major reasons for small business failures. For this reason, providing businesses with information and statistics through a variety of governmental sources is a national priority for Small Business Development Centers.

The developing national system of Small Business Development Centers (SBDCs) is required by federal legislation to provide a library or information service of current business information to aid local small businesses. The University of Wisconsin-Extension Small Business Development Center initiated its small business information service in 1978. The service has shown steady growth. It disseminates an ever-growing variety of business information through the University of Wisconsin campus SBDCs, University of Wisconsin-Extension county agents, and business associations. It also disseminates information directly to business owner/managers throughout the state. Due to its unique pioneering status, the Wisconsin SBDC Information Service serves as a model to other states interested in developing an SBDC Information Service. The Wisconsin SBDC Information Service's experi-

ences in investigation, evaluation, and utilization of traditional data sources and a system of delivery of information can help other SBDC's outreach efforts.

Background

Based on legislation passed in 1978, the U.S. Small Business Administration now supports over 40 state Small Business Development Centers (SBDCs). The mission of the SBDCs is to strengthen the economy of their respective states by assisting new and existing small businesses. The SBDC has four main objectives: to provide one-on-one counseling to owner/managers and prospective entrepreneurs; to provide management education; to generate basic and applied research; and to publish and distribute useful information. The legislation (S 972) specifically requires that SBDCs shall: provide "information specialists to assist in providing information searches and referrals for small businesses," and also provide and maintain "a comprehensive library that contains current information and statistical data needed by local small businesses."

Problem/Opportunity

The Wisconsin SBDC has provided information to small business since its inception and has gained statewide business recognition for its effort. Prior to the SBDC, the only available business literature for distribution were the limited "free" and "for sale" Small Business Administration publications. To strengthen this limited service, the SBDC began its own publication program. One of the first SBDC publications was the bimonthly "Small Business Newsletter," providing articles of interest to members of the small business community. Publications of the Wisconsin SBDC now include "Badger Business Briefs," *Wisconsin Small Business Forum,* specific industry series, *Wisconsin Business Resource Directory,* and "Going into Business in Wisconsin."

The popularity of these publications increased the demands for other information services. As a result, a full-time Information Specialist position was created in late 1982. Continually improving information services has been the main goal of the Information Specialist.

To improve availability and access to current data sources, the Wisconsin SBDC has acquired approximately 300 basic sources, and it subscribes to about 20 periodicals and uses DIALOG & BRS information and WILSONLINE about 12 hours per month. Over 150 different "free" and "for sale" SBA publications are also available in multiple copies. Information requests from the small business community and other governmental agencies are filled through in-house data resources and the use of the UW and state libraries either through referral or duplication. About 50 requests are filled each month. Examples of requests are: information on companies using lumber (wood) products; information on home-based businesses; the amount of lime used in Wisconsin each year; how to find suppliers for a pet store; the number of families living in Dane County; and information needed on franchising/marketing/advertising/accounting/exporting/procurement.

The existing volume of requests and the demand for additional in-depth searches demonstrates the need for more extensive and comprehensive information services. Consequently, the SBDC Research and Publication Committee, comprised of a representative group of UW-Extension business agents, campus coordinators, and other Extension specialists, and charged with overseeing the quality of SBDC research, sees the need for expanded information services. This committee has requested an in-depth study of the available business databases. Upon completion of this study, the SBDC Information Service will attempt to provide access to database information relevant to small business.

The Wisconsin Model

The Wisconsin SBDC Information Service is providing service directly to the

small business community as well as through the statewide network of county agents and UW campuses. Other states wishing to implement SBDC-type services will find the Wisconsin Information Service a useful model.

The overall goal of an SBDC Information Service is to provide information services for the small business community of a state. This goal can be achieved through a program accomplishing the following objectives and tasks:

(1) To determine the information services needed by small business owner/managers:
- Develop a mailing list of small businesses, private consultants, SBDC coordinators, county agents, consultants, information staff, professionals with small business clients, e.g., lawyers, CPAs, advertising firms, etc., government agencies involved with small business, and business librarians/information specialists;
- Pilot test the survey instrument and revise the survey;
- Disseminate survey to mailing list;
- Send follow-up letter to insure statistically adequate sample;
- Analyze results of survey to determine needs of small business persons as identified by all groups concerned.

(2) To identify, collect, classify, and disseminate business information:
- Survey literature of secondary data sources relating to business;
- Develop and prepare a written collection development policy;
- Investigate possible classification schemes for materials, and identify most usable, applicable system for the collection;
- Set up technical processing system for materials, and as they arrive, classify, process and shelve them;
- Set up system to process and route business periodicals;
- Use collection development policy guidelines to continue to build a better collection for serving the small business community.

(3) To develop and implement a network or referral system for information from libraries, government agencies and other information services, e.g., business reference librarians, government agency librarians, researchers in business areas, and staff of agencies organized to help businesses:
- Interview individuals already involved in business information services, e.g., business reference librarians, government agency librarians, researchers in business areas, and staff of agencies organized to help businesses;
- Obtain information on new commercial sources available;
- Place SBDC's name on newsletter and brochure mailing lists of commercial and government publishers;
- Survey business reference books for more sources of information;
- Set up card file system of contacts as they are made and continue adding to this network.

(4) To investigate and initiate use of government and commercial databases as information sources:
- Obtain information from producers, commercial and governmental, of business information database, including costs, hours of service, services offered, etc;
- Decide which sources to try and learn protocols to access selected systems;
- Run several sample searches;
- Attend seminars on using specific services and/or database;
- Continue to investigate other services like DIALOG, WILSONLINE, etc., as they become available, possibly subscribing to periodicals to learn of new computer services and databases and increase usage of information services and data banks.
- Organize file of searches run for future reference.

(5) To obtain and disseminate business information from local, state, and federal government sources as well as commercial publishers:
- Investigate publications of government and commercial publishers useful to small business;
- Obtain multiple copies of free publications to disseminate to business owner/managers and business counselors or consultants;
- Disseminate order information for good sources requiring a fee for their publications.

(6) To market the service to individuals involved with small business in the state:
- Assemble information for a brochure describing the services of the information service and order the publication printed;
- Locate mailing lists to use for brochure distribution and distribute brochure through direct mail, government agencies, and other library/information services;
- Develop newsletter-type articles on outstanding publications or databases for submission to SBDC newsletter editor as well as to editors of other newsletters sent to business persons in all areas of the state.

(7) To quantify and publish accomplishments of the information service:
- Maintain detailed records to identify use patterns of end users of this service;
- Record use of information by sources, e.g., computerized data bases, traditional library sources, and end users, e.g., county agents, small business clients, state, federal, and local government agency employees, etc.;
- Produce a semiannual summary of the accomplishments of the information service.

Most of the preceding objectives and tasks would be completed by the Information Specialist and the other library staff. However, the existing SBDC staff and counselors, including a Research & Publication Committee, would have input in compiling the mailing list, creating the collection development policy and recommending specific additions to the collection, evaluating sample searches from business databases, and designing and editing public relations items for the information service.

Budget and Personnel

A state considering the development of an SBDC Information Service should expect to allocate funding for the initial two years. (See Table 1) About two years are required to set up the information service and establish credibility with users.

Table 1. Approximate Funding

	First Year	Second Year
Salaries		
Information Specialist	$24,000	$25,500
Clerical Assistant	13,000	14,000
Student Assistants ($4.00/hr.)	8,000	8,500
Library Collection Materials	11,000	12,000
Capital Equipment		
Typewriter	700	—
Use of Xerox, IBM PC	1,000	1,200
Telephone & postage	800	1,000
Marketing Services	1,000	1,000
Travel for Information Specialist	1,000	1,200
Total	60,500	64,400
Two Year Totals	$124,900	

The budget items are mostly self-explanatory, except for the last two. The "Marketing" funds would finance the development and dissemination of a brochure describing the services available through the information service plus production of the interim and final project reports. The "Travel" funds would be used for consulting with staff from other SBDCs as well as some professional development activities.

Staffing for the SBDC Information Service will include a librarian or information specialist, one clerical assistant, and two or three part-time student assistants.

Qualifications for the information specialist are an M.S. in library science or relevant experience in a business library or business information department of a library. Experience with government documents would also be useful.

Good typing, organizational skills, and some experience with word processing are necessary for the clerical assistant. Also desirable would be good leadership skills.

Student assistants, available on campus, will be trained to accomplish repetitive tasks necessary to process materials and to fill simple information requests; they will also be encouraged to develop basic research skills at the campus libraries.

The suggested funding and staffing guidelines are for an SBDC interested in developing a comprehensive business information service. If budget constraints do not allow this level of expenditure, savings could be made in various ways including hiring a part-time Information Specialist who gradually implements selected parts of the objectives and tasks, cutting library materials and supplies, and reducing hours for clerical and student assistants. Obviously, this budget has a great deal of flexibility. The information service and its budget are determined by what services are delivered, how in-depth the services are, how quickly the service is developed, and how many institutions and individuals are served.

Conclusion

The need for additional and improved applied small business information is becoming more demanding as the states attempt to nurture their small businesses. The challenge to the network of Small Business Development Centers is to meet that need for their state by developing an information service that can discover data sources and make the data readily available. The network of national Small Business Development Centers and SBDC Information Services similar to the one described in this article is an excellent resource for getting the necessary information to the people who need it, the small business owner/managers.

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Industrial Drug Information: Role of the Library Science Professional

Cynthia C. Crawford

Ann Carter Weller

■ **The rapid evolution of information management is generating diverse career opportunities for library/information science professionals. Industrial drug information service provides a stimulating alternative in the professional development of information specialists in the health care field. To respond effectively to the product-related information needs of health professionals, Burroughs Wellcome Co. has recognized the need for individuals with specialized training and skills in information management, retrieval, and transfer. This paper outlines the objectives and implementation of a fellowship in industrial drug information awarded jointly by the Technical Information Department and the Division of Clinical Research at Burroughs Wellcome Co. and the University of North Carolina-Chapel Hill School of Library Science.**

Introduction

BIOMEDICAL knowledge is growing exponentially. This rapid growth requires that the scientific community selectively disseminate new information on a timely basis. Consequently, efficient information management and transfer have become crucial to the medical community. Under the pressures of such an information overload, control relies heavily upon the development of electronic information acquisition, management, and transfer capabilities.

Medical practice and biomedical research are natural beneficiaries of this rapidly evolving electronic information environment. Computers, as knowledge-based system consultants and clinical decision-making aids, greatly enhance the economy and reliability of the information systems so vital to health professionals. Telecommunications capabilities, such as on-line bibliographic retrieval, extend information resources held locally

and support the development of personal information files.

This rapid evolution of information management is generating diverse career opportunities for library/information science professionals. Sophisticated information handling skills are required of the individuals responsible for accessing and using that information. Increasingly, professionals are needed "who, by virtue of experience or cross-training in medicine, basic sciences, computer science, information science, and library science can work across professional boundaries." (*1*)

The importance of the link between internal and external information systems in support of effective decision making is especially pronounced in the pharmaceutical industry:

- Product bibliographies must accompany all Investigational New Drug Applications, New Drug Applications, and annual reports submitted to the Food and Drug Administration.
- Research, development, medical, and marketing units rely heavily on information support in their ongoing work with company products (*2*).
- Proper use of all drugs by health professionals and others must be monitored and encouraged.

To contribute to the development of needed skills in information management, retrieval, and transfer, Burroughs Wellcome Co. initiated a postgraduate fellowship in drug information. The yearlong fellowship is awarded jointly by the Technical Information Department and the Division of Clinical Research at Burroughs Wellcome Co. and the University of North Carolina-Chapel Hill School of Library Science.

Program goals of the Drug Information Fellowship are as follows:

- to provide an opportunity for the application of library and information science skills to the specialized information needs of the pharmaceutical industry;
- to develop skills in the selective dissemination of drug information;
- to gain familiarity with internal and external drug information systems; and
- to develop an understanding of the role of drug information services in an industrial setting.

Implementation of these goals through the performance of specific activities in both the Technical Information Department and the Drug Information Service at Burroughs Wellcome Co. allows the Drug Information Fellow to develop a practical understanding of some of the important functions of medical information personnel.

Drug Information Provision at Burroughs Wellcome Co.

The Technical Information Department is the depository and source of published information for Burroughs Wellcome Co.'s Research Triangle Park facility. Staffed predominantly by individuals who possess a degree in library science in addition to a scientific background, the department provides literature support to the entire company.

The Drug Information Fellow interacts primarily with the Product Information Section of the Technical Information Department. This section maintains an in-house product bibliography (PRODBIB) database. Records containing information descriptive of product and related literature are created, maintained, and retrieved from PRODBIB via the INQUIRE database management system. Each record in the PRODBIB file consists of bibliographic information and internally assigned indexing terms associated with one-product paper. The database is updated weekly, and more than 7000 papers are added annually. Currently, PRODBIB contains approximately 72,000 records.

The fellow learns to use the INQUIRE system as a bibliographic tool and develops familiarity with the structure of

the PRODBIB database, the section's indexing policies, the data entry and search procedures, and the products themselves. Knowledge of the system is also employed in other projects; a special project involves the use of published literature as an additional tool to monitor initial reports of specific adverse experiences associated with Burroughs Wellcome Co. drugs. For this project, the fellow and section supervisor work with the Department of Product Surveillance and Epidemiology.

Clinical research determines the potential therapeutic and toxic effects of a drug. The results of clinical studies must be rapidly, completely, and accurately disseminated to practicing physicians, who are responsible for determining the drug's ultimate role in medical practice. The Drug Information Service at Burroughs Wellcome Co. links the clinical research team and the medical practitioner. In this role the section uses, as well as extends, the services of the Technical Information Department.

The broad nature of the section's activities requires a diversity of knowledge and skills well beyond those associated with traditionally oriented drug information services. Consequently, the presence in this setting of individuals who possess library science skills is justified in numerous ways.

Drug information service functions typically include the collection, storage, retrieval, evaluation, and dissemination of selected information. The responsibilities of the Burroughs Wellcome Co. Drug Information Service exceed these traditional functions and also include the following:

- preparation and review of investigator's brochures, package inserts, and marketing materials;
- monitoring of adverse experience reporting and the coordination of a safety database;
- support of the company's legal department in review of potential litigations and other drug therapy-related issues;
- support of the company's marketing department regarding initial advertising and the educational needs of company sales representatives; and
- participation in the need assessment for additional clinical studies and the provision of support for conducting such studies.

Evaluation of the scientific literature is the Drug Information Service's most distinguishing characteristic relative to the services provided by the Technical Information Department. The director of the service is a clinical pharmacist who specializes in drug information practice. He utilizes his subject expertise to evaluate the clinical relevance of the literature relative to a given query and formulates that information into an understandable, appropriately formatted response. The library/information science professional contributes by providing the knowledge and skills necessary to facilitate access to the appropriate information and to organize and store that information for later retrieval.

In this setting, the Drug Information Fellow develops an understanding of the structure and operation of the Division of Clinical Research at Burroughs Wellcome Co. and its corresponding information needs. The fellow develops a practical knowledge of drug information sources, including published literature, unpublished materials, and automated information systems. The ability to discriminate between drug information sources is stressed.

The fellow gains this practical knowledge through diverse assignments:

- compilation of a list of core reference materials for a satellite library to be located near the Drug Information Service;
- development of a product-specific information source in anticipation of New Drug Application approval;
- participation in the formulation of responses to drug information inquiries—provision of relevant infor-

mation with efforts concentrated in a selected therapeutic area;

- participation in the indexing of correspondence for subsequent retrieval via the automated Drug Information Case Management System; and
- involvement in the development and maintenance of a microcomputer database containing records representing the service's collection of product-related papers.

The Drug Information Fellow also benefits from Burroughs Wellcome Co's support of educational endeavors. The fellowship establishes and sustains interaction between industry and academia. Such interactions are encouraged by Matheson (*3*). The fellow is provided with the opportunity to pursue coursework at UNC in a variety of subject areas. Two such courses, taught by members of the Division of Clinical Research, "The Clinical Development of Drugs" and "Drug Information Practice," contribute to the fellow's understanding of the clinical drug development process and associated information needs. The fellow's participation in education programs for library science students, which deal with drug information skills and knowledge, enables the UNC School of Library Science to expand its program and reveal another area of career opportunity for the information specialist. By affiliating themselves with UNC, the Burroughs Wellcome Co.'s Technical Information Department and Drug Information Service are able to increase their available resources and thus their overall effectiveness.

Summary and Conclusions

The Drug Information Fellowship encourages the development of technical and communication skills that Hayes (*4*) views as essential to the information resources manager. The opportunity to become familiar with computer hardware and software systems enhances the fellow's information technology skills. Projects that involve drug information sources augment information use, communication, and analytic skills. The fellowship imparts competency in a particular area of medical science. On a larger scale, communication between the disciplines of pharmacy and information science increases. Consequently, information science skills can be applied intelligently to the information needs of the pharmaceutical industry.

Recognizing that "special personnel—'information executives' to plan and coordinate the design and maintenance of appropriate systems and services—are essential to successful corporate information management," (*5*) Burroughs Wellcome Co. has created and initiated a unique Drug Information Fellowship. The fellowship can be seen as a response to the Matheson report's call for action on the part of industry to support "programs that encourage the rapid integration of information technologies in the learning and practice of the health professions." (*6*) The Burroughs Wellcome Co. Drug Information Fellow receives invaluable training and experience which, in turn, make the individual more valuable to both the field of Information Science and the pharmaceutical industry.

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Acknowledgments

The authors thank the Technical Information Department and the Drug Information Service at Burroughs Wellcome Co. and Dr. Fred W. Roper, Associate Dean, University of North Carolina-Chapel Hill School of Library Science, for the information and support they provided.

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In-House Automation of a Small Library Using a Mainframe Computer

Frances B. Waranius

Stephen H. Tellier

■ **An automated library routine management system (LRMS) was developed in-house to create a system unique to the LPI Library Information Center. A modular approach was used to allow continuity in operations and services as the system was implemented.**

LET me first outline for you a scenario. Here is a small special library operating with three people: a library manager whose chief responsibilities are the management and administration of the library and reference services; an assistant librarian who performs most of the "library" tasks—i.e., cataloging, serials check-in, binding, processing, etc.; and a technical information specialist whose charge is data retrieval from on-line searching and maintenance of the on-line in-house bibliography of the lunar and planetary literature.

Now bring in the recession of the early 80s with its resulting budget and personnel reductions and feel the effect of that reduction on the library staff. The idea of using automated library procedures had been discussed with increasing interest by the members of the staff, but the reduction in staff made the need for automation and greater efficiency a necessity rather than a nicety.

Due to the increased flow of data and information as a result of the expansion of the scope of the institute and rapid developments in the field of information science, many procedures and services were developed for the library without the kind of documentation that should normally be prepared. As a result, too much of the "library" was in the head of one or another of the staff. This could cause obvious difficulties when a staff member was out of the library on travel, leave, or if they left the institute entirely. In addition, the institute had recently upgraded its computer facilities to a Digital Equipment Corporation VAX 11/780, a computer with greater capabilities and far more "user friendly" than the PDP-11/45 that it replaced.

All of these things—budget cuts and reduced staff, the need to automate to increase productivity and to reduce duplication of effort, the desire to increase user accessibility to information by re-

moving the need of consulting a staff member for even the most routine request, and the availability of a powerful new computer—occurring at approximately the same time gave rise to the development of the Library Routine Management System.

Our goal was the following: to automate the library to the degree that anyone with library background could step in and use the system; to take many of the library procedures out of the "minds" of the library staff and put them into the memory of a computer; to use the online files which we already had; and to do this cheaply and without disruption to the operations of the library.

Several of the commercially available turn-key library management systems were reviewed but all seemed to have a "glitch" as far as our operation was concerned; the price tags in a time of budget cuts did not make them economically feasible. Most were too complex for our small operation and, of course, most would have required complete reentry of information, a task we certainly did not have the time to do.

We decided to accept the challenge of developing a system ourselves. Perhaps if we had known then what we know now we would not have been as naive about attempting the project. But with approximately 85% of the system currently in place, we have no regrets. There were several factors which made this approach attractive. Since many library data files and programs already existed, by developing the system ourselves we could custom design it to make use of what we already had and tailor it to meet the unique needs of our library.

The goals we set for ourselves included: a system easy to use with a minimum of computer expertise; a system which would be conservative of storage space on the computer; one which could be developed a piece at a time and on a part-time basis; one which would make use of everything we already had and provide information to our users easily and effectively.

The first thing we did was learn about our own computer. In addition to more capacity and a more sophisticated word-processing system, the new machine offered many new, built-in functions that could be used to meet library needs, and a unique command language that has proven to be the most versatile and useful tool of all. This language allows the programmer to string together a number of commands, built-in functions, and custom programs to create an automated routine that requires very little monitoring by, or interaction with, the user. Operations can be set up that: call the programs and files required, ask the user for instructions or input, change the names of old files or create new ones as needed, warn the user of errors or problems, and "cleanup" after itself by deleting old files that were used or temporary files that were created during the operation. Several ideas for using these new capabilities were tested by writing a program containing prompt routines and help files which, together with a user's manual, allowed an individual to use the LPI in-house computer-searchable bibliography without any special knowledge or training. At the end of a successful three-month test period, the approach was judged workable and the knowledge that had been gained was used in the development of LRMS.

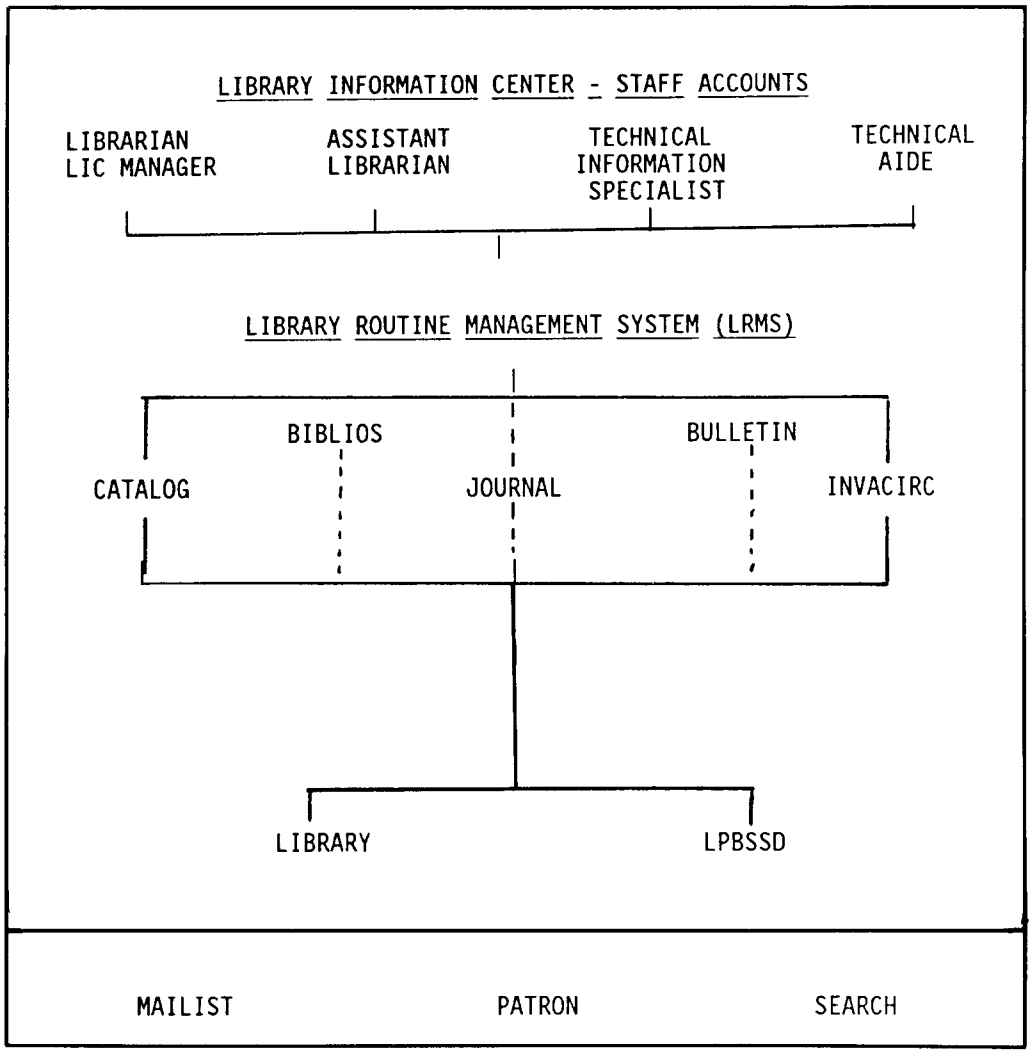
While analyzing the functions of the LIC and developing the logic for the management program, two things became obvious. One, given the size of a system having all the capabilities envisioned, several months of full-time work would have had to be devoted to the project to produce a complete system. This was not possible as it would virtually bring normal library operations to a halt. Two, a "completed" system was not considered desirable because the LIC wanted to retain the ability to upgrade its services and to add new features in the future. The importance of the special command language then was that it allowed the use of a "modular" approach to the design and development of the LRMS. A pro-

gram could be written consisting of an overall outline of the entire system and installed in the library computer accounts. The purpose of this program would be to provide a user with a way of moving through the library accounts in a logical and orderly manner to manipulate information simply by supplying answers to the prompts and questions built into the program. By itself, this program produces no results but provides a framework to which program modules designed to produce specific results can be attached.

Using this approach, library functions can be programmed one at a time as they are analyzed and outlined. A separate module is produced which contains the routines and programs needed to produce the specified results. The module can then be "plugged" into the appropriate place in LRMS, having been tested, edited and/or modified separately, without affecting or disrupting those portions of the overall system that are already in use and functioning properly. In the same way, help routines and explanations for the new units can be added to the system at the same time, without requiring a major rewrite. This design will also allow new functions and features to be added to the system easily and at any time in the future.

See Figure 1 for an overall design concept for the system. The staff accounts were set up following what was conceived to be an ideal staffing situation for a library of our size and with our functions. These include: Manager, Assistant, TIS, and Technical Aide. The LRMS scheme is a system of accounts based upon functions all of which are accessible through any of the staff accounts. There are seven: BIBLIOS; BULLETIN; CATALOG; JOURNAL; INVACIRC; LIBRARY; and LPBSSD. BIBLIOS and BULLETIN are dedicated to two special functions of the LIC. BIBLIOS contains the programs that have been written for creating and maintaining the LPI on-line bibliographic databases. The BULLETIN account contains routines and files used in producing the Lunar and Planetary Information Bulletin. The next three accounts, CATALOG, JOURNAL, and INVACIRC, are the everyday working accounts for the LIC. The CATALOG account contains the data files for the "card" catalog and in-process order file, and is used to identify, acquire, and process materials for the library. JOURNAL is used to maintain the journal holdings list, subscription information, and binding records. The acronym INVACIRC is a bit more obscure than the other account names which may be easier to recognize. INVACIRC stands for "inventory and circulation" and contains the files used in keeping track of contributions papers, proceedings, reports, and other technical material produced by the LPI as well as those items that are out on loan to patrons. The last two accounts, LIBRARY and LPBSSD, are used as storage locations for the working accounts. Programs for LRMS and various special routines and files are stored in the LIBRARY account. LPBSSD is used to store database files such as the bibliography which is accessed by LIC patrons. Placing this "completed" information in separate accounts reduces the clutter in the working accounts and protects them from casual or accidental alteration or deletion. The last major group of accounts is the "user" accounts. These are the accounts set aside to enable patrons of the LIC to access various databases produced by the staff. MAILIST is strictly an in-house database providing the LPI staff with a central up-to-date listing of addresses and phone numbers. The two remaining accounts, PATRON and SEARCH, are for the use of any member of the scientific community or interested public who contact the LPI for information. PATRON contains programs and routines designed to help an interested individual learn about and use some of the services and facilities of the LIC. Using the routines in this account, a user can search the online portion of the card catalog, get descriptions of available services, check the journals holdings, or check a list of the latest items to arrive in the LIC. An added feature of having

Figure 1.
Library Information Center—User Accounts



this information on-line and on the mainframe is that any staff member or scientist can access this account from a terminal in any office without having to come to the library or use any other form of tele-communications. The third account, SEARCH, contains the programs and prompts that allow a user to search the on-line bibliographies maintained by the LPI. Features of this account include the availability of boolean logic and data ranging for limiting searches as well as help files and routines for obtaining hardcopy printouts or electronic files of the results. This is the oldest and more complete on-line feature of the LIC and, as has already been mentioned, it was the testing ground for many ideas that have been incorporated into the design of LRMS.

Yes, we use menus and prompts that pretty much look like the menus and prompts you see in almost every on-line library system. (Figures 2-7) We can go from menu to menu, refining down the function we wish to perform. For ex-

Figure 2.

```
MAIN LRMS PROGRAM MENU

Select the routine you wish to use
   by entering its letter below

      A. CALENDAR ROUTINES
      B. STAFF ACCOUNTS
      C. USER ACCOUNTS
      D. CLERICAL ROUTINES
      E. ADMINISTRATIVE TASKS
      F. BYPASS OPTION
      G. QUIT (EXIT ACCOUNT)
      H. CALL HELP ROUTINES

-------------------------------------

      ENTER LETTER CHOICE  B
```

ample, this series of figures shows you the first menu to greet a staff member when one logs on in the morning. Notice as we go through that F, G, and H are always "bypass," "quit," and "help." Using mnemonic devices such as this makes the system easier to use. Having the "Bypass" option, which automatically returns one to the VAX mainframe, is useful when one wishes to leave the library routine management system. Choosing "B" leads one to the menu of STAFF ACCOUNTS where a choice of "C" puts one into the catalog function where the selection of an "A" sets one up to work with the INPROCS file either to check in some new materials or prepare

Figure 3.

```
LRMS STAFF ACCOUNTS MENU

Select the routine you wish to use
   by entering its letter below

      A. BIBLIOS ACCOUNT
      B. BULLETIN ACCOUNT
      C. CATALOG ACCOUNT
      D. INVACIRC ACCOUNT
      E. JOURNALS ACCOUNT
      F. BYPASS OPTION
      G. QUIT (EXIT SUBROUTINE)
      H. CALL HELP ROUTINES

-------------------------------------

      ENTER LETTER CHOICE  C
```

Figure 4.

```
MAIN CATALOG PROGRAM MENU

Select the routine you wish to use
   by entering its letter below

      A. ORDERING ROUTINES
      B. CHECK IN AN ITEM
      C. CATALOGING ROUTINES
      D. GET FORMATED OUTPUT
      E. LOCATE AN ITEM
      F. BYPASS OPTION
      G. RETURN TO LRMS
      H. CALL HELP ROUTINES

-------------------------------------

      ENTER LETTER CHOICE  A
```

orders. This next figure is an "alpha and omega" representation of what one sees when entering the order routine and when exiting from it. In between the two, a series of questions prompts the processor to enter author, title, and other information required to order the item. The information is then processed by the ORDERER program which appends the information in this "tagged" mode to the INPROCS file and reformats it to prepare the order slip shown in the next figure. This is the kind of function you would expect to find in an on-line system.

It is the design of the system that we feel helped us to accomplish our goals. By having all staff and function accounts part of the same "user" group on the VAX, we can circulate freely between them using the same set of files and programs. Because LRMS itself is a "core"

Figure 5.

```
YOU ARE NOW IN THE LRMS
   ORDERING ROUTINE
-------------------------------------

-------------------------------------
  NEW ORDERS HAVE BEEN PROCESSED
    *     *     *     *     *
  ITEMS HAVE BEEN ADDED TO FILE
   INPROCS.DAT AND ORDER FORMS
  HAVE BEEN STORED IN ORDERS.RDY
-------------------------------------

  TO CONTINUE ENTER A RETURN
```

Figure 6.

```
 1 T090 O_NUM    0700
 2 T240 MAUTHOR Taylor, Stuart Ross
 3 T250 MTITLE  Planetary Science: a lunar perspective
 4 T341 P_PLACE Houston, Texas
 5 T342 P_NAME  Lunar and Planetary Institute
 6 T344 P_DATE  1982
 7 T320 E_INFO  na
 8 T500 S_INFO  na
 9 T110 VENDOR  Majors
10 T120 PO_NUM  M-100
11 T130 O_DATE  05-25-85
12 T140 COPIES  1
13 T150 LIST    39.95
14 T160 COST    42.95
15 T170 PREPAID no
16 T180 REQUEST LIC
17 T190 LC_NUM  na
18 T030 STATUS  ON ORDER
19 T040 RECVED  NYR
20 T050 CARDS   NOT ORDERED
```

program, it is possible to store only one copy of the functional programs and use them in any of the staff accounts. "LIBRARY" is our storage account. A list of the files which are in the "Library" account is shown on Figure 8. Each of these files is in itself a "subdirectory" containing the actual working files indicated by the mnemonic names. For example, PINDEX.DIR is an Index of the Programs. It contains an abstract describing each program used by LRMS (Figure 9) along with a listing of the other programs called and the files created by that program. Each program has been liberally documented with comments so that another programmer at some future time could easily follow through the logic of a program. (Figure 10) Other subdirectories in LIBRARY include the help routines, the source code for the programs which are actually the "executable" programs, and the programs directory which contains the programs in readable form. Templates for such program parts as the menu

Figure 7.

```
0700

      Taylor, Stuart Ross
      Planetary Science: a lunar perspective

      Houston, Texas      Lunar and Plane     1982

      na                      na
-------------------------------------------------------
SHIP TO:                          VENDOR Majors
  LUNAR AND PLANETARY INSTITUTE   PO NO. M-100
  LIBRARY/INFORMATION CENTER      DATE   05-25-85
  3303 NASA ROAD ONE              COPIES 1
  HOUSTON, TX 77058               LIST   39.95
```

Figure 8.

```
Username:  LIBRARY
Password:
        Welcome to LPI VAX/VMS version V3.3


25-MAY-1985  17:16:11


              THIS ACCOUNT IS USED TO STORE PROGRAMS
              USED BY THE LIBRARY INFORMATION CENTER
                  *    *    *    *    *    *    *
               THIS ACCOUNT HAS BEEN BROKEN UP INTO
                 THE SUBDIRECTORIES LISTED BELOW.

Directory DRA1:[LIBRARY]

DOCUMENT.DIR;1          3       29-DEC-1984 14:40
FINDEX.DIR;1            1       29-DEC-1984 14:41
HFILES.DIR;1            1       29-DEC-1984 14:41
MACROS.DIR;1            1       29-DEC-1984 14:41
OLDCODE.DIR;1           2       29-DEC-1984 14:41
PINDEX.DIR;1            1       29-DEC-1984 14:41
PROGRAMS.DIR;1          3       29-DEC-1984 14:41
SOURCE.DIR;1            6       29-DEC-1984 14:41
SUPPORT.DIR;1           2       29-DEC-1984 14:42
TEMPLETS.DIR;1          1       29-DEC-1984 14:42
TRANSFER.DIR;1          1       29-DEC-1984 14:42
WORKING.DIR;1           5       29-DEC-1984 14:42

Total of 12 files, 27 blocks.
```

design are stored in Templets directory. This design assures that the system will be as usable by future staff as it is by the designers of the system.

By using the concept of user groups, programs and files can be called for use in a specific account but only one copy need be stored. This keeps the use of computer memory down to a minimum. This also allows the patron to access the most current copy of the library data files such as catalog and journals without the

Figure 9.

```
LIBRARY SUBDIRECTORIES

PINDEX (PROGRAM INDEX)

     THE SUBDIRECTORY .PINDEX CONTAINS ABSTRACTS
     WHICH GIVE BRIEF DESCRIPTIONS OF EACH OF THE
     PROGRAMS USED BY LRMS.

Directory DRA1:[LIBRARY.PINDEX]

ARRIVALS.ABS;1          7       18-APR-1984 11:33
CALENDAR.ABS;1          9       18-APR-1984 11:33
CATALOG.ABS;1           6       18-APR-1984 11:34
CATLOGER.ABS;1          5       18-APR-1984 11:34
CHECKON.ABS;1           5       18-APR-1984 11:37
DESPACE.ABS;1           4       18-APR-1984 11:37
GETENTRY.ABS;1          4       18-APR-1984 11:37
LOCATER.ABS;2           4       19-APR-1984 10:24
LRMSCORE.ABS;1          7       18-APR-1984 11:37
OFORMATS.ABS;1          4       18-APR-1984 11:38
ORDERER.ABS;1           5       18-APR-1984 11:38
PATRON.ABS;1            6       18-APR-1984 11:38
REWRITE.ABS;1           4       18-APR-1984 11:39
SRCHCAT.ABS;1           4       18-APR-1984 11:39
WHATSNEW.ABS;1          5       18-APR-1984 11:39

Total of 15 files, 79 blocks.
```

Figure 10.

```
        THIS IS AN EXAMPLE OF THE ABSTRACT DESCRIBING
              A PROGRAM USED BY LRMS.

                  PROGRAM OFORMS.PAS

  This program is designed to produce a vendor order form
  from an information record created by the program called
  ORDERER.PAS.  This form can then be printed out and sent
  to a vendor with a purchase order.

      Program is written in PASCAL for the VAX 11/780
        Using VAX/VMS operating system - Version 3.3
         Written - 12/09/82 - by Stephen H. Tellier
              Technical Information Specialist
               Lunar and Planetary Institute
           3303 NASA Road 1, Houston, Texas 77058
          Revised - 04/12/83 - by Stephen H. Tellier

  Program Calls:

  Created Files:
    ORDERS.RDY - The file containing the formated orders.

  Variable List:

  Program Notes:
```

necessity of up-dating the user files. When a patron searches the card catalog, the search is conducted on the same data file which was used by the cataloger to append new cataloging data.

By using a modular approach to the programming, each segment was put into operation as it was written and tested. It was possible to add to the functions on a part-time basis while library services continued uninterrupted. Granted, there were periods when it was necessary to work in a tandem mode keeping some records manually while others were on-line, but this is a necessary evolution of the whole process. I believe the motto of such a project must be "you've got to start somewhere." We also feel that the system will never be 100% complete. Since it is our own system, we can add to or make changes as the time and impulse strike. As one works with the system, new ideas and applications constantly come to mind. I have a whole list of "wouldn't it be nice to."

Our patrons have access to the system from any terminal in the institute since we are on the mainframe computer. Many of the services that we are able to offer, such as remote access, multi-user access, and electronic mail, are possible because of the capabilities of the mainframe. These would be more difficult to provide on a library-dedicated machine. Figure 11 shows the PATRON selection menu. Besides a search of the card catalog

Figure 11.

```
            MAIN PATRON PROGRAM MENU

     Select the routine you wish to use
        by entering its letter below

        A. EXPLAIN L/IC SERVICES
        B. SEARCH THE CARD CATALOG
        C. CHECK ON LATEST ARRIVALS
        D. CHECK JOURNAL HOLDINGS
        E. PLACE ORDERS FOR ITEMS
        F. LEAVE MESSAGES FOR L/IC
        G. QUIT (EXIT THE ACCOUNT)
        H. CALL PATRON HELP ROUTINE
```

and our journal holdings, one feature which has been very popular is the new arrivals. Each day we enter into the file a list of the journals, documents, and books which we received. Our users can then check this file to see if their favorite journal or a book they have requested has been received. This also serves as our new book list. Figure 12 shows the display format for a cataloged book entry if you were to search the card catalog through the PATRON account.

To those of you contemplating an on-line system, I would definitely recommend looking into developing it in-house using the core program and modular approach. I would also recommend that you get started! Sure, mistakes will be made. We certainly made some. We had three different kinds of formats in the document catalog before we settled on our tagged format. At least, if the data is in an electronic file, it can be manipulated in some way, even if only to be searched. Of course, one of the most important things is to have an understanding group of users. Our scientists really did bear with us in some of the interims when we

Figure 12.

```
CALL NO.          Q8592
                  T381
AUTHOR            TAYLOR, STUART ROSS, 1925-
TITLE             PLANETARY SCIENCE: A LUNAR PERSPECTIVE.
PUBLISHER         HOUSTON, TEXAS,
                  LUNAR AND PLANETARY INSTITUTE, 1982.
PHYS.DESCRIP.     XIX, 481 P. ILLUS. FIGS.  24 CM.
NOTES             INCLUDES BIBLIOGRAPHIES, GLOSSARY, INDEX.
SUBJECT           1. PLANETS--EXPLORATION.
                  2. MOON--EXPLORATION.
                  3. ASTRONAUTICS IN ASTRONOMY.
OTHER ENTRIES     I. TITLE.
LOCATION          REF; LIC
ACCESSION         0493 REF; 05396 C.2
```

had to look at the "goldenrod cards" in the card catalog and also at the electronic file on-line to find out what was on order. We still have the dual catalog, the old cards and the new on-line, but this problem will be solved by converting the shelf list to an on-line file. We know that our system is machine-specific and in many ways it was "jerry-rigged" to use what files we had. But we feel the logic is sound and should be functional to take care of the needs of the staff and users of the Library Information Center at the Lunar and Planetary Institute for many years to come.

In summary, LRMS is a program for giving the LIC staff controlled access to the accounts containing the programs for producing the data files that are used by the LIC patrons.

The Lunar and Planetary Institute is operated by the Universities Space Research Association under NASA contract NASW 4066. This paper is LPI Contribution No. 597.

Appendix

Acronyms

LIC	Library Information Center
LPI	Lunar and Planetary Institute
LRMS	Library Routine Management System
NASA	National Aeronautics and Space Administration
TIS	Technical Information Specialist

Computer Accounts and File Names

BIBLIOS	contains programs for the bibliographic databases
BULLETIN	contains files for preparing the Lunar and Planetary Information Bulletin
CATALOG	contains files for the "on order" files and "card" catalog
INPROCS	name of file containing materials on order; not cataloged
INVACIRC	contains the inventory and circulation files
JOURNAL	contains the journals holdings file, subscription information, etc.
LIBRARY	contains the programs, routines, and files which make LRMS work
LPBSSD	contains the database for the Lunar and Planetary Bibliography Search Service
ORDERER	program which creates the order to be sent to vendor and appended to the INPROCS file
PATRON	contains programs and routines for library users' access
PINDEX	contains an index to the programs used in LRMS
SEARCH	contains programs and routines to search the bibliographies

This paper was presented at the 1985 SLA Conference in Winnipeg.

Frances B. Waranius is with the Lunar and Planetary Institute in Houston, Texas.

Stephen H. Tellier is with the Lunar and Planetary Institute in Houston, Texas.

SLA Award Winners 1986

Hall of Fame Award:	**Elizabeth Gibbs Moore** **Edward G. Strable**
John Cotton Dana Award:	**Doris Lee Schild** **Ann Strickland**
Professional Award:	**Mary McNierney Grant**
SLA President's Award:	**Vivian J. Arterbery** **David R. Bender** **James B. Tchobanoff**
Honorary Member:	**Fred Kilgour**
H. W. Wilson Award:	**Samuel Demas**

Hall of Fame Award

Elizabeth Gibbs Moore

Elizabeth Gibbs Moore, a partner in the Gibbs-Moore Information Service in Greensboro, North Carolina, was nominated for the SLA Hall of Fame Award by her colleagues in both North Carolina and Michigan for her work at all levels of the Association, as well as for her efforts to advance ". . . the library profession on a national level."

Ms. Moore participated in the Michigan Chapter for nearly two decades serving on the Program, Election (chair), Membership (chair), Education, and Consultation committees, in addition to terms as vice president (1972–73) and president (1973–74).

Her activities with the North Carolina Chapter are equally impressive: in 1985–86 she was elected senior director of the chapter, and she serves as a member of the ad hoc Long-Range Planning Committee and chairs the Budget Committee.

As a member of the Business and Finance Division, she chaired the Ad Hoc Committee to Recruit Minorities (1973–75), was chair-elect for the division (1976–77), and chaired the division in 1977–78. In 1979–80 she was chair of the Bylaws Committee for the Library Management Division and in 1980–81 was a director of the Telecommunications/Communications Division.

Prior to her election to the SLA Board of Directors in 1981, she served on the Membership Committee (1974–77), the Nominating Committee (1979–80), chaired the Bylaws Committee and served as co-chair of the Information Committee for SLA's Annual Conference in Detroit. Currently she sits on both the SLA Professional Development Committee and the SLA Special Committee on Retired Members' Activities.

Ms. Moore has served the library profession with distinction. She was the SLA representative to the Planning Committee for Michigan, White House Conference on Libraries and Information Services (1979–80); the Detroit delegate to the Michigan Governor's Conference (1979); and the Michigan delegate to the White House Conference on Libraries and Information Services (1979).

She was manager of the corporate libraries of two of Detroit's most prominent firms: Michigan Bell Telephone Company and the Burroughs Corporation. Additionally, she has been a member and director of the Friends of the Detroit Public Library.

Elizabeth Gibbs Moore has "devoted her entire career to serving the needs of SLA, the library profession, and her community."

Edward G. Strable

Edward G. Strable was named to the SLA Hall of Fame for extraordinary accomplishments in ". . . his professional career, his commitment to library education (and) his service to SLA and to other library organizations."

In 1985 he retired from J. Walter Thompson USA; however, Mr. Strable remains active as a staff consultant for C. Berger and Company, specializing in collection development.

Over the span of 35 years, Mr. Strable has participated in a variety of Association activities, beginning in 1958 when he organized the Chicago Annual Conference. In 1959–60 he was elected president of the Illinois Chapter, during which time membership recruitment was of primary importance.

In 1967 he was chair/editor of a group of six Illinois Chapter members who wrote *Special Libraries: A Guide for Management,* a book which he also edited in the 1975 revision.

His work at the division and association levels began during the early 1960s. In 1961 he was elected to the SLA Board of Directors and in 1963 he served as co-chair of the Advertising Division.

Later, as SLA's president-elect (1971–72), he traveled 25,000 miles visiting chapters and universities to understand members' concerns for continuing education and library cooperation.

As president he began an innovative series of editorials in *Special Libraries* entitled "Let's Talk Together."

Also at the association level he served on the National Book Committee (1959–60), the Committee on Committees (1964–66), the Membership Committee (1969–70), the Library of Congress Liaison Committee of Librarians (1971–73), Headquarters Operations (1971–74), Awards (1971–72 and 1973–75), and the Plenum Publishing Corporate Awards Committee (1967–77).

His professional accomplishments match the excellence achieved in his Association work. As library director at J. Walter Thompson, he selected and implemented an optical coincidence system for indexing and retrieving internal research reports, and he built their outstanding reputation for quality reference service.

His career also included visiting over 20 library schools and teaching a course on "Special Libraries" at the Library School of the University of Chicago from 1958–63.

Always at the forefront of interlibrary cooperation, he served on the Illinois organizing committee of what became the Illinois Regional Library Council, on whose board he served from 1977–80.

Edward Strable's career, far from over, provides an inspiration and a challenge to librarians to forge a new standard of excellence.

He served on the staff of the American Library Association as executive secretary to the Reference Services Division where his work had a direct impact on the quality of reference service in all types of libraries.

John Cotton Dana Award

Doris Lee Schild

Doris Lee Schild retired as librarian at IBM Systems Research Institute in July 1985, following 20 years of service. She received the John Cotton Dana Award for her "continued and devoted interest in the workings of the Association and her unfailing support of her colleagues."

Miss Schild's activities with the Association have been varied, demonstrating a long-

standing interest in and support of SLA. In the New York Chapter she held several posts, including those of program chair (1969–70), first vice president (1971–72), and president (1972–73).

At the division level, she has served on the nominating committees for the Museum, Arts and Humanities Division and the Business and Finance Division.

In 1977, Miss Schild was elected to the SLA Board of Directors and served for three years, one of many roles she held at the association level. In 1971–72 she served on the Oral History Committee, from 1975–77 she served as the New York Conference Deputy Chair, and from 1977–80 she was a member of the Committee on Committees.

During her term as director she was board proctor for the Government Information Services Committee, Student Relations Officer, Publisher Relations Committee, and the Association of American Publishers/SLA Joint Committee.

Following her service on the board, Miss Schild served as chair of the SLA Division Structure Committee (1980–81) and chair of the Bylaws Committee (1981–85). She has also served on the New York Conference Program Committee (1982–84) and has fulfilled special projects for the Association, the New York Chapter, and the Publishing Division.

Among her notable accomplishments at all levels of the Association were organizing the Hudson Valley and Long Island chapters. During her tenure of the Bylaws Committee, she brought all division and chapter bylaws up to date.

As a professional special librarian, Miss Schild convinced the management of IBM to become a patron of the Association and to renew its support each year. She also promoted the Association to IBM libraries nationwide.

To her many friends and colleagues, Doris Lee Schild's library career is "marked by her devotion to SLA and to the ideal of professionalism among special librarians."

Ann Strickland

Ann Strickland received the John Cotton Dana Award for her outstanding record of service to the Association and to her fellow special librarians. She recently retired as librarian of the Governmental Reference Library in Tucson, Arizona, after 11 years of service to city government and a 20-year library career.

On the chapter level, Ms. Strickland was president-elect of the Rio Grande Chapter. Also in 1976 she was instrumental in forming the University of Arizona Student Group. In 1977 she spearheaded a move to form an Arizona Chapter, a move that was approved by the SLA Board in 1978.

Following this accomplishment, she continued work for the Association and served as the Arizona Chapter's career guidance chair (1978–80) and was appointed immediate past president of the chapter following an unexpected move of the officer.

At the division level, Ms. Strickland made two significant contributions. In 1978 she wrote "The Operations Manual," which was published in the *Bulletin of Management Science*. In 1980 she served as chair-elect of the Social Sciences Division and was an active chair of the division, which resulted in a fine program at the Detroit Annual Conference.

During her work on chapter and division levels, Ms. Strickland was also involved in SLA committee work. In 1980–81 she was a member of both the Networking and H. W. Wilson Company Award committees. In 1981–82 she served on the Government Relations Committee and was a valuable member to both the Ad Hoc Committee to Study Division Organization and the Ad Hoc Committee on Long-Range Financial Planning.

Ms. Strickland was no stranger to professional associations. She was a member and the treasurer of the Association of State Library Agencies in 1978 and served as an officer of the Arizona Chapter of the American Society of Public Administrators. She also represented special librarians on a multi-type information services panel at the regional pre-White House Conference on Libraries and Information Services in 1978.

Recently, Ms. Strickland served on the nine-member National League of Cities Advisory Council to LOGIN—Local Government Information Network.

Her contributions to the profession and the Association are many. She has been consulted by mail and in person by numerous people needing to set up special libraries, and has contributed many hours in SLA's Consultation Services. To members of the Association she is an active member, both up-front and behind-the-scenes at all levels of activity.

Professional Award

Mary McNierney Grant

Mary NcNierney Grant, director of the Center for Business Research at C. W. Post Campus, Long Island University, was the recipient of the SLA Professional Award for her work on the *Directory of Business and Financial Services,* a publication that has served as a "bible" for the business and finance information community. Mrs. Grant served as editor for the 1963, 1976, and 1984 editions of the directory.

Her achievements in the field of library science are many. She has testified before numerous federal and state committees to represent the library and education interests of all librarians, especially those of the business/finance world. Additionally, she has been influential in mobilizing the support of national, state, and local organizations for the passage of key library and education legislation.

She has been adjunct professor of Library and Information Science at the Palmer School for Library and Information Sciences and a visiting professor at Columbia University Graduate School of Library Service. Mrs. Grant has held positions in both the public and private sectors: head of the Business and Economics Department at the Nassau County Research Library; librarian at Price Waterhouse, New York City, supervisor of Public Relations Libraries, General Motors, New York City and Detroit; chief librarian at Bache & Co., New York City; librarian with the Special Services Division of the U.S. Army in Europe; and reference assistant in the Business Information Bureau of the Cleveland Public Library.

SLA President's Award

Vivian J. Arterbery, David R. Bender, and James B. Tchobanoff each received the SLA President's Award for their involvement with and outstanding contributions to the SLA Long-Range Plan.

Vivian J. Arterbery

Vivian J. Arterbery, library director of Rand Corporation, Santa Monica, California, received the SLA President's Award particularly for her role as the guiding force behind the Long-Range Plan.

A member of the Southern California Chapter, Ms. Arterbery has served in numerous chapter positions, including chair of the Committee to Compile a Directory of Special Libraries in Southern California (1965), Placement Committee (1968–70), Bylaws Committee (1970–71), Program Committee (1972–73), and Positive Action Committee (1979–80). Additionally, she was corresponding secretary (1966–67), recording secretary (1967–68), president-elect (1972–73), and president (1973–74), and was a member of several other committees.

On a division level, Ms. Arterbery is a member of both the Library Management Division and the Aerospace Division. She was secretary of the Aerospace Division in 1980–82.

Her association-level activities are extensive. She was a member of three committees: Membership (1970–72), Networking (1975–78 and 1978–81), and Awards (1982–83 and 1983–84). She was elected to the Board of Directors as cabinet chair-elect (1981–82), cabinet chair (1982–83), president-elect (1983–84), and president (1984–85). Ms. Arterbery also served as chair for the Long-Range Planning Committee (1983–84) and the Special Committee on Networking (1975). She had been involved in analyzing the SLA National Survey on Special Libraries Network Participation (1981) and was an invited participant at the SLA/NCLIS Conference (1975).

David R. Bender

David R. Bender, Executive Director of Special Libraries Association, received the SLA President's Award for hosting several meetings of the Long-Range Planning Committee, keeping the plan on target, and "gently reminding the committee members of the difference between a plan and the management of the plan."

Dr. Bender was appointed executive director of SLA in 1979 by the Association Board of Directors. In his six years as executive director, Dr. Bender has been instrumental in the overall growth of the Association. The Association has a staff of 28 and an annual budget of $1.6 million. In August 1985, Dr. Bender moved the Association to its permanent headquarters in Washington, D.C.

Prior to joining the staff of SLA, Dr. Bender was chief of School Library Media Service Branch, Division of Library Development and Services at the Maryland State Department of Education. He served in that capacity from 1972 to 1979.

Dr. Bender is vice chairman of the Foundation Board of the American Society of Association Executives. He has been a member of the Foundation Board since 1982.

Dr. Bender has held leadership positions in numerous professional organizations, including serving as chair for committees and programs of the American Library Association (ALA).

Among his many leadership positions are:

- Advisory Board, Center for the Book, Library of Congress, 1983–85.
- Secretary, Section of Social Science Libraries, International Federation of Library Associations and Institutions, 1982–85.
- Chair, Council of National Library and Information Associations, 1982–84.
- Advisory Board, ERIC Clearinghouse on Information Resources, 1981–83.
- Advisory Board, *Media Review,* 1979–1981.
- Executive Board, Maryland Educational Media Organization, 1976–79.
- Member, President's Commission, ALA, 1976–77.
- Member, Executive Board, American Association of School Librarians, ALA, 1975–76.
- Second Vice President, American Association of School Librarians, ALA, 1975–76.
- Board Member, State School Library Media Supervisors' Association, 1974–75.
- President, State School Library Media Supervisors' Association, 1973–74.
- Second Vice President, Young Adult Services Division, ALA, 1972–73.

Dr. Bender has held positions in school, public, and special libraries. His teaching credentials include work at C. W. Post Campus, Long Island University; Rutgers University; and Towson State University in Baltimore, Maryland.

Additionally, Dr. Bender has written scores of articles for leading library publications, has authored two books, and has provided consultation services to many universities, associations, and government organizations on the local, state, national, and international levels.

James B. Tchobanoff

James B. Tchobanoff, section manager, Technical Information Center at the Pillsbury Company, Minneapolis, Minnesota, was presented with the SLA President's Award for preparing numerous drafts of the Long-Range Plan, for making countless committee assignments as chair of the Long-Range Plan and for preparing a slide / tape presentation for use by the Association, chapters, and divisions.

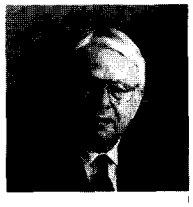
A member of the Minnesota Chapter, he has served as president-elect (1978–79), president (1979–80) and past president / director (1980–81).

On the division level, Mr. Tchobanoff served as chair of the Membership Committee for the Food and Nutrition Division (1981–82), chair-elect (1982–83), past chair / director (1983–84) and chair of the Directory Committee (1981–85).

In 1980 he became a member of the Committee on Committees serving at the association level for the first time. In 1983 he was elected to the Board of Directors as Division Cabinet chair-elect and remained on the board until his term as Division Cabinet chair expired in 1985. Also at the association level he served as a member of the Long-Range Planning Committee (1983–84) and was chair of the committee (1984–85) during which time the Long-Range Plan was implemented.

Mr. Tchobanoff has written a book, a research report, and a variety of articles, including two that have appeared in *Special Libraries*.

SLA Honorary Member



Fred Kilgour

Professor Fred Kilgour, founder trustee of OCLC Online Computer Library Center, Inc., in Dublin, Ohio, was elected to honorary membership in SLA for his support and many contributions to the field of special librarianship and the information profession.

OCLC is one of the best known and most successful library automation organizations, incorporating modern and powerful communications and computer technologies into librarianship. From its beginnings as a shared cataloging facility to benefit college and university libraries in Ohio, it has developed, under his direction, to provide a full range of library services on an international basis with over 11 million catalog records online.

He joined Ohio State University in 1967 as professor of Library Administration, a position that he holds today. He is also chair of the Board of Applied Information Technologies Research Center and a director of the International Electronic Publishing Research Center.

His library career began in 1935 when he joined the staff of the Harvard College Library as assistant, Circulation and Reference Department. Mr. Kilgour's active professional career includes positions with the U.S. Department of State, the Office of Strategic Services, and Yale University.

Mr. Kilgour has served as editor of the *Journal of Library Automation* (1968–71) and as managing editor for the *Yale Journal of Biology and Medicine* (1949–65).

H. W. Wilson Award

Samuel Demas, associate director of the Albert R. Mann Library at New York State College of Agriculture and Life Sciences, Cornell University, Ithaca, New York, received the H. W. Wilson Award for his outstanding article, "Microcomputer Software Collections," published in *Special Libraries,* winter 1985.

The H. W. Wilson Award, generously funded by the H. W. Wilson Company, is presented annually for the best article published that year in *Special Libraries*. The five-member committee, appointed by the SLA president, selects the article that provides the most significant contribution to the philosophy, development, and general practice of special librarianship. Originality, innovativeness, universal implications, validity, and communicative effectiveness are also criteria considered in selection. Although SLA members are given preference, any contributor to *Special Libraries* is eligible to receive the award.

Demas is an active member of SLA's Upstate New York Chapter, and is affiliated with the Food, Agriculture and Nutrition Division and the Biological Sciences Division.

CALL FOR PAPERS—78TH ANNUAL CONFERENCE

SPECIAL LIBRARIES ASSOCIATION
June 6–11, 1987; Anaheim, California

"Global Information Access—Expanding Our World"

The challenges and opportunities in the worldwide transfer of information are of key importance to special librarians and information specialists. The advances in telecommunications and computer technologies, which enable us to receive, transmit, store, and retrieve data internationally, have expanded the horizons of our information world.

California, gateway to the Pacific Basin and home of the Silicon Valley, is an ideal location for a conference on "Global Information Access." The 1987 SLA Conference will present many opportunities to examine this multi-faceted theme including such aspects as information technology transfer, standardization, worldwide information exchange, international copyright problems, international patent documentation, information needs of multi-national corporations and other organizations, the role of database vendors in the access of global information, and the political implications of international information transfer.

You are invited to submit papers on topics related to the conference theme. Multi-media presentations and poster sessions related to the Conference theme also will be considered. Papers accepted will be presented at the Contributed Papers Sessions. Very specific submissions will be referred to appropriate divisions.

Papers considered must comply with the following guidelines:

1. *Abstract*—A 250–500 word abstract that accurately conveys the scope of the paper, its depth, conclusions, and the way it contributes to the Conference theme must be submitted with the form below by **October 3, 1986.**

2. *Text*—Full text of the paper is due **April 1, 1987.**

3. *Originality*—Papers must not have been presented previously to any national or international group nor have been previously submitted for evaluation.

4. *Acceptance*—Papers will be accepted only if the abstract has been submitted for evaluation and if the author expects to be present to deliver the paper at the conference.

All papers are the property of the Special Libraries Association and will be considered for publication in *Special Libraries.*

To: Laura N. Gasaway
Law Library, Univ. of NC
Van Hecke-Wettach
Bldg. 064A
Chapel Hill, NC 27514

Attached is an abstract of my proposed paper for the 1987-SLA Conference.

Name: _____
Organization: _____
Mailing Address: _____
_____
Telephone: _____
Working Title: _____
_____

Audit Report January 1, 1985–December 31, 1985.

To the Board of Directors
Special Libraries Association, Inc.

We have examined the balance sheet of Special Libraries Association, Inc. as of December 31, 1985, and the related statements of revenue, expenses and changes in fund balances, and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the financial position of Special Libraries Association, Inc. as of December 31, 1985, and the results of its operations and the changes in its financial position for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Garner, Bloom & Klein, Chartered

Garner, Bloom & Klein, Chartered
Certified Public Accountants
April 1, 1986
Silver Spring, Maryland

SPECIAL LIBRARIES ASSOCIATION, INC.
BALANCE SHEET
DECEMBER 31, 1985

	Total All Funds	General Fund	Nonserial Publications Fund	Scholarship Fund	Special Programs Fund	Building Reserve Fund
ASSETS						
Current Assets						
Cash (interest-bearing $764,493)	$ 835,160	$ 653,251	$ 24,546	$ 14,132	$ 78,243	$ 64,988
Marketable securities, at cost (Note 3)	308,921	201,857		107,064		
Accounts receivable, net of allowance for doubtful accounts of $3,162 in General Fund, $650 in Nonserial Publications Fund	108,701	75,791	31,704	1,206		
Due from (to) other funds		46,207	(25,893)	(594)	763	(20,483)
Inventory of nonserial publications (Note 4)	102,080		102,080			
Prepaid expenses	61,593	61,593				
Total current assets	1,416,455	1,038,699	132,437	121,808	79,006	44,505
Marketable Securities, at cost (Note 3)	89,086	58,211		30,875		
Building, Furniture and Equipment (Notes 2 and 4)	1,600,410	1,600,410				
Other Assets	44,811	44,811				
	$ 3,150,762	$ 2,742,131	$ 132,437	$ 152,683	$ 79,006	$ 44,505
LIABILITIES AND FUND BALANCES						
Current Liabilities						
Current maturities of long-term debt (Note 4)	$ 48,000	$ 48,000				
Subscriptions, dues, fees and contributions received in advance	461,025	461,025				
Accounts payable—trade	76,966	73,466			3,500	
Withheld taxes and accrued expenses payable	22,968	11,354	11,614			
Income taxes payable	28,000	28,000				
Total current liabilities	636,959	621,845	11,614		3,500	
Long-Term Debt, less current maturities (Note 4)	852,000	852,000				
Commitments and Contingencies (Note 5)						
Fund Balances	1,661,803	1,268,286	120,823	152,683	75,506	44,505
	$ 3,150,762	$ 2,742,131	$ 132,437	$ 152,683	$ 79,006	$ 44,505

See accompanying notes to financial statements

SPECIAL LIBRARIES ASSOCIATION, INC.
STATEMENT OF REVENUE, EXPENSES AND CHANGES IN FUND BALANCES
YEAR ENDED DECEMBER 31, 1985

	Total All Funds	General Fund	Nonserial Publications Fund	Scholarship Fund	Special Programs Fund	Building Reserve Fund
Revenue						
Dues and fees	$ 646,798	$ 646,798	$	$	$	$
Subscriptions and advertising	203,277	203,277				
Net receipts from conference, less allocation below	299,427	299,427				
Net receipts from education program	77,328	77,328				
Net receipts from mailing list service program	70,097	70,097				
Interest, dividends and net gain on sales of investments	136,016	91,316	1,906	21,708	5,980	15,106
Sales of nonserial publications	177,558		177,558			
Gifts	2,000	2,000				
Miscellaneous	24,915	24,915				
Contributions	126,535			8,128	950	117,457
	1,763,951	1,415,158	179,464	29,836	6,930	132,563
Costs and expenses						
Allotment of funds to sub-units	139,810	139,810				
Salaries, wages and benefits	542,514	542,514				
Office services & occupancy costs	220,623	220,623				
Professional fees and services	38,046	38,046				
Travel and meetings	47,460	47,460				
Program services and promotion	60,449	60,449				
Costs of periodical publications sold, including allocation below	185,062	185,062				
Costs of nonserial publications	116,037		116,037			
Scholarships, stipends and grants	20,100			16,600	3,500	
Miscellaneous	33,640	33,640				
Depreciation	51,044	51,044				
Allocation of above expenses to:						
Costs of periodical publications	(18,593)	(18,593)				
Conference	(43,190)	(43,190)				
Other funds and programs	(18,673)	(26,971)	8,298			
Building expenses including interest of $44,089	70,242	70,242				
	1,444,571	1,300,136	124,335	16,600	3,500	
Excess of revenue over costs and expenses before taxes on income	319,380	115,022	55,129	13,236	3,430	132,563
Taxes on income	27,719	27,719				
Excess of revenue over costs and expenses	291,661	87,303	55,129	13,236	3,430	132,563
Fund balances—beginning of year	1,370,142	891,928	65,694	139,447	62,076	210,997
Fund transfers		289,055			10,000	(299,055)
Fund balances—end of year	$ 1,661,803	$ 1,268,286	$ 120,823	$ 152,683	$ 75,506	$ 44,505

See accompanying notes to financial statements

SPECIAL LIBRARIES ASSOCIATION, INC.
STATEMENT OF CHANGES IN FINANCIAL POSITION
YEAR ENDED DECEMBER 31, 1985

	Total *All* Funds	*General* Fund	Nonserial *Publications* Fund	*Scholarship* Fund	Special *Programs* Fund	Building Reserve Fund
SOURCE OF WORKING CAPITAL						
Excess of revenue over expenses	$ 291,661	$ 87,303	$ 55,129	$ 13,236	$ 3,430	$ 132,563
Add expense not requiring use of working capital—depreciation	55,893	55,893				
Working capital provided by operations	347,554	143,196	55,129	13,236	3,430	132,563
Proceeds from long-term debt (Note 4)	852,000	852,000				
Decrease in marketable securities	19,750	12,912		6,838		
Total	1,219,304	1,008,108	55,129	20,074	3,430	132,563
USE OF WORKING CAPITAL						
Purchase of building, furniture and equipment	1,520,726	1,520,726				
Increase in other assets	12,261	12,261				
Transfer to general fund from building fund		(299,055)				299,055
Transfer to special programs from general fund		10,000			(10,000)	
Total	1,532,987	1,243,932			(10,000)	299,055
Increase (decrease) in working capital	$ (313,683)	$ (235,824)	$ 55,129	$ 20,074	$ 13,430	$(166,492)
Changes in working capital items						
Increase (decrease) in current assets						
Cash	$ (405,651)	$ (271,839)	$ 1,254	$ (7,252)	$ 16,311	$(144,125)
Marketable securities	77,706	50,760		26,946		
Accounts receivable	47,626	30,920	20,360	46	(480)	(3,220)
Due from (to) other funds		(31,918)	55,617	(594)	763	(23,868)
Inventory	(29,795)		(29,795)			
Prepaid expenses	15,201	15,201				
Total	(294,913)	(206,876)	47,436	19,146	16,594	(171,213)
Decrease (increase) in current liabilities						
Current maturities of long-term debt	(48,000)	(48,000)				
Subscriptions, dues, fees and contributions received in advance	37,836	20,944	10,907	928	336	4,721
Accounts payable—trade	(789)	2,711			(3,500)	
Withheld taxes and accrued expenses payable	2,386	5,600	(3,214)			
Income taxes payable	(10,203)	(10,203)				
Total	(18,770)	(28,948)	7,693	928	(3,164)	4,721
Increase (decrease) in working capital	$ (313,683)	$ (235,824)	$ 55,129	$ 20,074	$ 13,430	$(166,492)

See accompanying notes to financial statements

SPECIAL LIBRARIES ASSOCIATION, INC.
NOTES TO FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Fund accounting
To ensure observance of limitations and restrictions placed on the use of resources available to the Association, the accounts of the Association are maintained in accordance with the principles of fund accounting. This is the procedure by which resources are classified for accounting and financial reporting into funds established according to their nature and purposes. Separate accounts are maintained for each fund; accordingly, all financial transactions have been recorded and reported by fund group.

The assets, liabilities, and fund balances are reported in five self-balancing fund groups as follows:

General Fund
Nonserial Publications Fund
Scholarship Fund
Special Programs Fund
Building Reserve Fund

Operations
The Association encourages and promotes the utilization of knowledge through the collection, organization and dissemination of information. It is an association of individuals and organizations with educational, scientific and technical interests in library and information science and technology.

Marketable Securities
The marketable securities of the General and Scholarship Funds are combined and managed as one fund for investment purposes, with participating percentages in income and gains and losses based on respective participation accounts at the end of the year. Marketable securities reflected as current assets are valued at the lower of cost or market and those reflected as non-current assets are valued at cost. It is the Association's intention not to utilize the non-current portion of these assets in the normal course of operations.

Inventory
Inventory of nonserial publications is stated at the lower of average cost or market.

Building, Furniture and Equipment
Fixed assets (including land) are stated at cost. Expenditures for additions, renewals and betterments are capitalized; expenditures for maintenance and repairs are charged to expenses as incurred. Upon retirement or disposal of assets, the cost and accumulated depreciation or amortization are eliminated from the accounts and the resulting gain or loss is included in income.

Depreciation is computed using straight-line and accelerated methods over the useful lives of the assets.

Subscriptions, Dues and Fees
Except for subscriptions to the periodicals "SpeciaList" and "Special Libraries," membership in the Association is based on either a December 31 or June 30 year. Dues, fees and subscriptions are credited to income as earned.

Pensions
The Association has a contributory group annuity defined contribution retirement program with an insurance company covering substantially all qualified employees. The Association's policy is to fund costs currently. Pension expense for the year was approximately $17,100.

Donated Services
A significant amount of the Association's functions are conducted by unpaid volunteer officers and committees. The value of this contributed time is not reflected in the accompanying financial statements because it is not susceptible to objective measurement or valuation.

Income Taxes
Taxes on income are based on unrelated business taxable income, which consists of net advertising income, net mailing list service income and net income from building rental activity. The Association's remaining activities are exempt from Federal income taxes under Section 501(c)(3) of the Internal Revenue Code and applicable local law.

2. BUILDING, FURNITURE AND EQUIPMENT

Major classes of building, furniture and equipment consist of the following:

Building and building improvements	$1,437,559
Furniture and equipment	279,745
	1,717,304
Less accumulated depreciation	116,894
Net building, furniture and equipment	$1,600,410

Net acquisitions for the year amounted to $1,520,726.
Depreciation expense amounted to $55,893.

3. MARKETABLE SECURITIES

Marketable securities consist of the following:

	Cost	Market
Current assets		
Cash	$150,177	$150,177
Common stocks	138,994	210,757
U.S. Government obligations	19,750	20,706
	$308,921	$381,640
Non-current assets		
U.S. Government obligations	$ 49,461	$ 54,500
Corporate bonds	39,625	32,900
	$ 89,086	$ 87,400

4. LONG-TERM DEBT

Long-term debt consists of the following at December 31, 1985:

Installment note to bank due in monthly installments through March 1995, with interest payable monthly at the rate of ¾% over the bank's prime lending rate. (The effective rate was 10¼% at December 31, 1985.) The note is secured by all real and personal property of the Association	$900,000
Less current maturities	48,000
Long-term debt	$852,000

The note is subject to the provisions of the business loan security agreement covenants which include the following:

a. The Association may borrow $25,000 or more only upon the bank's prior consent.
b. Until termination of agreement, the debtor agrees to maintain cash plus liquid investments at a minimum of $400,000.

Future minimum principal payments for the five years ended December 31 are as follows:

1986	$ 48,000
1987	60,000
1988	72,000
1989	84,000
1990 and later years	636,000
	$900,000

5. COMMITMENTS AND CONTINGENCIES

Leases
Until October 30, 1985, the Association conducted its operations from leased facilities under a noncancellable operating lease expiring in 1987. Rent expense for leased facilities in 1985 was $28,510. In view of the Association's relocation to Washington, D.C., the Association entered into a surrender and termination agreement with the lessor. Under the terms of this agreement the Association will receive $15,000 if certain conditions are met.

Annual Conference Contract
The Association is obligated under various letters of agreement with certain hotels in connection with its annual conferences through 1990. The liability, if any, under these agreements is not determinable at this time.

Other
At December 31, 1985, the Association has a commitment of $24,080 under a contract to purchase a telephone system.

Reviews

Aeronautics and Space Flight Collections, edited by Catherine D. Scott. New York: Haworth Press, 1985. 229 p. ISBN 0-86656-251-6. $29.95.

Members of the Special Library Association's Aerospace Division and history buffs of aviation and astronautics will find this book significantly important. Catherine D. Scott has done a distinctive job in describing aerospace library collections and has consolidated this information in a small volume that brings attention to major highlights of historical collections devoted to space flight and aviation.

The survey papers begin with oral collections in the field. Ms. Scott goes into details of special materials on the Wright Brothers, Charles A. Lindbergh, and Amelia Earhart. She covers the National Archives and Records Service as well as the Presidential Libraries. She describes aerospace libraries or collections of historical importance on a regional basis as well as NASA and its predecessor NACA, or the National Advisory Committee for Aeronautics.

The book becomes a fascinating story of man's attempts to fly and to succeed, rather than a volume of mere statistics and listings, due to the editor's writing in the narrative form. The editor reflects the U.S. Government's involvement in aviation and space programs. Foreign collections of aerospace history are additionally interesting. Contents also include mention of the following: the New York Public Library with its great collection of science and technology; the GALCIT Aero Library, which is one of the largest and most famous collections covering aeronautics and astronautics in the United States; the History of Aviation Collection of the University of Texas at Dallas with its more than three million items; and the Air and Space Museum Library of the Smithsonian Institution.

The volume concludes with an essay on aerospace bibliographic control written by Ronald L. Buchan, in collaboration with Philip F. Eckert, a retired information specialist with the NASA Scientific and Technical Information Facility. The writers give attention to the NASA/RECON on-line database.

Although there are many bibliographic citations at the end of each chapter, there is a need for a subject index.

Larry Chasen
General Electric Company
Space Systems Division Library
King of Prussia, Pa.

American Legal Literature: A Guide to Selected Legal Resources, compiled by Bernard D. Reams, Jr., James M. Murray, and Margaret H. McDermott. Littleton, Colorado: Libraries Unlimited, Inc., 1985. 239 p. ISBN 0-87287-514-8. $27.50 U.S.; $33.00 elsewhere.

The compilers of this bibliography aim to provide bibliographic access to the law for the lay public. With the movement for increased public access to information has come a concomitant awareness of the lack of public understanding of the law and the legal system. Various resources are appearing to meet this need: self-help guides from do-it-yourself presses, courses of legal instruction geared to the lay person, and guide books and handbooks published by government departments and other agencies, all of which reflect the growing demand for more information about civil rights and legal procedure. Catering to this demand, both law book publishers and other publishing houses are producing monographs directed to the lay public, rather than to lawyers, which are designed to explain the law on a variety of issues. Most material written on the law is written by lawyer specialists for other lawyers, and is too technical to be of great use to the general public. Legal bibliographies and research guides are also aimed at this highly specialized readership. Thus there is a need for a bibliography like this which picks from the body of American legal literature those materials which a lay person might find useful. There are few such guides as this.

The work has three main sections: the first is a list of primary materials, such as statutes, case reports, and finding aids useful for locating information in these primary materials; a second section lists legal reference materials such as law dictionaries, directories of lawyers, bibliographies, and research guides; and a third section, the most useful, lists monographs on the law accessible to a reader with no legal training. In addition there is a series of short appendixes, including a list of major American law book publishers and others who frequently publish law materials.

The emphasis in a bibliography for the lay legal researcher should be on monographs which introduce the reader to the issues involved. This listing, arranged by subject and well annotated, is excellent. The annotations give a brief outline of the aim and content of each monograph, a clear indication of the intended readership, and provide comments where appropriate as to the currency of the information. The listing covers a wide range of subjects with texts aimed at various levels of expertise ranging from titles giving a quick analysis of the law designed for law students and lawyers who are not specialists in an area, to handbooks for the real novice. While works on topics such as consumer credit, divorce and custody, and the civil rights of the aged are usually geared to non-specialized readers, works on subjects such as construction law, banking law, and admiralty law assume a readership with a more in-depth knowledge of their field.

The weak point of the bibliography is the comprehensive but non-annotated listing of primary materials. Listed with their common abbreviations are the main sources of statute law and case reports for every U.S. jurisdiction, including outlying U.S. dependencies. The compilers seem to have felt that adding primary materials to the bibliography was necessary for completeness, but such a listing poses problems and one wonders if, given the aim of the bibliography, it was necessary. Attempting comprehensiveness for the entire U.S. sacrifices completeness for any particular region, while neither the notations nor the introductory comments to the section contain enough explanation to demystify the listing.

Having described what this timely and interesting work is, I would like to spend a little time drawing attention to what it is not. As a Canadian law librarian, I was at first misled by the title; this is not a guide to the entire body of American legal literature, but documents the field only as it is of interest to the lay person. Although the book is of interest to law librarians, it is of value only insofar as it can provide a few very basic treatments for a variety of areas of the law. The compilers have purposely omitted periodicals, and also looseleafs, most of which are designed to provide consolidations of the law in special areas. A library which provides in-depth information on any specialized field will probably require much more specialized legal materials than are listed here in general, although the book could be useful as a supplementary source for basic legal materials in areas other than the area of specialization. This book is of most interest to those whose readership is the general public; such libraries will find it a very useful work to have.

Vivienne Denton
Librarian
Shibley, Righton & McCutcheon

Databases: A Primer for Retrieving Information by Computer, by Susan M. Humphrey and Biagio John Melloni. Engelwood Cliffs, New Jersey: Prentice-Hall, 1986. 384 p. ISBN 0-8359-1319-8. $25.95.

Databases: A Primer for Retrieving Information by Computer is an excellent overview of computerized information retrieval. This book covers the fundamentals of information retrieval in a clear, concise manner which should help individuals who are involved in searching interact with on-line systems more effectively. While *Databases* is written primarily for professionals and library/information science students, it is simple enough for end-users, even if they lack experience in computer searching.

Databases is attractive, well organized, and easy to read. Detailed illustrations accompany the text and range from computer output and Venn diagrams to small sketches of people discussing particular aspects of searching, such as the use of Boolean operators. Examples of searches and search output are simple and meant to prepare the reader for more formalized instruction on a specific on-line service. *Databases* is thus not system-specific, but is useful for orienting the new searcher to the concepts of information retrieval.

The first chapters in *Databases* give the theoretical basis for computerized information retrieval, illustrating how information is organized and stored in an on-line system. This is an in-depth analysis of the principles of information storage and retrieval which is not limited to any one system. These chapters cover records and fields, conventional files, and computerized record-keeping. Chapter 5 discusses some of the basic concepts of computerized retrieval, such as computer indexing, stopwords, and precision and recall ratios.

The middle chapters cover general searching techniques: Boolean operators, search strategy formulation, and searching with controlled vocabulary. Each chapter becomes more detailed, with chapters 10–12 devoted to limiting, printing, and save options.

The remaining chapters discuss some of the broader issues associated with computerized information retrieval. Chapter 15 focuses on

the impact of the microcomputer on information storage and processing, while the final chapter highlights the criteria for selecting a retrieval service.

Databases also includes three useful appendixes. Appendix A provides information on eight major computerized retrieval services in the United States: BRS, CAS, DIALOG, Mead Data, NLM, NewsNet, SDC, and Wilsonline. Address, phone number, telecommunications access, and available databases and their producers are given for each of these services. Appendix B provides selected sources of additional information on computerized information retrieval. This section includes textbooks and other monographs, dictionaries, periodicals, directories, organizations and associations, proceedings, and graduate schools of library/information science. Appendix C is a list of selected readings from current literature on information retrieval, arranged by author. Readings are taken from the periodical literature, as well as from selected conference proceedings.

Other useful features of *Databases* are a good index and a glossary of information retrieval terms. In addition, each chapter includes some interesting exercises which reinforce material presented in the text.

I highly recommend the purchase of *Databases,* for personal use as well as for library collections. It is an excellent book which would be appropriate for many readers, from novice searcher to seasoned library/information science professional.

Sara Anne Hook
School of Dentistry
Indiana University
Indianapolis, Indiana

Guide to Popular U.S. Government Publications, compiled by LeRoy C. Schwarzkopf. Littleton, Colorado: Libraries Unlimited, Inc., 1986. 464 p., indexes. ISBN 0-87287-452-4. $28.50.

LeRoy Schwarzkopf, former Head of Documents at the University of Maryland, has carefully compiled this revision of *New Guide to Popular Government Publications* by Walter Newsome (1978). Changes in policy in the past few years have decreased the number of federal publications produced and increased costs for individual titles. However, the depository library system still distributes about 20,000 titles in paper every year. The government continues to publish affordable information on a wide variety of subjects of interest to the layman, and this volume helps to make librarians and the public aware of these resources.

Mr. Schwarzkopf has subjectively selected approximately 2900 titles, most published since mid-1978, the cut-off date of the previous volume. Some older publications still for sale from the Superintendent of Documents are also listed. The most recent publications date from mid-1985. His selections were based on an exhaustive examination of all shipping lists for paper copy depository items shipped since July 1, 1978, current GPO Subject Bibliographies, and the GPO Sales Publications Reference File. The author has included items which he believes are of current or long-term popular interest to a large segment of the general public. Thus specialized technical publications are not covered. He has included a good collection of pamphlets, monographs, and serials which fall within his selection criteria, though some topics of current interest such as AIDS and the Strategic Defense Initiative are missing from the subject index.

Items are arranged alphabetically by title under broad subject categories and subdivisions. Entries include bibliographic data, Superintendent of Documents classification number, stock number, price, and brief descriptive annotations. References to entries or sections of related interest and to relevant GPO Subject Bibliographies are provided at the end of each category. Subject and title indexes provide additional access.

Because of the popular emphasis in the selections, many of the subject categories are consumer-oriented: e.g., Budgeting for the Family; Clothing Care and Repair; Common Tools and Repairs; First Aid and Emergency Treatment; Gardens and Gardening; Outdoor Recreation. However, among categories of possible interest in special libraries are Aeronautics and Space Science; Business, Economics and Industry; Computers and Data Processing; Demography and Statistics; Energy; Labor and Employment; United States Government. Major reference volumes produced by the government, such as Standard Industrial Classification Manual and County and City Data Book, are listed.

The volume also includes helpful introductory instructions on ordering government publications and an explanation of the federal depository library system. "The Guide to Abbreviations" defines abbreviations, acronyms and initialisms used in the entries. An appendix lists publications catalogs of various

federal agencies. In a few cases addresses are given for series of free publications, but users are referred to the *United States Government Manual* for most issuing agency addresses. Government bookstores and depository libraries are mentioned, but not listed, though sources for addresses are provided.

Prices and ordering availability will become outdated, but this volume does serve as a quick means of providing access to selectively chosen popular government publications. It is a valuable selection tool for librarians outside the depository library system. *The Guide to Popular U.S. Government Publications* is also an effective reference source for identifying publications by subject and Superintendent of Documents classification number, particularly for public library patrons and students, and it can be useful in all types of libraries.

Kendra St. Aubin
Technical Librarian
Sippican Inc.
Marion, Mass.

Managing the Library Automation Project, by John Corbin. Phoenix, Arizona: Oryx Press, 1985. 274 p. ISBN 0-89774-151-x. $35.00.

Let the reader beware: the title of this book should be interpreted narrowly. Described in its preface as "a practical handbook and guide for the librarian . . . responsible for developing an automated library system," the book concentrates on development, implementation, and ongoing project management, after the decisions have been made as to what the library wants by way of an automated system. Those looking for guidance on how those decisions may be reached will have to look elsewhere.

The book is arranged in four sections, the first of which defines and describes automated library systems and gives some basic information on computers. The second section outlines project organization and staffing, and describes planning elements. The third and fourth sections give detailed step-by-step instructions for developing and using a Request for Proposal (RFP) and for installing and operating the automated system. Each chapter begins with an outline of its contents, and subsections within the chapters are clearly labeled. Examples and charts abound. Appendixes summarize the instructions given in the text, give detailed job descriptions for project staff, list necessary equipment and supplies, and show a sample RFP. A glossary, selected bibliography, and index are also included. The level of organization and amount of information presented are most impressive.

Managing the Library Automation Project has two significant drawbacks, however. The first is its narrowness of scope. Although it explains in great detail how to implement and carry out a project in a prescribed manner, it gives no indication of what other options exist or of how this particular approach might be adapted to suit individual needs. The method described here seems best suited to the public or academic library with sizeable resources, and it is difficult to envisage its application in any other situation. The second drawback is its dullness. Professional literature in general, and the literature of library automation in particular, are not noted for style or wit. In many instances such a reputation is undeserved, but this work does nothing to break down the stereotype of professional reading as a sure-fire soporific. Granted, this perception may be the result of trying to read through a work which is primarily meant to be used as a handbook and read piecemeal as need arises. However, anyone who wants an overview of what implementing a library automation project might entail should be prepared to encounter some difficulty.

This is an admirable book within its narrow confines, but it might have been much more. It is a revised edition of the author's *Developing Computer-Based Library Systems,* which was published by Oryx Press in 1981.

Helga Borck
Special Projects Librarian
New York Public Library
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New York, New York

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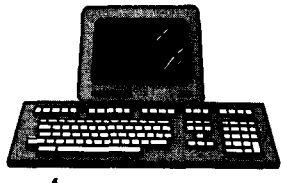

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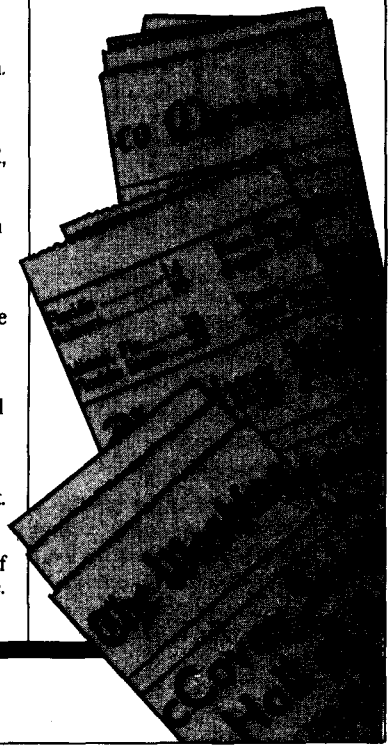

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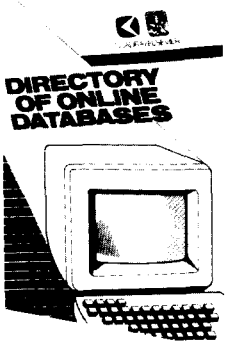

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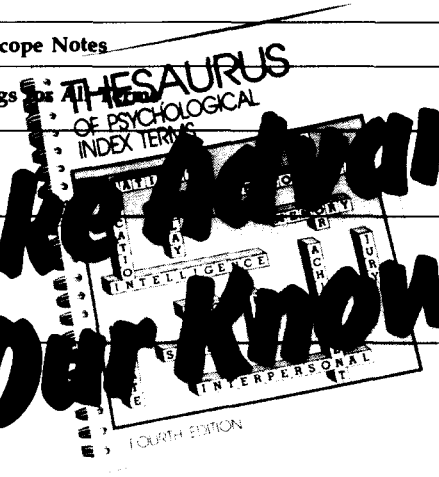

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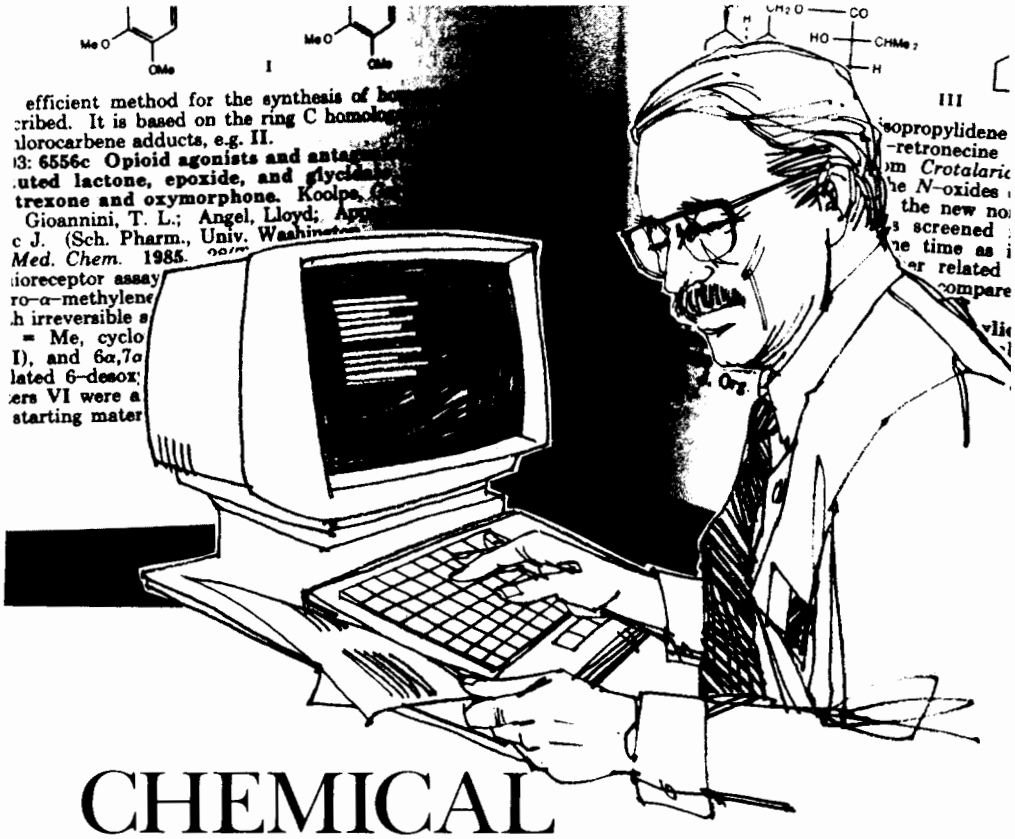

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