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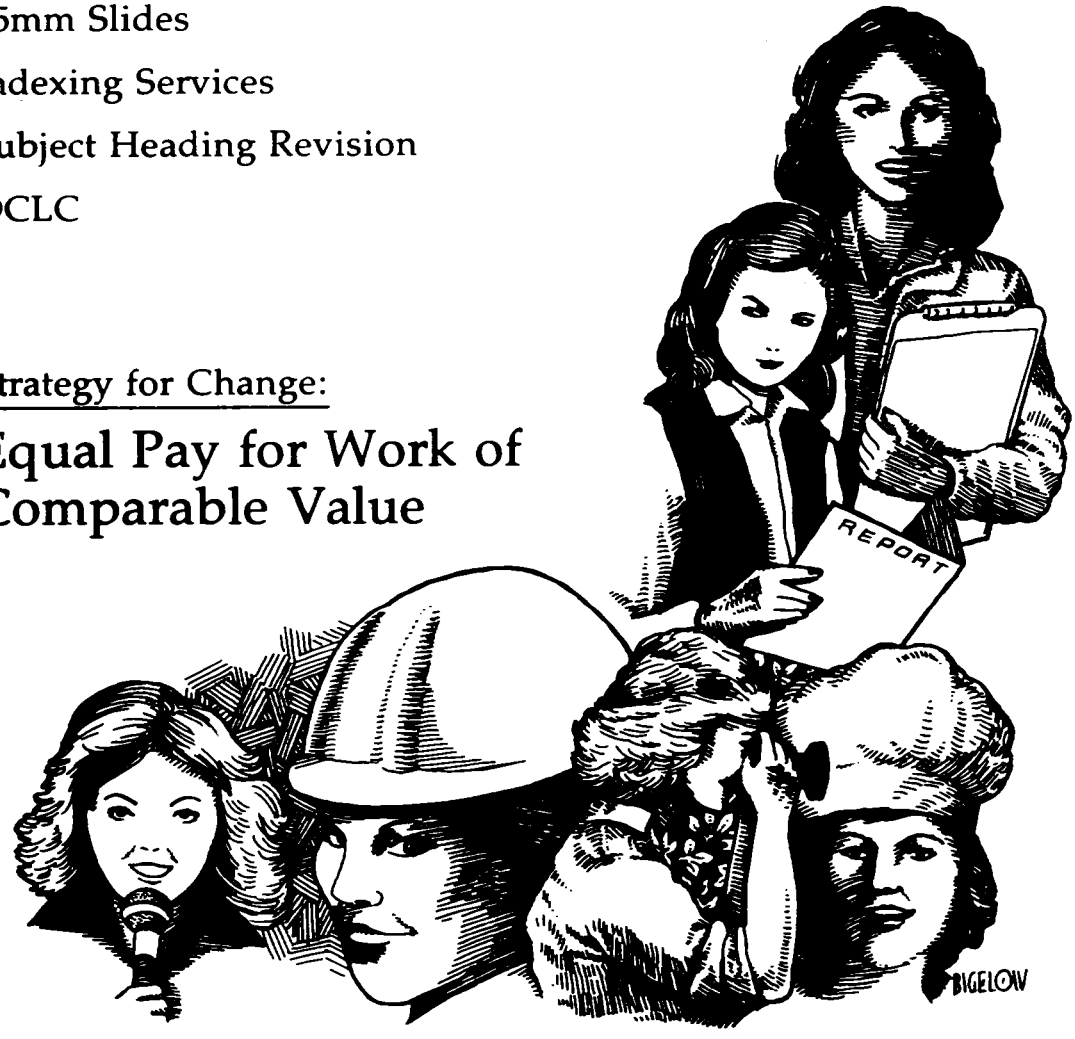
Inside:

Strategy for Change:

Equal Pay for Work of Comparable Value



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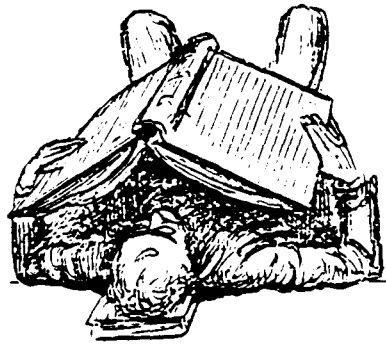

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LETTERS

PaperChase

In answer to the question asked in the excellent article by Sylvia G. Faibisoff and Jitka Hurych [*SL* 71 (no. 4): 347–355 (Oct 1981)] "Is There a Future for the End User in Online Bibliographic Searching?" I would like to call your attention to an article that offers an emphatic *yes*.

The same week as the appearance of the *Special Libraries* article, a report was published on computer searching by end users: "PaperChase: A Computer Program to Search the Medical Literature" by Gary L. Horowitz, M.D., and Howard L. Bleich, M.D., *New England Journal of Medicine* 305 (no. 16):924–930 (Oct 15, 1981). The level of use reported is astounding: "During the first year of operation 1,032 medical students, house officers, practicing physicians, and other hospital library users, *without formal instruction or user's manual,* (my italics) conducted 8,459 searches and displayed 399,821 references, 97,769 of which they selected for printing. Among users who conducted an initial search, 49 percent returned to complete five or more searches, and 14 percent returned to complete 20 or more" (p.924).

I believe the computer service described here has important implications for the development of online bibliographic retrieval. Obviously end users offered a suitable retrieval service want to perform their own searches and do so successfully.

The PaperChase program was designed to be self-service. It was assumed that users might not have time to be trained in search techniques or to read a user manual. The interaction with the computer is self-explanatory. At any point the user may request instruction about how to proceed. But the program offers more effective help than this alone. Rather than require the user to enter terms according to a rigid format, the search program matches what is typed with items in the database. For example, any of these variants will be matched to the term, *New England Journal of Medicine:* NEW ENGL J MED, NEJM, N.E.J.M., NEW ENGL JOUR MED, and even NEW EN. Further, the program monitors the user's search strategy and offers suggestions for improvement. Most often, the suggestion is to search by MeSH (Medical Subject Heading) term rather than by title word. As Faibisoff and Hurych point out, end users do not always think in terms of thesauri. PaperChase has been programmed to offer a choice of MeSH terms when a user enters a title word request.

The success of this program depends on the careful preparation of the database. Horowitz and Bleich give high praise to the National Library of Medicine for quality of indexing and accuracy of the database used. It seems to me that librarians can be of greatest help in designing high quality databases and high quality search programs to retrieve information from them. Then users will be happy to perform their own searches, thank you, without the help of an intermediary.

Judith Plotz,
Providence, R.I. 02906

Help Wanted

The Career Planning and Placement Center at Rensselaer Polytechnic Institute is developing a special library and resource area to support its career and graduate school counseling services, corporate job interview and cooperative education programs. The library presently consists of a nucleus of the following types of material:

- Directories on recruiting and placement personnel, professional and trade associations, research associateships and internships, corporations;
- Books on career exploration, decision making and goal setting, techniques for job search and interview skills;
- Handbooks and indexes on occupations and career opportunities;
- Graduate School literature, admissions exams and requirements;
- Files of corporate literature.

We are interested in communicating with similar libraries regarding subject heading authority lists and classification schemes adapted to this type of material. This would be very useful in the organization of the library as it expands. Any help *Special Libraries* can provide would be appreciated.

Elizabeth Kimball
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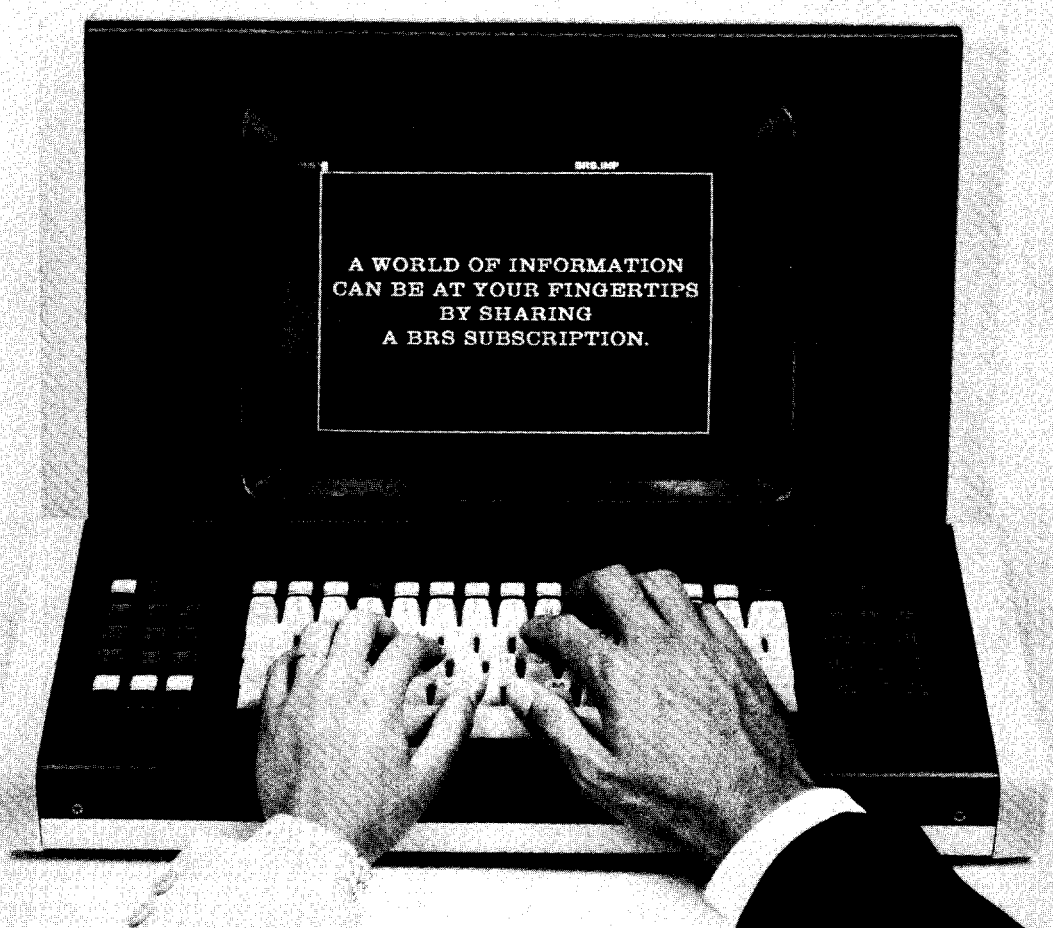

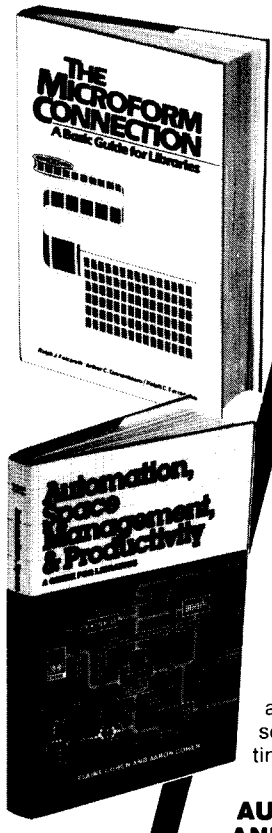

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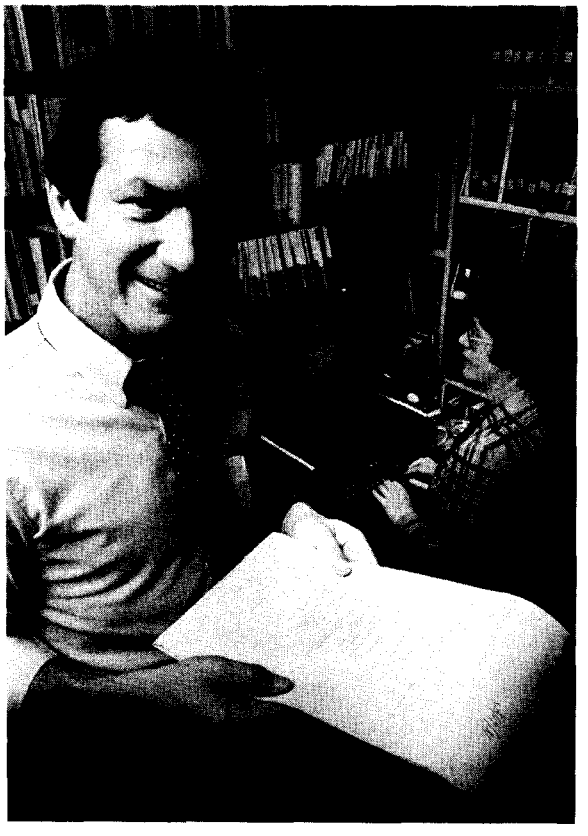

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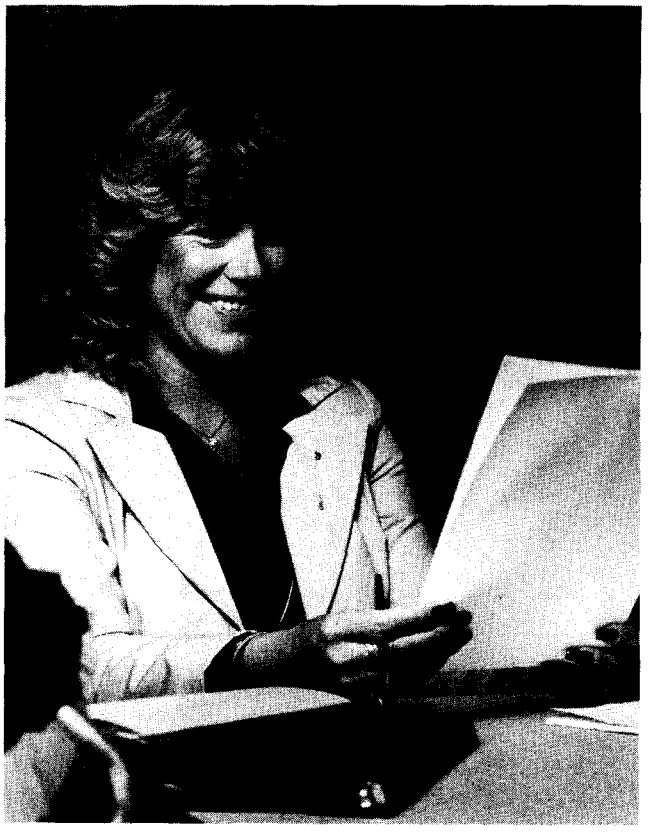

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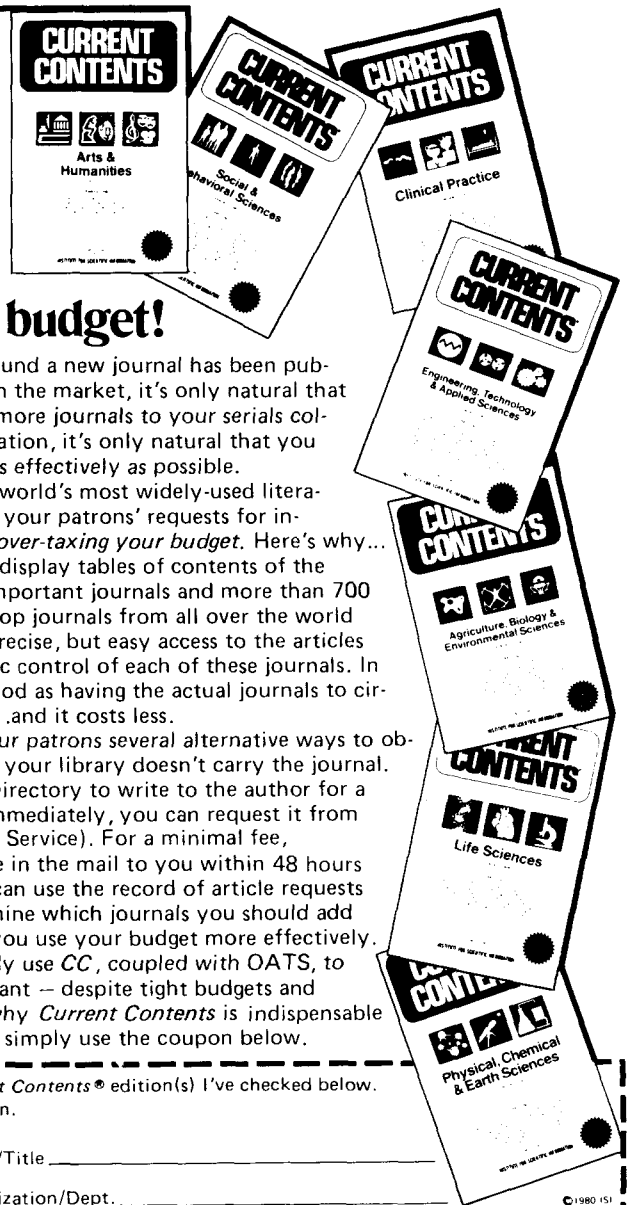

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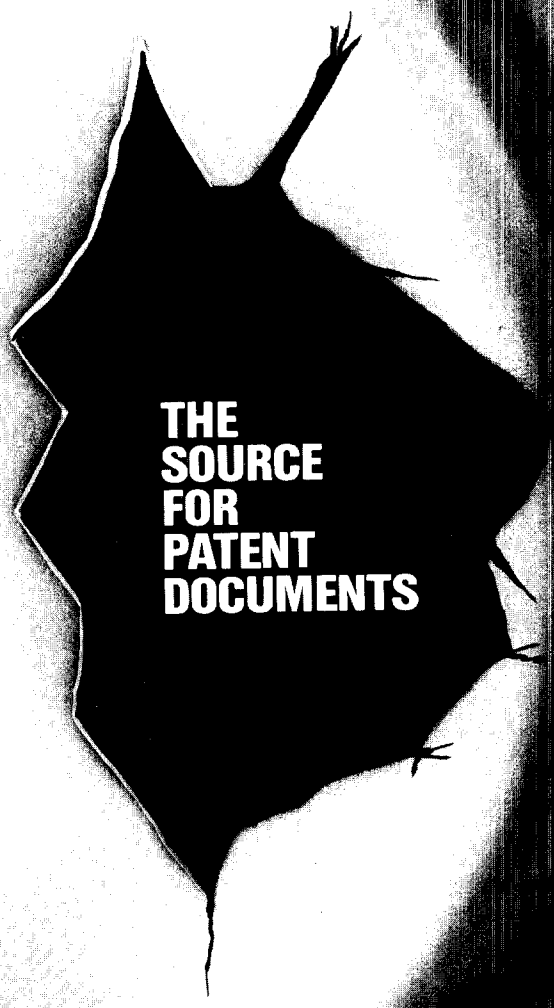

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1980s Forecast
Special Librarian to Information Manager

Evelyn Daniel

School of Information Studies, Syracuse University, Syracuse, N.Y. 13210

SOMETIME in the 1970s Americans began to lose faith in easy answers. We gradually began to realize the true complexity of the world. Our slogan has become, "Everything is related to everything else!" At the same time we have begun to place faith in our power to generate alternatives, to find different ways of achieving the same end. We believe that if we just explore enough alternatives, we will find a better way. This sense of the complexity and of the multiplicity of methods has led us to a form of conceptual paralysis. The information processing necessary to encompass the degree of complexity and possibility that surrounds us may force us back to a concrete, operational reality. For example, one may not know what the overall direction of the library should be, but one can know how to search *Chemical Abstracts*, how to develop a tailored bibliography, or how to abstract and summarize information on the etiology of some exotic disease.

How do we combat this problem and build a more comprehensive model of the world inside our heads so that we can confront and encompass the changes that are going on around us? A first step may be in forecasting the future—not the long-range future but the one confronting us in the 1980s. If we can sort out and extrapolate the trends in the major areas of our relevant environment, we will have better conceptual tools to prepare for that future. Three areas of forecasting we need to examine are the economic, the technological, and the social/political.

Economic Forecasts

In the economic area, two developments are occurring that have special importance for librarians: better techniques for costing the gathering, storing, and use of information; and a focus on increasing the productivity of service workers.

Special librarians have always been keenly aware of the need to talk to top managers in cost-benefit terms. The major, identifiable cost centers in information systems are: 1) awareness-screening, i.e., the costs of identify-

This article is based on a speech delivered to the Upstate Chapter of the Medical Librarians Association, October 1980.

ing what information is available; 2) acquisition of information, i.e., the decision whether or not to buy and the actual cost of the information set; 3) classification; 4) storage; 5) retrieval; 6) dissemination-usage, i.e., the costs of maintaining information flow in an abstracting-awareness service; 7) removal, i.e., the costs of eliminating material from the system.

The tangible, quantifiable benefits of these services are more difficult to identify: When we try to use "use" figures, we run into the Pareto law of optimality, the 80/20 rule—80% of the use comes from 20% of the collection. The Pittsburgh studies of university library collection use demonstrated this phenomenon (*1*). When the 80% unproductive tail is cut off, the 80/20 balance seems to reassert itself at a lower point. Perhaps the tail provides some needed stability.

Stafford Beer tells the story of how the railroad companies in Great Britain faced the fact that 20% of their lines showed 80% of the profit and vice versa. The obvious management strategy was to chop off the uneconomic lines. Unfortunately people who rode on the profitable 20% also rode on the unprofitable 80%. When these lines were cut, they were no longer customers. Thus, the relationship between payoff and effort reasserted itself at a new 80/20 point. Again the unprofitable tail was chopped off. Beer concluded that here was a "Machine for Eating the Railways" (*2*).

Productivity

In the 1980s we will see more concentrated effort expended towards establishing productivity measures for information use. For the most part, these efforts will be performed by economists and statisticians rather than by librarians allowing information services to be moved out of the overhead category. Peter Drucker reminds us that "overhead" is a term that "reeks of moral disapproval" (*3*). It suggests an activity to be shunned as nonproductive.

Productivity seems to be the key word of this era. Productivity means that balance between all factors of production that will give the greatest output for the smallest effort. In a modern world, increased productivity is not achieved by muscle effort but rather by extending man's physiological capacities through machinery. The average blue collar worker is capitalized at about $30,000; the average clerk at around $2,000, which includes the desk, chair, and typewriter, and the average professional or manager often at less than $1,500.

The growing number of what Machlup has termed "information workers" (*4*) in the workforce is the major target for increases in productivity in the 1980s. Service and office work are the last labor-intensive areas left in the United States. Office automation is the byword today. The personal information processor/computer for the professional or manager is the next step in increasing the information worker's productivity.

An analogous development has taken place in the field of agricultural research. In 1850, 50% of the nation's Gross National Product came from agriculture. Today, less than 10% does, yet enough is produced to feed a population that has grown ten fold, to export significant amounts, and to still have large surpluses. How was this made possible?—through applied technology and by bringing information to bear on the problem.

Technological Forecasts

We have had a lot of what might be called the "Gee-Whiz" approach to technological forecasting which presents one marvel after another and perhaps blurs the line between what is potential and what is actually available. The real technological achievements may seem somewhat anti-climactic after all the promises. The possibilities outrun our ability to create social inventions that will make appropriate use of these marvels.

The major take-off point occurred when computer technology was wedded to communications technology to produce a vastly increased capability for rapid and low cost electronic transmission of messages that could be received as sound, image, or electronic notation from anywhere to anywhere (5). Tony Oettinger refers to this phenomena as the field of "compunications" (6). This fusion will reshape society in ways our conventional wisdom may not be able to foresee, comprehend, or effectively control.

asynchronous communication with friends and colleagues via the electronic mailbox. Teleconferencing avoids the interruptions and frustrations of the telephone since it does not require both parties to be in communication at the same time.

Each technology taken alone is changing our way of life unalterably. And the merger of these technologies mean the rate of change is increasing and will continue to increase. We are in the information age and rapidly approaching a true symbiosis of man and machine.

The rate and complexity of economic, social, political and technological change is so great that the organization risks becoming conceptually paralyzed. Information management suggests an integration and rationalization of information flow within the organization, from data processing to record-keeping and documents management. Special librarians have the skills and judgment needed by today's organizations. They should take leadership by becoming true information managers.

Licklider's prediction in the sixties that home computer terminals would permit individuals to access, annotate, and retrieve information via telefacsimile documents is now being realized (7). Teledon in Canada, Viewdata in Great Britain, and the Source in the United States are fully prepared to enter the home via cable television with the electronic equivalent of the yellow pages. Videodisc technology, using computerized access and retrieval, can select particular visual images to show action slowed down, speeded up, or frozen for intensive study. A single disc contains 56,000 images which are read by laser beam technology so that, theoretically, the disc will never wear out. Similar developments are available in micrographics.

My particular interest is the use of personal computers or microcomputers as an extension of memory, computational abilities, and as a means of

In order to shift easily from one format to another, (as from print to machine-readable form, or from one machine-readable format to another), we will probably move to standardize many of the elements of information even though the particular markers or the formats that carry the information will be widely variable. It is here that the library's vast experience in standardized information descriptions will be invaluable.

Social/Political Forecasts

Our organizations are changing. Bennis suggests that the organization of the future will be an "ad hocracy", meaning that it will be adaptive through the use of rapidly changing, temporary task forces. Organized around specific problems, these ad hoc groups will involve individuals with diverse professional skills in working relationships (8).

Information Overload

Many managers today face the problem of information overload—a proliferation of data that is fragmented and not organized for easy access. At the same time they feel pressured to make decisions on the basis of too little relevant information. These information-based problems will continue to increase unless and until new methods of harnessing the information technologies or new organizational structures can be found.

In the political arena, legislators are expected to become knowledgeable and vote on an ever-increasing number of bills. New York State had over 34,000 bills introduced in 1980 (three times what it had ten years ago), although only about 3,000 became law. Even allowing for multiple versions of the same bill, private bills, and those being reintroduced, the information load is tremendous as more and more interest groups turn to legislation for redress of inequities, environmental problems, need for standardization, and the like.

Research Trends

In the field of research, the trend toward interdisciplinary work will continue and grow. Research in the professions, such as medicine, is highly dependent upon the application of specialized knowledge from many fields. Research in gerontology, for example, combines specialization and interdisciplinary research, and has received considerable amounts of federal funding.

The enormous and continuing use of federal funds to finance research has made research a public policy issue and shifted the emphasis from pure, or basic, research to an increasingly practical orientation. There is little patience or interest in historical research or in knowledge for its own sake. At a time when more and more is being published (and perhaps partly in response to this impossible burden of information), the scientist is becoming less concerned with documentary sources. The invisible college is used by all scientists, and the truly innovative scientist tends to use the informal channels of information almost exclusively. The first preference for most scientists is personal recommendation, followed by chance, and only after these avenues have been explored does the scientist turn to secondary sources, such as indexes and abstracts. Modern scientists require access to current facts in a vast range of fields, but then usually do not need, or want, to study the full knowledge context of these facts. Findings, conclusions, results, and an account of the methodology constitute the information sought. According to Osburn:

> The scientist is no longer a "scholar"; he is a researcher who pieces together bits of information, acquired by whatever means is the fastest and most efficient, and applies it to a theory and methodology of his own creation. In this cycle, the purpose of publication is more often the establishment of historical record and precedence than the communication of information, so that the maintenance of large local collections of scientific literature may be more politically motivated than substantively motivated (9).

The social scientist emulates this behavior with perhaps more emphasis on methodological tools. Even humanists are deserting erudition for literary criticism and analysis, often using the computer.

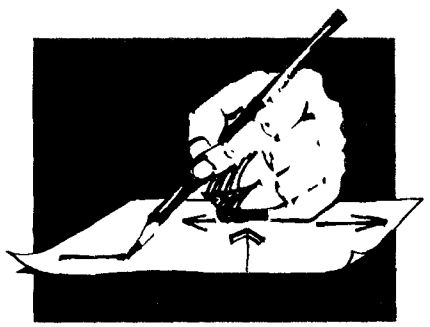
Information Management

How does this radical change in the way scholars create new knowledge affect the library's role? Are librarians moving into the 1980s in equal partnership with other professions? What are the requirements of the new breed of librarians? Can we serve a necessary function in a world of increasing complexity that seems to run on information and be overrun by it? Can a walrus become a unicorn?—can we, should we,

transform ourselves into information managers? I think the answer is yes.

The growth of information awareness, the explosion of messages, the increasing access to and demand for information, the growth of information technologies—all of these measures demand a more dynamic and holistic approach to information. It is in this context that "information management" originated and has become a rapidly growing field of professional activity. Taylor defines information management as,

> the design, management and evaluation of cost effective systems (i.e., appropriate combinations of people, information and technologies) to fulfill the objectives of the particular corporate body (or group of clients) by providing an efficient flow of information to those who need it when they need it (*10*).



The effective management of complex information resources requires a new breed of professionals who are committed to understanding the information age in which we live and to helping people and organizations control the information flow through the new technologies. For this purpose, a new framework is needed to give librarians perspective on all the variables of information and its concomitant technologies within different organizational environments.

Weaver identifies three types of problems in the development of scientific thought and describes the methodology associated with each one (*11*). Problems of *simplicity* usually involve only two variables, directly related to each other in their behavior. Experimental and analytical techniques have been developed to solve these problems. Problems of *disorganized complexity* are those in which many variables are involved and are dealt with using techniques of probability and statisics. Problems of *organized complexity* are those which lie between the other two types, having a larger number of variables than can be conveniently analyzed by typical research methods and a smaller number than are suitable for statistical techniques.

These types of problems call for dealing simultaneously with a sizable number of interrelated factors (the kinds of problems described earlier). The resolution of problems of organized complexity calls for a systems approach which first recognizes the complex organic whole of a given system and then identifies the intricate relationships and interconnections of each of the elements within that system.

Since the information manager of the future will be working within organizational contexts, the problems faced will be primarily those of organized complexity; thus, a systems view of the world will be necessary to provide an appropriate theoretical framework and the conceptual tools for getting on top of the situation and controlling information flows.

The Three Information Worlds

Presently there are three major "information worlds" which have traditionally been divided and separate. The first is familiar to all of us. It is the literature world of libraries and archives where information has been put into recorded form. A meaningful organization has been added along with an element of human judgment.

The second information world is the document world of information centers, clearinghouses, documentation centers, and records centers, where information has been collected and organized but perhaps not evaluated in the same sense

as in the literature world. In order for us to penetrate this world, we need the tools and understandings that come from paperwork management, a burgeoning sister field that is closely related to archival work.

The third information world is the data world of computers, telecommunication, and automated information systems, where the information is often numerical. Horton suggests that two key variables distinguish the three groups—time frame and storage medium (*12*). The library focuses on the historical time frame and the book/periodical storage medium. The paperwork or records center focuses on a more current document medium. Finally, there is the rapidly changing machine-readable data world of the computer. It is this latter field that is growing exponentially and that the new breed of librarians must penetrate in order to provide the information management function that is sorely needed now and can only increase in need in the late 1980s and the 1990s.

concerned with the most effective and efficient ways of collecting, storing, retrieving, analyzing, synthesizing, and evaluating their particular set of information responsibilities. All are also concerned with computer architecture, telecommunications, and media and display technologies.

In the future, it seems clear that these separate fields will be brought together organizationally and that the leadership of these merged units will come from the new profession of information management. The key factor that permits librarians to metamorphose into information managers more easily than can either database administrators or records managers is their ability to organize conceptually, to evaluate, to select, to filter, and to channel information to the point where it is needed when it is needed. Librarians have exercised these abilities for at least 100 years and possibly back to Alexandrian times. In a wonderful article written in the 1930s on "The Mission of the Librarian," Ortegya y Gasset argues that as

The key factor that permits librarians to metamorphose into information managers more easily than can either database administrators or records managers is their ability to organize conceptually, to evaluate, to select, to filter, and to channel information to the point where it is needed when it is needed. Librarians have exercised these abilities for at least 100 years and possibly back to Alexandrian times.

Presently there are clearly different ways of thinking about and dealing with these three types of information worlds. Database administrators are concerned with unanalyzed, concrete, raw data. Management information system experts or records managers are concerned with current information in context. Information storage and retrieval experts, that is, librarians, deal with collections of books and other artifacts that contain recorded knowledge. Yet, professionals in all three areas are

information continues to increase, the mission of the librarian will increasingly be to act as the primary filter (*13*). The need for filtering, for summarizing the gist, the core, the kernal of meaning for those without time or patience to read the whole corpus of literature is crucial to the way knowledge is used today.

The future is upon us—we are in the information age! With our heritage of gathering, evaluating, and organizing knowledge, we as librarians have a

special opportunity and a special challenge. We need to develop appropriate planning strategies individually and collectively to meet that future and take up the challenge of information management.

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Authorship Characteristics in *Special Libraries*

A Comparative Study

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■ *Special Libraries* **and four other library science journals were studied with regard to the sex, occupation, and geographic distribution of their authors. The study found that the typical author published in *Special Libraries* is a male special librarian from the northeastern region of the United States. While *Special Libraries'* authors are representative of SLA's membership with regard to geographic distribution and occupation, an imbalance in favor of male authors is exhibited by this journal and all other journals analyzed in this comparative study.**

THE PUBLISHING patterns of authors in various professional disciplines have long interested librarians. Little investigation, however, has been devoted to the publishing characteristics of authors in our own field. A recent effort in this direction is the article by John N. Olsgaard and Jane Kinch Olsgaard, "Authorship in Five Library Periodicals" (*1*). Their article details the results of a bibliometric study of five library science journals widely read by academic librarians. The Olsgaards chose to examine the sex, occupation, and geographic distribution of the authors published in those five academic library journals over a ten-year period. The five journals selected

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for the study, *College and Research Libraries, Library Journal, Library Quarterly, Library Trends,* and *RQ*, evidenced some publication bias with regard to the three characteristics studied. Curious to know if the literature of special librarianship contained similar imbalances, the authors repeated the Olsgaards' methodology in a study of five journals selected for their interest to the special library community, foremost among them, *Special Libraries.*

Methodology

The Olsgaards' criteria for selection of five academic library publications were:

- minimum ten-year publishing history;
- recognition as a "nationally known journal of library science"
- article format;
- influence on the library profession;
- "common trends in publishing" (*1*, p. 49).

With these same criteria in mind, the authors selected the following five special library journals for their examination:

Special Libraries (SL), v. 61-70, 1970-79;
Journal of the American Society for Information Science (JASIS), v. 21-30, 1970-79;
Law Library Journal (LLJ), v. 62-71, 1969-78;
Bulletin of the Medical Library Association (BMLA), v. 57-66, 1969-78;
Online Review (Online), v. 1-3, 1977-79.

Online Review fails the first stated criterion, a ten-year publishing history. It was included because the authors believe it to be representative of a new genre of library periodical that is gaining influence in the special library community.

A 100% sample of authored articles for the years listed above was conducted. Each named author was counted as one complete data entry, whether he/she appeared solely or as a joint author. Likewise, in instances of dual occupations for an individual author (most often as librarian and professor), both occupations were given a full data entry. The authors' sex, occupation, and geographic location were taken directly from the information included in the published article. Neither library directories nor other reference tools were consulted to complete any data entries. Ambiguous or incomplete data and foreign geographic locations were assigned to an "indeterminate" category and were disregarded in statistical operations, which used the following formula:

$$X = a/(N - d)$$

where X = % of specific data entries;
a = number of data entries in a particular category;
N = total number of entries in a journal;
d = number of entries for which data cannot be determined.

Occupational Categories

For the sake of comparison, there was an initial attempt to replicate all aspects of the Olsgaards' methodology; however, modifications to the occupational categories proved necessary. The modified occupational categories for this study are:

1) special librarian
2) library science faculty member
3) academic librarian
4) other librarian/library science student
5) other faculty/graduate student
6) information supplier/broker/association
7) nonlibrarian government/private sector occupation

Because the occupational categories have been redefined, extensive occupational comparisons should not be made between this study and the Olsgaards'. Apparent correlations may be spurious.

For the purposes of this study, special librarians are defined as librarians and information specialists actively employed in libraries and information centers serving industry, business, research institutes, and government. In addition, academic librarians clearly identified as working in a specific subject collection in an academic library or in a specialized divisional library were counted as special librarians. To illustrate, an author identified as "reference librarian, Engineering Library, Anywhere University" is counted as a special librarian, whereas an author who is listed as "science bibliographer, University of Anywhere Library" is counted as an academic librarian. Similarly, a "technical information specialist, Technical Information Center, ABC Corp." appears as a special librarian, while "technical information specialist, ABC Corp." is considered a private sector occupation.

Are women publishing more frequently in recent years because there has been an increase in the number of women promoted to the heads of organizations?

Limitations

An analysis of authorship characteristics solely based on the information provided by the typical library science journal is inherently risky. The authors found some author information to be sketchy, inconsistent, and/or incomplete. *Online Review* devotes most attention to such information. Its author information is not only consistently complete but also includes a useful addition, the author's preferred mailing address.

The regional designations employed by the Olsgaards and followed in this research are those of the ALA Committee on the Accreditation of Graduate Library School Programs. These designations are a limitation to the extent that they do not correspond to common usage. For example, Mississippi is considered by the ALA Committee to be in the southwestern region, whereas common usage places it in the southeast. The regional categories are:

Northeast:	Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.
Southeast:	Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.
Midwest:	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.
Southwest:	Arizona, Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma, Texas.
West:	Alaska, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming.

Results

During the ten-year period studied, 52.5% of authors selected for publication in *Special Libraries* were male, while 47.5% were female (Table 1). By way of comparison, a survey of the membership of Special Libraries Association indicates that 20.8% are male, while 79.2% are female (Table 2). Special Libraries Association ranked second among the three professional library associations in terms of male membership, as shown in Table 3.

As indicated in Table 4, a plot of the percentage of female authors in *Special Libraries* over the ten-year period under study would have a generally positive slope. By way of comparison, female

Table 1. Gender of Authors in Five Special Library Periodicals.

Journal	% Male	% Female	N − d
SL	52.5	47.5	767 − 20 = 747
BMLA	43.1	56.9	710 − 53 = 657
JASIS	76.5	23.5	777 − 126 = 651
LLJ	58.8	41.2	328 − 15 = 313
Online	40.7	59.3	156 − 6 = 150
Weighted Average	56.3	43.7	

Table 2. Comparative Gender Ratios.

Sample Groups	% Male	% Female
SL	52.5	47.5
Membership of SLA*	20.8	79.2
Combined 5 Periodicals of Special Librarianship	56.3	43.7
Population of Special Librarians**	24.1	75.9
Population of Academic Librarians**	33.8	66.2
National Average of Librarians†	16.0	84.0

*Based on a randomly selected 10% sample of all members listed in the Annual Directory Issue of *Special Libraries*, 69:65s–308s (Oct 1978).
**U.S. Department of Labor, Bureau of Labor Statistics, *Library Manpower: A Study of Demand and Supply*, Washington, D.C., Government Printing Office, 1975, p. 14.
† Ibid., p. 12.

Table 3. Gender of Membership in Three Library Associations.

Associations	% Male	% Female
AALL*	28.6	71.4
SLA	20.8	79.2
MLA†	15.3	84.7

*Based on a 100% sample of all members listed in *Directory of Law Libraries, 1980 Edition,* n.p., American Association of Law Libraries, 1980, pp. 80–141.
†Based on a 10% sample of all members listed in *Medical Library Association 1979-80 Directory,* Chicago Medical Library Association, 1979, pp. 42–92.

Table 4. Gender of Authors in Periodicals of Special Librarianship by Year.

Year	SL		BMLA		JASIS		LLJ		Online	
	%M	%F	%M	%F	%M	%F	%M	%F	%M	%F
1969			58.7	41.3			62.5	37.5		
1970	68.5	31.5	41.0	59.0	79.5	20.5	64.0	36.0		
1971	74.7	25.3	65.1	34.9	75.4	24.6	78.8	21.2		
1972	57.1	42.9	47.3	52.7	70.6	29.4	44.0	56.0		
1973	48.7	51.3	43.2	56.8	80.6	19.4	71.4	28.6		
1974	49.3	50.7	41.5	58.5	79.7	20.3	61.5	38.5		
1975	42.9	57.1	36.0	64.0	81.6	18.4	61.5	38.5		
1976	49.5	50.5	38.0	62.0	70.7	29.3	68.1	31.9		
1977	52.6	47.4	38.5	61.5	74.1	25.9	38.9	61.1	46.0	54.0
1978	49.3	50.7	34.8	65.2	80.0	20.0	46.0	54.0	34.0	66.0
1979	29.8	70.2			73.2	26.8			42.6	57.4
Weighted Average	52.5	47.5	43.1	56.9	76.5	23.5	58.8	41.2	40.7	59.3

authorship in *Special Libraries* increased 4.3% per year while in *Law Libraries Journal* and in *Bulletin of the Medical Library Association*, it increased 1.8% and 2.7%, respectively.

Table 5 describes the data which resulted from an effort to find a correlation between editor gender and sexual balance in choice of authors. Because *Bulletin of the Medical Library Association* was edited entirely by men and *Special Libraries* was edited almost entirely by women during the period studied, any correlation should have been apparent from this data set. No correlation was found. *Bulletin of the Medical Library Association* published the highest percentage of women authors under an all-male editorship.

While this study found significant differences between the gender distributions of authors published in *Special Libraries* and the population of special librarians as a whole, it found virtually no aberrations in geographic distribution (Table 6). The northeastern, southeastern, and midwestern regions are represented in slightly larger percentages than their portions of the population of special librarians, while the

Table 5. Comparative Editor Gender.

Journals	Editors		Authors	
	% Male	% Female	% Male	% Female
SL (3 editors)	7	93	52.5	47.5
BMLA (3 editors)	100	0	43.1	56.9
JASIS (2 editors)	100	0	76.5	23.5
LLJ (2 editors)	80	20	58.8	41.2
Online (1 editor)	100	0	40.7	59.3

Table 6. Comparative Geographic Distribution Ratios.

	%NE	%SE	%MW	%SW	%W
Special Libraries	46.9	7.3	23.2	5.3	17.3
SLA Membership	45.0	7.0	21.5	7.2	19.3
5 Periodicals of Special Librarianship	42.0	9.2	25.9	6.0	16.9

Table 7. Percentage of Foreign Authors in Periodicals of Special Librarianship.

Journals	%
SL	8.4
JASIS	18.7
LLJ	4.6
BMLA	4.8
Online	4.0
5 Periodicals of Special Librarianship	9.5

southwestern and western regions are slightly underrepresented. None of the regions deviates by more than 3% from the population norm.

While contributions from foreign authors were disregarded when calculating the geographic distribution shown in Table 6, these contributions constitute a significant portion of the articles in *Special Libraries*. Of all *Special Libraries'* authors, 8.4% live outside the United States, while 7.7% of the membership of SLA does so (Table 7). The output of foreign authors exceeds that of two U.S. regions, the southeastern and southwestern. That foreign authors are well represented suggests that Special Libraries Association is committed to its role as a truly international organization.

In examining Table 8, it is interesting to note that the percentage of special librarians published in *Special Libraries* during any given year remains relatively constant, while the percentages of the other occupational categories fluctuate over proportionally broader ranges. Such fluctuations in the other occupational categories might relate to successive trends in the interests of special librarians as they concern other disciplines. For example, the percentage of authors representing information suppliers, brokers, and associations increased over the ten-year period studied.

As might be expected, the three "traditional" special library journals studied—*Law Library Journal, Bulletin of the Medical Library Association*, and *Special Libraries*—exhibit higher percentages of authorship by special librarians than do their cross-disciplinary counterparts (Table 9). That *Law Library Journal* and *Bulletin of the Medical Library Association* publish the work of significantly more special librarians than does *Special Libraries* reflects their narrower scope and more specialized target audience.

It is disturbing to note that information suppliers, brokers, and associations are poorly represented in the literature of special librarianship, particularly in light of their integral role in the services offered by modern special libraries. Communication between librarians and the information industry seems to be taking place outside traditional channels, in information industry-oriented journals like *Online Review*.

Table 8. Occupations of Authors in *Special Libraries* in Order of Frequency.

Occupation	%	Range in Individual Years as Percentage
Special Librarian	43.8	40.0 to 47.9 = 7.9
Private/Government	16.4	9.6 to 31.1 = 21.5
Academic Librarian	13.6	6.5 to 26.0 = 19.5
Library Science Faculty	11.4	2.7 to 18.8 = 16.1
Other Librarian	5.6	2.7 to 10.4 = 7.7
Other Faculty	5.4	1.4 to 11.3 = 9.9
Information Supplier, etc.	3.7	0 to 10.4 = 10.4

Table 9. Occupation of Authors in Five Special Library Periodicals.

Journal	% Academic	% Library Science Faculty	% Special Librarian	% Other Librarian	% Other Faculty	% Information Supplier	% Private Government	% N – d
SL	13.6	11.4	43.8	5.6	5.4	3.7	16.4	783 – 4 = 779
JASIS	2.2	18.3	6.1	.8	41.7	5.6	25.3	781 – 23 = 758
LLJ	1.6	1.1	62.5	2.5	21.9	1.1	9.3	379 – 13 = 366
BMLA	2.6	6.8	68.6	4.3	12.3	.8	4.6	754 – 14 = 740
Online	8.3	3.2	26.7	1.3	3.2	32.5	24.8	158 – 1 = 157
Weighted Average	5.8	10.3	41.6	3.3	19.1	4.7	15.3	

Table 10. Percentage of Authors Listing Two Occupations.

Journals	% of All Data Entries	% of Special Librarian Category
SL	2.3	3.5
LLJ	13.9	21.4
BMLA	5.9	7.9
JASIS	.5	.5
Online	1.3	4.8
Weighted Average	4.3	8.7

Not demonstrated by Table 9 is the fact that almost all authors listing two occupations (4.34% of all data entries) are special librarians, the majority medical or law librarians. Most teach either in the institution with which their library is associated or in a library school (2). The percentage of double occupations may be somewhat exaggerated due to the practice in some academic law and medical libraries of awarding an academic title to signify faculty status rather than instructional responsibilities. Such cases could not be identified and segregated using byline information. Of all special librarian authors, 8.7% fall into this dual-occupation category (Table 10).

Conclusions

The typical author contributing to *Special Libraries* is a male special librarian from the northeastern region of the United States, as is the typical author contributing to special library literature as a whole.

While admirably unbiased with regard to geographic distribution of its authors, *Special Libraries* does exhibit imbalances in two areas. First, *Special Libraries* contains virtually no articles by authors employed by information suppliers, brokers, or associations. This study cannot answer the important question of why this is so. Is there editorial bias? Do editors fear possible protests from other commercial interests? Does the information industry submit fewer articles for consideration? Is librarianship still ambivalent about the emerging information industry?

The second imbalance in *Special Libraries'* authorship characteristics is in the area of gender. The authors can only speculate about what the causes of sexual bias might be. Since this sexual imbalance is so widespread in library literature, its causes may be assumed to relate to the nature of and climate in the

library profession, rather than to editorial attitudes. Do men submit more articles for publication? Do men have more to say by virtue of their more frequent selection to head library organizations? Are women publishing more frequently in recent years because there has been an increase in the number of women promoted to the heads of organizations? Or are they publishing more frequently in hopes of being promoted?

The questions that have been posed are not meant to be restrictive or to rule out factors that may account for certain imbalances; rather, they are intended to stimulate further research. Sophisticated bibliometric studies will be necessary to uncover the subtle forces at work here.

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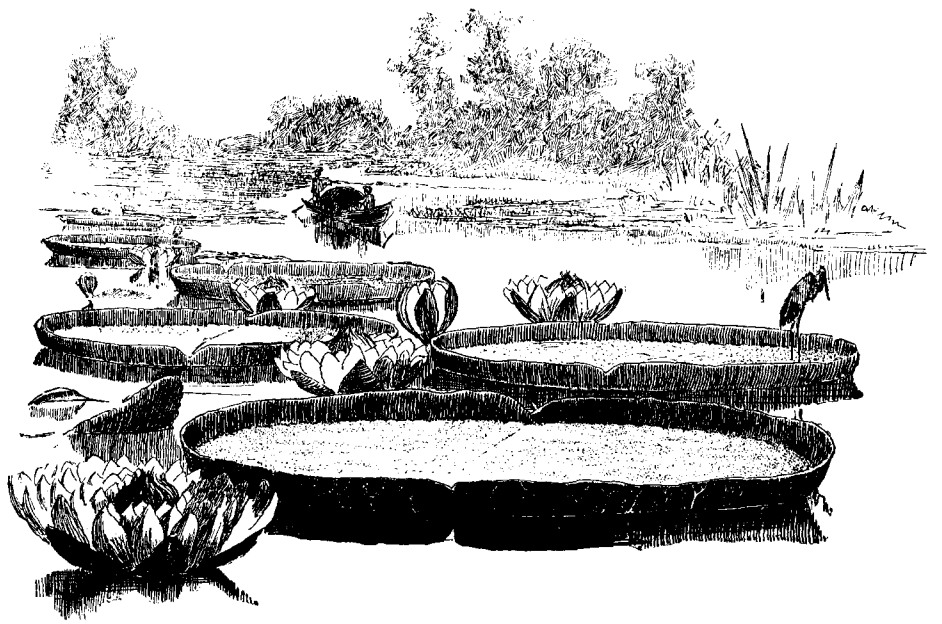

Equal Pay for Work of Comparable Value

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■ **Occupational segregation and other barriers to equal access to job opportunities for women are discussed. Two approaches to correcting pay inequities are examined: the establishment of equal pay for equal work, and more recently, the concept of equal pay for work of comparable value. Legal cases, job evaluation studies, and other steps being taken to implement a system of comparable worth are described.**

THE UNDEREVALUATION of women's work is a widespread and long-standing problem. In 1955, women full-time workers earned 64¢ for every dollar men earned. Today that figure has dropped to 59¢. A recent report points out that "the average female college graduate earns less than the average male high school dropout (*1*). For the first time in American history more than half of all adult women are part of the paid labor force; more than one-third of them work in clerical jobs that pay about $2,000 above the poverty level. Women's median full-time income in 1979/1980 was just over $10,000 a year, while men's full-time median income topped $17,000 annually (*2*). Less than 10% of working women today earn over $15,000, and less than 1% earn over $25,000 a year.

Strategies for Change

For the past 20 years, supporters of pay equity for women have focused most of their activity on the goal of gaining equal access to all occupations and equal pay for women. In practice, this strategy has meant moving women into nontraditional or "men's" jobs. The assumption has been that women would be in a better position to demand equal pay when they performed the same jobs as men (*3*).

Anti-Discrimination Legislation

A variety of laws were passed in the 1960s guaranteeing women equal access in employment. The Equal Pay Act of 1963 requires employers to pay men and women equally when they do the same

work. In 1964, Congress passed Title VII of the Civil Rights Act prohibiting discrimination in employment. Public pressure also resulted in President Johnson signing Executive Order 11246 prohibiting federal contractors and subcontractors from discriminatory hiring practices. Employers were required to take affirmative action to ensure equal employment opportunity for all individuals. The Equal Employment Opportunity Commission (EEOC) was established in 1965 to enforce Title VII, and the Department of Labor was charged with enforcement of the Equal Pay Act and EO 11246.

Yet, after almost 20 years it appears that anti-discrimination legislation has been considerably less effective than either its advocates hoped or its opponents feared. There has been little significant improvement in women's pay or access to jobs. The imprecise language of the Equal Pay Act, as well as the lack of specific legislation to enforce employers' compliance with affirmative action, have been blamed (*4, 5*). As late as 1976, the Labor Department's Office of Federal Contract Compliance had not terminated a single federal contract because of sex discrimination. Moreover, many contractors were found to have not fulfilled their back pay obligations. EEOC was so understaffed that it had a backlog of over 65,000 cases (*6*).

Occupational Segregation

A large body of literature exists on the sexual divisions in the workplace. Blaxall and Reagan (*7*) have edited the proceedings of a conference summarizing major approaches to the problem of occupational segregation. Edwards, Reich and Gordon (*8*) have compiled a collection of historical and contemporary studies analyzing the basis and consequences of labor market segmentation. Oppenheimer (*9*) presents a major analysis of the changing structure of the female labor force.

Occupational segregation and unequal pay date back to the beginnings of American industry in the early nineteenth century when women and girls were recruited to work in the New England mills. Their jobs were separated by location and task from those of the male workers, and they were paid significantly less.

For the past 20 years, supporters of pay equity for women have focused most of their activity on the goal of gaining equal access to all occupations and equal pay for women. This strategy has meant moving women into nontraditional or "men's" jobs.

Occupational segregation was given a major reinforcement by the protective labor laws passed in most states in the late nineteenth century. These laws restricted women from such jobs as bartending and mining which the lawmakers considered undesirable for women but which paid higher wages than "desirable" women's work. An extended discussion of these laws is found in Baer (*10*). Other forms of "protection" prohibited women from night or overtime work, thereby excluding them from shift and overtime premiums, as well as from many jobs requiring overtime or night work. Women were also excluded from activities such as heavy lifting that were part of many better-paying jobs.

These barriers to equal participation by women in the workforce were temporarily lowered during World War II because of the shortage of men in the labor supply. The concept of equal pay was given official recognition when the National War Labor Board (NWLB) ruled that unequal pay for "comparable quality and quantity of work on the same or similar operation" was illegal. The Board had temporary power to correct discriminatory policies. In 1945, the NWLB found that General Electric and Westinghouse purposely lowered wage rates when the jobs were performed by

women. The companies argued that female employees produced less than males; however, the NWLB declared the practice illegal, reinforcing its favorable stance on pay equity (*7*). Nevertheless, the Board opposed changing the existing relationship between men's and women's jobs, and opposed the concept of equal pay for comparable jobs (*11*).

The Female Job Ghetto

Bergman (*12*) first developed an analysis of the relationship and consequences of occupational segregation and "overcrowding." Since 1900, over half the female workforce has been crowded into occupations in which at least 70% of the workers are women (*13, 14*). As new occupations were created, they became either "feminized" or the prerogative of men.

Most women today continue to work in a low-paid, overcrowded ghetto of women's jobs. Eighty percent of women workers are clustered into low-salaried clerical, sales, service, and factory jobs. Women are not likely to be unionized or skilled blue collar workers; less than 5% of all skilled trades workers are women. Women professionals are segregated and underpaid in "women's fields." Most professional women are nurses, teachers, librarians, or health technicians (*15–22*). In 1980, 80% of all librarians were women, as were 97% of all pre-school and kindergarten teachers.

The segregation of "men's jobs" and "women's jobs" has been a barrier to successful litigation and bargaining for equal pay for women. Because the jobs of both sexes are not identical, it has been difficult to demonstrate the discriminatory basis of women's wages (*23*). The principal reason the equal pay for equal work strategy has not succeeded is because it accepts occupational stratification. Instead of challenging why workers in traditional female occupations are poorly paid, it is aimed at promoting a few women into management. This course of action neither benefits the majority of women workers nor those men who hold positions in traditional female occupations. Keeping women's salaries down guarantees the availability of a cheap labor pool and lowers the wages of the entire workforce.

Proponents of pay equity now recognize that the 59¢ wage differential between men and women will not be closed until the jobs that 80% of all women hold are rewarded by higher pay and status.

Comparable Worth

The concept of "comparable worth" has been developed as an alternative strategy to win economic equity in the workplace. Comparable worth, or equal pay for work of comparable value, holds that jobs requiring comparable but not

identical skills, demands and responsibilities should be paid equally. It is an attempt to find a way around the barrier that a segregated job market has presented to achieving equal pay for women (*24*).

The establishment of a job evaluation system based on comparable worth would require that work be valued for its intrinsic value. Through such a system, occupations dominated by women would be respected and rewarded equally to those held by men. However, two sets of questions need to be resolved in order to implement comparable worth: How is comparability to be measured, and how can employees and the government persuade employers to implement comparability assessments?

A variety of job evaluation studies have been made, some of which have been used in efforts to improve women's wages. A rapidly growing literature also exists on efforts to achieve comparability recognition through litigation, collective bargaining, and governmental action, as well as on the opposition to the comparable worth standard (*21, 25, 26*).

Job Evaluation Studies

Job evaluation studies are being used to document pay inequities. One of the most thorough attempts to analyze job content was the comparable work study undertaken by the State of Washington in 1974 in response to complaints by its female employees. It was the first study ever conducted in the United States to determine wage rates specifically for comparable jobs.

Willis and Associates designed a job evaluation scheme and prepared the final report, as well as a first update study (*27*). The study evaluated 121 state job classifications. It took into account knowledge and skills required, mental demands of the job, accountability, and working conditions. A weighted evaluation system was devised to allow comparisons of unlike jobs. The research demonstrated that women's compensation was unequal to that of men for work of comparable worth. Traffic guides (mainly male) earned between $721 and $923 a month for monitoring cars entering and leaving parking areas. A valid driver's license was the only requirement for employment. A secretary III (mainly female) was required to type 50 words per minute with no more than one error per minute, take shorthand, manage a small office and supervise other clerical workers for a monthly salary of $703-$900. A high school diploma and two years experience were required. The pay in jobs held predominantly by women averaged about 80% of the pay in jobs held mainly by men.

The segregation of "men's jobs" and "women's jobs" has been a barrier to successful litigation and bargaining for equal pay for women.

Among the jobs the study deemed to be of equal value, none of those held by women paid as well as the lowest paid job held by a man (*28, 29*). A recent article reviewing the progress made by the State of Washington in implementing the Willis recommendations showed little or no gains (*30*).

Several wage surveys initiated and performed by women working in female-dominated jobs point out the inequities in many wage-setting systems. In Denver, nurses sued the city after discovering that they were paid less than male tree trimmers and painters (*Lemons v. City and County of Denver*, 1979) (*31, 32*). In announcing the decision, the trial judge noted that this type of case has the possibility for "disrupting the entire economic system of the United States of America" (*33*). Needless to say, the nurses lost the case, and the Supreme Court refused to review it.

Librarians in California, Florida, Minnesota, Pennsylvania and Virginia

have studied local or state wage rates and have also found great disparities. San Diego public librarians filed a suit against the city after a survey revealed that 80% of the librarians were in the lowest third of the pay range for all professionals and that none were in the highest pay range (*34, 35*). The American Library Association has been collecting material and monitoring suits in which librarians are involved.

Comparable worth, or equal pay for work of comparable value, holds that jobs requiring comparable but not identical skills, demands and responsibilities should be paid equally.

It should be noted that opinion is divided on whether bias-free job evaluation plans are possible. In general, opponents of comparable worth argue that they are not. Helen Remick, who was involved in the Washington State study, David Thompsen of the Compensation Institute, and Treiman and Hartmann of the National Academy of Science (*36–38, 26*) find such plans both feasible and promising. However, Remick and Thompsen note that such factors as male bias in language and job content are built into earlier systems and may create and perpetuate discrimination.

Job Descriptions and Weighted Evaluation Systems

Job descriptions form the basis for implementing a system of comparability. Most job descriptions consist of five categories: 1) identification, or comparison with similar jobs; 2) summary, or the primary functions or activities of the job; 3) responsibilities and duties; 4) accountability; and 5) specifications, or factual data for evaluating and comparing the skills, responsibilities, effort and working conditions (*64*). These specifications and the weight given to each factor are the most crucial part of the job description since they help determine the value of the position to the employer. In evaluating jobs which are unlike but which have comparable worth, establishing the weight of compensable factors is often a subjective matter.

Bias occurs, for example, when jobs which require responsibility for tangible property, and which are generally held by men, are given more weight than jobs involving responsibility for people—a major component of jobs held by women. The *Dictionary of Occupational Titles* rates daycare workers (overwhelmingly female) as less skilled than parking lot attendants (majority male) (*39*). Heavy lifting, most often done by men, is often assigned greater point value than manual dexterity, most often required of women. In factories, male inspectors who move boxes of items are paid more than women inspectors who remove individual items in rapid succession from an assembly line conveyor belt.

Litigation

Several articles review the powers and limitations of the Equal Pay Act and Title VII (*16, 23, 4*) and clear, legal analyses of the status of litigation to date are available (*40–44*).

The Equal Pay Act and Title VII are the central pieces of legislation involved in litigation about comparable worth. Until recently, most court decisions have ruled against comparable worth cases. However, in August 1980, the International Union of Electrical Workers won a federal appeals court decision against a Westinghouse light bulb plant in New Jersey. The court found that Westinghouse had intentionally underpaid women's jobs "which had been judged *by the employer* to be of the same value as men's" (*45*).

In *Gunther v. County of Washington*, 1981, a suit brought to the Supreme Court by jail matrons in Oregon to gain equal pay with male guards doing similar tasks, the Supreme Court ruled that

pay discrimination claims for comparable but not "substantially equal" work could be litigated under Title VII. Equal pay advocates regard the high court's decision as a significant though partial victory. *Gunther* paves the way for further comparable worth cases, some of which are working their way toward the Supreme Court (*40*).

Labor Unions

Union involvement has varied from local bargaining for higher pay, to litigation, to the gathering of data in large research projects (*46, 47*). The AFL-CIO and several other unions have passed resolutions supporting comparable worth. Contract language on comparable worth has been included in some of the unions' pamphlets to serve as guidelines for members during negotiations. The AFL-CIO and American Federation of State, County and Municipal Employees (AFSCME) have published separate brochures on pay equity (*48, 49*). The Communications Workers of America (CWA) included the issue in its contract negotiations in 1977. A CWA study revealed segregated women's jobs and lower average wages (*50*). AFSCME locals in several states have initiated studies either independently or through bargaining to identify salary inequities between male and female jobs (*48, 25*).

On July 5, 1981, some 2,000 municipal workers of AFSCME local 101 in San Jose waged the first strike to gain comparable worth pay increases, and to end sex discrimination. City officials refused to implement the recommendations of a joint city and employee-sponsored job evaluation study on the grounds that the city did not have adequate funds. The contract ratified after the strike provides for some, but not full, comparable worth pay increases in addition to the across-the-board increases for all workers (*51, 52*).

EEOC

In 1980, the EEOC held fact-finding hearings on wage discrimination as a preliminary step in preparing written guidelines for employers. Representatives of women's organizations, unions, professional associations, and individual women presented testimony in support of EEOC's right to enforce comparable worth, and of its necessity for achieving women's economic equality. At the hearings, opponents of comparable worth opposed EEOC's right to regulate business on this issue (*20*).

The future role of the Commission is doubtful under the Reagan administration. Administrative support for the concept of comparable worth is also questionable.

Bias occurs when jobs which require responsibility for tangible property, and which are generally held by men, are given more weight than jobs involving responsibility for people—a major component of jobs held by women.

The EEOC commissioned the National Academy of Sciences (NAS) to study the possibility of developing a bias-free and enforceable job evaluation system. The long-awaited report, *Women, Work and Wages* (*26*) published in September 1981, has been hailed by comparable worth advocates. The NAS study documents persistent patterns of wage discrimination and occupational segregation. It reviews and criticizes two prevalent explanations for the wage gap: 1) that women entering the workforce have less experience, education, and training than men, and 2) that the productivity of "women's jobs" is less than that of "men's jobs." The study

affirms comparable worth as a foundation for determining wages and promotes job evaluation systems as "holding promise" for arriving at comparability.

Opponents of Comparable Worth

Not surprisingly, major opposition to comparable worth has come from the business sector (*53, 54*). The Equal Employment Advisory Council (EEAC) formed by the Business Roundtable in 1976, has been the leading organization lobbying against comparable worth. In its book, *Comparable Worth: Issues and Alternatives*, the Council summarizes its opposition to job evaluation studies and to the cost to business of implementing pay realignments (*55, 56*). Instead of comparable worth, it proposes that wages continue to be set by "market forces." EEOC consultant Ruth Blumrosen and Treiman and Hartmann (*16, 26*) point out that prevailing wages are a product of other employers' prior discriminatory practices. Thus, the EEAC proposal would reinforce and rigidify sex discrimination.

Comparable Worth Policies Abroad

In 1951, the International Labour Organisation adopted the principle of equal pay for work of equal value. The document was ratified by the majority of the Western European countries; the United States, however, did not ratify the treaty (*64*).

Among the Western European nations, Sweden has succeeded in establishing the smallest wage differential between men and women—less than 15% in 1973 (*64*). The situation in Canada, however, is similar to the United States. Women make up the majority of workers in low-paying, clerical and service jobs and are not heavily unionized. The Canadian Human Rights Act of 1978 determines job ratings according to a standard of "work of equal value." The equal pay portion of the statute applies only to federal workers—a small percentage of the workforce. Canada's provincial legislation, which affects a greater number of workers in the private sector, generally applies a standard of equal pay for substantially similar work. Although Canada was one of the signers of the ILO treaty, only its federal legislation is in compliance with the requirements.

Collective action is necessary, both within the profession or occupation and within the workplace, if comparability is to become the accepted standard of wage determination. Librarians, nurses, secretaries, and all other women who take pride in their work but receive little in return for it must ally together to solve this common problem collectively.

Coalitions for Comparable Worth

In the late 1970s, several women's organizations, labor unions and organizations, civil rights groups, and professional associations independently recognized the importance of comparable worth for women's economic equity and adopted it as a primary organizational goal. As business developed a national organization to fight comparable worth, grassroots organizations found it increasingly necessary to also form a national coalition. They convened the first national conference on pay equity Oct 24, 1979, in Washington, D.C. Two hundred experts and activists gathered to share information, discuss problems and to coordinate a strategy to raise women's wages. The Committee on Pay Equity, formed from the conference, is a national membership coalition of women's, labor, civil rights, legal and educational organizations located in Washington, D.C. The Committee has published the proceedings of their conference. It includes information on local, state, and federal government fact-finding and organiz-

ing efforts, reports of organizing activities, and information about wage and job evaluation systems (*25*). Divided into working task forces ranging from litigation and organizing to education and legislation, the Committee is organized to pursue a variety of strategies for achieving pay equity for women.

A Concept Whose Time Has Come

Following the 1979 Conference on Pay Equity, articles on the subject began to appear with increasing frequency in the news media (*57–60*), as well as in women's media (*30, 61–63*). The *Gunther* decision by the Supreme Court has stimulated massive nationwide coverage, heightened legal action, collective bargaining, and research on the issue.

Comparable worth is clearly a concept whose time has come. Yet, collective action is necessary—both within the profession or occupation and within the workplace—if comparability is to become the accepted standard of wage determination. Librarians, nurses, secretaries, and all other women who take pride in their work but receive little in return for it must ally together to solve this common problem collectively.

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Maps for Business

Accessing an Untapped Information Source

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■ **A description of the services offered by the National Cartographic Information Center is followed by four sections organized by type of map publisher. Publishers from the federal government, state governments, regional and local offices, and private and commercial sectors are included. Two other sections briefly describe sources of international maps and aerial photographs and computer mapping. The appendices contain a list of supplementary literature, as well as names, addresses, and phone numbers of federal government agencies and commercial publishers. Although most maps are relatively inexpensive, price information has not been included, but may be obtained from the appropriate publisher.**

MAPS are an excellent information resource, covering a broad range of subjects. Unfortunately, many people are only familiar with the basic political or road map and are unaware of the multitude of subjects which may be illustrated on maps. These include energy resources, plant locations, wholesale distributors, transportation networks, population statistics, zoning, telecommunications, and land use.

The purpose of this paper is to describe the various types of maps of interest to business, focusing on single sheet maps available from government, private, or commercial publishers. In general, maps which are found in books or journals will not be discussed; nor will atlases be reviewed since both general and some specialized atlases, such as the easily purchased Rand McNally *Commercial Atlas and Marketing Guide (1)* are already well-known sources of business and geographic information.

Cartographic tools such as glossaries, gazeteers, and books on map reading

are part of most library collections. There are also many large map collections in various libraries across the nation, and their librarians are excellent sources of map information. The directory, *Map Collections in the United States and Canada,* lists these libraries (2).

National Cartographic Information Center

In any search for maps, the first agency to contact should be the National Cartographic Information Center (NCIC). The Center best describes its own services:

> The National Cartographic Information Center (NCIC) exists to help you find maps of all kinds—and much of the data and materials used to compile and to print them. NCIC collects, sorts and describes all types of cartographic information from Federal, State and local government agencies and, where possible, from private companies in the mapping business. It is the public's primary source for cartographic information.
>
> At your request, the NCIC staff will—
>
> Inform you about maps and other cartographic information you can obtain from many government and private sources.
>
> Take your orders for any of the full range of maps, map byproducts, and other cartographic information produced by the Geological Survey, including millions of aerial photos and space images.
>
> Search vast holdings of maps and other cartographic information to help you obtain quickly the information or products you may be seeking to meet a highly specific need (3).

NCIC can only take orders for the cartographic products held by the U.S. Geological Survey. But for all other products, it will direct users to the appropriate government or private data center and provide ordering assistance. Although requests for information from NCIC can be submitted by mail, it is usually best to discuss mapping requirements with the professional researchers at the National or Regional Centers by telephone. In most cases, they can answer a question immediately or with a return phone call.

U.S. Federal Government Maps

The U.S. government is the largest publisher of maps in the world. These maps may appear in many different types of government documents including pamphlets, such as those distributed at the entrance to our National Parks, or in books, like the *National Atlas of the United States* (4). The majority of maps, however, are published in sheet form and are available for distribution or sale to the public.

The federal agency responsible for the majority of the topographic and geologic mapping in the United States is the U.S. Geological Survey (USGS), established by Congress in 1879. The USGS may be described as the U.S. national mapping agency since it is assigned to produce base maps for the entire country. Under the new National Mapping Program adopted in 1975, the principal objective of the USGS ". . . is to provide multipurpose maps and related data of appropriate scale, content and accuracy to satisfy modern requirements" (5). The major element of this program is the series of topographic maps produced at several scales to be used as basic tools for planning and executing projects.

The primary topographic series, 7.5 minute quadrangles at 1:24,000, is classified as large-scale maps and is especially useful for highly developed areas or rural areas where detailed information is needed. Intermediate-scale maps, from 1:50,000 to 1:100,000, cover larger areas and are especially suited for land management and planning. Small-scale maps, 1:250,000, 1:500,000 and 1:1,000,000, cover very large areas on a single sheet and are useful for comprehensive views of extensive projects or for regional planning. All of these maps are for sale by the USGS at a nominal charge—$2.00 per quadrangle in the 7.5 minute series. The principal USGS topographic map series and their characteristics are listed in Table 1.

For a brief explanation of the maps and other publications of the USGS, several brochures are available free of

Table 1. Principal USGS Topographic Map Series.*

Series	Scale	1 cm Represents (km)	Geographic Coverage	1 inch Represents
7.5-min	1:24,000	0.24	7.5′ x 7.5′	2,000 ft
Puerto Rico 7.5-min	1:20,000	.20	7.5′ x 7.5′	1,667 ft 2,000 ft
Alaska 1:24,000	1:24,000	.24	7.5 x 15′ or 18′	2,083 ft
Alaska 1:25,000	1:25,000	.25	7.5 × 11.25′	4,167 ft
1:50,000 county	1:50,000	.50	county	
15 min	1:62,500	.625	15′ x 15′	nearly 1 mi
Alaska 1:63,360	1:63,360	.6336	15′ x 20′ 22.5′, 30′, or 36′	1 mi
1:100,000 county	1:100,000	1.0	county	8,333 ft
U.S. 1:100,000	1:100,000	1.0	30′ x 1°	8,333 ft
U.S. 1:250,000	1:250,000	2.5	1° x 2°	nearly 4 mi
IMW 1:1,000,000	1:1,000,000	10.0	4° x 6°	nearly 16 mi

Note: In Alaska the size of the 1:250,000 and 1:1,000,000-scale quadrangles vary from the above figures.

charge from the NCIC. A more detailed description of the mapping pograms of the USGS and other U.S. agencies may be found in *Maps for America (6)*, published by the USGS and for sale from the U.S. Government Printing Office. Other sources of information are listed in Appendix A.

Indexes for each of the series published by the USGS may be requested, free of charge, from the NCIC or from the USGS Distribution Centers (see Appendix B for addresses). Perhaps the most useful indexes are those produced for each state, showing the three major series covering that area. These indexes are necessary not only to determine what maps are available but for ordering purposes. The maps are requested by series, as well as by the name of the quadrangle. On the back of each index sheet is the ordering information, including price, for maps of the U.S., for special maps and sheets, and for maps of national monuments, parks, and historic sites within the geographic area. Also included is a list of commercial dealers for topographic maps within the state, arranged alphabetically by city. On many indexes, dealers in nearby states may also be listed. Such dealers, in most cases, are recreational or sporting goods stores that do not usually stock all of the quadrangles for the state. Their prices may also be higher than those charged by the USGS.

On the state indexes, the dates of the published editions of each quadrangle are printed below the name of the quadrangle. In the USGS map revision program, emphasis is given to the 7.5 minute topograhic series, not only because it is the primary series but because it is used to update other products. Although many criteria may be applied, the normal review for revision generally occurs every five years in urban areas, every ten years in agricultural areas, and every twenty years in remote areas.

The USGS also provides technical assistance to the private sector, including mapping instructions and professional papers. Information may be obtained from: Technical Information Office, U.S. Geological Survey, MS 520 National Center, Reston, Va. 22092 (703/860-6275).

*Reprinted from the *Coastal Mapping Handbook*, Melvin Y. Ellis, ed. Washington, D.C., U.S. Government Printing Office, 1978, p. 12. Updated by the authors.

In addition to the topographic series, the USGS publishes many other maps and specialized cartographic information, particularly in the fields of geology, hydrology, and land use. Many other federal government agencies besides the USGS produce maps and charts—over 30 from which the NCIC collects information. These are listed in Appendix B, arranged by subject. Information about specific maps can be obtained by contacting the NCIC or the publishing agency. Most of the agencies provide catalogs, ordering instructions, and order forms free on request. Addresses and phone numbers of all agencies are listed in Appendix C.

State Government Maps

Mapping programs in the 50 states vary greatly, both in the quantity of maps produced and the information services available to the public. Some states have their own mapping organizations, some enter into contracts with commercial companies to supply necessary maps, and others combine these two methods. Many states also participate in cooperative agreements with federal mapping agencies on projects that serve local needs as well as contribute to national mapping.

Determining the name of the state agency or office which publishes and distributes maps may sometimes be difficult. In most cases, mapping information may be obtained from the State Department of Conservation, the State Transportation (or highway) Department, or the state geologist. The NCIC directs inquiries to the correct agency. The State Library is also a good source of information since it serves as the depository for state documents, including maps. Finally, some states do have map information services, in various stages of development. The Map Information Unit of the New York State Department of Transportation is an example of one of the more extensive state programs.

To find the names, addresses, and phone numbers of all agencies within a particular state, consult the phone book for the capital city of the state, or the official state organization manual or similar publication. All 50 states publish their own state highway or road maps, revised on an annual or biennial basis and free upon request. Since most of the free oil company maps are no longer available, these state road maps are well worth the postage and time involved in ordering them and maintaining a current file. The individual state maps are usually preferable to the U.S. road atlases for sale by several commercial companies for three reasons: they are printed at a larger scale and thus contain more detail, the maps are revised more frequently, and they almost always include inset maps of more of the major cities within the state. For a list of addresses, consult "Appendix XI: Sources of State Highway Maps" in *Map Librarianship* by Mary Larsgaard (7).

Regional and Local Maps

Locating regional and local maps presents similar problems. Determining the name of the publishing agency or company may be difficult. NCIC now collects this information from many cooperating local agencies. The state cartographic information office, if one exists, is another information source.

The addresses of county, town, city, or village agencies can be found in the appropriate telephone directory. Certain words in an agency's name, such as tourism, parks, highways, engineering, economic development, zoning, and so on, may indicate that it publishes maps. Other possible sources of local maps which should not be overlooked are the many fire departments which distribute accurate, detailed street maps of their jurisdictions. In heavily populated areas, there is usually at least one company which produces and sells city or county maps or atlases; the Hagstrom Company, for the New York City metropolitan area, is one example.

Chambers of commerce, banks, real estate companies, public utilities, his-

torical societies, or insurance companies may all be local map publishers. The public library or chamber of commerce for the area should be able to identify the appropriate source. When several city maps are needed, the *World Wide Chamber of Commerce Directory (8)* is a useful source.

Commercial and Association Maps

The two types of private, or non-government, map publishers are commercial firms and professional associations or societies. Many of the largest companies, such as Rand McNally, Hammond and International Map, and some associations like the National Geographic Society, publish general political and physical maps for use in the educational institutions and for sale to the public. Their coverage is worldwide in scope, unlike the specialized map publishers which generally limit their map production to a specific geographic area. Most of the specialized publishers in the United States produce maps in one of the four following categories: marketing and advertising, real estate, mining and energy resources, or communications.

One of the best-known producers of marketing maps for the United States is Bill Communications. Maps from this company provide national retail and industrial market information, as well as data for nine major marketing regions in the United States. Capital survey and consumer trade information are two of the subject areas covered. These thematic maps actually provide business information, but there are two additional types of maps frequently used in marketing and advertising which do not strictly serve this purpose. Included in the first group are detailed maps purchased by companies for their sales personnel. These maps cover major business centers and regional business areas with insets of metropolitan areas. They are often accompanied by specially designed overlays to aid in planning sales campaigns. The second group is made up of maps designed for use in promotional campaigns. These maps are often accompanied by advertisements and produced in novel formats. They are generally purchased and then distributed by chambers of commerce, banks, or similar organizations. Many of these are street maps and are often available free from the distributing organization. American Geographic, Inc., Hagstrom Co., Morgan-Grompion Publishing Co., and Rand McNally produce both types of maps.

Many publishers who produce custom-made maps also produce road maps. A basic list of road and street map publishers would include Champion, Denoyer-Geppert, Dolph, General Drafting, Gousha, International Map, Hagstrom, Hammond, Michelin, Thomas, and Rand McNally. Most of the publishers map only specified geographic areas. Additional publishers are listed in the *Thomas Register* under the heading "Maps", or in the Yellow Pages of regional telephone directories.

Real Estate and Insurance Maps

In the real estate field, the largest company is Real Estate Data, Inc. (REDI), a private land use mapping company which also provides information service to realtors. REDI produces maps that include land identification, recorded subdivision plots and surveys, street indexes, block numbers, and tax data. It also offers aerial photography mapping. The main office is in Florida; regional offices are located in the northeast, northwest, and southwest United States. All inquiries should be made to the Florida office.

E. Belcher Hyde Company produces real estate and insurance maps for the five boroughs of New York City. Maps include such information as lot numbers, property dimensions, and house numbers, and can be updated.

Energy Resources Maps

There are a number of private sources that help to meet the growing demand for energy-related information. Many

private publishers produce or supply maps about mining and mineral resources or on geological conditions, which is of key importance to engineering and mining exploratory concerns. Some of these publishers are commercial enterprises; others are affiliated with professional societies. The majority are situated in the western part of the United States, the location for most domestic mining enterprises. Among the private companies that supply these types of maps are the American Association of Petroleum Geologists, the American Petroleum Institute, Berge Exploration, Inc., the Geological Society of America, Geomap, Oklahoma Oil Maps, Inc., and Telberg.

Communications Maps

Communications maps are especially important to the advertising and electronics industries. Two companies, TV Digest, Inc., and MSI Telecom Engineers, offer maps in this field. TV Digest, Inc., publishes maps of microwaves serving cable systems for the entire United States. Maps include Grade A and B contours in 35 and 50 mile zones. This company formerly produced network maps but no longer does because of the technological advances in this field. TV Digest's maps accompany its book publications and are not available separately. MSI Telecom Engineers produces maps for common carrier and private microwave systems. Geographic coverage is for the entire United States. MSI also offers custom-made maps.

The addresses and telephone numbers for all of the companies and associations mentioned, along with those for many other private map publishers, are listed in Appendix D. Although the list is not comprehensive, it is representative. Brief descriptions of publications from selected companies are included, when the information was current and readily available. More extensive lists of map publishers may be found in Mary Larsgaard's *Map Librarianship* (*10*).

International Maps

For maps of individual foreign countries or worldwide coverage, once again the best advice is to contact the NCIC. Its researchers may refer inquiries to one of the large commercial publishers, such as Rand McNally or Hammond, or they may suggest purchase from the U.S. Defense Mapping Agency (DMA). The DMA is primarily responsible for providing maps for military purposes, but many of its cartographic products are also available to the public. The agency currently publishes aeronautical and nautical charts and topographic maps of areas other than the United States. Additional sources for acquisition are international organizations such as the United Nations, Organization of American States, and the World Bank.

Most foreign countries have their own mapping agency which is usually a branch of the military. When a country is involved in any type of military action, especially guerilla warfare, it will be almost impossible to obtain large-scale topographic maps directly from them since these maps may be classified

information. However, there are other reasons for avoiding direct purchase—agency identification, language problems, currency exchange, international shipping, and so on. An alternative is to purchase from an international jobber, especially if only a small number of maps of each country are required. Purchasing from the jobber eliminates the necessity of dealing separately with several different publishers in several different countries. The two major map jobbers are GeoCenter in Stuttgart and Edward Stanford in London.

For world travel information, the Forsyth Travel Library in Shawnee Mission, Kansas, sells city and country road maps, atlases, and travel guides from various publishers including Rand McNally, Michelin, Bartholomew, and Kummerly & Frey. There are a few other international jobbers in the United States and many others worldwide. Most of them publish catalogs. For selected addresses, see Appendix D.

Aerial Photography and Computer Mapping

Many types of aerial photographs are available for purchase from the federal government. These include low and high altitude aircraft photos, manned spacecraft images, and satellite images. Before contracting with a commercial firm for this expensive service, it is wise to first inquire if a government agency has already produced the aerial photograph required. Federal agencies which either produce the photos themselves or contract to a private company to supply photos range from the Soil Conservation Service to the National Aeronautics and Space Administration (NASA). Most areas in the United States have been photographed at different altitudes over the last 40 years. With its sophisticated computer system, the NCIC can produce a list of all aerial photos taken over any U.S. area. In most cases, the photographic information may be purchased in any of several different formats, including the standard 9″ x 9″ print, enlargements to order, slides, and even computer-compatible tapes of Landsat data. The NCIC can provide information on the millions of aerial photos and advise on purchase.

Computer graphics translates the computer representation of information into a graphic representation (*11*). Computerized mapping applies the technology of computer graphics to cartography. It is a complex and expanding area of cartography in which many map publishers are involved. The Harvard University Laboratory for Computer Graphics publishes a series of books that provide a good background in the computer mapping field (*12*).

There are two ways to obtain computer maps. Organizations which have adequate computer hardware can purchase a software package (i.e., a cartography computer program) and produce their own maps. Both the Kansas Geological Survey and the Harvard Laboratory for Computer Graphics and Spatial Analysis sell computer programs for cartography. It is also possible to contract with a company that does computer mapping. A basic list of publications and organizations involved in this field can be found in *Managements Use of Maps* (*13*).

Conclusion

Many different types of maps, charts, and aerial photographs are available from a variety of sources—federal, state, regional and local government agencies, organizations, and commercial publishers. Therefore, the greatest difficulty in acquiring maps is determining which source to contact for specific cartographic information. The National Cartographic Information Center collects, sorts, and describes all types of cartographic information and exists to help the public find maps of all kinds. Whenever a map source is unknown, the NCIC should be contacted first. The researchers at NCIC can usually supply ordering information quickly or refer the public to the proper source.

APPENDIX A. Supplementary Sources

American Library Directory. New York, R. R. Bowker, 1980

Carrington, David K. /*Map Collections in the United States and Canada: A Directory*. New York, Special Libraries Association, 1978.

Ellis, Melvin Y., ed. /*Coastal Mapping Handbook*. Washington, D.C., U.S. Government Printing Office, 1978.

Harvard Library of Computer Graphics Mapping Collection, 11 v.—. Cambridge, Mass., Harvard University Laboratory for Computer Graphics and Spatial Analysis, 1979-.

Larsgaard, Mary /*Map Librarianship: An Introduction*. Littleton, Colo., Libraries Unlimited, 1978.

"Mapping/Data Base". *Electrical World* 193:70-72 (Apr 15 1980).

Muehreke, Phillip /*Map Use: Reading, Analysis, and Interpretation*. Madison, Wisc., JP Publication, 1978.

Rand McNally and Co. /*Commercial Atlas and Marketing Guide*. Chicago, Rand McNally & Co., 1980.

Robinson, Arthur /*The Nature of Maps: Essays Toward Understanding Maps and Mapping*. Chicago, University of Chicago Press, 1976.

Thomas Register of American Manufacturers and Thomas Register Catalog File, 71st ed. New York, Thomas Publishing Co., 1981.

Thompson, Morris M. /*Maps for America: Cartographic Products of the U.S. Geological Survey and Others*. Reston, Va., The Survey, 1979.

U.S. Geological Survey/ *The National Atlas of the United States of America*. Washington, D.C., U.S. Government Printing Office, 1970.

Winch, Kenneth, ed. /*International Maps & Atlases in Print*. 2nd ed. New York, R. R. Bowker, 1976.

Wise, Donald A. /"Cartographic Sources and Procurement Problems". *Special Libraries* 68 (Nos. 5/6):198-205 (May/Jun 1977).

World Wide Chamber of Commerce Directory: 1970-80. Loveland, Colo., Johnson Publishing Co., 1979.

Pamphlets:

Mini Catalog of Map Data. Reston, Va., U.S. Geological Survey, National Cartographic Information Center, 1980.

National Cartographic Information Center. Reston, Va., U.S. Geological Survey, National Cartographic Information Center, 1980.

Popular Publications of the U.S. Geological Survey. Washington, D.C., U.S. Government Printing Office, 1979.

Steger, Theodore D. /*Topographic Maps*. Washington, D.C., U.S. Government Printing Office, 1978.

Topographic Maps: Tools for Planning. Washington, D.C., U.S. Government Printing Office, 1980.

Wakefield, Robert E. /*Types of Maps Published by Government Agencies*. Washington, D.C., U.S. Government Printing Office, 1978.

Watkins, Allen H. / *The EROS Data Center*. Washington, D.C., U.S. Government Printing Office, 1979.

APPENDIX B. Maps Published by Government Agencies.*

Type	Publishing Agency	Available From
Aeronautical Charts	Defense Mapping Agency National Ocean Survey	National Ocean Survey National Ocean Survey
Boundary Information: United States and Canada	International Boundary Commission	International Boundary Commission
United States and Mexico	International Boundary and Water Commission	Geological Survey (Denver)
Census Geographic Area (1970)	Bureau of Census	Bureau of Census
Census Tract Outline Maps (1970)	Bureau of Census	Bureau of Census

(Continued)

*Reprinted from the pamphlet, *Types of Maps Published by Government Agencies*, by Robert E. Wakefield. Washington, D.C., U.S. Government Printing Office, 1978.

APPENDIX B. (Continued)

Type	Publishing Agency	Available From
Climatic Maps	National Oceanic and Atmospheric Administration	National Climatic Center
Coal Investigations Maps	Geological Survey	Geological Survey (Arlington or Denver)
Congressional Districts	Bureau of Census	Superintendent of Documents
Electric Transmission and Generation Facilities	Department of Energy	Superintendent of Documents
Geologic Quadrangle Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Geologic Investigations Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Geologic Map of North America	Geological Survey	Geological Survey (Arlington or Denver)
Geologic Map of the United States	Geological Survey	Geological Survey (Arlington or Denver)
Geophysical Investigations Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Ground Conductivity	Federal Communications Commission	Superintendent of Documents
Highways: State and County	State Highway Departments	State Highway Departments
Historical: Reproductions from Historical and Military Map Collections	Various Sources	Library of Congress National Archives and Records Service
Selected Civil War Maps (reproduced from originals)	National Ocean Survey	Superintendent of Documents
Treasure Maps and Charts (bibliography)	Library of Congress	Superintendent of Documents
Hydrographic Information: Bathymetric Maps of United States and Adjacent Continental Shelf	National Ocean Survey	National Ocean Survey
Nautical Charts of U.S. Coastal Waters	National Ocean Survey	National Ocean Survey
Great Lakes and Connecting Waters	National Ocean Survey	National Ocean Survey
River Charts:		
Cumberland River	Corps of Engineers	Corps of Engineers, Nashville
Illinois Waterway to Lake Michigan	Corps of Engineers	Corps of Engineers, Chicago
Mississippi River (Lower)	Corps of Engineers	Corps of Engineers, Vicksburg
Mississippi River (Upper)	Corps of Engineers	Corps of Engineers, Chicago
Missouri River	Corps of Engineers	Corps of Engineers, Omaha
Ohio River	Corps of Engineers	Corps of Engineers, Louisville
Tennessee River	Tennessee Valley Authority	Tennessee Valley Authority
Foreign Waters	Defense Mapping Agency	Defense Mapping Agency Topographic Center
Hydrologic Investigations Atlases:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)

APPENDIX B. (Continued)

Type	Publishing Agency	Available From
Hydrologic Unit Maps (by State):		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Indian Reservations	Bureau of Indian Affairs	Superintendent of Documents
Land Use and Land Cover Maps	Geological Survey	Geological Survey (NCIC)
Map Projections	National Ocean Survey	National Ocean Survey
Mineral Investigations Field Studies Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Mineral Investigations Resource Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Minor Civil Divisions	Bureau of Census	Superintendent of Documents
Moon/Planetary Maps	Geological Survey	Geological Survey (Arlington or Denver)
National Atlas Separate Sales Edition	Geological Survey	Geological Survey (Arlington or Denver)
National Forest Regions	Forest Service	Forest Service
National Parks:		
Topographic Maps	Geological Survey	Geological Survey (Arlington or Denver)
National Park System	National Park Service	Superintendent of Documents
Natural Gas Pipe Lines	Department of Energy	Superintendent of Documents
Oil and Gas Investigations Maps and Charts:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Orthophotoquads:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
Polar Maps:		
Antarctic	Geological Survey	Geological Survey (Arlington)
	Defense Mapping Agency	Defense Mapping Agency Topographic Center
Arctic	National Ocean Survey	National Ocean Survey
	Defense Mapping Agency	Defense Mapping Agency Topographic Center
Population Distribution of the United States (1970)	Bureau of the Census	Superintendent of Documents
Soil Survey Maps	Soil Conservation Service	Soil Conservation Service
Space Imagery Maps:		
(Maps east of Mississippi R.)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi R.)	Geological Survey	Geological Survey (Denver)
State Maps (Base, Shaded, and Topographic)	Geological Survey	Geological Survey (Arlington or Denver)
State Maps (Geologic)	Geological Survey and Various State Geological Surveys	Geological Survey (Arlington or Denver) and various State Geological Surveys

(Continued)

APPENDIX B. (Continued)

Type	Publishing Agency	Available From
State Maps:		
Standard Topographic Mapping	Geological Survey	Geological Survey (Arlington or Denver)
Intermediate-scale Topographic Mapping (county and quadrangle)	Geological Survey	Geological Survey (NCIC)
Orthophotoquad Mapping	Geological Survey	Geological Survey (NCIC)
Storm Evacuation Maps	National Ocean Survey	National Ocean Survey
Time Zones of the World	Defense Mapping Agency	Defense Mapping Agency Topographic Center
Topographic Map Indexes (by State):		
(Maps east of Mississippi River, Puerto Rico, and Virgin Islands)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi River, American Samoa, and Guam)	Geological Survey	Geological Survey (Denver)
Topographic Quadrangle Maps:		
(Maps east of Mississippi River, Puerto Rico, and Virgin Islands)	Geological Survey	Geological Survey (Arlington)
(Maps west of Mississippi River, American Samoa, and Guam)	Geological Survey	Geological Survey (Denver)
Township Plats (reproductions):		
Illinois, Indiana, iowa, Kansas, Missouri, and Ohio	National Archives	National Archives and Records Service
All other Public Land States	Bureau of Land Management	Bureau of Land Management
Transportation Maps (State)	Federal Railroad Administration	Superintendent of Documents
United States Base Maps	Geological Survey	Geological Survey (Arlington or Denver)
	National Ocean Survey and other government agencies	National Ocean Survey Superintendent of Documents and/or publishing agency
Urban Atlas (selected Standard Metropolitan Statistical Areas)	Bureau of the Census	Superintendent of Documents
Water Resources Development Map	Geological Survey	Geological Survey (Arlington or Denver)
Weather Maps	National Weather Service	Superintendent of Documents
World Maps	Defense Mapping Agency	Defense Mapping Agency Topographic Center
	National Ocean Survey	National Ocean Survey

APPENDIX C. Addresses and Telephone Numbers for National Cartographic Information Centers and Federal Map Publishers and Distributors.

I. National Cartographic Information Centers

National Headquarters
National Cartographic Information Center
U.S. Geological Survey
507 National Center
Reston, VA 22092
703/860-6045

Regional Offices
Eastern Mapping Center-NCIC
U.S. Geological Survey
536 National Center
Reston, VA 22092
703/860-6336

Mid-Continent Mapping Center-NCIC
U.S. Geological Survey
1400 Independence Rd.
Rolla, MO 65401
314/341-0851

National Cartographic Information Center
U.S. Geological Survey
National Space Technology Laboratories
NSTL Station, MS 39529
601/688-3544

Rocky Mountain Mapping Center-NCIC
U.S. Geological Survey
Box 25046, Stop 504 Federal Center
Denver, CO 80225
303/234-2326

Western Mapping Center-NCIC
U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
415/323-8111, Ext. 2427

II. Federal Map Publishers and Distributors

U.S. Army Engineer District
Corps of Engineers, Chicago
219 South Dearborn St.
Chicago, IL 60604
312/853-4140

U.S. Army Engineer District
Corps of Engineers, Louisville
P.O. Box 59
Louisville, KY 40201
502/582-5739

U.S. Army Engineer District
Corps of Engineers, Nashville
P.O. Box 1070
Nashville, TN 37202
615/251-7161

U.S. Army Engineer District
Corps of Engineers, Omaha
6014 U.S. P.O. & Courthouse Bldg.
Omaha, NE 68102
402/221-3020

U.S. Army Engineer District
Corps of Engineers, Vicksburg
P.O. Box 60
Vicksburg, MS 39180
601/634-5000

Department of Energy
National Energy Information Center
Forrestal Bldg. EI-22
1000 Independence Ave.
Washington DC 20585
202/252-8800

Department of State
Office of the Geographer
Bureau of Intelligence and Research
8744 State Department Bld.
2201 C St., N.W.
Washington, DC 20520
202/632-2022

Energy Regulatory Commission
Office of Public Information
Energy Regulatory Commission
825 N. Capitol St., N.E.
Washington, DC 20426
202/357-8055

Environmental Protection Agency
Office of Public Awareness
Environmental Protection Agency
401 M St., S.W.
Washington, DC 20460
202/755-0700

(Continued)

Federal Highway Admin.
Aerial Surveys Branch
Highway Design Div.
Rm. 3130A
400 7th St., S.W.
Washington, DC 20590
202/426-0294

Federal Insurance Administration
National Flood Insurance Program
P.O. Box 34294
Bethesda, MD 20817
800/638-6620

U.S. National Archives and Records Service
Cartographic Archives Div. (NNS)
Pennsylvania Ave. at 8th St., N.W.
Washington, DC 20408
202/523-3062

U.S. National Climatic Center
Federal Bld.
Asheville, NC 28801
704/258-2850

U.S. National Ocean Survey
Distribution Div., (C-44)
Riverdale, MD 20840
301/436-6990

U.S. National Park Service
Office of Public Inquiries
3043 Interior Bld.
18th and C St., N.W.
Washington, DC 20240
202/343-6843

U.S. National Weather Service
Gramax Bld.
8060 13th St.
Silver Spring, MD 20910
301/427-7622

Bureau of the Census
Users Services Staff
Data Users Services Division
Bureau of the Census
Washington, DC 20233
301/763-5820

Bureau of Indian Affairs
Public Information Office
Bureau of Indian Affairs
18th and C Sts., N.W.
Washington, DC 20245
202/343-7435

U.S. Bureau of Land Management
Office of Public Affairs
18th and E St. N.W.
Washington, DC 20240
202/343-4151

Defense Mapping Agency
Office of Distribution Services
Attn: DDCP
Washington, DC 20315
202/227-2495

Federal Railroad Administration
Office of Public Affairs, ROA-30
400 Seventh St. S.W.
Washington, DC 20590
202/426-0881

U.S. Forest Service
Information Office, Rm. 3238
P.O. Box 2417
Washington, DC 20013
202/447-3957

U.S. Geological Survey
Branch of Distribution
1200 South Eads St.
Arlington, VA 22202
Telephone: NCIC

U.S. Geological Survey
Branch of Distribution
Box 25286, Federal Center
Denver, CO 80225
Telephone: NCIC

International Boundary Commission
United States and Canada
425 Eye St., N.W., Rm. 150
Washington, DC 20001
202/632-8058

International Boundary and Water Commission
United States and Mexico, U.S. Section
P.O. Box 20003
El Paso, TX 79998
915/543-7300

Interstate Commerce Commission
Office of Public Information
Constitution Ave. and 12th St., N.W.
Washington, DC 20423
202/275-7252

EROS Data Center
User Services Unit
U.S. Geological Survey
Sioux Falls, SD 57198
605/594-6511

Federal Communications Commission
Office of Public Information
1919 M. St., N.W.
Washington, DC 20554
202/632-7260

Federal Highway Administration
Office of Public Affairs
Federal Highway Administration
Rm. 4208
400 7th St., S.W.
Washington, DC 20590
202/426-0677

Library of Congress
Geography and Map Division
James Madison Bldg.
101 Independence Ave., S.E.
Washington, D.C. 20540
202/287-6277

National Aeronautics and Space Administration
Public Services Branch LFF-3
National Aeronautics and Space Administration
Washington, DC 20546
202/755-8326

U.S. Soil Conservation Service
Information Div.
P.O. Box 2890
Washington, DC 20013
202/447-5063

Superintendent of Documents
U.S. Government Printing Office
North Capitol and H St., N.W.
Washington, DC 20402
202/783-3238

Tennessee Valley Authority
Mapping Services Branch
111 Haney Bld.
Chattanooga, TN 37401
615/751-5404

APPENDIX D. Addresses, Telephone Numbers, and Selected Annotations for Commercial and Association Map Publishers.

Abrams Aerial Survey Corp.
124 North Larch St.
Lansing, MI 48901
517/372-8100

Provides aerial photography maps of midwestern, southern, and New England States, as well as Mexico. Main office is located in Michigan; regional offices in Florida, Illinois, and Pennsylvania.

American Association of Petroleum Geologists
P.O. Box 979
Tulsa, OK 74101
918/584-2555

Produces geological highway maps' series which is national in scope.

American Geographic, Inc.
3109 Thompson Rd.
Fenton, MI 48430
313/629-5335

American Petroleum Institute
2102 L St., N.W.
Washington, DC 20036
202/457-7000

Supplies crude and product pipeline maps for the United States, as well as southern Canada.

American Map Co.
1926 Broadway
New York, NY 10023
212/595-6582

(Continued)

American Waterways Operators
1600 Wilson Blvd.
Suite 1101
Arlington, VA 22209
703/841-9300

Produces maps of the major navigable waterways of the United States.

Arrow Publishing Company
P.O. Box 252
Canton, MA 02021
617/828-8013

Association of American Railroads
Office of Information and Public Affairs
1920 L St., N.W.
Washington, DC 20036
202/293-4190

Distributes the free *List of Railroad Maps* which provides brief descriptions of publications, dates and prices.

Automobile Association of America
Listed under "AAA" in White Pages of most telephone directories.

Berge Exploration, Inc.
7100 N. Broadway
Denver, CO 80221
303/426-1086

Publications include maps of coal and uranium facilities and major electrical power transmission lines in the United States.

Bill Communications, Inc.
633 3rd Ave.
New York, NY10017
212/986-4800

Champion Maps
4863 N.E., 12th Ave.
Oakland Park, FL 33334
305/491-2430

Chicago Aerial Survey
2140 Wolf Rd.
Des Plaines, IL 60018
312/298-1480

Provides aerial photography mapping with international coverage, as well as computerized contour mapping.

George F. Cram Company, Inc.
P.O. Box 426
Indianapolis, IN 46206
317/635-5564

Denoyer-Geppert Co.
5235 N. Revenwood Ave.
Chicago, IL 60640
312/561-9200

Dolph Map Co., Inc.
430 North Federal Hwy.
Fort Lauderdale, FL 33301
305/763-4732

Forsyth Travel Library
P.O. Box 2975
9154 W. 57th St.
Shawnee Mission, KS 66201
913/384-3440

Geo Center
Internationales LanderKartenaus Gmbh.
Postfach 800830
DT Stuttgart 80, West Germany

Geographic Map Company, Inc.
P.O. Box 688
Times Square Sta.
New York, NY 10036
212/695-6585

Geological Society of America
3300 Penrose Place
Boulder, CO 80301
303/447-8850

Publications include geological and physiographic maps.

Geomap Co.
P.O. Box 30008
Dallas, TX 75230
214/424-1511

Geologic base and subsurface maps for major petroleum producing areas of the United States.

General Drafting Co.
Convent Sta., NJ 07961
201/538-7600

H.M. Gousha Publications
P.O. Box 6227
San Jose, CA 95114
408/296-1060

Hagstrom Co., Inc.
450 W. 33rd St.
New York, NY 10001
212/868-3420

Hammond Inc.
515 Valley St.
Maplewood, N.J. 07040
201/763-6000

Geoscience Information Society
c/o American Geological Institute
5205 Leesburg Pike
Falls Church, VA 22041
703/379-2480

Hearne Brothers
25th Fl.
First National Building
Detroit, MI 48226
313/961-8388

Hubbard Scientific Co.
1946 Raymond
P.O. Box 105
Northbrook, IL 60062
312/272-7810

Hudson Map Company, Inc.
2510 Nicollet Ave.
Minneapolis, MN 55404
612/872-8818

International Map Co.
595 Board Ave.
Ridgefield, NJ 07657
201/943-5550

Kansas Geological Survey
1930 Avenue A
Campus W.
Lawrence, KS 66044
913/864-3965

Laboratory for Computer Graphics and Spatial Analysis
Graduate School of Design
Harvard University
520 Grund Hall
48 Quincy St.
Cambridge, MA 02138
617/495-2526

Morgan-Grompion, Inc.
2 Park Ave.
New York, N.Y. 10016
212/340-9700

MSI Telecom Engineers
266 W. Main St.
Denville, N.J. 97834
201/627-7400

National Geographic Society
17th and M Sts. N.W.
Washington, D.C. 20036
202/857-7000

The National Survey
Chester, VT 05143
802/875-2121

A. J. Nystrom and Company
3333 N. Elston Ave.
Chicago, IL 60618
312/463-1144

Oklahoma Oil Maps, Inc.
1100 Classen Dr.
Suite 222
Plaza Ct. Bldg.
Oklahoma City, OK 71303
405/235-0421

Maps include information about county, subsurface, and lease ownership with date of expiration for State of Oklahoma. Similar map producers in other oil producing states can be identified through the Yellow Pages of appropriate geographic regions.

Pitmon Maps
Oregon Blue Print Co.
930 S.E. Sandy Blvd.
Portland, OR 97214
503/232-1161

Rand McNally
Map Store
10 E. 53rd St.
New York, N.Y. 10022
212/751-6300

Real Estate Data, Inc.
2398 N.W. 119th St.
Miami, FL 33167
305/685-5731

Rockford Map Publishers, Inc.
P.O. Box 6126
Rockford, IL 61108
815/399-4614

The Sidewell Co.
Sidewell Park
28 W. 240th North Ave.
West Chicago, IL 60185
312/231-0206

Produces aerial photography mapping, as well as topographic mapping for Illinois and selected areas of the Midwest.

Edward Stanford Ltd.
12-14 Long Acre
London WC2E 9LP, England

(Continued)

APPENDIX D. (continued)

Telberg
P.O. Box 920
Sag Harbor, NY 11963
516/725-0780

TV Digest, Inc.
1836 Thomas Jefferson Place, NW
Washington, DC 20036
202/872-9200

Important maps in the subject areas of tectonics, geological and paleontological conditions. Geographic regions covered include China, India, and Russia. This service will be of special interest to mining and engineering exploration concerns.

UNESCO Publications Center
Division UNIPUB Inc.
345 Park Ave., S.
New York, N.Y. 10016
212/686-4707

Thomas Brothers Maps
550 Jackson
San Francisco, CA 94133
415/981-7520

Western Map Co.
217 S. Orange
Suite 4
Glendale, CA 91204
213/245-0274

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1. Rand McNally and Co. / *Commercial Atlas and Marketing Guide.* Chicago, Rand McNally and Co., 1980.
2. David K. Carrington / *Map Collections in the United States and Canada: A Directory.* New York, Special Libraries Association, 1978.
3. National Cartographic Information Center. Reston, VA: U.S. Geological Survey, National Cartographic Information Center, 1980.
4. U.S. Geological Survey / *The National Atlas of the United States of America.* Washington, D.C., U.S. Government Printing Office, 1970.
5. Theodore D. Steger / *Topographic Maps.* Washington, D.C., U.S. Government Printing Office, 1978, p. 5.
6. Morris M. Thompson / *Maps for America: Cartographic Products of the U.S. Geological Survey and Others.* Reston, Va., U.S. Geological Survey, 1979.
7. Mary Larsgaard / "Sources of State Highway Maps." In *Map Librarianship.* Littleton, Colo., Libraries Unlimited, 1978, pp. 260-264.
8. *Worldwide Chamber of Commerce Directory: 1979-80.* Loveland, Colo., Johnson Publishing Co., 1979.
9. "Products and Services." In *Thomas Register of American Manufacturers and Thomas Register Catalog File,* 71st ed., S.V. "Maps"
10. Mary Larsgaard / "A Sampling of Commercial and Association Map Publishers." In *Map Librarianship.* Littleton, Colo., Libraries Unlimited, 1978, pp. 252-257.
11. Jack Belzer, ed. / *Encyclopedia of Computer Science and Technology.* New York, Marcel Dekker, 1975, S.V. "Computer Graphics and Design."
12. *Harvard Library of Computer Graphics Mapping Collection,* 11 vols, to date. Cambridge, MA: Harvard University Laboratory for Computer Graphics and Spatial Analysis, 1979-.
13. Allan H. Schmidt / "Executive Introduction to Computer Mapping." In *Managements Use of Maps: Including an Introduction to Computer Mapping for Executives.* Cambridge, Mass., Harvard University Laboratory for Computer Graphics and Spatial Analysis, 1980, p. 52.

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35 mm Slides
Storage and Retrieval for the Novice

Marian Z. DeBardeleben and Carol G. Lunsford

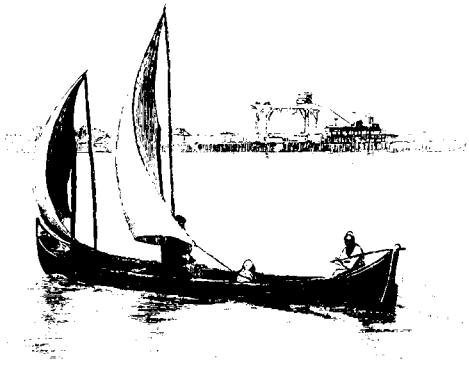
Philip Morris Research Center, Richmond, Va. 23261

■ **The development and maintenance of a slide storage and retrieval system are described. Methods of slide retrieval were identified and the needs of users were studied. Results showed that 1) subject matter retrieval is essential, 2) the ability to browse the slide file is vital, and 3) a central record of presentations is helpful. The system described is both simple and inexpensive; it combines retrieval by subject with retrieval by prior use. A classification system of alpha code plus accession number is used, based on a list of subject matter categories. Several cross-referenced indexes have been created to speed access to a particular slide. Slide labeling, storage, and loaning practices have been developed. Duplicating, archiving, and the option of computerized indexing is also discussed.**

ORAL presentations are inherent in an R&D facility. There are presentations by local management to corporate management, by scientists to peers, by personnel to visitors, by recruiters to students. In a normal year of meetings and trips, several hundred 35 mm slides will be produced, depending on the size of the organization. If there is no central storage system for these slides, they will be retained by those who initiated their creation—retained in corners of drawers or old shoe boxes or filing cabinets. Lack of reuse creates unnecessary work for the graphic artist, leading to duplication of effort and extra cost.

Such a situation existed at the Philip Morris Research Center. The authors were presented with a plastic bag full of twelve years' worth of 35 mm slides. None were identified. It was the hope of the graphic artist that an identification and storage system could be devised to facilitate retrieval and reuse of individual slides in the future.

More sophisticated systems have previously been described in this journal. These systems manage large collections, employ rigid classification schemes, and are intended to serve large populations of potential users. By way of comparison, the system developed at Philip Morris is skeletal in design and opera-



tion; it is fluid rather than archival in nature. The authors feel it will serve the needs of slide librarians who require, and who have the option of implementing, a relatively simple system that can be tailored to individual organizations.

Methods of Retrieval

The first decision made in developing the system was that there would be only one file containing all 35 mm slides produced at the Research Center—color as well as black and white. It would contain only 35 mm slides, excluding lantern slides, transparencies, photographs, and so on. Original mounts would be retained where possible.

The next decision was the most important one: the storage and retrieval system itself. How would users approach the file? How would they request slides? An investigation identified two ways to retrieve a specific slide: 1) Dr. Jones may ask for a picture of a gas chromatograph for his meeting next week; this would be retrieval by subject matter, a logical way to locate a suitable slide. Or 2) Dr. Jones may ask for the picture of a gas chromatograph that Dr. Smith used in her speech last summer; this is still retrieval by subject, but it includes a qualifier of prior use.

Two logical arrangements for the slides were considered. For subject retrieval emphasis, a classification scheme similar to library cataloging could be devised. Slides would then be labelled and filed according to their content. For prior use retrieval, a simple accession number arrangement, keeping all the slides from a specific presentation intact, appeared best. While the latter method of storage and retrieval appeared to be most attractive, because it is least labor intensive, it was found to be impractical; the collection was unmanageable before it had grown in size to 500 slides.

Retrieval by Subject and/or Prior Use

An investigation of the reuse of slides at the Philip Morris Research Center identified the following considerations: 1) the ability to browse the slide file is vital; 2) subject matter retrieval is essential; and 3) a central record of presentations is helpful. Using these considerations as objectives, a simple and straightforward system was devised that allows slides to be stored in a format inducive to browsing as well as to on-demand retrieval in accordance with any qualifications.

Classification

A list of 22 categories was compiled to describe the slides in the collection. A unique alpha code was assigned to each category (see Appendix I). Each slide was identified, classified, and labelled, using the appropriate alpha code followed by a sequentially assigned accession number. Pressure-sensitive labels were purchased in typewriter-feed rolls of 1,000. The slides were filed by alpha code, allowing several years of expansion space between categories. In this manner, a file was created that is easily browsable by broad subject area.

Subject Retrieval

Using 8 1/2" × 11" quadrille sheets,* a notebook was compiled with a separate page for each alpha category (see Appendix II). The slides in each category were subindexed, and the indexing terms were typed alphabetically on the appropriate quadrille sheets. For example, slide B-111 is an aerial view of the

*Commercially available paper, premarked with squares, 4 squares to the inch.

company's manufacturing complex at the Commerce Road location in Richmond, Va. This building would be subindexed on B quadrille sheet, along with other slides in the B category as follows:*

—
—
—
Commerce Road, Manufacturing Center
Commerce Road, Manufacturing Center, aerials
Commerce Road, Research Tower
Commerce Road, Research Tower, construction
—
—
Louisville, Kentucky, Manufacturing Plant
—
—

When a new slide for a specific subcategory was received, its code number was simply added to the appropriate entry on the quadrille sheet. This detailed indexing allowed cross-referencing of slides that were coded to one alpha category but had relevance to another. For example, a slide of the Research Center library may be coded LE-632. However, the fact that the vice-president, R.B. Seligman, is in the picture may be of future importance. Therefore, under the personnel subcategorization you would find:

—
—
—
Sales, May Louise PER-16
Sarrow, Richard Elwood PER-2
Seesey, Joanne Marie PER-43 M-10
Seligman, Robert B. LE-632
Shrop, John David PER-169
—
—

This achieved the objective of providing access by subject matter on a detailed level.

*Dashes indicate lines left blank to accommodate the addition of future entries.

Prior Use

Prior-use retrieval was handled in a slightly different manner. One sheet of quadrille paper was prepared for each presentation. The headings appeared as follows:

FLORY, John Alan. Richmond Engineer's Club:
"Productivity in the Engineering Disciplines"
(14 June 1976)

Following the headings the codes of the slides used were listed in order of presentation. "In order of presentation" is stressed to prepare for an emergency request to recompile a five-year-old presentation within the next ten minutes, as in the example shown below:

FLORY, John Alan. Richmond Engineer's Club:
"Productivity in the Engineering Disciplines"
(14 June 1976)

B-43	L-31
B-101	M-16
LE-62	A-29
LE-2	PER-54
M-16	LE-137
PER-350	

For presentations that were likely to be reused intact in the future—for example, orientations to the Philip Morris Research Center—a copy of the script was also retained. Presentations that were reused often were duplicated in total and stored in carousels ready for any emergency. All of these prior-use sheets and scripts were filed alphabetically by presenter in the 3-ring notebook behind an index guide labelled "Presentations."

Thus, a central record of presentations was created that allows cross-referencing between subject matter and prior use. This simple and inexpensive storage and retrieval system for 35 mm slides was controlled by and referenced through a single 3" 3-ring notebook.

Slide Documentation

The painful experience of sorting through unidentified slides that are many years old led the authors to create a second index. This index is a master record of all the slides in the file, arranged alphanumerically. Such an index was found to be not merely helpful but essential.

Special forms were prepared to inventory the collection (see Appendix III). Each slide was entered on the appropriate inventory form in sequence of accession. Of special importance to users is the dating of the material on the slide and as complete a description of the contents of the slide as possible.

Equipment

The original slide storage unit was a Multiplex Model #50. It consisted of large racks that slid in and out of a storage cube. Each rack held a maximum of 130 35 mm slides. Recessed at the front of the cube was a fluorescent lighting unit equal in size to the racks. This allowed an entire rack of slides to be viewed simultaneously. Maximum capacity of the unit was 3,500 slides.

The unit was used at standing height. Below the rack storage cube was a cabinet for storing viewers, filmstrips, canned presentations, supplies, and the like. It was a practical and effective piece of equipment, if not a thing of beauty, purchased in 1974 for $550.

Several years after the collection was organized, it had grown to more than 3,000 slides. A larger storage unit was needed along with some new design features. In 1978, an Abodia 3000 slide storage system was purchased from Elden Enterprises, Inc., for $1,100. As its name implies, the system accommodates 3,000 slides in metal racks, housed in an attractive wood veneer cabinet. When the cabinet doors are opened, a fluorescent light mounted behind a fixed viewing screen is activated automatically. Individual racks, stored on either side of the screen, can be slid into the central area for viewing. The cabinet is designed for seated use, making it convenient for lengthy browsing or sorting.

The base of the unit offers several useful features: 1) a lighted, slide-sorting drawer which can be pulled out for close-up viewing and arranging of slides; 2) storage space for supplies; and most important, 3) two compartmented drawers, each with a 2,600-slide capacity. By storing duplicate slides in the drawers, more space is created in the racks for master slides. This feature enabled the Research Center to initiate a lending system which allows users to browse the master slides but to borrow only duplicates.

Units similar to those described above, though less sophisticated in design, have been used to house small slide collections at the Research Center for over ten years. No deterioration in slide quality has resulted from long-term retention.

Circulation of Slides

When the project first began, there was little interest or effort made to obtain duplicates of every slide for circulation. Therefore, a simple check-out system was devised for slides which had already been identified and classified. An 8-1/2" × 11" piece of paper was divided into 2" squares and photocopied to produce many copies. As slides were checked out, the slide number, the name of the borrower, and the date loaned were typed onto the 2" squares. Each square was cut off and placed in the cabinet in the slot of the loaned slide. Anyone could see at a glance who had borrowed a particular slide. When the slide was returned, the dummy was destroyed.

Consideration should be given, however, to the use of duplicates instead. The authors strongly recommend that master copies of slides be identified as such (as is now done at the Research Center) and not loaned. Duplicates should be made for circulation and masters should be retained for this purpose. The quality of a duplicate made from a master is far superior to that made from another duplicate.

Duplicates are currently filed in the Abodia unit's compartmented drawers, using the same alpha codes and accession numbers as for the corresponding master slide. Tab-topped cards may be labelled and placed in appropriate compartments to aid in locating duplicates—an indexing system similar to a library card catalog.

If desired, the 2"-square dummies may be used to mark the places of slides on loan. Or a notebook may be used to record the borrower's name, the date, and the accession numbers of the borrowed slides. It is useful to note the date of the talk or event for which the slides are borrowed. A timely phone call to the user increases the Center's return rate, keeping the collection intact. Soliciting the return of borrowed slides is a critical part of slide maintenance; if neglected, it can leave you with a beautiful but empty storage unit.

Creation and Storage of Slide Archives

Any slide collection in existence for five years or more should be purged. The Center's collection included slides dating back more than a decade and was overdue for pruning: a substantial group of slides showed people in outmoded hairstyles operating outdated equipment. Thus, the first criterion used in choosing slides for the archives was age. The second was underuse. Slide circulation patterns offered a good indication of which slides were rarely, if ever, requested.

By removing outdated, inactive slides from the file, space was created for new slides. Most of the purged slides were kept for the archives. It is not advisable to discard slides, given the slide librarian's law which states that a discarded slide is immediately requested by someone.

Despite their status as wallflowers, archival slides are requested. Archival slides should be stored in or near the main unit for easy access. Essentially, they remain part of the collection. At the Research Center, they retain their original accession numbers. The 2"-square dummies, inserted in the file racks, are used to indicate the relocation of archival slides. Similar entries are made in the reference indexes to inform users of archival slides, using an abbreviation such as "LE-210-ARCH."

Archival storage can take several forms, including 1) metal boxes designed to hold 100 or more slides and 2) plastic window pages or plastic hanging frames for use in notebooks or drawers. Perhaps the most ideal method, offered in some Abodia units, is a set of sliding metal racks which can be pulled out from the cabinet base for viewing.

The Computer Option

In time, the average slide collection can become a major resource for users throughout the company. The size of the file and frequency of its use may be sufficient to warrant a computerized indexing system. To learn more about this option, the authors consulted the photographic staff at the Philip Morris Training Center who maintain a computerized index of more than 7,000 slides. Under this system, slides are given locater numbers and filed sequentially in the storage unit. When entered on the computer, however, each slide is assigned the following additional characteristics: category (prime classification); class (subcategory); description of image (may be as specific or lengthy as necessary); and a computer dossier number. For slides which are part of a sequential presentation, the index also includes the position of the slide in the program and its position in a specific slide tray. This affords rapid assembly of programs. Once entered, this information can be retrieved in several forms, such as by locater number, alphabetically by category, or by presentation.

In addition to data storage and retrieval, the computer program enables the operator to search, delete and correct data and to generate reports. A computer printout of the entire index

is kept in a notebook for reference, but the system's designers favor computer rather than manual retrieval of slides.

The greatest advantages of a computerized slide index are the rapid retrieval of slides from a large collection and the easy access to slide data in a variety of forms. One disadvantage of computerization, in addition to equipment costs, is the unpredictable computer downtime. While there are no immediate plans to automate the Research Center slide file, it can easily be done using present indexing methods. With an automated system, slides would still be stored by category since an arrangement based on sequential accession numbers does not easily lend itself to casual browsing. The Center's purpose is to assist end users in searching the collection.

Conclusion

The slide storage and retrieval system in operation at the Philip Morris Research Center is simple in concept and design and inexpensive in creation and maintenance. It caters to the end user rather than to the slide librarian. At the same time, it is controlled by careful and adequate documentation. From its beginning as a bag of unidentified slides, it has become a valuable service for many. As with any marketable service, the needs of its users will govern any future changes in this storage and retrieval system.

Literature Cited

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2. Clawson, C. R. and Rankowski, C. A./ Classification and Cataloging of Slides Using Color Photocopying. *Special Libraries* 69(8): 281–285 (Aug 1978).
3. ————/Slide Classification and Cataloging: Further Considerations. *Special Libraries* 72(1): 39–43 (Jan 1981).
4. LoPresti, M./An Automated Slide Classification System at Georgia Tech. *Special Libraries* 64(11): 509–513 (Nov 1973).

APPENDIX I: Sample Alpha Codes.

A	Advertising campaigns
B	Buildings
BF	Buildings, foreign locations
C	Competition
CP	Cigarette brands
D	Designs, schematics, flowcharts, etc.
F	Filters and filtration
F$	Financial, general
F$INC	Financial, corporate
F$INT	Financial, international
F$USA	Financial, USA
F$R&D	Financial, research center
L	Jokes, cartoons, etc.
LE	Laboratories, offices, equipment
M	Miscellaneous
O	Organization charts
P	Microphotographs
PER	Personnel
PLA	Plans and objectives
PP	Purchased presentations
T	Tobacco
X	Textual slides not expecting future re-use

APPENDIX II: Sample Quadrille Subject Index.

Buildings

Administration B-5 B-6 B-9

Architect's drawings B-21 B-22 B-23 B-39 B-40

Commerce Road, Manufacturing Center B-124 B-126 B-128

Commerce Road, Research Tower B-52 B-53 B-58

Commerce Road, Research Tower: Aerials B-120 B-124

Commerce Road, Research Tower: Groundbreaking B-70 B-71

Commerce Road, Research Tower: Landscaping B-45 B-46

Commerce Road, Research Tower: Night shots B-89 B-90

Commerce Road, Research Tower: Open House B-112 B-113 B-114

Main Street B-48 B-49

Stemmery B-30

Stockton Street B-123

Training Center B-209

Warehouse B-16 B-17

APPENDIX III: Sample Slide Inventory Record.

Slide No.	Description
B-122	Tower, A Building, walkway to Reception Building (Brochure picture) (1974)
B-123	Philip Morris factory at Stockton Street (1968)
B-124	Commerce Road factory, pond/fountain, Tower, etc. (1976): Aerial
B-125	Commerce Road layout with cafeteria locations highlighted (1976)
B-126	Factory training center (1975)
B-127	Commerce Road factory, pond/fountain/reflecting pool (1977): Aerial
B-128	R&D complex, parking lot, manufacturing center (1977): Aerial
B-129	R&D complex, pond, manufacturing center (1977)
B-130	R&D complex, engineering building, I-95 (1977)
B-131	Research tower, patio, moon in sky (1978)
B-132	Manufacturing center, fountain, ad pylon (1977): Aerial
B-133	R&D complex, manufacturing center, pond, I-95, parking lot (1978): Aerial

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Lunsford

Time Lag in Four Indexing Services

Robert K. Poyer

Library, Medical University of South Carolina, Charleston, S.C. 29425

■ **A study of time lag in *Current Contents: Life Sciences, Science Citation Index, SDILINE/MEDLINE,* and *Index Medicus* was conducted at a university library. Using 51 heavily cited and heavily circulated biomedical journals, time lag was calculated by taking the difference between when the journal issue arrived and when the index which covered the first article arrived. On the average, it took 31 days for a journal to be indexed in *Current Contents: Life Sciences,* 110 days by *Science Citation Index,* 86 days by *SDILINE/MEDLINE* and 129 days by *Index Medicus*.**

TIME LAG between the publication of an article in a journal and its appearance in an indexing service is a primary concern of librarians who try to provide the most current references on a subject. Although librarians are generally aware of time lag differences between various indexing services, there have been few studies reported in the literature (*1–6*).

In the present study, time lag is examined in four services that are heavily used at the Medical University of South Carolina Library (MUSC): *Current Contents: Life Sciences (CC), Science Citation Index (SCI), SDILINE/MEDLINE (SDILINE)* and *Index Medicus (IM)*. Although each indexing service is unique in terms of purpose, production methods, and finished product, librarians may use a combination of them in executing a literature search. Since there is a considerable amount of overlap among them, librarians may modify their search strategies based on the perceived differences in time lag.

Materials and Methods

Fifty-one journals were chosen based on the following criteria: 1) each was included among the 100 most-cited journals in the sciences in 1977 (*7*); 2) each journal had circulated at least 200 times from the MUSC Library between January 1978 and December 1979; and 3) the date was known for when each 1980 issue was received at the MUSC Library. *Biochimica Biophysica Acta* and the *Journal of Infectious Diseases* met the first two criteria but not the third.

The tables of contents of four 1980 issues of each journal title were photocopied—the first issue received in January and March and the last issue received in February and April or the issues nearest to those dates. With the *Annals of the N.Y. Academy of Sciences* and *Federation Proceedings*, four volumes or issues indexed by *SDILINE* and *IM* were used because not all volumes of the former and the abstract issues of the latter are indexed.

The data shown in Table 1 was collected for each journal issue. Time lag for *CC*, *SCI*, and *IM* was calculated by taking the difference between when the journal issue arrived at the library and when the index which covered the first article arrived. For *SDILINE*, time lag was calculated by taking the difference between when the journal issue arrived at the library and when the first article in the journal issue became available on *SDILINE*. By using the date the journal and index arrived in the library, a precise calculation of time lag could be made.

Although the journals used in this study usually arrived the month posted on the cover, this was not always accurate. With the indexes, *CC* and *IM* usually arrive at the MUSC Library the same month as posted on the cover. This is not true for *SCI* because the posted date corresponds to what was published and available for indexing during the period covered. After gathering this data for each journal issue an average time lag was calculated for each journal title.

There were two uncontrolled variables that could affect results. First, journal issues and index issues could have been lost or delayed in the mail; either the U.S. Mail or an institution's own mail service. Second, frequency of publication of the journals and indexes could affect the results. An attempt was made to minimize this problem by averaging four issues which arrived at various times during a month.

There was one controllable variable that affected the results of this study. When an indexer for *SDILINE* (and *IM*) receives a journal issue for indexing, he treats each article as a separate entity. Each must be read and understood before assigning appropriate subject headings. After each article in a journal issue has been indexed, the articles can be put into *SDILINE* (and *IM*). This is more time-consuming than the methods used to produce *CC* and *SCI*, which simply require an individual to edit the author, title, and bibliography sections of an article.

Table 1. Data Collected on Each Journal Issue.

Title	Science 208(4426), Jan 4, 1980
Date Received at MUSC Library	Jan 8, 1980
CC Cover Date	Jan 21
CC Date Received at MUSC Library	Jan 24
Difference+	16 days
SCI Cover Date	Jan–Feb
SCI Date Received at MUSC Library	Mar 24
Difference+	107 days
SDI/MEDLINE Date of entry (DA)	Feb 26
Next *SDILINE* Update	Mar 8
Difference*	60 days
IM Cover Date	Apr
IM Date Received at MUSC Library	Apr 24
Difference+	107 days

+ Difference between when the journal issue arrived and when the index which covered the first article arrived in the MUSC Library.
* Difference between when the journal issue arrived at the MUSC Library and when the first article in that journal issue first became available on *SDILINE* (next *SDILINE* Update).

Time Lag

On the average, it took 31 days for a journal to be indexed by *Current Contents: Life Sciences*, 110 days by *Science Citation Index*, 86 days by *SDILINE/MEDLINE* and 129 days by *Index Medicus*. The results for each journal title are shown in Table 2. Since many of the journal titles are indexed for *Abridged*

Table 2. Time Lag by Journal Title.

Journal Title	CC	SCI	SDILINE	IM
*Am J Cardiol**	42 days	124 days	61 days	105 days
*Am J Med**	40	99	69	111
*Am J Obstet Gynecol**	43	120	73	118
Am J Physiol	29	126	88	130
Anal Biochem	29	110	104	146
*Ann Intern Med**	41	123	54	99
Ann NY Acad Sci+	91	166	91	131
*Ann Surg**	39	117	88	129
Arch Biochem Biophys	27	111	127	164
Biochem Biophys Res Commun	24	100	97	165
Biochem J	31	117	184	227
Biochem Pharmacol	12	81	114	153
Biochemistry	26	122	113	152
*Blood**	29	121	75	117
Brain Res	25	121	81	125
*Br Med J**	8	58	113	156
*Cancer**	28	98	88	140
Cancer Res	34	104	75	125
Cell	25	103	102	144
*Circulation**	35	95	41	106
Circ Res	28	92	67	110
Clin Chim Acta	23	99	101	143
*Endocrinology**	39	108	61	104
Eur J Biochem	17	80	85	125
Exp Cell Res	30	108	70	111
FEBS Lett+	18	93	107	156
Fed Proc	33	124	76	119
*Gastroenterology**	37	114	68	91
Infect Immun	21	116	139	173
*JAMA**	27	123	62	110
J Biol Chem	27	87	47	80
J Cell Biol	26	93	78	152
*J Clin Endocrinol Metab**	44	112	93	135
*J Clin Invest**	45	112	60	161
*J Exp Med**	31	115	85	130
*J Immunol**	41	128	75	124
*J Lab Clin Med**	35	126	59	103
J Nat Cancer Instit	27	92	65	111
J Neurochem	19	107	138	177
*J Pediatr**	45	124	64	107
J Pharmacol Exp Ther	35	107	64	107
J Physiol	21	99	157	193
*Lancet**	16	123	65	109
Life Sci	27	119	149	186
Nature+	19	102	63	107
*N Eng J Med**	32	122	48	95
Pediatrics	45	117	84	125
Proc Nat Acad Sci USA+	65	105	110	155
Proc Soc Exp Biol Med	28	94	68	111
*Radiology**	39	118	68	111
Science+	15	120	58	104

* Abridged *Index Medicus* titles.
+ Selectively indexed by *Index Medicus.*

Index Medicus (*AIM*), the difference in time lag between *AIM* and non-*AIM* titles were also examined (Table 3). *CC* and *SCI* indexed non-*AIM* titles quicker than *AIM* titles, while *SDILINE* and *IM* indexed *AIM* titles approximately 25 days sooner than non-*AIM* titles.

Discussion

When examining these results, it is important that the differences in purpose, production methods, and finished product be considered. As one might expect, the services offered by the Institute for Scientific Information (*CC* and *SCI*) were more current than their counterparts offered by the National Library of Medicine (*SDILINE* and *IM*).

First, ISI takes special pride in the timeliness of its products and makes the extra effort to receive and index journals as quickly as possible (*8, 9*). Not only does ISI request publishers to send their journals posthaste, they sometimes receive page proofs prior to publication of the journal.

A second reason ISI is able to publish more current indexes is that it requires less time and intellectual effort to index an article. In producing *CC* and *SCI*, an individual need only edit the table of contents and the first page of an article. In addition, the bibliography needs to be edited for the *Citation Index* of *SCI*. It is not surprising that it takes only half an hour to three days to edit a complete journal issue. (*10*). *SDILINE* and its monthly byproduct, *IM*, require greater intellectual effort and thus takes longer to produce. The indexer must read and understand key parts of each article and assign appropriate subject headings from Medical Subject Headings (MeSH) to insure that all important concepts are indexed.

Although the average results for each of these tools will be helpful in answering general questions about currency, a few important observations need to be made. First, *CC* covers foreign published journals quicker than U.S. published journals. Second, the 70- to 80-day difference between the indexing of an article in *CC* and *SCI* can be attributed to the bimonthly publication schedule of *SCI*. It appears that *CC* and *SCI* do not try to treat *AIM* titles differently than non-*AIM* titles. However, when comparing *CC* with *SDILINE* and *SCI* with *IM*, *AIM* titles are covered quicker by *CC* and *SCI*. The results also show that how often a journal is published does not affect how quickly it is indexed.

The 45-day difference in coverage between *SDILINE* and *IM* may be important for libraries which have access to both tools. Some libraries will not execute one term searches on *SDILINE / MEDLINE* if the term is a subject heading in *Index Medicus*. These libraries might consider amending this policy for the *SDILINE* file only, especially if the client is looking for the most current information and will not look through *CC* or *SCI*.

The average results found in this study can be used as a guideline in setting up a search strategy when one or more of these indexes will be used. If the librarian does not do literature searches for all clients, these results will be helpful in counseling clients on the currency of these indexes. Table 2 might be helpful in tracking down an article from one of the journals studied.

Table 3. Time Lag between *AIM* and non-*AIM* Titles.

	CC	SCI	SDILINE	IM
All Journal Titles	31 days	110 days	86 days	129 days
AIM Journal Titles	35	113	71	115
Non-*AIM* Journal Titles	29	107	97	141

Summary

A study of time lag in four indexes was made on 51 heavily cited and heavily circulated biomedical journals. On the average, it took 31 days for a journal to be covered by *Current Contents: Life Sciences,* 110 days by *Science Citation Index,* 86 days by *SDILINE/MEDLINE* and 129 days by *Index Medicus.* These results should be helpful in planning a search strategy of the current biomedical literature, as well as answering general questions about the currency of these indexes.

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On the Practical Side

Subject Heading Revision
A System for Small Libraries

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■ **After determining the need to improve the subject catalog at a medical library, policy decisions were made involving headings sources and revision methodology. A plan is presented for analyzing subject headings, weeding out unnecessary or overlapping terms, and introducing more relevant headings, along with suggestions for the creation of improved cataloging and reference tools.**

THE Maternal and Child Health/Population Dynamics Library of the Johns Hopkins School of Hygiene and Public Health not only serves two of the School's departments but is also the Information Unit of the Hopkins Population Center. Even with this dual role, it is a small library. Its holdings (aside from over 200 journal subscriptions) consist of approximately 6,000 volumes and a 50-drawer card catalog divided into author/title/series and subject sections. The staff consists of two professionals and one library technician.

Evaluation of the Subject Catalog

For most of the library's twenty odd years of existence, cataloging had been a task performed by the same individual responsible for administration and reference. Needless to say, the catalog had become a victim of rushed work and lack of periodic review.

A simple search would uncover a vast array of problems such as the following groups of headings:

Labor
Childbirth
Birth

Infant mortality
Mortality, infant

Careers
Occupations
Occupations and Disciplines

A gross lack of cross references created further confusion, as in the following examples:

Kin network
Family

Population structure
Population composition

Survey design
Research design
Study design

In addition there were numerous singular and plural forms of the same term, confusing subheadings, and a general turmoil in geographic terminology, e.g., headings existed for East Europe, Eastern Europe, Europe, Eastern and Europe, East.

What was truly bothersome was the lack of user complaints about the catalog. One needed only to stand by the catalog for a short time to realize that most users were giving up in frustration or assuming that there was nothing in the library on their topic. As time went on, users began to avoid the subject catalog altogether and addressed their reference questions directly to the staff. The professional staff at that point decided to embark on a revision of the subject catalog.

Methodology

Headings Source

The first step in the process involved the texts that were being used for subject headings. Library of Congress subject headings had been found lacking, especially due to the dual nature of the library's subject matter. The *Family Planning/Population Thesaurus* of the Carolina Population Center and the *Medical Subject Headings (MeSH)* of the National Library of Medicine were, therefore, chosen instead.

It was decided to lean more heavily toward using *MeSH* whenever possible for several reasons: 1) the library's users are medical professionals who are likely to be familiar with the terms in *MeSH*; 2) other libraries at Johns Hopkins use *MeSH* heavily; and it enabled the library to maintain consistency of terms between the card catalog and the online bibliographic searching it performed for users through the National Library of Medicine. The decision to use two sources still left room for possible confusion, but it seemed the most logical compromise.

Analysis of Current Headings

The next step was to create a complete record of the existing subject headings in the card catalog by noting each on an index card. Each heading, whether or not it contained a subheading, was recorded on a separate card. Both professionals and clerical assistants participated in this phase so as to familiarize everyone with the nature of the project.

In order to identify each term's source, each index card was labelled with an "M" (for *MeSH*), a "T" (for *Thesaurus*), or a "-" (for neither).

Problem Identification

While working with the cards, a Master List of Revisions (MLR) was prepared simultaneously. Any two or more terms that seemed to be overlapping or inconsistent were noted. The *Thesaurus* provided some assistance at this point since it lists *MeSH* terms that are relevant to each of its own terms, many of which the staff had not been aware of. The MLR became a 25-page opus with approximately 500 items listed.

The next step was performed by the two professionals on the staff and

involved reviewing each item on the MLR along with the card catalog and both headings sourcebooks, deciding if headings were overlapping, checking off which of the headings in each group of problems was preferred, and noting the necessity for cross references, removal of headings, additions and revisions of existing terms. This review was an education in itself. It provided an opportunity to formulate more precise definitions of terms the library had been using, as well as to learn new term possibilities. One example was the discovery that *MeSH* assigns the term "Oviducts" to nonmammals only, while "Fallopian tubes" is the appropriate term for mammals.

Problem Solving

The most crucial element in decision making was user-orientation, which itself is never clear. With changes in technical and age- or education-specific terminology, users may vary in deciding which heading to search in a card catalog. Such a problem was encountered with the term "Adolescent Pregnancy." *MeSH* lists the term "Pregnancy—in adolescence," but the current term in the field is "Adolescent Pregnancy." Although the latter is not a *MeSH* term, the library opted for user familiarity. A more complicated situation developed with the terms "Demographic methods" and "Demographic models." The two terms indicate different aspects of research but are closely related and need to be dealt with accordingly in the card catalog. The result of this deliberation was a large set of "see also" cards involving 10 separate terms.

Making the Changes

Having decided upon the changes to be made, the clerical part of the process was then begun. Three working lists were created from the MLR: one each for "See references and "See Also References," from which cards were typed and filed. The longest list made contained over 360 items, called "Pull & Change" (P&C).

Each problem term in the P&C list was numbered with an arrow pointing to the preferred term:

23 Sexual sterilization →
Sterilization, sexual
24 West Germany → Germany, West

Subject heading cards with problem terms were pulled and handed to the librarian in packets. Since it had been decided to use the shelf list as an authority file and to change the subject listings on these cards as part of the project, a list of changes by call number was created, using the number assigned to the change on the P&C list:

23. HB891.W92
HQ771.S94
24. RB113.F91
HM201.D34 1980
QP257.S3 Vol.1

where "23" and "24" correspond to change items on the P&C list.

This information recorded, the actual change was then made on the card by whiting out and retyping each heading. The P&C list sometimes included the direction "pull and give to librarian" in special cases where a definite decision could not be reached without reviewing the book itself or when batches of cards with a broad heading (e.g. "Population") had to be narrowed in scope, differently in each case. For the latter cards, a special list of call numbers titled "Miscellaneous Pull and Change" was created and the exact change noted.

The final aspects of the process were:

1. Refiling the corrected cards. This was done by one of the professionals. Due largely to the changing nature of the project, this step uncovered inconsistencies that had gone unnoticed earlier.
2. Making notations in the *Thesaurus* as to which terms are no longer used. Whenever a *MeSH* term was indicated and preferred, it was checked in the *Thesaurus*.
3. Typing lists of "See" and "See Also" references to be used as cataloging tools.

4. Changing the shelf list cards.
5. Revising the original index card file of subject headings using the MLR as a guide.
6. Checking the revised index card file against the card catalog, not only to methodically check the card file but also to catch additional problems to be corrected as soon as possible.
7. Using the index card file to compile a complete list of subject heading terms used by the library. This list serves as both a cataloging and a reference tool.
8. Establishing a system whereby the index card file can serve to continuously update the library's subject heading listing. As new terms are introduced into the card catalog, tagged cards are filed into the card file. Supplements to the subject heading are supplied every six months, with completely new listings supplied once a year or more if the number of additions warrants it.

Results

Although the project took longer than expected and the changes were more numerous than anyone imagined, the heightened efficiency of the subject catalog has resulted in more fruitful searches by both staff and users. Reference questions that can be resolved by a simple subject catalog search are less common. The master list of subject headings should help to improve users' searching abilities and familiarity with the subject scope of the library.

The involvement of the entire library staff in the catalog revision project helped to make everyone aware of the theory behind the process. This engendered a deeper understanding of the card catalog and helped in assisting clients in the use of the catalog.

The cataloging librarian now has at her disposal several new cataloging tools which relate to the specific subject area of the library: an efficient card file and typed list of subject headings, lists of all cross references in the catalog, and a headings sourcebook with notations for the use of cataloging terms. These tools will, if properly maintained, ensure greater consistency and eliminate uncertainty in cataloging.

The special subject areas of the library's holdings are now recorded through the subject heading list; by analyzing new additions to the list, users and staff can see in which directions the collection has grown.

Specific policy decisions were made in areas where none had previously existed, e.g., the use of *MeSH* whenever possible and use of the shelf list as an authority file for all changes made in the card catalog.

The idea of revising the author/title/series catalog has been discussed, enabling staff to introduce AACR2 to the catalog in a methodical way and to create an authority file specific to the library.

Conclusions

The subject catalog was improved through weeding, correcting and integrating headings, keeping in mind the orientation of the majority of the library's users. A year-long undertaking, it was a project embarked on "blindly" that met with success due to staff cooperation and innovation on the part of the professionals. Users have responded positively by their increased use of the subject catalog. The entire staff is pleased with the clarity of the catalog and the time-saving features which have been introduced. It has become apparent that this type of endeavor can trigger an endless pursuit of "perfection" in the catalog, which is healthy if kept in perspective.

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The Effective Use of OCLC in a One-Person Astronomy Library

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■ **The application of the OCLC system for use in a one-person astronomy library is discussed. The benefits include: freeing the librarian from clerical duties; a reduction in the time required to catalog unusual acquisitions; more efficient searches for interlibrary loan items; and the use of the system for converting previously cataloged material into machine-readable form. Justification of such a system in a one-person library is also discussed. Some problems are presented, mainly concerning slow acquisition time on a dial-up system.**

THE U.S. Naval Observatory, in Washington, D.C., had its beginnings in 1830 as part of the Depot of Charts and Instruments, an unlikely sounding name for the future Naval Observatory. Initially, observations were made daily with a transit instrument in order to rate, or accurately set and calibrate, the chronometers used on U.S. Navy ships. The Naval Observatory Library originated with the small collection assembled by the first two directors of the Depot. In 1842, Congress authorized a new permanent building for what was now called the Naval or sometimes National Observatory and sent Lt. James Gilliss to Europe to buy instruments and books. In reporting on this trip to the Secretary of the Navy, Gilliss listed the books donated to him and those he purchased. The books presented to him by other observatories and scientific institutions were the beginning of an exchange agreement which is still in effect today with many of the same institutions. This was the first "acquisitions list" for the library. Some of the books Gilliss purchased are now in the rare book collection and include such titles as *Poeticon Astronomicon* by Hyginius (1482) and *Selenographia* by Hevelius (1647).

The library grew from these small beginnings until at present there are 75,000 volumes in the collection, including bound periodical volumes. It is generally agreed that the Naval Observatory Library is the best astronomical collection in the country, if not the world. The collection contains 800 pre-nineteenth century books, complete sets of observatory publications from all

over the world, and complete sets of astronomical journals. The book collection covers all fields of astronomy, as well as physics, mathematics and navigation. The collection of nineteenth century mathematics texts and journals is also impressive. The library is continuing to grow in all its subject areas, with emphasis given to astronomy.

Managing a One-Person Library

One would imagine that a collection of this size and importance would require a sizeable staff. Yet the staff consists of one librarian who is everything from library page to head of reference, acquisitions, and cataloging. In the field of astronomy, there is a large amount of original cataloging necessary: small conference proceedings, important observatory publications, foreign publications, especially in Russian, and so on. Many of these items are cataloged eventually by the Library of Congress, but the wait for catalog cards is sometimes many months, years in some cases. Knowing that astronomers need access to this material before that length of time, much original cataloging, as well as the clerical work involved in preparing catalog cards, had to be performed by the library's lone librarian. Using card stock in the photocopy machine worked effectively, but still all the subject headings and added entries had to be typed, and this was also true of the Library of Congress cards.

After reading about OCLC in the literature and seeing it demonstrated in other libraries, OCLC seemed the perfect solution for eliminating most of the clerical work associated with cataloging. Going online with OCLC would allow other libraries to use the original cataloging produced by the Observatory library. The interlibrary loan system on OCLC could also reduce the time normally spent processing interlibrary loan requests.

Early in 1978, the librarian began to investigate the advantages and costs of using OCLC with both a CRT and a dial-access terminal. Libraries which used both types of terminals were visited. At the time, a $3,900 start-up cost and a $3,700 annual use fee were estimated for a CRT. For dial access, the start-up cost was $2,400 and the annual use fee, $2,500. Based on these estimates, approval and support for acquiring dial access came easily; the cost of a CRT, however, was too high. In the fall of 1979, at the beginning of the new fiscal year, the terminal was purchased and a contract was signed with OCLC.

Benefits of Using OCLC

In April 1980, the Naval Observatory Library became a user of OCLC with the symbol DNO. The library came in under the FEDLINK network, a part of the Federal Library Committee. Overall, the library's experience with OCLC has been highly satisfactory.

Cataloging Functions

The ability to do original cataloging quickly and to know that other libraries also can use the cataloging is encouraging. At present the National Radio Astronomy Observatory, Kitt Peak National Observatory, and Sacramento Peak Observatory are the three other observatory libraries not associated with universities which have OCLC. With four libraries doing original cataloging for those obscure but much needed astronomical publications, one major function of the library is fulfilled—quick access to relevant materials for users. This is not to say that original cataloging of astronomical materials is not done by universities which have observatories or departments of astronomy. It is, but usually technical services in university libraries serve all departments, and there are some delays in original cataloging of materials.

Cataloging new books is done efficiently. When new books are ordered, each title is searched on OCLC and, if found, call number changes or subject and added entry changes are noted on the print-out. When these books arrive, work sheets are pulled and the books

are cataloged on OCLC. For material not found in the database, original cataloging is done when the item arrives.

Interlibrary Loan

The interlibrary loan system of OCLC is also of great help. The ability to quickly find the location of a needed volume saves time previously spent telephoning other libraries. Since Washington is a city rich in libraries, it is sometimes faster to phone a local library, once it has been determined via OCLC that it has the book, rather than transmit the request through OCLC. The book can then be picked up and be in the library the same or next day. If the request is not urgent, OCLC is used for transmitting the request. The number of interlibrary loan requests has increased since the Observatory library has gone online, but not by an unreasonable amount.

Retrospective Conversion

Another useful feature of OCLC is the Retrospective Conversion Mode. This mode allows previously cataloged material to be converted into machine-readable form. In 1973 the Observatory library began issuing acquisitions lists, usually bimonthly. Using these lists, the library has begun to update its holdings on OCLC for the period 1973-1979. The cost is 15 cents per record in non-prime time compared with 60 cents per record during prime time. An online catalog for 1973 to the present is being prepared using the tapes generated by retrospective conversion. It would be ideal to have the complete card catalog online, but that will take more money than is available at present for such projects.

Dial Access

A further benefit of joining OCLC is the use of the dial-access terminal. The library now has easy access to the Bibliographical Star Index at NASA's Astronomical Data Center at Goddard Space Flight Center. It also has online access to Dialog and the Defense R, D, T&E On-Line System (DROLS) of the Defense Technical Information Center. Access to these databases through the dial-access terminal, will increase the effectiveness of the library.

Drawbacks of the System

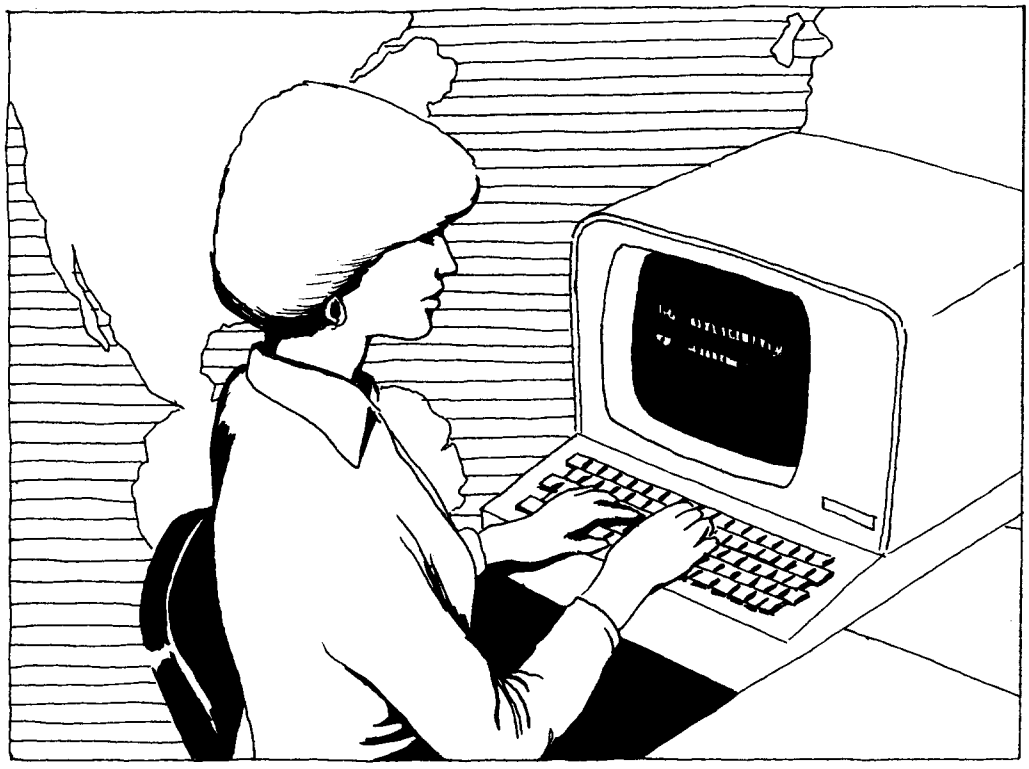
When the library first began using the system in the spring of 1980, access was no problem except for an hour or two in the middle of the afternoon. Unfortunately, response time has been getting slower, and sometimes one is unable to get on at all. In discussing this problem with a staff member of the FEDLINK network, the author was told that there are many dial-access users now, and the number is growing daily. OCLC wants to, and will, do something about the matter, but it will take time.

With dial-access, the printing is slower than with a CRT terminal. When searching many titles, one sometimes wishes that the fixed field, which has less pertinent information, could be deferred so that one could get right to the heart of the matter—the variable field where author, title, and call number are listed. This is not a problem with the CRT because of the speed with which the information appears on the screen.

Training

Another minor drawback has been the training. Training sessions are conducted by FEDLINK and are set up to cover one subject at a time since most people attending are specialists such as catalogers, interlibrary loan librarians, and serials catalogers. The sessions are two days each, and much of the material is repetitive. It would be useful to have one session which covered searching, interlibrary loan, and serials cataloging in two or three days. However, since one-person libraries are in the minority, this suggestion is most likely impractical.

There is one additional drawback for the space-conscious librarian: The amount of material supplied by OCLC and the library network is voluminous.



Conclusions

In a one-person library the greatest benefit of having OCLC is the extra time gained to do additional professional projects, as well as to manage the day-to-day operations of the library. In the case of the observatory library, this includes the selective dissemination of incoming journals and observatory publications which contain articles relating to research in progress at the Naval Observatory. Keeping up with new titles published in the library's subject areas is another task that can now be done more thoroughly.

One project which is not a part of the daily operation of the library, but is nonetheless important, is the preservation of astronomical materials. The deterioration of the library's nineteenth century publications is a matter of great concern. Going online with OCLC has allowed the librarian extra time to pursue some preservation solutions.

A project is currently underway to investigate the software and hardware necessary for an online catalog in the library, and how best to implement such a system. Information is being gathered about the Integrated Library System (ILS) which was developed by the National Library of Medicine for use in small- to medium-size libraries.

A one-person library has a greater need for automation than does a library with a larger staff. The use of OCLC at the Naval Observatory library has not eliminated all mundane library tasks, but it has allowed the librarian to manage the collection in a more effective and professional manner.

Received for review Apr 6, 1981. Revised manuscript accepted for publication Jan 20, 1982.

Brenda G. Corbin is librarian, U.S. Naval Observatory, Washington, D.C.

Actions of the Board of Directors January 27–29, 1982

The SLA Board of Directors met at the Galt House Hotel, Louisville, Kentucky, Jan 27–29, 1982, during the Association's 1982 Winter Meeting. Meetings of the Chapter and Division Cabinets were also held at the Winter Meeting. Actions taken as well as important reports heard by the Board are summarized below.

Association Finances—The Association ended 1981 as it did 1980 with a healthy budgetary surplus. The Executive Director reported $55,261* of excess income over expenditures for FY 1981. The surplus was generated by the 1982 Annual Conference, the Continuing Education Program, the Special Libraries Program, interest income, the Mailing List Service, and careful monitoring and control of expenditures by staff. The only 1981 budget line in which expenses were considerably more than the amount budgeted was Membership Services ($67,400 actual vs. $46,300 budgeted).

The Board reconsidered priorities presented by the Finance Committee at the 1981 Fall Meeting and voted to apportion the excess income among the following funds and programs: Reserve Fund ($22,630), Computer Fund ($13,131), Building Fund ($10,000), New Communications Technologies Study of the American Society of Association Executives (ASAE) Foundation ($5,000), and the Special Programs Fund ($4,500).

As noted above, the Board considered a request of the ASAE Foundation for SLA's participation in the funding of a study of the impact of new technologies on association communications and information management. SLA's support was solicited specifically by the Foundation for a focused study on the use of electronic mail systems by associations. The Board deemed the project worthwhile and a good public relations opportunity for SLA. Therefore, it approved $5,000 for the ASAE study.

In June 1981, the Board authorized the Executive Director to search in the New York area for a building suitable for relocating the Association Office. At the 1982 Winter Meeting, the Board established a Building Fund and approved procedures for the inspection and approval of a new office facility. As noted earlier, $10,000 of the surplus income in the FY 1981 budget was allocated to the Building Fund.

The Board heard from staff that the Association finished FY 1981 with 11,263 members—approximately 100 members less than were anticipated in the 1981 budget. The failure to meet the projected figure was attributed to the dues increase that went into effect on Jan 1, 1981. The Board was reassured to hear that the number of new memberships and renewals currently being received indicates the small loss of membership in 1981 will be more than recouped in 1982. The projected 1982 membership is 11,500.

A $1,500 interest-free loan was approved for the Florida Chapter to assist the Chapter with financing the publication of a directory of special libraries and collections in the state of Florida.

The Board approved $1,100 for the purchase of a telephone answering machine. The machine will be used by the Employment Clearinghouse to establish a telephone jobline to replace the placement newsletter, *Employment Opportunities*.

* Unaudited.

A comparison study of the advertising rates of the major library and trade association journals was presented by the Illinois Chapter. After considering the report, the Board voted to increase the advertising rates for a full-page ad in *Special Libraries* to $0.035 per reader, based on present circulation.

An offer to sponsor an SLA doctoral scholarship was presented to the Board by the Association staff on behalf of a commercial firm. Because there are already two sponsored SLA doctoral scholarships, the Board instructed the staff to further explore with the commercial firm the use of its contribution for another constructive purpose.

Conference Planning—Executive Director David Bender briefed the Board on several problems that had arisen as a result of the scheduling of an international Grand Prix automobile race by the city of Detroit at the Renaissance Center, site of SLA's 1982 Annual Conference.

The race and other related events will take place during the first three days of the SLA meeting. Dr. Bender stated that the Association staff had not been successful in coordinating Conference planning with the Grand Prix Race Committee, and that, to date, the city of Detroit is not willing to reimburse the Association for the extraordinary expenses it will incur as a result of the changed environment for the Conference.

The Board discussed alternatives to holding the 1982 Annual Conference in Detroit and requested advice from the Chapter and Division Cabinets. After hearing from the Executive Director that an alternate midwestern city with adequate hotel, meeting, and exhibit space was available, the Board approved the Cabinets' recommendation that the Executive Director be instructed to negotiate with Detroit and to investigate an alternate city as the site for the 1982 Annual Conference.

The Board's action empowered the Executive Committee of the Board to change the Conference venue if, in the final analysis, it was determined that an available alternate site would render a better environment than Detroit for SLA's professional meeting.

The final decision on moving the Conference or keeping it in Detroit will be made on or before Feb 9, 1982. If the meeting is moved, SLA members will have received notice far in advance of the publication of this report.

Public Relations Program Proposed—The Task Force on Public Relations urged the Board to establish a public relations program to advance the image of special librarians, information specialists, and the Association. The Task Force suggested that partial funding for the program be derived from a $100 annual assessment of each SLA Chapter and Division.

The Chapter and Division Cabinets informed the Board of their strong support of the Task Force's recommendation for the establishment of a public relations program; however, the Cabinets were not in favor of an annual assessment. The Executive Director stated that funds to support a public relations program will be included in the Association's draft budget for FY 1983.

Placement Ad Policy Questioned—A concerned member had objected to the publication in the *SpeciaList* of classified employment advertisements from organizations based in Arab countries, or from the governments of these countries, in light of the Association's anti-discrimination policy. The Board considered the matter, but no action was taken to change the current policy of accepting such advertisements as long as they contain no references to race, color, creed, national origin, age, sex, physical handicaps, or any other discriminatory practice as a condition of employment.

Name Change Discussed—Past President Jim Dodd reported on the work of the Task Force on a Name Change for SLA. The Board agreed with Dodd that the Task Force should continue with its assignment to select and recommend an appropriate new name for SLA. Should a definite decision to change SLA's name be made, the Board would not act without strong, grass-roots membership support nor would a new name become effective until after the celebration of the Association's 75th Anniversary at the Annual Conference in 1984.

In response to a request by the Rio Grande Chapter that merger discussions be initiated with the American Society for Information Science, the Board informed the Chapter that some preliminary discussions had already taken place between the 1980/81 ASIS and SLA Presidents. The result of those discussions was a decision by the ASIS Council

in February 1981 that ASIS continue to pursue areas for resource sharing and other topics of mutual interest with SLA. However, the Council did not favor a merger of the two associations.

Federal Job Standards Opposed—After hearing a report from the President of the Washington D.C. Chapter on the Tentative Standards for Library and Information Service Positions (GS1409-11), which were released for comment in December 1981 by the U.S. Office of Personnel Management (OPM), the Board adopted the following resolution:

> The Board of Directors of the Special Libraries Association goes on record as being strongly opposed to the Tentative Standards for Library and Information Service Positions released December 8, 1981, by the U.S. Office of Personnel Management and instructs the President and the Executive Director to prepare an appropriate document expressing the views and concerns of the Special Libraries Association.

As a result of letters written by the President and the Executive Director, SLA, and by other library leaders, OPM extended the deadline for suggestions for changes in the Tentative Standards from February 8 to March 10. The President and the Executive Director, SLA, will consult with Chapter and Division officers, committee chairmen, and SLA representatives before they document the views and concerns of SLA members, both within and without the federal library community, for submission to OPM.

Legislative Concerns—The Executive Director reviewed with the Board the effects of cuts in the U.S. federal budget on library and information service programs. He also reviewed the status of pending legislation that has direct or indirect implications for the information community.

The Board adopted the following resolution to support funding of the National Commission on Libraries and Information Science:

> Whereas, the National Commission on Libraries and Information Science was established in 1970 by U.S. Public Law 91-345 as a permanent, independent agency to advise both the President and Congress by developing and recommending policies and plans for library and information services according to the needs of the people of the United States; and
>
> Whereas, the work of the Commission has been accomplished in a cost effective and efficient manner with a budget of only $700,000; and
>
> Whereas, the programs established and supported by the National Commission on Libraries and Information Science have had and will continue to have a significant impact on the development of library and information services through its task forces, information exchange programs, and leadership functions; and
>
> Whereas, the support rendered to the special libraries community specifically illustrated by the establishment of a joint NCLIS/SLA task force (the Task Force on the Role of the Special Library in Nationwide Networks and Cooperative Programs) to define the role and develop ways to expand the participation of special libraries in nationwide information networks and to promote the sharing of information resources between the private and public sectors; and
>
> Whereas, the National Commission on Libraries and Information Science continues to work with all segments of the library and information community in both the public and private sectors to keep them aware of current and projected happenings in the information field; therefore,
>
> Be it resolved that on this 28th day of January 1982, the Board of Directors of the Special Libraries Association passes this resolution in support of the National Commission on Libraries and Information Science and requests that the President and Congress continue to support and fund the efforts of this Commission.

Award Winners Announced—The Awards Committee reported that it had selected Alleen Thompson to receive the 1982 Hall of Fame Award and James Humphry III to receive the John Cotton Dana Award. The Board also approved the Committee's nomination of Hon. William David Ford, Congressman from the 15th Michigan District, for Honorary Membership. Rep. Ford's nomination will be referred to the membership for election at the 1982 Annual Business Meeting (June 9). All three awards will be presented during the Awards Banquet at the 1982 Annual Conference.

Salary Survey Planned—The Board heard a progress report from the Association staff on the planning for the 1982 triennial SLA Salary Survey and informally instructed the staff to publish the preliminary survey re-

sults in the October 1982 issue of *Special Libraries*. The detailed survey report will be published separately as a non-serial publication.

Division Concerns—A recommendation by the Geography and Map Division that the Board approve the Division's participation in the Anglo-American Cataloging Committee for Cartographic Materials–Memorandum of Agreement was approved with the provision that SLA assumes no financial responsibility for the Division's participation in the Committee.

The Chairman of the Division Cabinet informed the Board of the Cabinet's rejection of the recommendations of the Special Committee on Division Structure. The Special Committee had recommended the formation of a cooperative union or council of Divisions to share resources for conference planning, publishing, and projects. The Cabinet expressed its appreciation to the Special Committee for its work and indicated to the Board that a similar committee would be established within the Division Cabinet to study further the problems of Division structure and possible solutions.

Miscellany—The Radisson Plaza Hotel in Nashville, Tennessee, was selected as the site of the 1986 Winter Meeting (January 29–31).

Several standing committee definitions were referred to the Committee on Committees for editorial changes in the wording used to define the terms of office of committee members. The Committee was also charged with redefining the Scholarship Committee and with redesignating the staff member who serves as the Association Office Contact for the Positive Action Program for Minority Groups Committee, the Scholarship Committee, and the Student Relations Officer.

HELP!

The SLA Library often receives requests from special librarians seeking information on library management and is trying to develop a collection of sample management documents to help answer these questions. Some materials have already been collected, but more are needed to make this collection a really useful resource.

Do you use any of the following kinds of documents in your library? Can you make them available to other special librarians? If you can, please send your contributions to:

Wanda Kemp
Manager, Information Services
Special Libraries Association
235 Park Avenue South
New York, N.Y. 10003

- ☞ JOB DESCRIPTIONS
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- ☞ USER GUIDES & PROMOTIONAL LITERATURE
- ☞ STAFF MANUALS
- ☞ COLLECTION DEVELOPMENT POLICIES
- ☞ BUDGETS (IN PERCENTAGES)
- ☞ FLOOR PLANS
- ☞ USER-SURVEY QUESTIONNAIRES

REVIEWS

Alternatives for Future Library Catalogs: A Cost Model, by Robert R.V. Wiederkehr. Rockville, Md., King Research Inc., 1980. 179 p. $15.00.

This publication represents an attempt to mathematically model the costs of various alternative catalog configurations in the context of the large, general-purpose research library. The impetus for this work was the emergence of AACR 2 and the consequent tactical decisions that need to be made about how to implement it. This, coupled with the various forms in which a catalog may now be maintained and used—card, microform, and online—makes this study a timely one.

The intent of the model is not to prescribe one best approach but to provide a decision-making tool for libraries. Libraries that wish to use this model must make a substantial effort to generate and collect the necessary input data.

The book contains a great deal of useful information for the general reader who has no anticipation of using the model. The model represents no mean effort; it contains some 97 input variables and 58 output variables. This gives an idea of the magnitude of the effort involved in using the model. The context is complex and, by necessity, the model is also. It reaches its greatest subtlety and sophistication in its handling of the number of unique headings per title, a function which varies in a non-linear fashion with the size of the collection. The description of this phenomenon is well written. The author has provided a real service by pulling together data on this phenomenon in a fashion that provides a good estimate or default value (if the library does not have its own statistics on this point, which most will not) of this very important decision-making variable.

The model is sophisticated both in terms of its modelling of library operations and in economic terms. It is, for example, a net present value model—an approach of fundamental importance in economic analysis but, unfortunately, all too rare in the not-for-profit library world. This reviewer's only complaint is that the modeling of the various technological alternatives to the catalog is not as detailed, and therefore not as reliable, as the analysis of catalog operations per se. Although the modeling of alternative technologies is inherently more different than modeling systems which are already in hand, this is one area in which the model should be enhanced and extended.

The model, however, does produce some directly useable and interesting data. For example, the cost of implementing AACR 2 is estimated to be in the range of four to seven percent of total cataloging costs over the five-year range of the model. Such a percentage is by no means trivial, but it is certainly far less than some of the gloomy predictions that have been made.

The default values can be used to generate some general rules of thumb. The card catalog is not yet a dead dodo. Microform appears to be an interim technology at best; it does not prove to be very economical in this model. What the model says, in effect, is—don't abandon the card catalog for anything short of full online.

Enclosed as an appendix to the report is a background paper by Richard Boss entitled the "Future of the Catalog" which is well-worth reading. It contains both a description of the pros and cons of the various alternatives and an excellent review of the literature on library cataloging costs. This serves as a useful supplement to, and indeed is the basis of, many of the default figures provided by the study proper. The two together provide a reasonable set of benchmarks to be used by libraries in the preparation of input for the model. Costing of library and information-related operations is a complex task that does not come easily to academic librarians. Egregious mistakes in cost analysis are often made, as the literature demonstrates. The inclusion of default values and an explanation of how they are derived, including an indicator of the author's confidence in the reliability of the estimate, increases the likelihood that this model will be appropriately used.

Despite the utility of the model and the wealth of data contained in the report and in the appendices, the book does have its faults. The most striking fault is the presentation format; the book is too obviously a relatively unmodified report to the funding agency. The result is a dreary, pedestrian style. From the reader's point of view, much of the information that appears in the report should have been transfered to the appendices, and much of the material found in the appendices should have been given more prominence in the report.

A second caveat is that the report might make clear, in a far more explicit fashion

than it does, that the ultimate utility of cost figures is that they represent benefits foregone by the pursuit of an alternative, and that this must be weighed against the benefits achieved. The study does not, in a methodical fashion, address the benefits obtained by alternative approaches to the catalog, nor was that within its intended scope. By not making this point clear, the report may inadvertently foster narrow-sighted decisionmaking.

The above remarks notwithstanding, this report is highly recommended, not only for those concerned with catalog conversion but for anyone interested in the larger issue of the cost of handling and processing information.

Michael E. D. Koenig
School of Library Service
Columbia University

Teaching Library Use: a Guide for Library Instruction by James Rice, Jr. Westport, Conn., Greenwood, 1981. 216 p. $25.00 (cloth). LC 80-21337; ISBN 0-313-21485-9.

This book is intended chiefly to help librarians design appropriate instruction for users of all types of libraries. It will be an excellent volume to keep on ready reference, since it offers not only sound, pragmatic advice on planning library instructional programs but also suggests a well-documented and distinctive three-tiered model. The first tier, "library orientation," is defined as an introduction to the library building only. The second, "library instruction," consists of an explanation of specific materials, often course or subject related. "Bibliographic instruction," the third and highest level, is offered in formal bibliography courses.

In well-organized chapters, the author describes planning techniques, implementing strategies at each instructional level, and specific testing and evaluative methodologies—a particularly useful feature, since it is often neglected. The concluding chapter offers pointers on effective library design, following the example of an aesthetically pleasing classroom environment as a teaching aid. Appendices list relevant conferences, AV materials (both for purchase and for production), texts, tests, and research agenda.

Both the in-depth services of special libraries and the sophisticated, often demanding and impatient characteristics of their clientele are noted. Yet the need for instruction is perceived here as a given fact, and actual user needs surveys receive brief treatment. The author seems to believe in the essential "goodness" of library use instruction—a concept that has become firmly entrenched as a professional article of faith, especially among academics. However, many special librarians may feel that the need for such instruction represents a service deficiency rather than a commitment.

Good or bad, such a need does exist today, and this clearly written book will serve it well.

Marcy Murphy
Indiana University
Bloomington, Ind.

Errata

An error appears on p. 42 of Frederick A. Marcotte's article, "Operational Audit and Library Staffing" [Jan *SL* 73 (no.1)]. The yearly factor given in the footnote should read .08333 rather 0.83333.

The article on "Cooperation among Special Libraries at the International Level" by Paul Kaegbein and Renate Sindermann [Oct *SL* 72 (no.4)] should have stated that DID in EMBRAPA operates the following six databases: CAB (Commonwealth Agricultural Bureau), ISI, IFIS/FSIS, Bioscience, CAS, and Smithsonian. Biblioteca Nacional de Agricultura is connected with the information system AGRIS managed by FAO.

PUBS

(82-007) Corrections. Eleanor C. Goldstein. Boca Raton, Fla., Social Issues Resources Series, Inc., 1978. 2 v. $65.00 v. 1; $39.00 v. 2.

This two-volume set contains 160 articles describing the historic background and theories of correction, problems of sentencing, the personal experiences of offenders, the wide diversity in prison conditions, and possible alternatives. The articles are reprinted from such publications as *Manpower, Center Magazine, Christian Science Monitor,* and *Federal Probation Quarterly.*

(82-008) Serials Currently Received, rev. ed. Cornell University Libraries. Ithaca, N.Y., Cornell University Libraries, 1980.

This publication contains approximately 40,000 serial titles in alphabetical order by title or corporate entry. Each entry includes the place of publication, beginning volume and/or date of publication (when available), the location, classification number, and holdings. Included also are titles received, OCLC numbers, and holdings of the Cornell Medical College in New York City.

(82-009) World Bibliography of International Documentation. Theodore D. Dimitrov, ed. Pleasantville, N.Y., Unifo Publishers, Ltd., 1981. 2 v. 846 pp. $95.00. LC 80-5653; ISBN 089111-010-0.

A comprehensive guide to international organizations covering their activities, structure, and information policies. Its broad scope ranges from identifying bibliographic sources of documentation to policies and research, document control, methodology and collection management.

(82-010) Women, Volume 1. Eleanor C. Goldstein. Boca Raton, Fla., Social Issues Resources Series, Inc., 1980. $65.00

This manual contains 100 articles describing the conditions of women in many parts of the world. Articles examine the background of the women's movement, the present economic status of women, the ERA attitudes of women today. The collection includes reprints from such publications as *Civil Rights, Digest, Time, Fortune.*

(82-011) Defense. Eleanor C. Goldstein. Boca Raton, Fla., Social Issues Resources Series, Inc., 1981. $52.00. ISBN 089777-024-2; ISSN 0273-2491.

Packaged in this three-ring notebook is a collection of 80 articles dealing with the subject of defense. Topics range from nuclear war and Salt II, to U.S. defense spending and war in space/the future. Articles are taken from such journals as *Defense Monitor, Defense Management Journal, Worldview.*

(82-012) Special Libraries Serving Governments. Washington, D.C., National Center for Education Statistics, 1981. 56 p.

This document is a result of a survey conducted by the National Center for Education Statistics of various subgroups of special libraries, e.g., state library agencies, federal government libraries, and special libraries at the state government level. It explores three main factors that determine the effectiveness of a library: its physical quarters, its collection of materials, and the staff.

(82-013) Book Theft and Library Security Systems 1981-82. Alice Harrison Bahr. White Plains, N.Y., Knowledge Industry Publications, Inc., 1981. 157p. $24.50 pbk. ISBN 0-914236-71-7; LC 80-26643.

This update to the respected 1978/79 edition describes the ongoing changes in systems that continue to be developed for library security. Describes the best procedures available for measuring losses and how to finance them, as well as the appropriate remedies for reducing these losses, with special emphasis on electronic security systems.

(82-014) Advances in Data Communications Management, Volume 1. Thomas A. Rullo, ed. (Heyden Advances Library in EDP Management) Philadelphia, Pa., Heyden and Son, Inc., 1980. 241 p. ISBN 0-85501-605-1.

Designed to provide a single source for information on data processing management, this book provides up-to-date perspectives on design, development, and operation of data communications systems. Topics covered include fiber optics in data networks, satellite communications, impact on data communications, future trends in network architecture, energy consideration in network design, and hardware procurement.

(82-015) Advances in Computer Security Management, Volume 1. Thomas A. Rullo, ed. (Heyden Advances Library in EDP Management) Philadelphia, Pa., Heyden and Sons, Inc., 1980. 245p. ISBN 0-85501- 606-X.

The important concerns of computer security —the integrity of hardware, software, and stored data—are examined with specific cases to exemplify proper perspectives and applications. Topics covered include security of statistical databases, software security and how to handle it, data security, risk management for small computer installations, a survey of computer-based password techniques, management's role in effective computer security, and terminal security.

(82-016) Advances in Distributed Processing Management, Volume 1. Thomas A. Rullo, ed. (Heyden Advances Library in EDP Management) Philadelphia, Pa., Heyden and Sons, Inc., 1980. 199p. ISBN 0-85501-604-3.

Presents a greater understanding of the potentials and pitfalls of distributed processing. It covers the technical aspects of distributed systems, placing emphasis on specific application and the "people" side of operations. Topics covered include desktop computers, future trends towards smarter systems, management of distributed systems, staffing implications of a distributed system, and the distributed data network.

(82-017) Library Effectiveness: A State of the Art. Proceedings of the 1980 ALA Preconference on Library Effectiveness. New York, Library Administration and Management Association/ American Libraries Association, 1980.

Contains papers presented at a conference sponsored by the Library Administration and Management Association, Library Research Round Table/Reference & Adult Services Division, ALA. The reports discuss library effectiveness in such areas as: user satisfaction, library research and surveys, management systems, collection size in branch libraries, COM catalogs, and telephone reference services. Available from the Library Administration and Management Association, 50 E. Huron St., Chicago, Ill. 60611.

(82-018) Online Bibliographic Searching: A Learning Manual. Ching-Chih Chen and Susanna Schweizer. New York, Neal Schuman Publishers, Inc., 1981. 227p. $19.95. LC 81-83497; ISBN 0-918212-59-6.

A beginner's guide to the skills necessary for the retrieval of information from computerized bibliographic files, with special emphasis on online interactive searching techniques. It is designed to serve as a self-instruction manual and to encompass both the theoretical and the practical aspects of online searching.

(82-019) Meetings 1980 (LJ Special Report #20). New York, Library Journal, 1981. 248p. ISBN 0-8352-1423-0; ISSN 0362-448X.

Meetings/1980 reprints meeting reports that originally appeared in *Library Journal* and the *Information Bulletin* of the Library of Congress. Includes annual conferences, round tables, and committee meetings sponsored by ALA, SLA, ASIS, and more than 20 other organizations. Photographs taken at conference sessions are included, as well as an extensive index listing participants, sponsoring organizations, topics, and events.

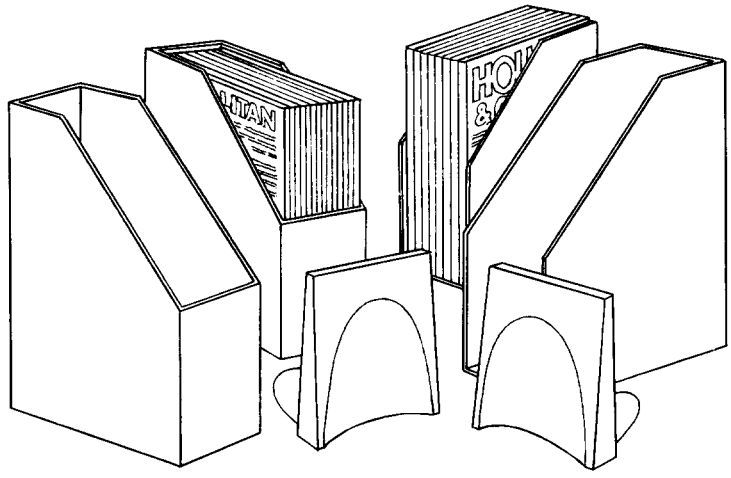
(82-020) Library Data Collection Handbook. Mary Jo Lynch, ed., and Helen M. Eckard, project officer. Chicago, American Library Association, 1981. 228p. $10.00. ISBN 0-8389-5600-9.

This handbook is the result of work performed by the ALA's Office for Research under contract to the National Center for Education Statistics. It outlines a system for data collection in all types of libraries and defines the essential terms involved in the system. It provides guidance to library managers, boards of trustees, and other library decision makers in identifying factual and comparative data useful in developing policies and making decisions.

(82-021) State Government Reference Publications: An Annotated Bibliography. 2nd ed. David W. Parish. Littleton, Colo., Libraries Unlimited, Inc., 1981. 355 p. $25.00. LC 81-788; ISBN 0-87287-253-X.

This updated guide selects and annotates 1,756 reference publications in the United States and U.S. territories. Includes 1,129 new sources published from 1974 to 1980 and updated information on 627 sources from the first edition. The new format emphasizes bibliographic rather than regional classification. There are nine chapters: Official State Bibliography; Blue Books; Legislative Manuals; State Government Finances; Statistical Abstracts; Directories; Tourist Guides; Audiovisual Guides, Atlas, and Maps; and Bibliographies and General References. Within these chapters, sources are grouped by state. Includes author, title, and subject indexes, a directory of issuing agency addresses, lists of "Suggested Readings" and "Reference Tools", and an expanded "Subject Core of State Publications."

Wanda Kemp



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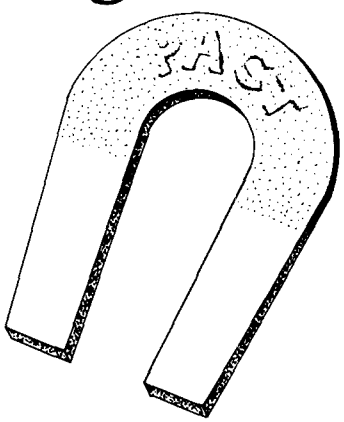

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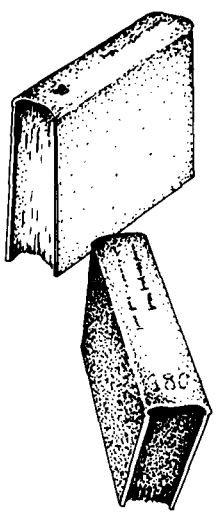

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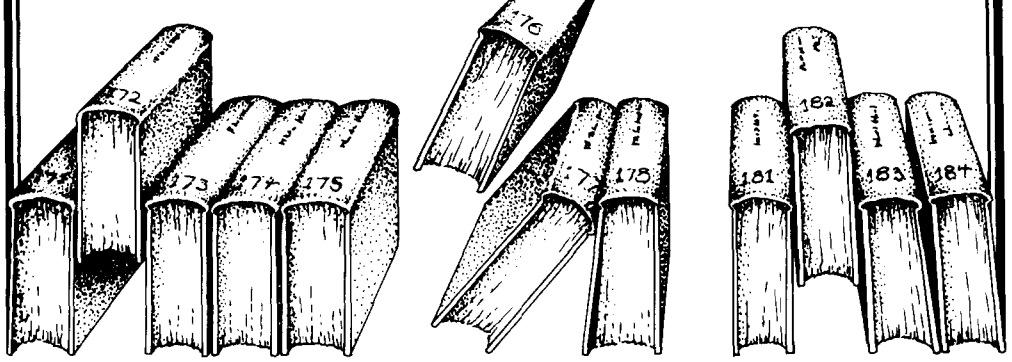

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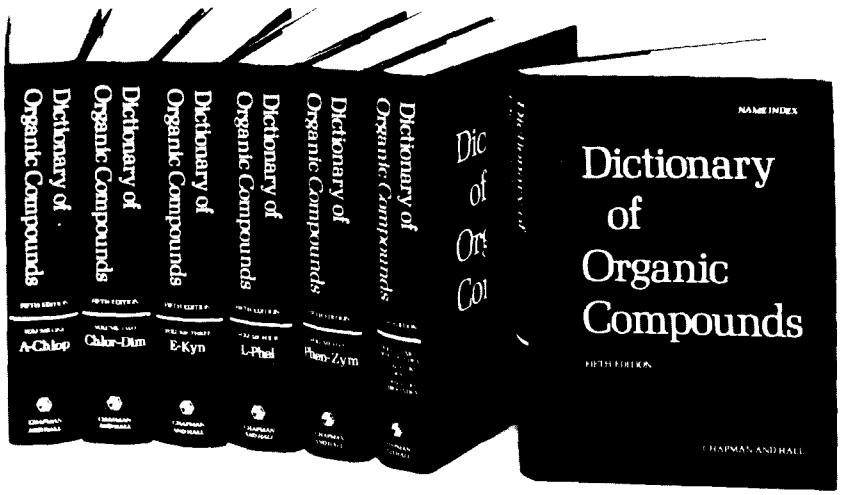

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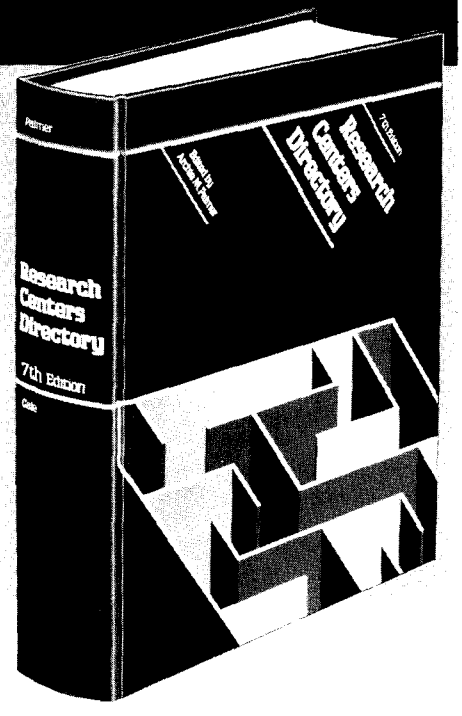

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