volume 11
number 1

ISSN 0022-2240

journal of library automation

march, 1978

jlauay 11(1) 1–88 (1978); j libr automat

WE'RE COMPATIBLE.

Brodart's IROS System.

CLSI's LIBS 100 System.

Libraries today are evaluating new automated services designed to increase speed and reduce the cost of various library operations. Brodart and C L Systems, Inc. (CLSI) have joined together to provide libraries with significant economic savings and service advantages.

CLSI's LIBS 100 System for the Circulation Control Application provides for automated check-in and check-out, reserve handling, notice production, patron registration, fine collection, and statistical and managerial reports. The LIBS 100 System maintains local on-line files for library materials and borrowers of user libraries which are promptly updated as a bi-product of circulation operations.

Brodart's IROS System provides on-line access to a central file of over 650,000 English language monographs at Brodart. Designed for large public and university libraries or library systems which employ central ordering operations, IROS provides a fast, accurate, and economic mechanism for performing pre-order searching, for obtaining availability information about materials sought, and for placing orders for immediate processing.

Brodart and CLSI have produced an interface which makes the IROS System and the LIBS 100 System compatible. The interface to IROS provides LIBS 100 users the ability to obtain access to the IROS file and perform the IROS searching and ordering functions at LIBS 100 keyboard/display stations, without additional investment in terminals or equipment. Further, the interface provides the facility for automatically capturing the bibliographic information from IROS for the LIBS 100 data files for subsequent use in circulation activities.

If you're interested in a compatible circulation control/book ordering system, or if you have thoughts on how other automated systems might be integrated to benefit your library, please contact either Brodart or CLSI. Serving the needs of libraries is our business... our only business.

TWO SOURCES, ONE SYSTEM

Contact: Mr. Leedom Kettell, Vice President, Brodart, Inc., 1609 Memorial Avenue, Williamsport, PA 17701
Or Ms. Joan Blair, V.P., Director of Library Relations, C L Systems, Inc., 81 Norwood Ave., Newtonville, MA 02160.

JOURNAL OF LIBRARY AUTOMATION

Volume 11, Number 1: March 1978

CONTENTS

JLAUAY 11 (1) 1–88 (1978); J Libr Automat

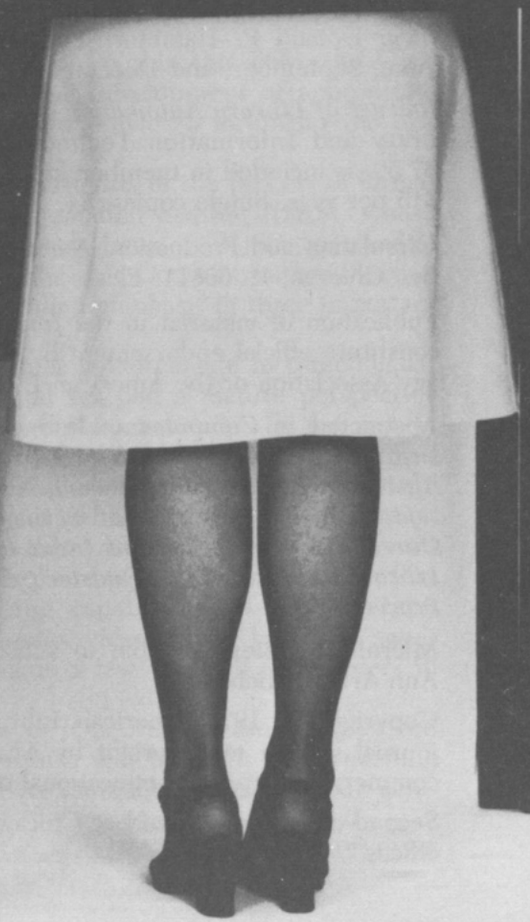
Cast your vote for...

Quality Data Base Services—At SDC we are progressive, using our experience to bring you better information retrieval. Now, you will find a refined ORBIT® (the fourth in a series of planned developmental efforts) and data bases moving to standard on-line format.

Innovative Information Retrieval Tools—Order original documents on-line, tailor reference printouts to meet your specific search needs, and save time and money with the system sophistication found only in ORBIT.

Accountability in Product Delivery—a variety of channels is available for user support and feedback, including access to our technical staff to discuss and *respond* to your information needs, and free computer time on new data bases.

Quality Services, Innovative Tools, and Accountability are what you vote for when you call SDC Search Service's ORBIT Retrieval System. Your terminal and telephone are truly your on-line polling place.



For more information contact us by phone (using one of our toll-free numbers listed below) or by mail. Then cast your vote for...

SDC Search Service a division of
System Development Corporation
2500 Colorado Avenue, Santa Monica, CA 90406
Toll Free Numbers: (800) 382-6689 (CA)
(800) 421-7229 (continental U.S. except CA)

BOARD OF EDITORS: Brian H. Aveney, Alan Benenfeld, Richard De Gennaro, Ruth Frear, Theodora L. Hodges, Martha W. West, William D. Mathews, *Editor;* Mary A. Madden, *Technical Communications Editor;* Judith G. Schmidt, *Book Review Editor;* Susan K. Martin, *Advertising Editor.*

Manuscripts of articles should be addressed to William D. Mathews, Editor, *Journal of Library Automation*, NCLIS, 1717 K St., N.W., Washington, DC 20036. Technical communications and news items should be addressed to Mary A. Madden, *JOLA Technical Communications*, Blackwell/North America, 10300 S. W. Allen Blvd., Beaverton, OR 97005. Copies of books submitted for review should be addressed to Judith G. Schmidt, *JOLA Book Reviews*, 1408 D St., S.E., Washington, DC 20003. Advertising arrangements should be made with Susan K. Martin, *JOLA Advertising*, 134 Trinidad Dr., Tiburon, CA 94920.

Journal of Library Automation is the official publication of the Library and Information Technology Association, a division of the American Library Association, 50 E. Huron St., Chicago, IL 60611; *Executive Secretary:* Donald P. Hammer. The journal is issued quarterly in March, June, September, and December.

Journal of Library Automation is a perquisite of membership in the Library and Information Technology Association. Subscription price, $7.50, is included in membership dues. Nonmembers may subscribe for $15 per year. Single copies, $4.

Circulation and Production: American Library Association, 50 E. Huron St., Chicago, IL 60611. Please allow six weeks for change of address.

Publication of material in the *Journal of Library Automation* does not constitute official endorsement by the Library and Information Technology Association or the American Library Association.

Abstracted in *Computer & Information Systems, Computing Reviews, Information Science Abstracts, Library & Information Science Abstracts, Referativnyi Zhurnal, Nauchnaya i Tekhnicheskaya Informatsiya, Otdyelnyi Vypusk,* and *Science Abstracts Publications.* Indexed in *Current Contents, Current Index to Journals in Education, Education, Library Literature,* and *Quarterly Bibliography of Computers and Data Processing.*

Microfilm copies available to subscribers from University Microfilms, Ann Arbor, Michigan.

Copyright © 1978 American Library Association. All material in this journal subject to copyright by ALA may be photocopied for the noncommercial purpose of educational or scientific advancement.

Second-class postage paid at Chicago, Illinois, and at additional mailing offices.

What's In A Name: ISAD Becomes LITA

It's official; the vote has been tallied and certified. Members of the Information Science and Automation Division of ALA have adopted the new name "Library and Information Technology Association" (LITA). And while it is always difficult to legislate in matters of free speech, the division Board of Directors has voted that the new acronym should be pronounced "leeta." Since the membership has already voted in favor of the new name, the board has decided to use it in the bylaws and wherever else it occurs without the formality of a further vote.

The members have also mandated a change in the function statement for the division. The new function statement reads:

> The Library and Information Technology Association shall concern itself with the development and the application of automated systems including systems analysis and design, electronic data processing techniques, communications technology, and related technological developments, in all areas of library work. Within this field, the Division shall foster research, promote the development of appropriate standards, disseminate information, and provide a forum for the discussion of common problems.

Concurrently, a new section of the division is in the process of formation. The Information Science and Automation Section (ISAS), whose proposed bylaws appear elsewhere in this issue, will join the Audio-Visual Section (AVS) and the Video and Cable Communications Section (VCCS), to give the division a well-rounded emphasis in three important areas.

I believe this evolution signals a fundamental change in direction for the division. We have come of age and reached a mature perspective from which it now appears that the word "automation" is far too narrow to describe our wide interests and the far-reaching activities in which we are vitally engaged. It now seems unlikely that any single technology will sustain and satisfy the broad needs of the library and information science community. Rather, it will be through a fusion of many relevant technologies for recording, transmitting, and processing information that the sustaining information processing capabilities of the nineteen eighties will emerge. Micrographic, audio, video, cable, facsimile, satellite, and computer techniques—to name a few—will all be partners in this work.

I am pleased to be the new editor of *JOLA*. These are complex and challenging times. I trust that the future will be even more exciting than the past. For the division and its journal, I welcome your comments and ideas.

WILLIAM D. MATHEWS

A Model for Cost Comparison of Automated Cataloging Systems

Anton R. PIERCE and Joe K. TAYLOR: University Libraries, Virginia Polytechnic Institute and State University, Blacksburg.

A model to calculate the costs of automated cataloging systems is developed. The model is based on the use of cataloging copy found in a system's data base. A system that provides acceptable cataloging copy for a high percentage of titles searched may afford economies by offering the option of trading higher-cost professional positions for paraprofessional positions. The costs derived by the model for two systems, OCLC and BALLOTS, are compared to the costs of an existing manual system.

INTRODUCTION

Three interrelated goals are common to any cataloging system: (1) to produce an authoritative catalog, (2) to process library materials as quickly as possible, and (3) to process materials as inexpensively as possible. Different systems place emphasis on different aspects of these conflicting goals. The basic goal of all major automated cataloging schemes is to reduce the amount of original cataloging by providing cataloging copy. Since it is less expensive to catalog a book with copy, the greatest potential benefit of an automated system that provides a greater quantity of copy will be a reduction of costs. To determine any real savings that may occur with an automated system, the actual cost of any system must first be determined.

COST PARAMETERS

The costs of any cataloging system may be divided into three categories: (1) one-time costs, (2) fixed recurring costs, and (3) use-sensitive costs.

An example of a one-time cost would be an entrance fee such as that required to join an OCLC-affiliated network like SOLINET. Fixed recurring costs are typified by fees paid for annual subscriptions to a serv-

Manuscript received June 21, 1976; accepted March 29, 1977; revision received December 14, 1977.

ice such as the 3M's BCS. Use-sensitive costs are represented by fees such as computer connect time fees or transaction fees.

Table 1 lists these costs along with the symbols that will be used throughout this work as cost parameters. No account will be taken of overhead costs such as fringe benefits, lighting, and value of real estate. The cost parameters in table 1 are related to the functional form of the systems under consideration.

To see how these variables function, examine the positive and negative entries in the table. These entries show whether a parameter implies an increase or a decrease in cost over a manual system. A zero indicates no change.

The cost of personnel (P) has been entered as +/−, that is, personnel costs may increase or decrease. No clear data exist from which one may predict either savings or cost increases due to changes in personnel after installation of an automated system. The direct calculation of the matrix elements based on available data is presented in the examples.

At the next level of detail, the major cost components of each of these systems are identified. As will be confirmed later, the major cost for any system is personnel (P). Significant additional costs for a manual system are incurred for cataloging tool subscriptions (S). With regard to specific systems, it was found that BALLOTS' greatest cost, beyond personnel, is the record fee cost (Rec). For OCLC the greatest cost beyond personnel is the first-time use record fee (Rec) with a significant contribution from the entrance fee (E).

For all systems, potential major savings over a manual system will occur in personnel changes that come about by trading professional positions for library assistant positions or by reducing clerical positions. Alternately, an intangible savings may be introduced by freeing original catalogers so that they may turn their attention to other duties. Additionally, automated systems can reduce costs for some institutions by capturing cataloging records in the form of machine-readable output (MRO).

Table 1. Matrix of Sign of Cataloging Costs with Respect to Manual System

Cost	*Manual*	*BALLOTS*	*OCLC*
One-Time			
Entrance Fee (E)	0	0	+
Hardware Purchase (Hp)	0	+	+
Fixed Recurring			
Hardware Rental (Hr)	0	+	+
Maintenance (M)	0	−	−
Personnel (P)	0	+/−	+/−
Subscriptions (S)	0	−	−
Use-Sensitive			
Machine-Readable Output (MRO)	+	−	−
Record Fee (Rec)	0	+	+
Supplies (Sup)	0	+	+
Connect Time (Ct)	0	0	0

A MODEL OF AUTOMATED CATALOGING COSTS

In this section a model of expected costs is developed, based on anticipated overlap between items to be added to a library's collection and the cataloging data held in an automated system and on anticipated acceptability of the cataloging data. A cataloging data base can provide bibliographic information useful to other units in the library. The acquisitions unit may use a data base for preorder searching; interlibrary loan may use it for location and verification. In some cases sophisticated library users may use it as a catalog supplement.[1] Discussion here will be limited to the cataloging process, defined as those activities that occur from the time a book enters the cataloging department until the time the book has been sent to be processed for the shelf and the order has been placed, either locally or remotely, for the final catalog product, whether it be cards, machine-readable records, or some form of printed catalog.

Overlap/Acceptability Function

Two crucial factors affect the performance of any cataloging system: (1) the degree of overlap a cataloging system has with an institution's collection and (2) the degree of acceptability of the cataloging in the system.

For older materials, overlap may be defined as the occurrence of the same cataloging record in both the system and the library. For newly acquired materials, overlap is the occurrence of a cataloging record in the data base that matches the new book. In this discussion, overlap will be expressed as a percentage.

Acceptability may be defined in terms of the level of sophistication required to catalog a book. In Arlene T. Dowell's terminology there are three types of cataloging copy: exact copy, near copy, and co-op (shared cataloging) copy.[2] In practice, the boundaries between these types can become blurred. Exact copy and near copy are alike in that a paraprofessional cataloger usually handles both types. Cataloging based on co-op copy and original cataloging normally will be performed by professional catalogers. In this discussion, acceptable copy includes exact copy and near copy; unacceptable copy requires professional attention. The factors of overlap and acceptability determine what personnel changes can be expected for each system and thus what potential savings may exist.

Let any cataloging system have an overlap, X, with an institution's collection. Thus, X is the ratio of the number of titles for which copy was found to the total number of titles to be cataloged. Let Y, the measure of acceptability, denote the ratio of copy that is authoritative and unquestionably acceptable to total copy (typically $Y = 1$ for MARC).[3] If Q is the total number of titles that are searched, then the product QXY can be processed by paraprofessional staff, while

QX (1—Y) titles must be reviewed by professional catalogers even though these titles were found in the system. Because they must be reviewed, these titles require more effort at a higher level and, consequently, are significantly more costly to process. Of course, professional staff must also do the original cataloging for the Q (1—X) titles not found in the system. Thus, the "copy ratio," R, is:

$$R = \frac{\text{acceptable copy found}}{(\text{unacceptable copy found}) + (\text{copy not found})}$$

$$R = \frac{QXY}{QX\,(1-Y) + Q(1-X)} = \frac{Y}{(1-Y) + (\,(1/X) - 1)} \qquad (1)$$

This is an interesting equation in that acceptability Y of system output enters on an equal footing with overlap ratio X. The value of Y is determined, essentially, by administrative considerations. What is authoritative for one library may not be acceptable for another. Many libraries define only two sources of authority, themselves and the Library of Congress. To illustrate the behavior of the copy ratio R for the systems under consideration, R is calculated for values of the overlap X and the acceptability Y based on data collected from Virginia Polytechnic Institute's moderate-sized library and from a survey of fourteen SOLINET libraries in Virginia.[4]

System	X	Y	R
Manual	.64	1.00	1.8
BALLOTS[5]	.70	0.90	1.7
OCLC	.87	0.76	1.9

It is expected that small libraries have fewer exotic titles to process and tend to have a large overlap with an automated system. Conversely, very large libraries probably buy a greater proportion of distinctive titles and thus experience a decrease in the overlap X, thereby increasing the amount of original cataloging required.

One risk inherent in very large data bases with limited quality controls is the risk of allowing duplicate nonauthoritative records to obscure "authorized" MARC records. In such a case, although more copy may be found, more review is necessary before accepting the data, and the copy ratio R drops.

A more optimistic value may be appropriate for those institutions who have decided that many sources can provide authority. Likewise, the overlap X should theoretically increase for systems based on contributed cataloging, since a goal of these systems is to increase the number of titles for which copy is available. If more optimistic projections are made for the overlap X and the acceptability Y for BALLOTS and OCLC (noting that these values can only be determined by careful experimental work) the comparison would become:

System	*X*	*Y*	*R*
Manual	.64	1.00	1.8
BALLOTS	.80	0.95	3.2
OCLC	.95	0.95	9.0
"Ideal"	.95	1.00	20.0

Note the dramatic improvement shown by OCLC with a more optimistic value for the acceptability *Y*. Likewise, if a library chose to accept all OCLC records unquestioningly, i.e., if $Y=1$ for OCLC, then OCLC would approach the ideal *R* value.

Personnel Change

How much savings will even the best value of the copy ratio *R* offer? To answer this question, formulas are developed to determine how many professionals and paraprofessionals are needed to catalog a library's new monographs.

Let *Q* be the total number of titles processed in a year, *A* be the number of paraprofessional catalogers, *B* be the number of original catalogers, *a* be the cataloging rate in titles per year per person for copy cataloging, and *b* be the rate for original cataloging. The paraprofessional rate *a* will represent an average of the rate for processing exact copy and for making the minor changes required for near copy. This average will be weighted by the relative amounts of each type of copy. Likewise, the professional rate will be an average of the rate for processing unacceptable copy and for performing original cataloging. Since each library determines by policy the acceptability of cataloging copy, these rates vary drastically from library to library.

Total number of titles processed in a year equals the number of copy catalogers *A* times their average rate *a* plus the number of original catalogers *B* times their average rate *b*.

$$Q = Aa + Bb \tag{2}$$

To relate *A* and *B* to the number of titles *Q* and the copy ratio *R* recall

$$R = \frac{\text{(acceptable copy found)}}{\text{(unacceptable copy found)} + \text{(copy not found)}}$$

$$= \frac{Aa}{Bb}$$

$$Aa = RBb \tag{3}$$

Restating equation (2), we find

$$Q = Bb\,(1 + R)$$

Solving for *B*, we find

$$B = Q/(b\,(1 + R)\,) \tag{4}$$

which relates the number of professionals required to work the load Q and the copy ratio R.

Also from equations (2) and (4), we find

$$A = (Q-Bb)/a = (1/a)\,(Q-Qb/(b(1+R)\,)\,)$$

Thus,

$$A = QR/(a(1+R)\,) \tag{5}$$

The number of copy and original catalogers required varies proportionate to the work load Q and inversely proportionate to the copy and original cataloging rates a and b. Note in (4), $B = Q/(b(1+R)\,)$, the strong inverse dependence of the number of professionals required B on the copy ratio R.

Adding equations (4) and (5) we find the total number of persons to be:

$$N = A + B = Q/(b\,(1+R)\,) + QR/(a\,(1+R)\,) \tag{6}$$
$$= (Q/\,(1+R)\,)\,(R/a + 1/b)$$

If the average salary of a copy cataloger is D and E is the average salary for an original cataloger, then the average personnel cost for a given system is:

$$P = (Q/\,(1+R)\,)\,(RD/a + E/b) \tag{7}$$

After equation (7) has been differentiated, the rate of change of personnel costs (P) as the copy ratio R changes is given by:

$$dP/dR = (Q/\,(1+R)^2)\,(D/a - E/b) \text{ or } Q/R^2 \tag{8}$$

Thus, personnel costs increase linearly as the quantity of work increases but decrease proportionate to the square of R, the copy ratio. An automated system with a high value for R may offer savings in personnel costs.

Another part of the cost considerations, the costs associated with obtaining machine-readable output (MRO), must be examined. The automated cataloging systems considered here offer users the ability to receive cataloging information in MARC format. For a library with a strictly manual cataloging operation and with no aspirations for computer-produced catalog products, it is reasonable to disregard MRO costs. However, even for these libraries, there may be benefits derived from acquiring MRO, especially in light of the emerging national bibliographic network.[6] Libraries that need machine-readable records must consider the cost of capturing complete MARC-like records, hardware costs, and salary costs if these records are not supplied by the system under consideration. In many instances these costs would be carried by the other units in the library needing the MRO.

Functional Dependence of Costs on Copy Ratio R

As the copy ratio R increases, a greater number of acceptable catalog

entries are expected to be available in a given data base. As R increases, use-sensitive costs will increase.

Equations developed earlier can be used to calculate the number of professional and paraprofessional catalogers needed, and thus the functional dependence of cost on work load Q, processing rates per person a and b, copy ratio R, and the average paraprofessional and professional salaries D and E. Data exist for all variables except R, a, and b. The copy ratio R can be determined exactly, in principle, after the fact from operating records. Recall that, above, probable values were used to show the dependence of R on overlap X and acceptability Y. The per-person production rates a and b strongly determine the overall costs of any system. However, they are not well known and vary from one institution to another. The rates a and b are assumed at least to be equal to manual rates, otherwise catalogers would be sitting on their hands waiting for the system to respond. While this has happened in some environments, it was never thought to be acceptable. On the other hand, even if a system had perfect response time, probably catalogers' mental processes would not function faster—people must still think—and the machine would be waiting for the people with no change in the overall productivity. Although it is argued that productivity rates will be the same for all systems considered, in the real world real gains or losses may be effected by changing systems. The reexamination required to install a new system can readily point out areas for improvement (and even areas of efficiency in a manual system that may be eliminated by the new system). Claims of increased efficiency through installation of a new system frequently could be credited to the elimination of wasteful parts of the old system. Theoretically, reasonably optimized systems should have closely similar productivity rates. Thus, a and b can be treated as system independent.

With equations (4), (5), and (7), the projected changes in personnel costs for several values of the copy ratio R are calculated and listed in table 2. This table is based on present salary estimates of the monographic cataloging sections at Virginia Tech. In a world of personnel policies dictated from above, there may be no sense talking about 6.2 catalogers; it is useful, however, to keep the decimal FTE values so that a smooth curve can be drawn as a function of R. For libraries flexible enough to hire part-time catalogers, the exact figures could be used; otherwise, Parkinson's Law can be expected to take up the non-integer slack. Note in figure 1 that the similar shapes of the curves for salary cost (P) and for number of original catalogers (B) is a visual expression of the fact that personnel costs are determined by the number of original catalogers required. It must be emphasized that these curves, in general, will retain their shapes as salaries change; only the exact values of the intercepts will change. These values can be easily recalculated using equations (4), (5), and (7).

PROJECTED COSTS

The costs of different systems may be projected and the results compared after one has determined the personnel costs as a function of the copy ratio R. At this point it is useful to depart from generalized discussion to consider illustrative examples. The principles described above are applied to the current manual system at Virginia Tech and to a potential application of OCLC (SOLINET) and BALLOTS in the same environment. Because the copy ratio R for both OCLC and BALLOTS is uncertain, the costs of participating in the system are calculated for three potential values of R where appropriate, 1.0, 4.0, and 9.0. Unit costs, derived by dividing the total ongoing cost by the total number of titles cataloged, for the range of R values are (1) manual system, $4.68; (2) OCLC, $3.54–$5.45; (3) BALLOTS, $4.02–$5.86.

Virginia Tech Manual System

During fiscal year 1976–77, 32,008 copy transactions (28,927 new title transactions and 3,081 recataloging transactions) were performed by four copy catalogers utilizing what was Information Dynamics Corporation's Micrographic Catalog Retrieval System (MCRS)—a product now marketed by 3M under the name BCS. Thus, $a = 32{,}008/4 = 8{,}002$ transac-

Table 2. Personnel Cost vs. Copy Ratio

R	*A*	*B*	*P*
0.00	0.00	28.16	$380,160
.25	1.24	22.53	$315,315
.50	2.07	18.78	$272,160
.75	2.66	16.09	$241,155
1.00	3.10	14.08	$217,980
1.50	3.72	11.27	$185,625
2.00	4.13	9.39	$163,935
3.00	4.65	7.04	$136,890
4.00	4.96	5.63	$120,645
5.00	5.17	4.69	$109,845
6.00	5.32	4.02	$102,150
7.00	5.43	3.52	$ 96,390
8.00	5.51	3.13	$ 91,845
9.00	5.58	2.82	$ 88,290
10.00	5.64	2.56	$ 85,320
Max	6.20	0.00	$ 55,800

Cataloging Transactions $Q = 49{,}623$
Paraprofessional Rate $a = 8{,}002$
Professional Rate $b = 1{,}762$

Average Salaries
Paraprofessional $D = \$\ 9{,}000$
Professional $E = \$13{,}500$

$A = (Q/a)\ (R/(1+R)) = 6.20\ (R/(1+R))$
$B = (Q/b)\ (1/(1+R)) = 28.16/(1+R)$
$P = AD+BE = A(\$9{,}000) + B(\$13{,}500)$

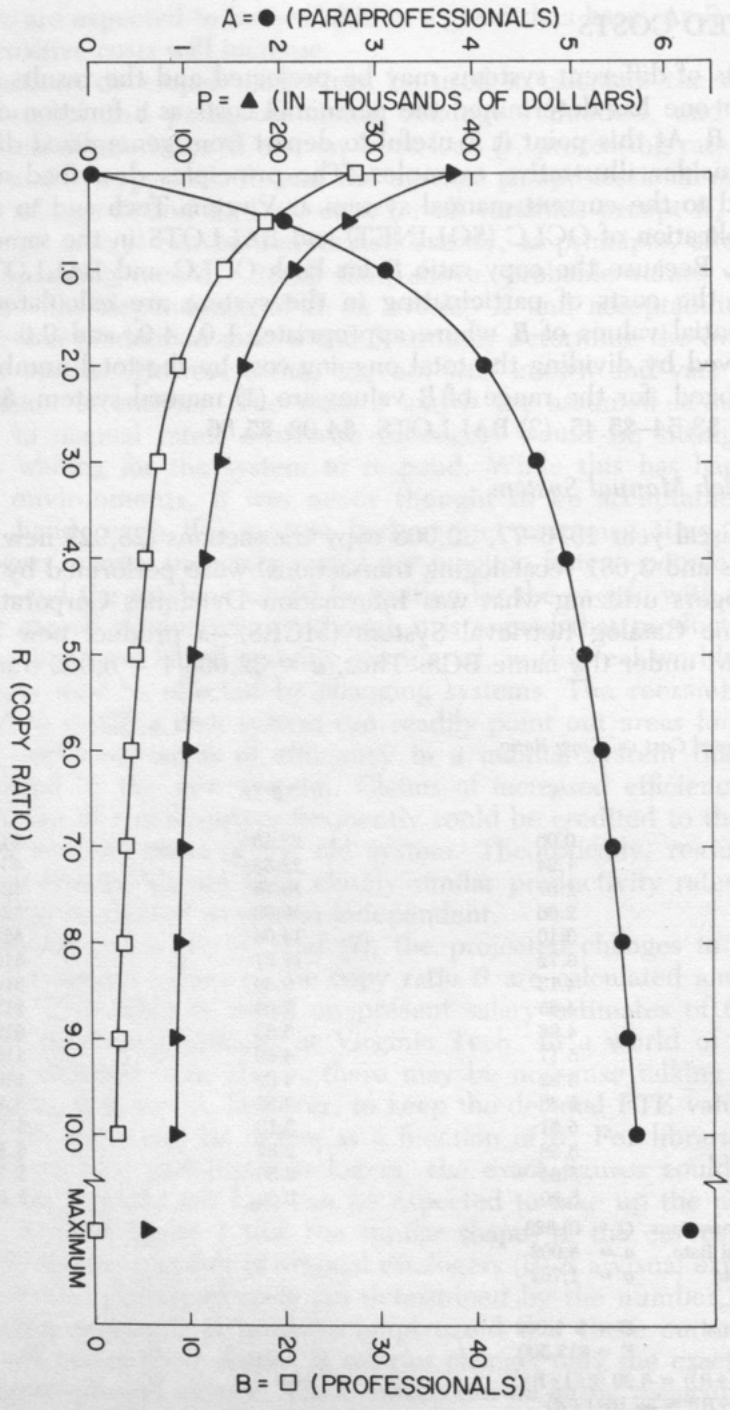


Fig. 1. Monographic Cataloging Personnel Costs.

tions per person per year. Similarly ten original catalogers cataloged 16,233 new titles and recataloged 1,382 titles for a total of 17,615 transactions. Thus, b = 17,615/10 = 1,762 transactions per person per year. Also, for this case R = 32,008/17,615 = 1.8 or 64 percent copy transactions. The cost of this monographic cataloging is given below:

One-Time Costs

Hp *Hardware Purchase:* Two copiers and a BCS reader-printer were purchased for $5,904.

Fixed Recurring Costs

Hr *Hardware Rental:* A Xerox machine was rented at a rate of $3,194 per year for 1976–77.

M *Maintenance:* Typewriters and copiers were under service contracts for $3,536 for 1976–77.

P *Personnel:* The personnel costs for four copy catalogers, ten original catalogers, four clerk-typists, and one BCS searcher were P = 4 × $9,000 + 10 × $13,500 + 4 × $5,500 + $5,500 = $198,500.

S *Subscription:* BCS was $9,135 for the year 1976–77.

Use-Sensitive Costs

MRO *Machine-Readable Output:* The introduction of a computerized circulation and finding system at Virginia Tech requires that brief machine-readable records be created in-house.[7] All new monographic titles must be converted, requiring the efforts of two data entry operators, MRO = 2 × $6,000 = $12,000. Note that hardware costs are attributed to the circulation and finding system. If the library required full MARC records, the cost of local creation of MRO would be significantly greater.

Sup *Supplies:* Card stock was $4,200 per year, and other sundry items were under $2,000, so Sup = $6,000.

The total for the Virginia Tech manual system may be found in Table 3.

SOLINET (OCLC)

Most of the data used herein is based on published costs given by Ryburn Ross, Barbara Markuson, and SOLINET/OCLC.[8-10] Frequently, however, estimates had to be made because data vary considerably, sometimes by an order of magnitude. There appear to be no consistent data about how many transactions one terminal can be expected to handle.

Joining SOLINET requires that an institution pay an entrance fee and a recurring membership fee, purchase terminals, rent modems and phone lines, and pay a fee for the number of first-time uses. A first-time use is capturing and editing cataloging data for titles found in the data

base. Making maximum use of as many first-time uses as possible is the point of cooperative cataloging.

Intangible cost aspects of OCLC surely affect the usefulness of the system. The erosion of the *R* value by the lack of name authority and quality control is a serious problem. Another intangible cost may result from the obligation of a participating institution to enter into the system all cataloging performed. This obligation is requisite if the cooperative venture is to grow, but it may prove very costly if a library handles a good deal of exotic material and is thus forced to conduct a significant amount of original inputing on-line. The estimated costs for OCLC at Virginia Tech are given below.

One-Time Costs

E *Entrance Fee:* For SOLINET this is 1.5 percent of book budget or $27,000.

Hp *Hardware Purchase:* The amount of hardware required depends on the total number of titles to be cataloged, Q. It is commonly stated that a single terminal can handle 10,000 titles a year. The terminals cost $3,700 and are installed for another $250. An additional cost is installation of one modem for $148. It is useful to purchase a hard copy printer to review entries; one printer costs approximately $1,500. To set up the format for the printed catalog cards costs about $300. Thus, Hp = $Q/10{,}000 \times \$3{,}700$ + $250 (installation) + $148 (modem installation) + $1,500 (printer) + $300 (format) = $(Q/10{,}000 \times \$3{,}700) + \$2{,}198 = 5 \times \$3{,}700 + \$2{,}198 = \$20{,}698$.

Fixed Recurring Costs

Hr *Hardware Rental:* The modem rents for $85 per month or $1,020 per year. The telephone line rental is $2,400 per year. OCLC has leveled the line charges, charging all libraries equally regardless of actual cost, thus penalizing libraries in cities to the benefit of more remote libraries. Hr = $3,420.

M *Maintenance:* The maintenance for the terminals is $396 per year per terminal. Thus, M = $5 \times \$396 = \$1{,}980$.

P *Personnel:* The changes in personnel cost due to projected savings through reallocation of duties are taken from table 2. The numbers are rounded to the nearest integer number of persons.

R *Copy ratio*	*A* *Para-professionals*	*B* *Professionals*	*P* *Cost*
1.0	3	14	$216,000
4.0	5	6	$126,000
9.0	6	3	$ 94,500

Other personnel changes involve staff who are not associated di-

rectly with the cataloging decision but who process the catalogers' products. OCLC may be viewed as a giant typewriter that automatically types headings, call numbers, entries, etc. The four clerical positions identified in the manual system may be released through receipt of OCLC cards. Searching costs for OCLC would be "bundled" with the paraprofessional duties, eliminating the BCS search operator. The paraprofessionals would be expected to keyboard minor corrections to copy found.[11]

S *Subscription or Membership:* Annual SOLINET membership fee is \$150. A subscription to an inexpensive MARC-based microformat cataloging service such as the excellent MARCFICHE would offer inexpensive protection against extended downtime. MARCFICHE is \$276 per year.[12] Thus, S = \$426.

Use-Sensitive Costs

MRO *Machine-Readable Output:* For archival tapes there will be Q/f records per tape where Q is the number of transactions and f is the frequency of tape issuance. Charges are \$19.55 per tape and a sliding fee per record: \$.035 (1–1,000), \$.012 (1,0001–5,000), \$.004 (5,001–50,000). The SOLINET fee of 15 percent is included in the calculation.

f = 26 (biweekly)	f = 12 (monthly)
Q/f = 1909	Q/f = 4135
\$ 19.55 tape	\$ 19.55 tape
40.25 (1–1,000)	40.25 (1–1,000)
12.53 (1,001–1,909)	43.25 (1,001–4,135)
72.33	103.05
× 26	× 12
\$1,880.58 per year	\$1,236.60 per year

Depending on the value of f elected, direct cost is about \$1,550 ± \$325.

Rec *Record Fees:* Record fees are charged at a rate of \$1.48 for each "first-time use" of a record found in the data base. Of this \$1.48 OCLC receives \$1.20 and SOLINET receives \$0.28. This charge applies only to "found" cataloging data; there is no record fee for contributed cataloging. This fee structure provides a potential economic incentive for libraries to contribute to the data base. To express the record fee cost in terms of R, the total number of new titles must be used since OCLC and SOLINET charge for first-time use transactions only. During 1976–77 Virginia Tech processed 45,160 new titles. Using equation (2) for new titles only:

$$Q = Aa + Bb = 45{,}160$$
$$a = 28{,}927/4 = 7{,}232$$
$$b = 16{,}233/10 = 1{,}623$$

From these figures and table 2 the record fees may be calculated as a function of R. Note that since a library is only billed for the number of "found" titles used, they need only pay for Aa titles. Using Rec = \$1.48 × Aa the costs for the three values of R are:

R *Copy ratio*	*A* *Para-professionals*	*Aa*	*Rec*
1.0	3.1	22,419	\$33,180
4.0	5.0	36,160	\$53,517
9.0	5.6	40,499	\$59,938

Sup *Supplies:* Card stock is charged at \$.039 per card. Since Virginia Tech has only a single complete catalog, there is an average of six cards per title for a cost of \$0.24 per title. In addition to cards, an amount for sundries, \$2,000, is included: Sup = 49,623 × \$0.24 + \$2,000 = \$13,909.

Table 3 summarizes the results and compares them to the values obtained for the Virginia Tech manual system.

Table 3. Summary of OCLC vs. Virginia Tech Manual

	OCLC			*Virginia Tech*
R	*1.0*	*4.0*	*9.0*	*1.8*
One-Time				
E	27,000	27,000	27,000	
Hp	20,698	20,698	20,698	5,904
	\$47,698	\$47,698	\$47,698	\$5,904
Fixed Recurring				
Hr	3,420	3,420	3,420	3,194
M	1,980	1,980	1,980	3,536
P	216,000	126,000	94,500	198,500
S	426	426	426	9,135
	\$221,826	\$131,826	\$100,326	\$214,365
Use-Sensitive				
MRO	1,550	1,550	1,550	12,000
Rec	33,180	53,517	59,938	
Sup	13,909	13,909	13,909	6,000
	\$48,639	\$68,976	\$75,397	\$18,000
Total first year	\$318,163	\$248,500	\$223,421	\$238,269
Ongoing	\$270,465	\$200,802	\$175,723	\$232,365
Ongoing cost per title	\$5.45	\$4.05	\$3.54	\$4.68

BALLOTS

Experience with BALLOTS as a cataloging service is limited to a small but growing number of libraries. Data used for the BALLOTS calculations are based on best estimations and the BALLOTS pricing structure. At the present time BALLOTS has disadvantages for cataloging retrospective materials because of the relatively small size of its data base. Its powerful searching capabilities, especially the indexes of words in title and in corporate author fields, plus the system's integral authority control, tend to compensate for the size deficiency. Since the data base includes all current MARC records, the overlap for current cataloging is at least equal to any MARC-based service. The estimated costs for BALLOTS are as follows:

One-Time Costs

Hp *Hardware Purchase:* The number of terminals is uncertain. At an earlier time BALLOTS did not offer the options of card production and maintenance of a library's data on-line. The primary use was for editing and capturing MARC records for local processing, a process that could be performed significantly faster than full on-line cataloging. Initial estimates of capture rates were 15 titles per hour or 27,000 titles per terminal year. While per-person productivity rates are assumed to be system independent, there is reason to expect that the processing rate, even with full BALLOTS, would differ significantly from other systems. Although copy catalogers will still be limited to about 10,000 titles per year, with preplanning they should be able to catalog these titles at the publicly announced BALLOTS rate of 12 titles per hour. Thus, each copy cataloger would be connected only about 834 hours per year. Judicious scheduling would allow two copy catalogers to share a terminal. Since the rate-limiting factor is the thinking speed of catalogers, catalogers could think off-line, thereby reducing the number of terminals needed. Under the assumption of sharing terminals at a rate of 12 titles per hour for 2,000 hours per terminal year, Virginia Tech would need $Q/24{,}000$ or 2.07 terminals. Thus, two terminals would be required. Three terminals would be purchased to provide for backup, peak period use, scheduling simplification, and public service use.

In the line-by-line mode BALLOTS is amenable to multiple terminal types, and libraries can utilize existing terminals, such as the common Texas Instruments' Silent 700 series. Many other inexpensive terminals are available, either video or hard copy, for about $1,600. Acoustic couplers for dial access would add another $250 per terminal. Presumably, at least one hard copy

terminal would be chosen, obviating the need for a separate printer.

BALLOTS recommends that full-face users purchase the Zentec 9003 intelligent terminals and a modem called a multidrop box for use with a leased telephone line. This arrangement offers multiple terminal access to the system over a single phone line and is potentially the most economical approach for libraries requiring a significant number of connect hours per month. Virginia Tech would choose the full-face approach.

The Zentec terminals cost $3,400 and are installed for another $215. The multidrop box and modem are included in the cost of the terminals. A hardcopy printer would cost an additional $1,500. The profiling charge would be approximately $300. Thus, Hp = 3 × $3,400 + $215 (installation) + $1,500 (printer) + $300 (profile) = $12,215.

Fixed Recurring Costs

Hr *Hardware Rental:* Monthly telephone costs must be included as rental. For the anticipated full-face mode, the leased line from a library to BALLOTS must be negotiated with the telephone company. The BALLOTS office advises us that, for the application at Virginia Tech, the charge for the leased line would be $1,500 per month plus $200 per month for a front-end processor fee at the BALLOTS Center. Thus, Hr = $20,400.

M *Maintenance:* The maintenance for the Zentec terminals is $360 per year per terminal. A small additional charge may be incurred if local service is unavailable for libraries outside of California. Shipping fees to ship terminals to Zentec would arise infrequently enough to be neglected. Thus, M = $1,080.

P *Personnel:* Under the assumption of equal efficiency the personnel cost would remain the same as OCLC/SOLINET:

R	*A*	*B*	*P*
Copy ratio	*Paraprofessional*	*Professional*	*Cost*
1.0	3	14	$216,000
4.0	5	6	$126,000
9.0	6	3	$ 94,500

S *Subscription:* A microformat subscription to the MARC files would provide useful backup for the downtime experience. A service like MARCFICHE costs $276 per year. Thus, S = $276.

Use-Sensitive Costs

MRO *Machine-Readable Output:* BALLOTS fees for MARC records on tape are $34.00 per tape plus $.04 per record above 500 records. For 26 tapes per year, Virginia Tech would receive 1,909 records per tape. For 12 tapes per year, the library would receive 4,135 records per tape.

26 Biweekly		12 Monthly	
$34.00	(1–500)	$ 34.00	(1–500)
+ $56.36	(500–1,909)	+ $145.40	(500–4135)
$ 90.36	per tape	$179.40	per tape
× 26		× 12	
$2,349.36	per year	$2,152.80	per year

Depending on the frequency chosen MRO is about $2,250 ± $100.

Rec *Record Fees:* BALLOTS' rate structure was revised as of February 1978. Record fees of $1.65 per title are charged for records that are captured. To provide an incentive for contribution, there is no record fee for contributed cataloging as long as the records input meets BALLOTS' standards (*AACR*). OCLC's experience with substandard cataloging argues persuasively for rigorous adherence to this standard. Equation (2) must be employed to express the record fees in terms of R, based on the number of new titles cataloged, since these fees are charged only for new titles. During 1976–77 Virginia Tech processed 45,160 new titles.

$$Q = Aa + Bb = 45{,}160$$
$$a = 28{,}927/4 = 7{,}232$$
$$b = 16{,}233/10 = 1{,}623$$

Using Rec = $1.65 × Aa the costs for the three values of R are:

R *Copy ratio*	A *Para-professionals*	Aa	*Rec*
1.0	3.1	22,419	$36,991
4.0	5.0	36,160	$59,664
9.0	5.6	40,499	$66,823

When these costs are added in table 4 and the "bottom line" calculated, the costs for BALLOTS and OCLC are so close that a choice between the systems cannot be based on cost alone.

Ct *Connect Time:* For line-by-line mode, processing the 49,623 titles at a rate of 12 per hour would incur telephone expenses for 4,135 hours per year. Telephone line charges will vary depending on the location of the library, network involvement with leveled rates (as in SOLINET), access through Telenet or Tymnet, time of use, and sophistication of application. At a rate of $9 per hour for Tymnet, the Ct costs would be $37,217. This cost is of interest to those libraries interested in line-by-line access and is not included in the Virginia Tech totals.

Table 4. Summary of BALLOTS vs. Virginia Tech Manual

	BALLOTS			*Virginia Tech*
R	*1.0*	*4.0*	*9.0*	*1.8*
One-Time				
Hp	$12,215	$12,215	$12,215	$5,904
Fixed Recurring				
Hr	20,400	20,400	20,400	3,194
M	1,080	1,080	1,080	3,536
P	216,000	126,000	94,500	198,500
S	276	276	276	9,135
	$237,756	$147,756	$116,256	$214,365
Use-Sensitive				
MRO	2,250	2,250	2,250	12,000
Rec	36,991	59,664	66,823	
Sup	13,909	13,909	13,909	6,000
	$53,150	$75,823	$82,982	$18,000
Total first year	$303,121	$235,794	$211,453	$238,269
Ongoing	$290,906	$223,579	$199,238	$232,365
Ongoing cost per title	$5.86	$4.50	$4.02	$4.68

Sup *Supplies:* Virginia Tech catalogers will use about $2,000 of sundry supplies under any system. Catalog cards cost $.04 each or $.24 for a six-card pack. For 49,623 titles, supplies cost: Sup = 49,623 × $0.24 + $2,000 = $13,909.

Table 4 summarizes the results and compares them to the values obtained for the Virginia Tech manual system.

SUMMARY

The total cost of a cataloging operation can be expressed as the sum of component costs in the categories of one-time, fixed-recurring, and use-sensitive costs. The total cost of any system is inversely related to a ratio, *R*, which is the ratio of titles cataloged by paraprofessionals with cataloging copy to the number of titles cataloged by original catalogers with or without copy. This ratio can be calculated for any system and can be formally related to the overlap of a given cataloging system with a given library's collection and to the acceptability of the cataloging copy in the system. The number of original catalogers needed for a given system, one of the strongest cost determining factors, can be expressed as a relationship between the ratio *R*, the total number of titles processed, and the rate at which the catalogers work. The formalisms have been applied to three systems, and the results have been compared.

REFERENCES

1. Richard W. Blood, "Impact of OCLC on Reference Service," *Journal of Academic Librarianship* 3:68–73 (May 1977).

2. Arlene T. Dowell, *Cataloging with Copy: A Decision-Maker's Handbook* (Littleton, Colo.: Libraries Unlimited, 1976).
3. U.S. Library of Congress, MARC Development Office, *Information on the MARC System* (Washington, D.C., 1974).
4. Virginia State Council for Higher Education, Library Advisory Committee, Subcommittee on Networks/Computers, Working Group on Input Capability, "Library Computer Activities in Virginia" (Richmond, 1977).
5. Staff of Project BALLOTS and Stanford University Libraries, "Stanford University's BALLOTS System," *Journal of Library Automation* 8:31–50 (March 1975).
6. *Journal of Library Automation* 10:97–200 (June 1977). This issue is devoted to the prospective national network.
7. Virginia Polytechnic Institute and State University, Systems Development, "Brief Documentation of the Library Circulation and Finding System" (Blacksburg, Va., 1976).
8. Ryburn M. Ross, "Cost Analysis of Automation in Technical Services," in *Proceedings of the 1976 Clinic on Library Applications of Data Processing: the Economics of Library Automation* ed. by J. L. Divilbiss (Urbana-Champaign, Ill.: University of Illinois Graduate School of Library Science, 1977), p.10–27.
9. Barbara E. Markuson, "The Ohio College Library Center: A Study of the Factors Affecting the Adaptation of Libraries to On-Line Networks," *Library Technology Reports* 12:11–132 (January 1976).
10. Cynthia A. Wilkinson, "OCLC/SOLINET charges for FY '78," *SOLINET Memorandum* 1977–14 (Atlanta, May 1977).
11. An excellent discussion of work patterns in libraries using OCLC is available in Markuson, p.102.
12. Available from MARC Applied Research Company, P.O. Box 40035, Washington, DC 20016.

Campus Document Delivery Systems to Serve Academic Libraries*

Richard M. DOUGHERTY: University of California, Berkeley

Libraries are currently assessing their roles in the evolving national bibliographic network. In general, greater emphasis is now placed on the utilization of library collections than was true a few years ago. This paper discusses the employment of campus-based document delivery systems to improve access to documents. Experiences gained in different campus environments are summarized. The benefits accrued and problems encountered in introducing a personalized campus delivery system are presented.

Librarians are beginning to recognize the need to improve document delivery systems. There is a general recognition that the capacity and performance of existing delivery systems must be improved if libraries are to take full advantage of a national communications network. The workloads of some interlibrary units are already near capacity, and it is unlikely that these units will be able to absorb significantly greater loads without additional funds.

Public librarians seem to have given higher priority to interinstitutional lending and borrowing, probably because they were able to secure LSCA funding to implement innovative projects. Academic librarians will soon be forced to turn their attention to document delivery; otherwise, as the national network provides more information about book location, they will have to face increasing numbers of frustrated library users unable to obtain promptly materials requested from other libraries.

Most system analysts have focused their attention on the problems associated with improving access to bibliographic data. While these problems must continue to be addressed, system designers should devote more attention to the delivery of materials. The national network will

*This article is based on a paper presented at the Association of Research Libraries program meeting, San Diego, California, May 5, 1977.

Manuscript received August 26, 1977; accepted November 1, 1977.

not become a reality until we can expeditiously deliver what the bibliographic network locates.

Although the term "document delivery" is readily understandable, it may convey different concepts to different people. To some, it is synonymous with traditional interlibrary loan functions. To others, document delivery is more synonymous with systems such as those developed at the National Library of Medicine or at the British National Lending Library. These systems have received extensive attention in the literature.[1,2]

Up to now, most attempts to improve document delivery have focused on the movement of materials *between institutions*. Although these efforts will continue, it is also clear that if academic libraries are to utilize computer-based bibliographic networks effectively, they must improve their capacity to deliver materials to local constituencies from their own collections as well as from the collections of institutions in other localities.

A CHANGING ENVIRONMENT

Academic libraries are in a period of transition. The traditional emphasis on resource accumulation, the *sine qua non* of research libraries, while remaining central, has begun to give way to resource utilization. This shift is already reflected in the Research Libraries Group (RLG) and the University of California, Berkeley/Stanford University Research Library Cooperative Program.[3] Both undertakings place great stress on improved utilization through programs of expanded resource sharing.

This new emphasis on resource sharing has created a dilemma for many academic librarians. While research libraries are being encouraged, sometimes even cajoled, to share their resources with researchers from other institutions, faculty still expect their libraries to acquire and organize collections of sufficient richness to support campus graduate research programs. Faculty also expect and may even demand that library resources be located close at hand even though they might not have any actual need of them for years. De Gennaro has stressed that libraries cannot continue to maintain the comprehensive research collections in the old image of Yale and Harvard. He has correctly observed that our institutions do not have the money, and our society cannot or will not provide it.[4]

Unfortunately, administrators may also misinterpret a library's collection development activities. Warnings that have compared libraries to "bottomless pits" have created a sense of wariness among administrators. Efforts to develop strong collections are cited as further evidence that librarians continue to pursue a goal of collection self-sufficiency, even though most librarians recognize the relative illogic of pursuing self-sufficiency for its own sake.

Administrators regularly question book budget requests to develop re-

search collections, yet they often point with pride publicly at their institutions' multimillion-volume collections. Librarians recognize that quantity is not necessarily correlated with quality, but existing reward structures place heavy emphasis on quantitative factors. The reward structures need to be changed, and imperceptibly, this may be beginning to occur. In the meantime, academic librarians are caught on the horns of a dilemma—damned if they do and damned if they don't.

Daniel Gore has proposed an alternative academic library model.[5] It has been termed the "no-growth" library. Gore believes that the no-growth model would enable libraries to cut costs while at the same time improving services by increasing a library's ability to provide readers with a higher percentage of books that are in demand. Librarians and academic administrators may disagree or may tend to discount Gore's view of libraries, but it must also be recognized that his proposals may receive a sympathetic hearing among those responsible for funding research libraries. In a similar vein, Michael Buckland has shown that book availability can be improved if a library consciously purchases multiple copies of titles shown to be in high demand when the system is linked with a scheme of variable loan periods.[6] If a research library were to experiment with the "no-growth" model, the results would quickly prove operationally and politically unworkable. Neither extreme—neither the Yale and Harvard model nor the "no-growth" model—seems viable. The research library model of the 1980s is more likely to function very much like its predecessor of the '70s. Only its growth rate may be more modest.

The importance of increasing collection utilization through improved access is not a recent notion. It is probably as old as the most ancient library. One perceptive recognition of a changing library environment was offered by Ben Bowman in 1970. Recognizing that research library problems were intensifying, Bowman proposed an alternative set of principles for rationalizing library problems. Briefly summarized, he urged research libraries to give increasing attention to (1) availability as opposed to acquisition, (2) cooperation as opposed to self-reliance, and (3) acceptance of centrally produced bibliographic data as opposed to creation of local, customized variations of such data.[7]

In order to adjust to a different environment, Bowman foresaw a growing commitment toward coordinated action, the development of computerized data bases, the standardization of bibliographic records, and the use of specially constructed book storage facilities. Currently, the University of California is considering a plan for its nine campus libraries that reflects many of the principles articulated by Bowman.[8]

CAMPUS DOCUMENT DELIVERY

A campus document delivery system is one technique that can be employed to improve user access to campus library resources. The con-

cepts underlining such systems are quite simple. It permits qualified users to communicate by memo, in person, by telephone, or by computer terminal with a library in order to request that a book, a journal, or a photocopy be retrieved and delivered to a place of work. The system obviates the requirement that a user fill out the customary borrowing charge record, and it encompasses the return of materials to the library.

The University of California, Berkeley, has inaugurated a delivery system that has been well received by the faculty.[9] The system, dubbed BAKER, is available to both faculty and graduate student subscribers. In 1976–77, more than 19,000 requests were processed. Seventy percent of these requests were ultimately delivered. Users have termed the service a time-saver, a more efficient and effective way to use university funds, and even the best library service to interpret a complex university library system. The following three comments are typical of the dozens of unsolicited reactions that have reached the library:

> I've been preparing teaching materials for an elementary course, using books and journals from many different disciplines—and therefore library branches. You have saved me endless hours of frustration. In sheer economic terms, it means that I or an assistant would be free from having to spend hours in the library locating research materials, making out call slips, keeping track of holds, carrying journals to the Xeroxing department, etc.
>
> For the first time since I've been at Berkeley (four and one-half years), I now feel that the Main Library is a usable research resource rather than the hindrance it has so frequently seemed to be. It isn't just the fact that the document delivery service somehow seems to find most of the books.
>
> What is most important is that the service has greatly improved my morale. The fact that staff members are now working actively to find books and are taking responsibility for finding them is a great and refreshing step forward.[10]

Document delivery systems can be used to serve faculty and students in a variety of environments; for example, library materials can be transported to researchers who are members of institutes and/or laboratories that are widely dispersed throughout a campus. Customarily, universities have allowed research institutions to develop small, specialized, stand-alone libraries. Yet these collections are rarely large enough to satisfy all the information needs of their members. Document delivery is one relatively inexpensive way to augment these small collections.

Document delivery systems can also be designed to serve the needs of scholars participating in interdisciplinary programs. For example, an interdisciplinary health sciences program recently was launched at Berkeley, but the planners did not and still do not contemplate the creation of a new health sciences library. The General Library, with generous support from the National Library of Medicine, developed a scheme

of personalized services, including document delivery, to serve the information needs of the program's faculty and students. This program, the Health Science Information Service (HSIS), serves representatives for the faculties of zoology, public health, city and regional planning, physiology, anatomy, optometry, genetics, public policy, anthropology, social welfare, and biochemistry. The HSIS has become a quasi-intracampus network serving as the agency that acts as an intermediary between the interdisciplinary programs, faculty and students, and the multibranch library system.

USER ATTITUDES

Campus-based document delivery systems can have considerable impact on the overall service posture of a research library. User reactions to a delivery system are likely to be dramatic. Almost certainly, most faculty who use the service will alter their attitudes toward the library. An attitudinal change can almost be assured if the findings of one research study can be generalized. In a 1972 study, 100 members of the Syracuse University faculty were interviewed. One of the questions asked was, "When you need a specific item from the library, what would you estimate as your *expectation* that when you leave the library you will have the item in hand?" Faculty were asked to rate their response on a scale of zero to ten, with five interpreted to mean the material would be located half the time and ten that the material would always be located. The average response of those interviewed was 5.10, or in other words, individuals felt that they were able to locate and retrieve materials they wanted about half of the time.[11]

The same questionnaire was administered at Ohio State University, where a campus book delivery system had recently been introduced by the library. Based on sixty-nine interviews of the delivery system users, the inference was made that use of the delivery system had affected general attitudes toward the library. These users perceived that the library was doing a better job than had been true prior to the delivery service's introduction. They estimated their success at locating materials not at 50 percent but at 75 percent.[12] It must be emphasized that, in both cases, the results were based on attitudes rather than on actual library performance. However, these perceived attitudes raise questions about the effectiveness of actual performance in libraries. Is there a significant variation between the attitudes of users toward the quality of a library's performance and that library's actual performance?

One piece of faculty club folklore is that one is lucky to locate one-half of what one seeks in a library's stacks. I have tried numerous times to dispel that myth, but neither my rhetoric nor my data convince many skeptics. Nonetheless, the data collected at the University of Colorado and at Berkeley do not support the fifty-fifty hypothesis. Faculty users can and should expect a much greater than fifty-fifty probability of

locating desired materials in the library. At Berkeley, 19,000 requests were submitted to the document delivery service in 1976–1977. Seventy percent were filled. An additional 25 percent of the requests produced a positive report, i.e., on reserve, at the bindery, in circulation, or not owned.[13] The level of performance of a similar service at the University of Colorado was 69 percent filled, with an additional 27 percent of the requests generating a positive status report.[14] This is comparable to the Berkeley experience.

The campuses at the University of Colorado, Ohio State University, and the University of California, Berkeley, maintain decentralized library systems. Each employs and supports many highly specialized researchers. It appears likely that by introducing a document delivery service, similar university libraries could replicate the empirically verified experiences of Ohio State, Colorado, and Berkeley.

OVERCOMING INITIAL RESISTANCE

The experiences of the research study cited earlier, plus attitudes of faculty and administrators at both the University of Colorado and the University of California, Berkeley, suggest that those who propose a campus document delivery system should anticipate initial negative reactions from those who have not been previously exposed to such a system. In interviews with the 100 faculty members who had no prior experience with document delivery systems, the overall attitudes were noticeably negative. The following quotes are typical: "Poor use of library funds," "Students can be used to fetch materials," "Useless waste of resources," "Financially impossible," "Faculty are not that busy," "Library can go too far in providing services," "Wish to retain browsing."[15] However, once the system is in operation, attitudes will gradually assume a different tone. One particularly vocal Berkeley professor lambasted and consistently opposed the concept of initial funding of the Berkeley document delivery system. This professor, along with several of his departmental colleagues, have since become, in his words, "converted sinners."

Some colleagues within the University of California system, although committed to the objective of improved access, do not share my belief that campus-based delivery systems warrant a high operational priority.[16] Many of their objections parallel those just discussed. Some do not believe that the service can be operated economically; others fear that the service could prove counterproductive by encouraging faculty to stay outside the library. These objections are representative of those with which a library must cope if it decides to add delivery to its range of traditional services.

Operational problems associated with delivery systems may be difficult to avoid; for example, the service may become too popular. The demand for service may increase so rapidly that performance is de-

graded, thus forcing the introduction of arbitrary control mechanisms. In the first year at Berkeley, the number of requests totalled 7,050; a year later, demand had increased to more than 16,000. A modest fee was introduced after the second year in order to stabilize the level of demand. The dollar assessment was not an attempt to recover costs but rather a strategy that seemed to be the simplest approach for controlling demand. Another library wishing to avoid fees might introduce a quota system, whereby each department or individual would be granted a limited number of transactions per year. As a matter of fact, during fiscal year 1977–78, the Berkeley schedule of fees will be structured so that users who exceed 125 requests pay an added premium for each additional transaction.

SUMMING UP

There are growing indications that academicians are reexamining some of the traditional roles of the university library. There seems to be greater emphasis on improving availability of and access to resources and less emphasis on materials acquisition. As the national network evolves, it will become easier for library users to locate information about books they desire. This comprehensive bibliographical access will produce even heavier burdens on existing intra- and interlibrary lending and borrowing systems. Consequently, the need for better document delivery systems to handle larger capacities will emerge as a major library issue.

Although research libraries will continue to serve as the principal repository for materials to support humanistic and scientific research, changes are likely to occur in the way libraries develop their collections. Greater reliance will be placed on specialized collections available at neighboring institutions, and libraries will slowly reduce the scope of collecting activities. Research libraries may broaden their interpretation of what constitutes prime constituency user groups. Increasingly, research libraries will serve as regional research centers. The intent of Title II C of the Higher Education Act is to assist the nation's research libraries in maintaining the quality of specialized research collections. At the same time, acceptance of Title II C funds could constitute a moral and perhaps a legal obligation on the part of those institutions that accept the funds to serve as regional resource backup libraries.

Research librarians should begin now to consider how best to respond to the changing role of research libraries. Permitting greater access and taking measures to improve availability will bring with it a new set of problems. Collections will be subject to more mutilation, theft, and accelerated physical deterioration. Yet these same libraries must take steps to improve access while minimizing these problems of physical deterioration. It will not be an easy task.

REFERENCES

1. Vern M. Pings, "Improved Document Delivery Services," *Library Trends* 23:89–107 (July 1974).
2. Maurice B. Line, "Access to Resources Through the British Library Lending Division, "*Aslib Proceedings*" 27:8–15 (January 1975).
3. To obtain a better understanding of the RLG philosophy, the reader might wish to consult the 1975–76 annual report of the Research Libraries Group prepared by James A. Skipper, president, and progress reports of the Berkeley/Stanford Research Library Cooperative Program.
4. Richard De Gennaro, "Austerity, Technology, and Resource Sharing: Research Libraries Face the Future," *Library Journal* 99:918 (May 15, 1975).
5. Daniel Gore, "Farewell to Alexandria: the Theory of the No Growth High Performance Library," in *Farewell to Alexandria: Solutions to Space, Growth, and Performance Problems of Libraries*, ed. by Daniel Gore (Westport, Conn.: Greenwood, 1975).
6. Michael K. Buckland, *Book Availability and the Library User* (New York: Pergamon, 1975), 196p.
7. Ben Bowman, "Problems and Assumptions in Research Libraries," in *Rationalizing Research Libraries in the 70's*, proceedings of a symposium sponsored by the Five Associated University Libraries, November 12, 1970 (Syracuse, N.Y., Fall 1970).
8. University of California, Systemwide Administration, Office of the Executive Director of Universitywide Library Planning, *The University of California Libraries, a Plan for Development, 1978–88* (Office of the Executive Director, July 1977), 210p.
9. Anne G. Lipow, "Library Services to the Graduate Community: the University of California, Berkeley," *College and Research Libraries* 37:254–55 (May 1976).
10. Comments submitted by users are kept on file in the office of the head of the delivery service unit.
11. R. M. Dougherty and L. L. Blomquist, *Improving Access to Library Resources: The Influence of Organization of Library Collections and of User Attitudes toward Innovative Services* (Metuchen, N.J., Scarecrow, 1974), p.90.
12. Dougherty and Blomquist, p.49–66.
13. R. M. Dougherty, "The Evaluation of a Campus Document Delivery Service," *College and Research Libraries* 34:29–39 (January 1973).
14. Anne G. Lipow, "Library Delivery Service: Status Report as of 31 May 1976" (General Library, Univ. of California, Berkeley).
15. Dougherty and Blomquist, p.111–15.
16. University of California, Systemwide Administration, Office of the Executive Director of University Library Planning, Chapter VI.

Steps Toward an On-Line Union List

Ruth C. CARTER: Serials Unit, University of Pittsburgh Libraries, and PRLC Committee on Union List of Periodicals.

This paper describes the on-line union list file currently being developed by the University of Pittsburgh and other libraries of the Pittsburgh Regional Library Center. Present procedures and future plans are described. The on-line holdings format for local data records agreed upon with OCLC is reported. It is expected that concepts worked out for the Pitt/PRLC on-line union list records will be precedent setting for other future on-line union list efforts.

As of December 1977, the University of Pittsburgh (Pitt) libraries and the other libraries of the Pittsburgh Regional Library Center (PRLC) are well on their way to having an on-line union list file of serial records. The file will be maintained as one part of the Ohio College Library Center (OCLC) on-line data base. Because the file is, in part, widely available through OCLC, Pitt and PRLC would like to share some of the background and developments to date, even though the stituation is evolving rapidly. Furthermore, to reassure users of the serial records in the OCLC data base, such as Saxe, it seems important to state clearly the efforts being made to bring those Pitt and PRLC bibliographic records that are minimal up to full cataloging standards.[1]

HISTORICAL BACKGROUND

The University of Pittsburgh and PRLC union list files were developed in machine-readable form in the late 1960s and are presently stored on magnetic tape. The Pitt file, which contains the holdings for thirty-one locations, is maintained locally on a current basis. However, the PRLC file, which encompasses holdings for fifty-seven libraries, was last updated in 1973. Although they are similar in nature, there were enough differences, both in content and in choice of entry (as well as some variance in practice between latest versus successive title cataloging), to justify separate files at the time of the last simultaneous update for publication in 1973. Programming and computer time for that update

Manuscript received May 31, 1977; accepted November 15, 1977; revised version received December 19, 1977.

were provided by the University of Pittsburgh. Because both files were designed prior to the development of LC-MARC-S, they are tagged differently and are in uppercase only.

Despite such limitations, much of the bibliographic data was more complete than those in other sizable union lists available in early 1974. In particular, publication dates and places of publication were ordinarily present. This was a key factor in OCLC's decision to use the Pitt and PRLC files. OCLC and PRLC signed an agreement that called for OCLC to convert the bibliographic information from the two files to MARC format. In addition, OCLC agreed to convert the Pitt/PRLC holdings information to local data records.

Shortly after the OCLC/PRLC contract was signed, the Minnesota Union List of Serials (MULS) became available to OCLC. MULS was a larger file (approximately 75,000 titles as compared with approximately 45,000 unique titles in the Pitt/PRLC files) and was in MARC-S format with upper- and lowercase. At the same time, the CONSER project was being organized, and OCLC gave priority to the addition on-line of the MULS file as part of the CONSER project. These on-line records became available in August 1975 and were followed shortly afterward by LC-MARC-S records and others. This is well documented in the literature by Anable, Upham, and others.[2,3]

CONSER diverted OCLC's interest in the bibliographic information in the Pitt/PRLC records as an initial serials data base. However, because of the existing OCLC/PRLC contract for the conversion of the Pitt/PRLC files, there was strong reason to pursue the projected on-line union list. In June 1976 the bibliographic records unique to the Pitt file (approximately 13,000) were added to the on-line data base. They had been checked at OCLC for duplication against the MULS file but not against the rest of the data base. Later in the fall of 1976, the PRLC unique records and PRLC/Pitt duplicates were converted. In addition, the Pitt and PRLC symbols were added to MULS records as appropriate.

GOALS AND OBJECTIVES

There are several reasons why the University of Pittsburgh and PRLC are interested in pursuing an on-line union list. An initial factor was the desire to provide for the maintenance of the file in a way that would enable regular production of printed output both of the file as a whole and as separate lists for each library. It was a definite objective to provide a single merged list of the Pitt and PRLC records. As mentioned previously, in the past this was not readily feasible, due in part to differences between successive and latest title cataloging. However, this problem should eventually be overcome with the on-line file. With current cataloging rules requiring successive entry and bodies such as OCLC and LC having expressed their intent to conform, the cataloging

in the on-line file should at some point meet the specified standards.

A major benefit of an on-line file will be the obvious advantage of timeliness and more widespread availability of these up-to-date records. Early experience with the on-line file at Pitt indicates that a significant number of incoming interlibrary loan requests will be answered by the on-line file, because Pitt's most recent printed union list with its semi-annual supplements is not as current.

Another possible benefit will be the option of building a subject index to the union list. At a later date, Pitt/PRLC expects to receive tapes from OCLC that can be used to produce a printed union list. These tapes will be in MARC-S format and will contain a full bibliographic record for each title as well as holdings. Consequently, the subject heading fields can be manipulated to produce a subject index, or, more generally, a broad subject list based on LC classification could be produced.

It is important to note that the assignment of subject headings and call numbers for periodicals was not done previously by either the University of Pittsburgh or many of the other PRLC libraries. However, since Pitt/PRLC will benefit from the efforts of others using the OCLC system, it seems only appropriate that classification and subject work be provided for those titles that Pitt/PRLC either holds uniquely or processes first. Therefore, all cataloging being input is complete cataloging, according to OCLC requirements. In general, sharing efforts in bibliographic control and making resources known are both objectives of participation in on-line file building.

As stated above, Pitt/PRLC expects to produce eventually a printed list from a tape of records to be furnished by OCLC. This printed list may take the form of conventional hard copy or it may be in another format such as computer output microform (COM). Despite the many advantages of an on-line file, there are also many advantages to a printed list, including distribution to libraries without OCLC terminals. Many libraries in the PRLC list are non-OCLC libraries, and Pitt has many departmental libraries that do not have terminals. In addition, many public service points in the main library do not have terminals at present. By having an on-line file with the capability of producing printed union lists, Pitt and PRLC expect to be able to satisfy the needs and requirements of their various participating libraries for access to this information.

HOLDINGS

After the conversion of the bibliographic records, the next step on OCLC's part was to convert the Pitt/PRLC holdings data. The Pitt file conversion was completed in May 1977, with the PRLC file scheduled for a later date. Originally, the plan was to create one local data record for each copy of each title. However, at a serials training session at

OCLC in December 1976 and subsequently in conversation with OCLC staff, it became apparent that the OCLC system is capable of handling union-list-type holdings on one record per title per union list file. Multiple holdings can be shown in the retrospective holdings field (RTHD) by repeating subfields that can be used for union list holdings statements. These subfields are ≠a Location (Pitt is using the four-character OCLC code), ≠b Local Call Number, ≠v Holdings, ≠y Dates, ≠e Acquisition Status, ≠f Retention Policy, and ≠g Completeness of Holdings. The latter three have been defined by ANSI Z39 subcommittee 40 in a draft standard. They are not necessary for Pitt/PRLC purposes in the foreseeable future, but Pitt plans to use the ≠v subfield to express holdings as they are formatted in the present union list. Thus, in the Pitt file, the RTHD field for *Journal of Library Automation* is recorded as: RTHD PITT ≠v V1- PITL ≠v V1- ≠a PITH ≠v V1-5,6INC,7-8.

Pitt/PRLC staff considered the possibilities of one record versus multiple local data records from several viewpoints. Serials check-in is not a concern at present, whereas the purpose in using the system is to produce union lists. Considering additional uses and factors, such as public service searching, file maintenance, or production of a printed list from the file, it seems better to utilize one screen to display a bibliographic entity. The capability to produce a printed or COM list is important, because not all libraries represented in the file have easy access to the OCLC system. In addition, the Pitt/PRLC agreement with OCLC calls for OCLC to furnish Pitt/PRLC with a tape suitable to use for the production of a printed list. If desired, data could be extracted from one record if printed lists are desired for individual participating libraries. Although serials check-in cannot be done on one record serving as a union list record, Pitt or PRLC libraries that want to use it for check-in are still able to use the system to create individual local data records as required. In the future, it is possible that programming will be available by OCLC to take holdings data in individual local data records and display these together as one record. Thus, maintenance of a union list record would be strictly optional.

Another factor affecting the Pitt/PRLC preference for union list records is that the tape to be furnished to PRLC eventually will come from the on-line file rather than archival records. This means that bibliographic data originally in an on-line Pitt/PRLC record may be deleted when a CONSER participant (including LC, NSDP, and NLC) works on the record. Thus, it would not appear in a tape taken from the on-line file. For example, local area study codes such as LA (Latin America) originally converted by OCLC to a 651 tag would be deleted. The Pitt control number for the union list file is sometimes removed. Less computer storage space will be used by having one screen per title for each of the two files, because the constant data will not be repeated. It will

also facilitate programming, because multiple holdings records will not need consolidation. One record will be especially helpful in inputting new local data records because it will be faster. It has been decided to place the Pitt and PRLC union list control number in Remarks (RMKS). The Pitt area study code will go into Location (LOCN). If it is an item classified in the Pitt library system, the call number will be placed in the ≠b subfield following the first ≠a subfield in RTHD.

UNIVERSITY OF PITTSBURGH DEVELOPMENTS AND PROCEDURES

Pitt has been working with serials in the on-line system for some time. Beginning in November 1974, original cataloging has been input for new titles processed, if there was no existing record on OCLC. Starting in the fall of 1976, local data records have been created for holdings information. The Pitt file that was converted by OCLC was current through August 1975. Pitt furnished OCLC with a tape updated through January 1977. When OCLC converted the Pitt holdings statements, it was able to use the 1977 holdings data for those records on the 1975 tape. However, local data records for all bibliographic records new to the file between August 1975 and January 1977 had to be created by Pitt.

In order to form a basis for judging what would be involved in creating local data records according to the full specifications in the OCLC serials control manual, the Pitt serials staff experimented for six months with creating one local data record for each copy of each new title. Experimentation included use of the Definition (DEFN) field as well as complete detailing of the Retrospective Holdings (RTHD) field. As stated previously, the creation and use of multiple records were found to be unwieldy, and the development of the union list record was requested. Holdings input for Pitt has been in union list format since March 1977.

In order to establish and maintain an on-line union list file, the University of Pittsburgh is working with three types of updates to the file. The same procedure will be used when PRLC begins active work (probably in the winter of 1978). The update types are (1) new bibliographic record plus associated holdings, (2) changes to holdings or other data, and (3) upgrading the bibliographic records for the file that were converted by OCLC from the old union list. The activity divides into current operations and a special retrospective project. It should be noted that the University of Pittsburgh is currently maintaining its present in-house union list system and will be using that system to produce printed supplements to its June 1976 edition until it is possible to produce printed output from tapes furnished by OCLC. The union list is a particularly vital tool in the Pitt library system because the majority of serials is not classified and does not appear in the card catalogs.

Following is a brief description of procedures presently employed:

I. New items.
Reporting libraries submit a photocopy of the title page and table of contents along with holdings and acquisitions information for each new title they receive. Photocopies of title pages accompany a Serials Action Form (see figure 1). When information on a new title is received centrally by the Serials Unit, it follows procedures for searching and verification. Cataloging for the title, which may be original, LC copy, or other copy, possibly upgraded, serves as the basis for entry into the present off-line union list file and also the on-line file.

II. Holdings changes.
These are first entered in the present union list and then are held for updating the on-line file. Incoming holdings changes for records automatically created by OCLC are being accumulated for processing against the on-line file. Holdings are formatted similarly in both the on-line and off-line union list records.

III. Upgrading the bibliographic records.
About 13,000 records from the Pitt union list were loaded into the OCLC data base as unique bibliographic records. At Pitt's request, OCLC has listed these one title per page to use as worksheets. The titles are being searched one by one against the OCLC data base to determine if it contains more complete records. If a more complete record is found, the note "DO NOT USE THIS RECORD FOR CATALOGING—SEE OCLC # " is being added to the Pitt record. Then the Pitt holding symbol is transferred to the more complete record. Notification of the "DO NOT USE" action is sent to OCLC. If there are no other holdings attached to the record, OCLC will delete it from the on-line data base.

PRLC PLANS

The PRLC file has not been updated since 1973. Recommendations are presently being developed for procedures for the on-line updating and maintenance of the PRLC union list. Efforts are underway to secure funding for necessary staff. PRLC is anticipating centralized updating of the union list file. All records for the file will have the PRLC symbol (QPR) plus the symbol of each OCLC participating library added to the record. All updates for the union list will be submitted to a central location. Libraries will be able to submit updates via a form similar to Pitt's that will ask for OCLC number, title, and update information. New entries will be reported with sufficient data for cataloging.

All bibliographic records held by any PRLC union list participant should have the QPR symbol. The RTHD field in the local data records will contain in ≠a subfields either the OCLC symbol of participating li-

PITT-1971 (REV. 3/76) SERIAL ACTION FORM - UNIVERSITY LIBRARIES

TO | DATE

FROM - (NAME) | DEPARTMENT

TITLE - (PUBLICATION)

OBTAINED BY:
_____SUBSCRIPTION _____EXCHANGE
_____GIFT _____OTHER _____

PRINTOUT NUMBER

NOTE: ATTACH A XEROX OF TITLE PAGE OR OTHER APPROPRIATE DATA

ACTION TO BE TAKEN

☐ TITLE CHANGE (SEE OLD TITLE ABOVE; NEW TITLE IN REMARKS)

SOURCE OF CHANGE _____
LAST VOL. (OLD TITLE) DATE _____ ISSUE NO. _____
FIRST VOL. (NEW TITLE) DATE _____ ISSUE NO. _____

☐ ESTABLISH ENTRY ON PREVIOUSLY UNVERIFIED TITLE

☐ CHANGE HOLDINGS AS INDICATED BELOW

☐ RECEIPT OF BACK ISSUES

☐ CHANGE OTHER INFORMATION IN PRINTOUT AS INDICATED BELOW

☐ RECEIPT OF FIRST ISSUE (VOL. NO. _____ DATE _____).

REMARKS: _____

Fig. 1. Serial Action Form.

braries or a subcode under QPR, such as QPR2, for libraries without OCLC terminals. An example is given below for *Platinum Metals Review*, an on-line PRLC record held by eight libraries:

Platinum metals review.
ISSN: 0032-1400 OCLC no: 1762481 Frequn: q Regulr: r
Hld lib: QPRR Copy: Repr: Subsc stat: A Loan:
1 CLNO
2 LOCN
3 FUND
4 RMKS 6444900000
5 DEFN ≠v vol.≠p no.
6 NEXT
Date recd:
7 CRHD
8 RTHD QPRR≠v (1)−≠y 1957−≠a CPLL≠v 1−≠y 1957−≠a PMCC≠v 1−≠y 1957−≠a QPRE≠v 1−≠y 1957−≠a QPRK≠v 1−≠y 1957−≠a QPRX≠v 1−≠y 1957−≠a QPR8≠v 9−≠y 1965−≠a DUQQ≠v 1−≠y 1957−
9 CLMS
10 BNDG

It should be noted again that using one local data record per title for a union list display for PRLC records will not preclude individual libraries from creating individual local data records for use as a check-in record. This will be possible because, as indicated above, both the overall QPR symbol and the symbols for individual libraries with OCLC terminals will appear on each bibliographic record.

CONCLUSION

Working toward an on-line list is a very challenging, demanding, and exciting project. Much of the speed of successful development depends upon attaining additional funding for staff, but some progress will continue even if limited by staff size.

Pitt/PRLC has not yet received a tape from OCLC to attempt to print a list. It will probably not request one until considerable updating of the union list file has been accomplished. When a tape is received, there will undoubtedly be a whole new series of problems. Some of these include the development of new programs for a tape in MARC-S format in contrast to the present tagging system, the lack of an easy way to develop the cross-reference structure available in the present list, and changes in entry in records of which we are unaware (the file is so dynamic with the upgrading capabilities of CONSER participants that it is virtually impossible to be aware of all critical changes made). The de-

cision will be made later on the form of printed output, and it will be determined, at least in part, by available funds.

Overall, Pitt/PRLC expects that, with careful planning, the investment in the development and maintenance of an on-line union list will be more than worthwhile. The staff is very enthusiastic about this effort, and the library administrators are extremely supportive of this innovative project that will improve library service to users throughout western Pennsylvania and northern West Virginia.

ACKNOWLEDGMENTS

The author appreciates the support and contributions of many individuals both in making this project possible and in preparation of this paper. They include Glenora E. Rossell, director of university libraries, University of Pittsburgh; Florence M. McKenna, coordinator for processing, University of Pittsburgh; and Stephen B. Folts, executive director, Pittsburgh Regional Library Center.

REFERENCES

1. Minna G. Saxe, "Great Faith and a Few Big Questions; Notes from a Librarian Using the CONSER Base," *American Libraries* 8:27, 42 (Jan. 1977).
2. Richard Anable, "CONSER: an Update," *Journal of Library Automation* 8:26–30 (March 1975).
3. Lois Upham, "Mixed Feelings: Taking part in CONSER," *American Libraries* 8:26–27 (Jan. 1977).

Performance Test of Hybrid Access Method

Abraham BOOKSTEIN: Graduate Library School, University of Chicago; and C. E. RODRIGUEZ: Department of Computer Science, East Texas State University, Commerce.

A frequently observed difficulty of file access by truncated search keys is the large number of items sometimes retrieved. A simple, efficient means of elaborating upon the truncated search key approach so as to compensate for this difficulty is reviewed and a test of the method described. It is found that the hybrid approach does substantially reduce the number of items retrieved.

INTRODUCTION

Truncated search keys are among the most heavily used access routes to on-line bibliographic information. Although convenient and usually easy to derive, these keys suffer from a particularly troublesome defect: search keys are not unique and from time to time will retrieve an unacceptably large number of items. Several system responses are possible. For example, the system may:

1. Create alternative access routes, for example, by other search keys, author, LC card number, etc., so that the search key is just one of a number of access routes permitted by the system. This approach involves the creation and maintenance of a number of indexes to the file.
2. Use more elaborate search key prescriptions, thereby reducing ambiguity. But this approach conflicts with the ideal of a key that is simple to derive.
3. Consider the search key not as an access mechanism but as a file reducing mechanism. The reduced file could then be processed in a manner that would not be economically feasible for the full file; for example, each record could be searched for specific characteristics.

Manuscript received September 27, 1977; accepted January 3, 1978.

The hybrid access method is a variant of the third approach.[1] To use this method, the user of the system first enters a search key value; the system responds by creating an internal list of pointers to records that would be retrieved by the search key alone. If necessary, the user will be asked to enter words or fragments of words taken, for example, from the title. On the basis of the additional entries, the method permits the system to reduce the size of the list of items having the specified search key value. Only then are the records actually retrieved, either for output or further processing. Thus the hybrid access method is an efficient form of the third approach described above and reduces the number of disk accesses needed to retrieve full records from the file.

The next sections describe an implementation of the hybrid access method in more detail and a test of the technique.

HYBRID ACCESS METHOD

To implement the hybrid access method, the search key index of a file is expanded for each record to include its "signature," a fixed-length string of bits, along with the record's address. The signature of a record is constructed so that it is possible to determine with a high degree of probability whether any word(s) entered by the user are a part of the field of interest, for example, the title field. Such a determination is made before the record itself is retrieved from disk. Thus, a smaller number of records actually needs to be retrieved than would be the case if only the search key value were available.

In our implementation, the signature was made up of a thirty-two-bit binary number, a convenient length for the IBM computer on which the test was run. A number of bits of the signature was turned on for each "word" in the title,* and the full signature was constructed of all the 1s turned on by each of the words of the title. Given a character string comprising a single word, the bits to be turned on were chosen by the following technique:

1. Break the word into successive strings of three characters. The word "HEALTH," for example, is decomposed into the strings "HEA," "EAL," "ALT," and "LTH."
2. Associating a number with each character, replace each string of three characters with a string of three numbers. If H→8, E→5, and A→1, "HEA" is replaced by (8,5,1).
3. By means of a previously selected function, map the sequence of

*A word in the title was taken as any string of characters greater than two characters in length and delimited by symbols not "recognized" by the program, for example, blanks and unusual punctuation. In the items at which we looked, the performance was not sensitive to which punctuation marks were treated as delimiters. The description that follows is of a run in which blanks and all punctuation marks were considered to be delimiters. Other implementations might treat two-character words and punctuation marks somewhat differently.

three numbers onto a number between 0 and 31. The bit corresponding to the number mapped onto is set equal to one. We tested two simple functions, F1 and F2, to determine the sensitivity of the results to the function chosen. These functions were defined as follows:

$$F1 = \text{INT}\,(3.141592654\,(n_1 + n_2 + n_3))\ \text{Mod}\ 32, \text{ and}$$
$$F2 = \text{INT}\,(3.141592654\,(n_1 \cdot n_2 \cdot n_3))\ \text{Mod}\ 32$$

where n_1, n_2, and n_3 are the three integers associated with the letters and "INT" is the function giving the integer part of a number. For example, when F2 is applied to the three numbers (8, 5, 1), first $n_1 \cdot n_2 \cdot n_3$ is computed as 40. This product is then multiplied by 3.141592654 (π) to get 125.6637062, which is converted by INT to the integer 125. Since 125 mod 32 equals 29, bit number 29 is turned on. As this process is repeated over the entire character string, the contribution of each word to the signature is determined.

The existence of a signature representing the title permits a quick test of whether a word offered by the user as a keyword is a part of the title field of a record. If a signature is created from that keyword using the procedure just described, then each bit turned on in that signature also will have been turned on in all the signatures of records having that word in their titles. Thus, if a comparison of the keyword signature with the document signature shows that the bits turned on in the keyword signature are not a subset of those turned on in the document signature, that document can immediately be rejected without actually having to retrieve the record for the document. Further, the comparison is made using logical operations that are performed very rapidly on most computers. However, this procedure does not eliminate all false drops. In an earlier paper, a formula is given predicting performance under ideal conditions.[2] In this paper we include a test of that formula.

RESULTS OF THE EXPERIMENT

The Ohio College Library Center (OCLC) data base was searched with a 3,2,2,1 title search key. The search key value (gui, to, th, h) was used and provided a set of twenty-nine full titles to be tested. This set was large enough to permit a realistic test of the hybrid access method but not too large to preclude an in-depth investigation of performance.

Each full title was independently shown to three subjects who were asked to select a primary keyword (most distinctive term in the title) and a secondary keyword (next most distinctive term), which were used in the extended search. Each primary keyword was treated as a request, so the results of the three sets of twenty-nine requests—eighty-seven requests in all—were analyzed.

User Consistency

Experience with inter-indexer inconsistency led us to expect that a wide variety of keywords would be chosen. In fact, although many differences did appear, the subjects' choices were surprisingly consistent.

For example, each document permitted three comparisons among the primary keywords chosen. Over the twenty-nine documents, this permitted eighty-seven comparisons of pairs of primary keywords. We found that for 70 percent of these pairs the primary keywords agreed. Of the pairs where the primary keywords chosen disagreed, in 69 percent of the cases at least one of the primary keywords was matched by a secondary keyword. In fact, all three subjects chose the same terms for 62 percent of the documents.

If the subjects had agreed perfectly, twenty-nine primary keywords would have been chosen. If they had disagreed perfectly, eighty-seven different primary keywords would have been chosen. If fact, forty-four different primary keywords were selected. Thus, the number of primary keywords chosen by the subjects fell 26 percent of the way from perfect agreement toward perfect disagreement. The extremes for pairs of primary and secondary keywords are 58 and 174. Here only eighty primary and secondary keywords were chosen, 20 percent away from perfect agreement toward perfect disagreement. It seems reasonable to conclude that, when confronted with titles with uninformative initial words and search keys that retrieve a large number of records, users will pick individuating keywords with a rather high degree of consistency.

Distribution of Triplets by Hashing Function

As noted above, two functions, F1 and F2, were tested to detect sensitivity of the hybrid access method to choice of mapping function. We first tested for the degree to which triplets were clustered. A systematic sample of letter triplets was selected, and the number of times each bit was turned on was tabulated. The ideal hashing function would distribute the triplets uniformly. Neither function tested accomplished this ideal. However, F2 performed substantially better than F1.*

For example, if the triplets were scattered uniformly, each bit would have received about thirty-one triplets. F1 sent as many as 136 triplets to a single bit, whereas F2 sent no more than 46 to any one bit. There

*A measure of deviation from uniformity is the Chi-square statistic,

$$\sum \frac{(x_i - E)^2}{E},$$

where x_i is the empirical value, and E is the value expected.

This statistic took the value 2138.80 for F1 and 132.35 for F2. Both are significant at the 99 percent level given 31 degrees of freedom. But as a descriptive statistic, the value of Chi-square shows that the improvement in going from F1 to F2 is striking.

was no obvious reason why one function should so outperform the other. Some care must be taken in the choice of function; both uniformity of spread and machine execution speed must be carefully tested.

Retrieval Performance

We noted that the function F1 differed from F2 in its tendency to cluster triplets. It also performed less well as part of the retrieval mechanism. In one run, for example, F1 retrieved a total of 392 documents for the 87 requests, an average of 4.5 items per request; the corresponding figures for F2 were 279 documents retrieved and 3.2 items per request. F1 retrieved as many as nineteen documents (compared to twenty-nine documents that would be retrieved by the search key acting alone), while F2 retrieved as many as seventeen.

F1 retrieved three or fewer documents 55 percent of the time, while F2 retrieved three or fewer documents 75 percent of the time. If a filtering mechanism is arbitrarily defined as "effective" if it eliminates at least 75 percent of the items retrieved by the search key, then F1 had 80 percent effectiveness and F2 had 93 percent effectiveness. Thus, while both functions can be quite effective in cutting down the number of items retrieved by the preliminary search key request, there is a significant improvement in using the function that has a smaller tendency to cluster terms.

We can further examine the retrieval performance of F2 to see the effect of introducing the secondary keyword from the title. On the average, the secondary keyword eliminated 36 percent of the items retrieved by a single keyword alone. But this figure understates the effectiveness of introducing the secondary keyword: in many cases the secondary keyword couldn't reduce the output very much because the first keyword retrieved only one or two items, one of which was the desired item. Of greater interest are the cases where a single keyword resulted in the retrieval of many items. In the worst case, where F2 yielded seventeen items, the secondary keyword reduced the number of items retrieved to two. In the next worse case, where eleven and ten items were retrieved, the secondary keyword again reduced the retrieval to two items. For only one word pair did the two-keyword entry yield as many as four items. For 89 percent of the word pair requests, the twenty-nine-item yield of the search key was reduced to one or two items (of which one was the desired item).

Finally, we can compare the actual number of items retrieved with the expected number retrieved as given by the formula in the footnote on page 44. Using the formula we can compute the expected number of false drops over the eighty-seven requests and, adding eighty-seven to this quantity to include the number of proper retrievals, compute the expected number of items retrieved. The formula is an ideal one, assuming that each triplet is assigned a bit value independently of all the

other triplets and that they are uniformly distributed over the thirty-two bits that can be turned on. This ideal value is 233 retrievals, or 2.7 items per request. As we saw above, F2 retrieved 3.2 items on the average. An ideal function would be expected to retrieve 16 percent fewer elements, on the average, than F2 retrieved, an improvement probably not worth the extra computing time that would likely be required to implement an improved F2.

CONCLUSIONS

We described a hybrid access method based on the use of a truncated search key supplemented by keywords taken from the field of interest, here the title. We were interested in how users responded to the task of picking out keywords from ambiguous titles and how well these keywords reduced the list of titles retrieved by the search key. We found our subjects had little difficulty in choosing terms that separated titles in their minds and that they tended to agree with one another on the terms they selected. These keywords were usually quite effective in reducing the list of items that would be retrieved by the search key acting alone, though a couple of times using the keyword eliminated less than half the items. However, the use of two keywords in every case substantially reduced the search key retrievals in our sample and quite frequently reduced the number of retrievals to one or two items. We therefore concluded that a single keyword will usually be adequate, and, when it is not, that inputting a second keyword will almost always suffice. The hybrid access method is efficient in operation, easily implemented, and makes minimal demands on computer storage and CPU time.

ACKNOWLEDGMENT

The authors wish to gratefully acknowledge the technical editorial assistance of Jean Howard Rodriguez in the preparation of this manuscript.

REFERENCES

1. Abraham Bookstein, "Hybrid Access Method for Bibliographic Records," *Journal of Library Automation* 7:97–104 (June 1974).
2. Abraham Bookstein, "On Harrison's Substring Testing Technique," *Communications ACM* 16:180–181 (1973).

Bibliographic Access to Full Descriptive Cataloging with COM

Earl E. WASSOM and Richard A. JONES: Division of Library Services, Western Kentucky University, Bowling Green.

A catalog containing more than one million entries (1.3 million cards) of the Division of Library Services at Western Kentucky University has been produced in computer output microfiche (COM) format. This catalog, developed from locally produced machine-readable records, contains full bibliographic information in an author/title and subject heading arrangement. A brief overview of the procedures followed and the format is presented.

A COM catalog generated from locally produced machine-readable data is now in use at Western Kentucky University. The experience at WKU demonstrates a successful program of library automation without reliance upon a network system. This independence was not deliberate, for machine-readable data were not available when WKU began its library automation activities in December 1970. The concept for the system was established when a decision was made to reclassify the existing collection from Dewey to Library of Congress Classification. The use of computer technology for the conversion was the most feasible approach, and a total system of library management was envisioned. As a result of that early decision to generate a data base containing all bibliographic data, the entire program has emerged.

A survey and analysis of existing cataloging and circulation systems were made. The initial thrust was to create cataloging data with sufficient "tags" to enable future applications to manipulate available bibliographic data for any foreseeable library systems. First priority, of course, was to provide Library of Congress catalog information for bibliographic access and appropriate printouts for labels and pockets for reclassified books as well as new acquisitions. The second priority at that time was to utilize essential components of the record to develop an on-line circulation file.

Design of the system and subsystems was to insure flexibility in existing, planned, and projected library applications. The basic purpose of

Manuscript received November 1, 1977; accepted December 28, 1977.

the reclassification endeavor was to improve efficiency in the cataloging of resources and enhance services for the library users.

Since 1970, the Division of Library Services has worked closely with the campus computer center. A series of computer programs has been developed to maintain and utilize an ongoing machine-readable data base. From these files, catalogs have been produced in a variety of formats. In September 1971, an author/title book catalog with short-entry information was printed. This catalog was updated with supplements. Between June and September 1972, a standard card catalog was printed using the data base and the campus computer center printer. Supplements to the book catalog continued to provide bibliographic access to divisional and branch libraries on campus; to the Western/Brescia/Wesleyan (WBW) graduate consortium in Owensboro; to Eagle University, a prep, undergraduate, and graduate consortium at Fort Campbell, Kentucky/Tennessee, and to other off-campus centers of graduate instruction. Continuation of the paper supplements proved to be inefficient and computer output microfiche (COM) was determined to be a viable alternative.

In August 1976, the total holdings were merged, and a truncated author/title COM catalog was produced. In November 1976, subject headings were formatted and included in the project. This catalog contained either author/title or subject information, edition, date(s) of publication, document number (computer file record number), number of copies, branch library, location, and LC call number. The catalog was formatted at 48x reduction on 4-by-6-inch fiche. Each fiche contained 270 frames, 268 of which listed 58 bibliographic entries. The two remaining frames indexed the data on a particular fiche. Each fiche gave access information to approximately 15,500 author/title or subject entries. The COM master short-entry author/title catalog was produced on 29 microfiche and the subject catalog on 63 microfiche. Supplements to the master catalog were produced monthly, and following supplements were merged and cumulated files were generated. In actual practice, the library patron was required to search in only two catalog alphabets, the master catalog file and the cumulated supplement. Twenty-four copies of this catalog were distributed throughout the university library system and to consortia centers associated with the university.

A one-year trial period was established for procedural and operational evaluations. This trial period tested user acceptability, microfiche readers, files for holding the fiche, carrels, and instructional procedures to acquaint the university community with the changes. It also prepared the users for the eventual freezing and the ultimate removal of the traditional card catalog.

A COM catalog containing full descriptive entries followed. Accessibility, accuracy, and economy were the principal reasons for the conversion.

Records in machine-readable form are generated daily in WKU Technical Services Section using IBM 2741 terminals linked to a campus IBM 360/40 computer. These records are retained in on-line mode until the time when the processing of a given "system" of books is completed. At that time, the new "system" is merged with previous "systems" contained in the master file of holdings. WKU is also a subscriber to the LC/MARC tapes, and procedures are being integrated into the library management system to access and utilize LC data. Prior to this time, all records have been generated in WKU/Technical Services. New records appear on the cumulated catalog supplement, which is now being produced on a monthly basis. A time period has not yet been determined when supplements will be merged with the master file. A six-month period for the merging of the master and cumulated supplement is favored. Nonetheless, the user of the collection has only two sources to search, and the available information is current.

When the machine-readable data on a new "system" of books is completed, these data are sorted and merged with the previous supplement, producing a new cumulative supplement. The new cumulative supplement tapes are sent to a commercial data processing center in Louisville, Kentucky, for COM production. These tapes are sent via a courier service on Monday evening at 4 p.m. to Louisville, and the completed COM is in Library Technical Services on Wednesday evening, ready for distribution to the various catalog locations. The newly acquired and processed books are distributed to the branch and divisional libraries at the same time, and the on-line circulation file is updated to accommodate these new resources. A "system" of books accumulates for twenty working days. When the "system" is released for computer center processing, the turn-around time for the COM cumulative supplement is from Friday afternoon to Wednesday morning.

WKU now has full cataloging information displayed in two separate units, the author/title catalog and the subject catalog. This arrangement is in keeping with the practices maintained in the former card catalog. Several different approaches to the display of data were analyzed. Formatting of the University of Texas–Dallas COM catalog and the arrangement of the Georgia Institute of Technology microfiche system were analyzed. Meetings were held in which formatting was discussed with SOLINET systems personnel, as well as consultations with commercial vendors. Final selection of the fiche, frame, and entry format was based on an analysis of user search strategy, librarian requirements, and cataloger and library system analyst preferences, which were ultimately incorporated into the final layout decisions. Provisions contained in the International Standard Bibliographical Description (ISBD monographs) were precisely followed. It was the responsibility of the library systems analyst and the catalogers to write the detailed rules for the program that would format the records using our own mnemonic codes.

Campus computer center personnel wrote the programs according to these specifications.

As indicated earlier, entries on all fiche contain full bibliographic information. All information contained in the traditional catalog has been completely replicated on microfiche. Full cross-references and tracings have been included to enhance and facilitate the user's search strategies. Use of the subject headings contained on the two index frames of each fiche not only accelerates the search process but also gives the user an immediate visual scan of other subject heading possibilities, a strategy not easily accomplished using a card catalog.

Special emphases in the fiche layout were incorporated to optimize usability and readability. Space was of importance but was not a major item of concern. The catalog entries are displayed in two columns with an average of six entries per frame. Format programming was designed to retain all information in an intact unit (entry) without division of cataloging information from one column to another or one fiche to another. Indentations, spacing, and arrangement of information is nearly identical to card catalog format. This order has proved to be very effective.

Figure 1, a subject catalog master fiche, shows arrangement of data. Date and descriptions of the catalog, the title row index that lists the first entry on the microfiche, and fiche number are in eye-readable form. The bibliographic data are arranged into fifteen alpha rows and eighteen numeric columns. An average of 1,608 catalog entries appear on each fiche.

Figure 2 shows one of the two index page/frames located in the lower-right corner of each fiche. The alpha-numeric coordinate directs the user to the page/frame number for a particular entry. The heading bears the first entry for each frame.

Figure 3 presents a sample entry of one of the 268 data-frames on a fiche. Note the coordinate entry at the bottom of the frame to insure search accuracy for the COM user.

When converted to COM, an equivalent of one million records or 1.3 million catalog cards were produced in fiche format. The master author/title catalog has 376 fiche, and the master subject catalog is represented on 221 fiche. Since the master catalog was produced, the present cumulative supplement includes eighteen author/title and thirteen subject fiche.

At the present time, Western has sixteen complete COM catalogs available for the public with additional copies in Technical Services. Retrieval modules have been designed to facilitate access to the collection. Each station includes a full catalog, a high resolution fiche reader, an oversize carrel, and stool. For every four stations, a convenient CRT terminal, IBM 3270, is available, which permits the user, once he or she has identified the desired resources, to query the on-line circulation

file to learn of the availability of the material selected. If the books are not checked out, the user can note the call number and location on the CRT and retrieve the materials. If the book is checked out, he or she may place a hold on the book and will be notified when it is available.

COM catalogs will be placed in every service area in the Division of Library Services and either author/title or subject units on the desks of acquisitions librarians and catalogers. Fifty units are now budgeted, with other units forthcoming for academic departments on campus and off-campus centers.

The conversion to COM at WKU has been very successful. Standards

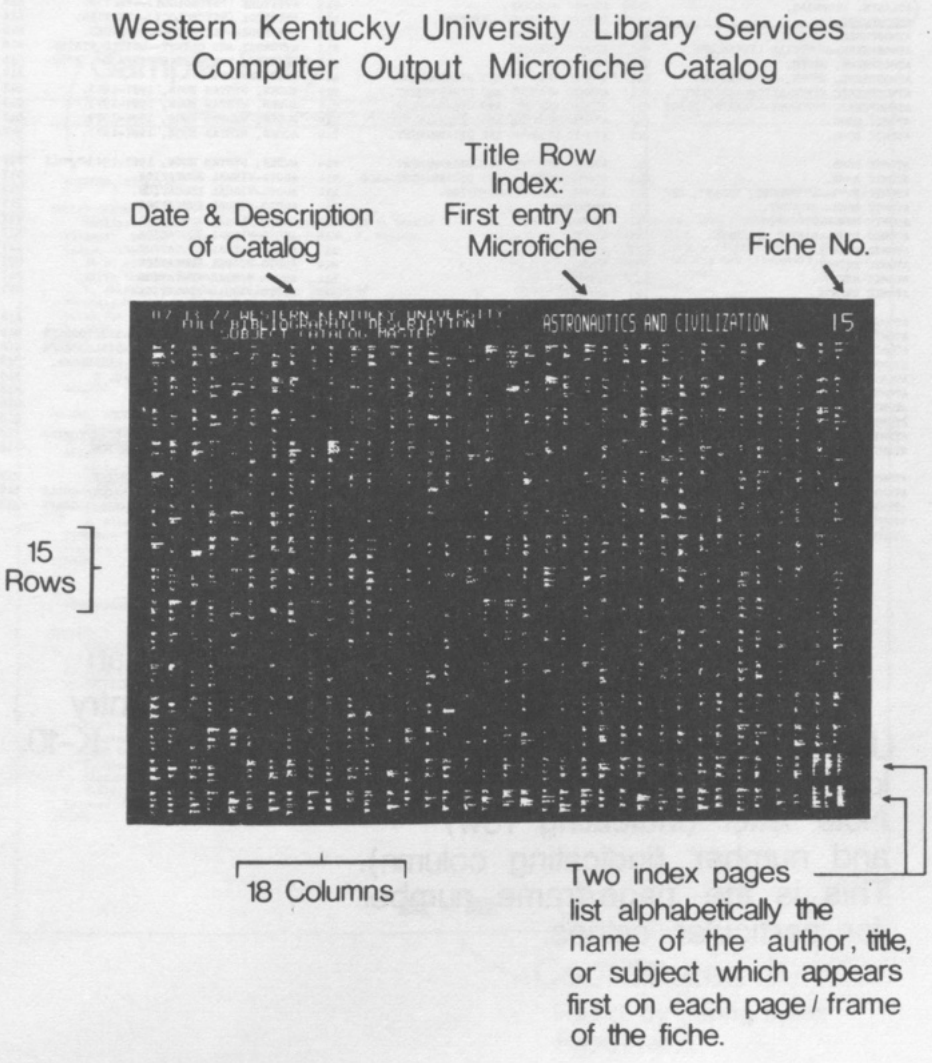


Fig. 1. Subject Catalog Master Fiche.

INDEX PAGE/FRAME

Coordinates ——— Atlases,Nigerian is the first entry on page/frame K-10.

Use coordinates to locate page/frame. Note letter (indicating row) and number (indicating column). This is the page/frame number for particular entries.

Fig. 2. Index Frame.

have been maintained and accessibility, accuracy, and economy have been positive forces in the implementation of COM.

There has been a high level of acceptance of the COM. It has been enthusiastically received by the university: the president, Council of Deans, department chairpersons within the various colleges, the faculty, and students. Teaching the use of the COM has been incorporated into a course in library usage that is required of all freshmen and transfer students.

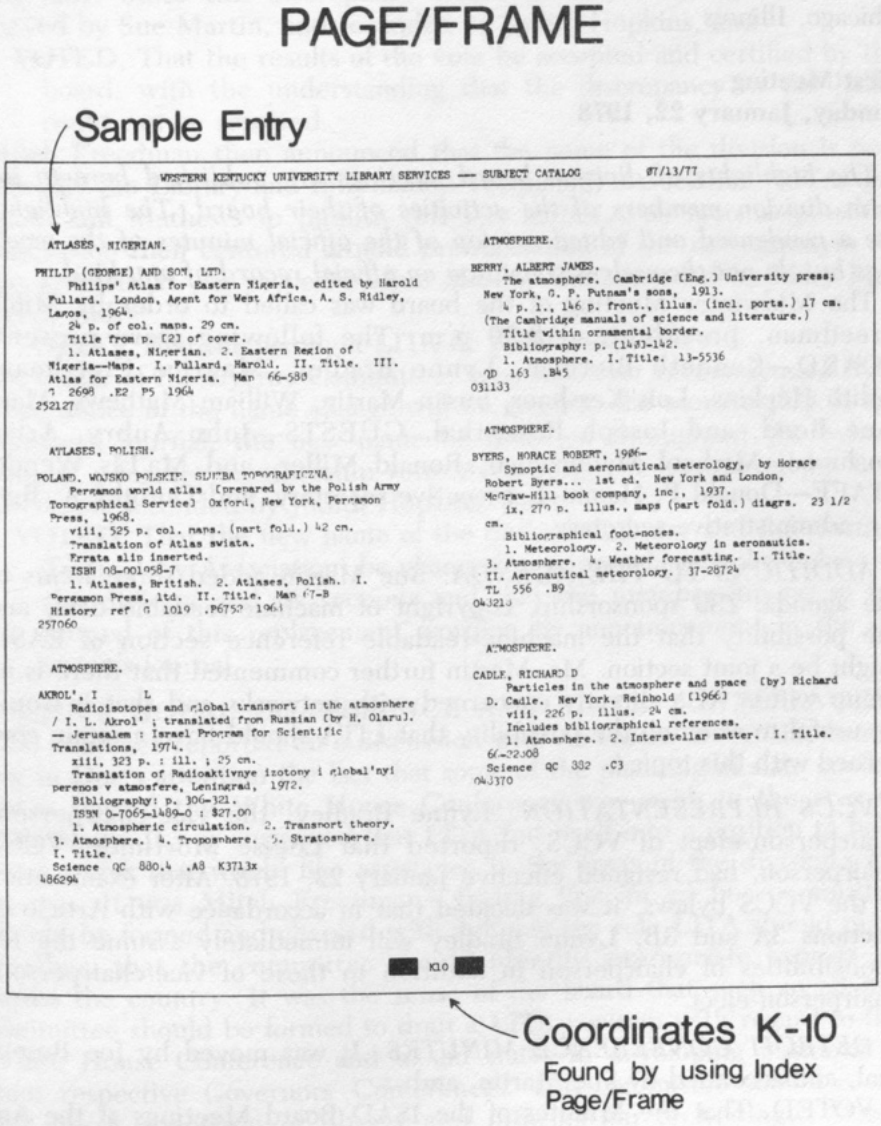


Fig. 3. Data Frame.

Highlights of Division Board Meetings

1978 ALA Midwinter Meeting
Chicago, Illinois

First Meeting
Sunday, January 22, 1978

The highlights of division board meetings are published here to inform division members of the activities of their board. The highlights are a condensed and edited version of the official minutes of the meetings but do not themselves constitute an official record of any kind.

The Midwinter Meeting of the board was called to order by Mitch Freedman, president, at 8:30 p.m. The following were present: BOARD—Kenneth Bierman, Lynne Bradley, Maurice Freedman, Judith Hopkins, Lois Kershner, Susan Martin, William Mathews, Mary Jane Reed, and Joseph Rosenthal. GUESTS—John Aubry, Arlan Bushman, Michael Malinconico, Ronald Miller, and Ma'Lis Wendt. STAFF—Donald P. Hammer, executive secretary, and Dorothy A. Butler, administrative secretary.

ADDITIONS TO THE AGENDA. Sue Martin added three items to the agenda: Z39 sponsorship, copyright of machine-readable data, and the possibility that the machine-readable reference section of RASD might be a joint section. Ms. Martin further commented that there is no group within ALA directly concerned with networks and that it would be useful to examine the possibility that LITA should have a group concerned with this topic.

VCCS REPRESENTATION. Lynne Bradley, the vice-chairperson/chairperson-elect of VCCS, reported that Louise Mortimer, VCCS chairperson, had resigned effective January 22, 1978. After examination of the VCCS bylaws, it was decided that in accordance with Article 6, Sections 3A and 3B, Lynne Bradley will immediately assume the responsibilities of chairperson in addition to those of vice-chairperson/chairperson-elect.

DETROIT CONFERENCE MINUTES. It was moved by Joe Rosenthal, and seconded by Sue Martin, and

VOTED, That the Minutes of the ISAD Board Meetings at the Annual Conference in Detroit, June 1977, be approved.

RESULTS OF BALLOTING ON NAME AND FUNCTION STATEMENT. Don Hammer reported that a change in the name of the division from Information Science and Automation Division (ISAD) to Library and Information Technology Association (LITA) has been approved by a membership vote of 344 to 96 with 1 invalid ballot. Proposed changes to the function statement for the division were also approved, in this case by a vote of 419 to 32. Lynne Bradley pointed out a discrepancy in the election report totals indicating a probable 10-vote error in the tally. Since this discrepancy would not affect the results, it was moved by Sue Martin, and seconded by Judith Hopkins, and

VOTED, That the results of the vote be accepted and certified by the board, with the understanding that the discrepancy in the ballot count can be resolved.

Mitch Freedman then announced that the name of the division is now officially the Library and Information Technology Association (LITA) and asked Bill Mathews to publish this fact in *JOLA* as soon as possible. Discussion then centered around pronunciation of the new acronym for the division. It was moved by Sue Martin, and seconded by Mary Jane Reed, and

VOTED, That the acronym LITA be pronounced "leeta."

On behalf of the Bylaws Committee, Lois Kershner recommended that, since notice of the name change will be given to the membership in the divisional journal, the new name be reflected throughout the bylaws without a further membership vote. Accordingly, it was moved by Lois Kershner, seconded by Judith Hopkins, and

VOTED, That the new name of the division (Library and Information Technology Association) be changed as appropriate in the bylaws of the division and its sections and that the membership be so informed of this replacement wording by announcement in the division's journal.

WHITE HOUSE CONFERENCE AND STATE CONFERENCES. Don Hammer reported on a discussion with Al Trezza of NCLIS, bringing to Don's attention the fact that some of the planning of state conferences toward the White House Conference was weak in the area of technology. It was suggested that LITA put itself into a position to help those states that would like assistance in the areas of the division's expertise. It was Mitch Freedman's feeling that an ad hoc committee should be formed and charged with defining the role LITA should play. Further, that the committee should identify appropriate experts all across the country. It was the sense of the board that such an ad hoc committee should be formed to draft a LITA position with regard to the White House Conference and to aid states in developing positions at their respective Governors' Conferences. This committee should cover the whole spectrum of library and information technology. Mitch Freedman and Don Hammer will draft a charge for the ad hoc commit-

tee and present it to the board at its next meeting.

LITA REPRESENTATION AT THE UNESCO/UNIBID SYMPOSIUM. Mike Malinconico requested that the LITA board support one-third of his travel expenses to Taormina, Sicily, to attend the UNESCO/ UNIBID Symposium as chairperson of MARBI. He explained that the basic purpose of the symposium is to determine whether there should be one or two formats for the exchange of machine-readable bibliographic information; one for libraries and the other for secondary information services. Following discussion it was moved by Judith Hopkins, seconded by Joe Rosenthal, and

VOTED, That the LITA Board support the attendance of S. Michael Malinconico at the International Symposium on Bibliographic Exchange Formats in Taormina, Sicily, in April 1978 with an amount of four hundred dollars.

LITA SPONSORSHIP OF AN LC NETWORK ADVISORY COMMITTEE PROGRAM. Don Hammer reported a request from Henriette Avram that LITA sponsor a Network Advisory Committee program at the June 1978 conference together with LC and NCLIS. Mitch Freedman reminded the board that a condition placed on LITA sponsorship of such a meeting was that there be adequate time allowed for questions and answers. Mr. Freedman suggested that the Program Planning Committee prepare a budget for this program and that it be made clear that LC or NCLIS would be required to make up any amount above the budget for use of audiovisual equipment and the like.

INSTITUTE FEES AS APPLIED TO LITA MEMBERSHIP. Presently, it is possible to apply some part of the fees for attendance at LITA-sponsored institutes toward the fee for LITA membership. Don Hammer asked if this policy should apply equally for past members and nonmembers, since its intent was to encourage new people to join. After discussion, it was decided that the present policy was satisfactory and that such fees could be applied to division membership by the same person any number of times.

Z39 SPONSORSHIP. Sue Martin expressed her concern that the ANSI Z39 committee, which is involved in establishing bibliographic and library oriented standards, not be allowed to flounder without support. She pointed out that Jerry Orne, executive secretary of Z39 for many years, has retired. NSF failed to provide some of the funding support it had previously committed, resulting in a loss of United States representation at the appropriate meetings of IFLA. Ms. Martin suggested that perhaps LITA and ASIS could jointly sponsor Z39. Joe Rosenthal commented that he would be very hesitant for LITA to join with ASIS unless it were made very clear who would be the secretariat and that there would be continuing bodies to manage this effort since it in-

volves an enormous amount of time and energy. Further discussion centered around a study, in which ALA has already concurred, proposing that responsibility for Z39 reside with the Council of National Library Associations (CNLA). The LITA board agreed to defer further discussion on this item until additional clarifying information becomes available.

LITA POSITION ON COPYRIGHT OF SOFTWARE. Sue Martin asked if it might be appropriate to formulate a LITA position statement regarding copyright of machine-readable data and software. Ms. Martin had already prepared such a statement that unofficially represented the feelings of the library and information science community on this matter. That statement has been submitted to the National Commission on New Technological Uses of Copyrighted Works (CONTU). It was decided that this statement should be distributed to the board for their information and that comment on this issue will be deferred until after that time.

The meeting was adjourned.

Second Meeting
Tuesday, January 24, 1978

The meeting was called to order by Mitch Freedman, president, at 2 p.m. The following were present: BOARD—George Abbott, Kenneth Bierman, Lynne Bradley, Maurice Freedman, Judith Hopkins, Lois Kershner, Susan Martin, William Mathews, Jerome Miller, and Joseph Rosenthal. GUESTS—Evelyn Clement, Bonnie Juergens, Brigitte L. Kenney, S. Michael Malinconico, Gwen Miles, and Ruth Tighe. STAFF—Donald P. Hammer, executive secretary, and Dorothy A. Butler, administrative secretary.

PROGRAM PLANNING COMMITTEE REPORT. Bonnie Juergens reported on a number of institutes and other programs that LITA will be sponsoring. She asked the advice of the board concerning appropriate dates and places for some of these activities. After some discussion, it was decided that the schedule of LITA institutes for 1978 would be as follows:

May 1978—Automated Circulation Systems Institute (a repeat of the Dallas Institute), Philadelphia
June 1978—State of the Art Preconference, Chicago
September 1978—Information Storage Media Institute, Washington, D.C. (with satellite transmission to Ann Arbor, Mich.)
December 1978—Closing of the Catalog, New Orleans, La., or Atlanta, Ga.

The program planning committee also recommended that LITA present a two-hour program at the annual meeting of the Association for Com-

puting Machinery (ACM). It was moved by Joe Rosenthal, seconded by Judith Hopkins, and

VOTED, That the board endorse the proposal of Bonnie Juergens that LITA request a program slot at the forthcoming meeting of ACM in December 1978, and that if this program slot is obtained, the President and Immediate Past President of LITA be responsible for the presentation, and necessary expenses of the LITA participants be paid from LITA funds.

Ms. Juergens also reported that the AVS and VCCS sections are having programs during the ALA Annual Conference in Chicago and that LITA and JMRT are jointly sponsoring a two-hour program for this conference as well.

RESOLUTION ON COMMUNICATIONS. The board then considered a resolution on communications, which had been forwarded to the board for its comment by Eileen Cooke of the ALA Washington Office. The resolution would be introduced into the record of appropriate congressional hearings on the restructuring of the communications industry. Lynne Bradley commented that the VCCS Section felt this resolution did not go far enough, although the section did not have specific recommendations for changes in the wording. Sue Martin suggested that the board endorse the resolution as it now stands for the purpose of the Washington Office but then turn the resolution over to the LITA Legislation and Regulation Committee for their recommendations and further comment. It was then moved by Lynne Bradley, seconded by Sue Martin, and

VOTED, That action on the Resolution on Communications be referred to the new divisional Legislation and Regulation Committee for recommendation back to the LITA Board.

NOMINATING COMMITTEE REPORT. George Abbott reported that a nominating committee had been formed that consisted of Sue Tyner, Paul Fasana, and himself as chairperson. The candidates selected for LITA president-elect are Barbara Markuson and Ron Miller. Candidates for member-at-large are Kenneth Bierman and Teresa Strozik. All nominees have accepted, and their acceptance forms and biographical data have been turned in to the LITA office.

CLSI AWARD. Joe Rosenthal distributed a draft statement regarding the proposed CLSI/LITA Award. It was the consensus of the board that an awards committee should be appointed by the president or the president-elect once the award is officially established. The purpose of this award would be to recognize achievement in the area of information technology. The board discussed at some length the eligibility requirements for this award and conditions that would be placed on the sponsor. It was decided, for example, that the award could be given either to an individual or to a small group of individuals working in collabora-

tion; but it would not be given to an organization or institution. The award will be evaluated after five years, with CLSI being asked to give an initial commitment for not less than five years. The board also felt that the amount of the award should be held consistent from year to year. After further elaboration of terms and conditions, the LITA board discussed the name to be given to the award. It was moved by Jerome Miller, seconded by Sue Martin, and

VOTED, That the award will be named the CLSI/LITA Award for Achievement in Information Technology.

There was one abstention.

AVS REPORT. Evelyn Clement reported that the Audio-Visual Section is relatively new and finds a need for better communication with its membership. Presently the section is somewhat lacking in focus. AVS will be sponsoring a program during the 1978 ALA Annual Conference titled "Ethics and Accountability in the Fair Use of Multi-Media Materials." The main speaker will be Jerome K. Miller. Ms. Clement submitted a budget request for the section in the amount of $700. She noted that the AVS would like to issue a newsletter for their membership and that she would partly support this newsletter herself. Mitch Freedman, president, noted Ms. Clement's generosity and thanked her for her efforts. It was then

VOTED, That the budget request for 1978–1979 for the AV Section, totalling $700, be approved.

ISAS REPORT. Ken Bierman, acting chairman of the Information Science and Automation Section, reported on the activities of that section, now undergoing its organization. A nominating committee consisting of Jerry Pennington, chairperson, together with John Knapp and Bill Mathews has submitted names of candidates for officers of the section. The nominees are: for chairperson, Lois Kershner and Larry Auld; for chairperson-elect, Mary Madden and Linda Crismond; for secretary, Gwen Miles and Chester Gough; for member-at-large three-year terms, Jerome Yavarkovsky and John Kountz; two-year terms, Hank Epstein and Brian Aveney; one-year terms, Ralph Shoffner and A. John Linford. Initially, all LITA members will be members of the ISAS. Proposed bylaws for the section will be formulated by Ken Bierman and voted on by the ISAS membership through the established ALA election process. (The proposed bylaws are published in this issue of *JOLA*).

VCCS REPORT. Lynne Bradley reported that the VCCS Section is developing a membership network on a regional basis to communicate, to receive feedback, and to recruit new members. The Legislation Committee is identifying additional names to provide testimony on legislation, and the Publications Committee is revising its handbook. Also, a program on video update is being planned for the 1978 ALA Annual Conference and a preconference for the 1979 Dallas Conference is being

developed. This would be aimed toward administrators trying to develop video and cable programs for their systems.

LED/LITA EDUCATION COMMITTEE REPORT. Brigitte Kenney reported that since LED has been dissolved by Council, the committee has lost half its membership. Yet she emphasized that the committee feels strongly that it should continue to exist and that it should revise its function statement. She pointed, for example, to the critical need for education in developing criteria for evaluating commercial vendors of library automation products. She asked for board approval of the continuation of the committee, a postponement of formulation of the function statement until the ALA Assembly meets, authorization to enlarge its membership, and permission for Ms. Kenney to represent LITA before the Assembly on this matter if necessary. After some discussion it was

> VOTED, That the LITA Board approve formation of the Committee on Education for Library and Information Technology to replace the now defunct LED/ISAD Joint Committee on Education for Information Science and Automation and that present LITA members be continued as members of the new committee.

The committee will submit a new function statement to the LITA Bylaws and Organization Committee for review.

MARBI REPORT. Mike Malinconico reported that the MARBI Committee has considered five LC proposals relating to analytics. Four were passed with minor revisions, and one was rejected. The committee heard reports from LC on proposed MARC formats for journal articles and technical reports. LC has agreed that several liaison people from the committee should work with them on these formats. Mr. Malinconico also reported that the Committee on Coordination of National Bibliographic Control (COCONABIC) is likewise involved in drafting a format for journal articles and technical reports. MARBI will write a letter to them expressing interest in being kept informed as this format evolves.

EDITORIAL BOARD REPORT. Bill Mathews reported that Judy Schmidt from the Library of Congress has been appointed book review editor of *JOLA*, that Mary Madden of Blackwell North America has been appointed technical communications editor, and Sue Martin has been appointed advertising editor. The journal intends to promote more advertising during the next year with a subsequent review of the appropriate balance between advertising and editorial material. It also seems that, in the opinion of some, the journal is not adequately serving all the members of the division, especially in its news department. He indicated that the editorial board will develop function statements for the journal and for each of its parts with some relation to the function statements for the three sections of the division. He will also be working on plans for a newsletter that would serve all the sections more equita-

bly. Mr. Mathews informed the board that he is pleased to have the opportunity to contribute to the association in his new capacity as editor of *JOLA*.

RTSD FILING COMMITTEE REPORT. Joe Rosenthal reported that the filing committee intends to make a preliminary distribution of the draft filing rules fairly soon. Mr. Rosenthal thought it would be useful to distribute the draft rules to the technical services heads of large and medium-sized libraries and perhaps to some public service people as well. It was the sense of the board that copies of the draft should also be sent to the members of the LITA board for review.

The meeting was adjourned.

Third Meeting
Wednesday, January 25, 1978

The meeting was called to order by Mitch Freedman, president, at 8:30 p.m. The following were present: BOARD—Kenneth Bierman, Lynne Bradley, Maurice Freedman, Judith Hopkins, Lois Kershner, Susan Martin, William Mathews, Jerome Miller, Mary Jane Reed, and Joseph Rosenthal. GUESTS—Judith Corin, Arlene Faber, Barbara Gates, S. Michael Malinconico, Larry Molumby, and Loreta Tiemann. STAFF—Donald P. Hammer, executive secretary, and Dorothy A. Butler, administrative secretary.

BYLAWS AND ORGANIZATION COMMITTEE REPORT. Lois Kershner reported that the committee has tabled discussion of divisional representation on ALA Council pending additional information. The committee has reviewed the function statements of division committees on which the board members had voted. The committee has taken into consideration the many comments that were made on the ballots and will submit a redraft of the function statements for the board's consideration and another vote by mail. The committee also considered the matter of VCCS representation to the board and recommends that Lynne Bradley serve as chairperson for the remainder of the year and continue as chairperson next year since it is a last expired term. The board asked the committee to formulate bylaws to cover most instances where there might be a resignation, and thanked Lois Kershner for her diligent work.

MEMBERSHIP PROMOTION TASK FORCE. Judith Corin reported on promotional activities for the coming June meeting. There was general discussion of techniques for encouraging new members to join the division, after which it was moved by Sue Martin, seconded by Lynne Bradley, and

VOTED, That LITA sponsor a cash bar in conjunction with the membership meeting at the 1978 Annual Meeting.

The board also discussed sponsoring a LITA hospitality suite to provide a focal point for groups to discuss issues concerning library automation. It was moved by Sue Martin, seconded by Jerome Miller, and

VOTED, That LITA sponsor a hospitality suite during the ALA Annual Conference 1978, with publicity at the ALA hospitality suite.

Additionally, it was moved by Joe Rosenthal, seconded by Ken Bierman, and

VOTED, That LITA financially support the ALA hospitality suite at the Chicago 1978 Annual Conference to an extent equivalent to other units and divisions of ALA, not to exceed $50.

DIVISION BUDGET. Don Hammer reviewed the status of the division's accounts. He explained the difference between the regular budget, which shows expenditures only, and the special accounts, which include income and expenditures. There are eight special accounts for LITA, which mostly represent involvement in institutes. After two years, funds in special accounts revert to LITA's regular budget. Mr. Hammer reported that there is presently a balance of $22,638.15 in LITA's special accounts and that there is approximately $59,028 available in the regular budget. Expenditures this year are expected to be about $40,346. Reports for the present budget year have not yet been received from the ALA accountants. For the past year, actual income was $39,980, and expenditures were $35,342.04 with the surplus carried over into the current fiscal year. For *JOLA,* actual income was $32,492, and expenditures were $27,528. Part of last year's *JOLA* income was provided by a subsidy from the division, and the surplus will be returned to the division. This year, *JOLA* will be subsidized by the division in the amount of $4,737.

INTEREST ON LITA FUNDS. Joe Rosenthal expressed displeasure concerning ALA's refusal to credit the division with interest earned on LITA special accounts, but he felt that to make this into a large issue would not reflect well on LITA's public relations image. He stated that the division might better spend its efforts suggesting that certain ALA administrative matters could be improved. For example, salary and personnel policies that make it very difficult to recruit and maintain good support staff at ALA could be looked at more closely. It was agreed that the president should not continue to pursue the attempt to receive accrued interest on LITA funds. At the same time, Mitch Freedman agreed to write to Robert Wedgeworth reminding him of LITA's contributions to the general coffers of ALA with interest from its accounts and requesting that ALA lean wisely toward improving its administration.

BUDGET REQUESTS. Ken Bierman submitted a budget request of $1,200 for the Information Science and Automation Section (ISAS). It was moved by Judith Hopkins, seconded by Sue Martin, and

VOTED, That the proposed budget for ISAS 1978–79 be approved.

Lynne Bradley submitted a budget request for $1,500 for the Video and Cable Communications Section (VCCS). It was moved by Mary Jane Reed, seconded, and

VOTED, That the LITA Board accept the VCCS budget for 1978–79.

The LITA division budget will be increased $150 for printing and duplicating, $2,000 for stationery and promotional literature, $1,000 for telephone, $601 for promotional buttons, and $1,000 for the hospitality suite. It was further recommended by Lynne Bradley that $600 be allotted to each section to support their activities for the 1979 Dallas Conference. It was moved by Sue Martin, seconded by Lynne Bradley, and

VOTED, That LITA allocate $600 to assist each section for activities during the ALA Annual Conference 1979.

It was then moved by Judith Hopkins, seconded by Jerome Miller, and

VOTED, That a budget of $44,444 be approved for LITA in the fiscal year 1979.

The board also considered the importance of sending appropriate representation to LITA-sponsored institutes. It was moved by Judith Hopkins, seconded by Ken Bierman, and

VOTED, That the LITA pay the expenses of the LITA President (or the President's designee who is a member of the LITA Board) to attend any or all of the LITA-sponsored institutes held during the President's term of office.

Regarding expenses for LITA representatives to other organizations: the Board will review LITA policy on this in June 1978.

JCET REPORT. Larry Molumby reported on the Joint Council on Educational Telecommunications (JCET). Only one meeting has been held since the 1977 Annual Conference. It was observed that public broadcasting is still being used as an educational medium in schools—contrary to public opinion. JCET had also debated whether, in view of the new copyright law, it should look into the matter of off-air videotape recording. It was agreed that JCET could assist in developing some guidelines on off-air recording. It is anticipated that there will be a convergence of the educational library community on one side and the producers of software on the other. Jerome Miller complimented JCET and all the other groups involved with this issue and suggested that JCET act in a close relationship with the Copyright Office since they are charged by Congress to pursue the matter in detail.

CATALOG CODE REVISION COMMITTEE REPORT. Barbara Gates stated that the review of AACR II has been completed and publication is projected for some time in the fall of 1978. Meanwhile, committees at the Library of Congress are deciding what LC is going to do about a number of options allowed in the rules. The Descriptive Cataloging Committee is working on romanization tables, and some

transliteration tables have been turned over to ANSI. The program to introduce AACR II to librarians in the country was discussed. It has been proposed that videotape programs should be implemented and that regional workshops should then be held. Workshop development would take place through much of 1978 with the workshops themselves occurring after January 1979. The LITA board expressed its wish to continue liaison with those RTSD units concerned with cataloging and related matters and it was moved by Sue Martin, seconded by Judith Hopkins, and

VOTED, That the LITA Board acknowledge and thank Barbara Gates for her representation of LITA on RTSD's Catalog Code Revision Committee.

LITA MEMBERSHIP IN AFIPS. Mike Malinconico reported for Henriette Avram on the matter of LITA membership in the American Federation of Information Processing Societies (AFIPS). He read a memorandum from Henriette Avram strongly recommending such membership. It was moved by Ken Bierman, seconded by Sue Martin, and

VOTED, That LITA join AFIPS on a trial basis and that a representative from LITA be sent to the AFIPS Board meetings with costs to be paid from LITA funds.

A resolution will be drafted by the president to the ALA Council requesting permission for LITA to join AFIPS.

EDITORIAL BOARD. Bill Mathews extended his report on the activities of the Editorial Board by noting that the board has agreed to inscribe a citation to Sue Martin for her efforts during the past five years. He suggested that the LITA board might consider some similar action. It was moved by Ken Bierman, seconded by Judith Hopkins, and

VOTED, That the LITA Board commend Susan K. Martin for her enthusiastic and tireless efforts as editor of the *Journal of Library Automation* for the past five years, rescuing the publication from a threatened demise, bringing to that publication new vitality, raising its quality, and enhancing its prestige.

TELECOMMUNICATIONS COMMITTEE. In the absence of the committee chairperson, Bill Mathews reported that, much to his dismay, the Telecommunications Committee had failed to meet as scheduled. He stated that, given the circumstances, it is very unlikely that the committee will be able to hold its previously planned program during the 1978 Annual Conference. Notwithstanding, he noted that the Telecommunications Committee is very important and should have strong leadership. Mitch Freedman stated that he would look into the matter in more detail.

ANSI Z39. Further discussion was held on the role of CNLA as a sec-

retariat for ANSI Z39. It was moved by Sue Martin, seconded by Judith Hopkins, and

VOTED, That LITA express to CNLA its interest in Z39's continuing activity in developing and supporting library-related standards.

NETWORKS. Sue Martin expressed concern that no group within ALA is specifically concerned with network activities. She asked if the board felt that an ad hoc or standing committee would be appropriate. The proposed committee would concern itself with technological aspects of networking. Sue Martin volunteered to draft a function statement for such a proposed committee and distribute it to the board.

BUDGET ITEM. A final budget item was brought up for consideration. It was moved by Lynne Bradley, seconded by Sue Martin, and

VOTED, That LITA contribute up to $200 per section to support hospitality suites during the 1978 Annual Conference.

The meeting was adjourned.—*The official minutes were recorded by Dorothy A. Butler; these highlights were edited by William D. Mathews.*

Proposed Bylaws: INFORMATION SCIENCE AND AUTOMATION SECTION (ISAS)

As part of the metamorphosis of the Information Science and Automation Division into the Library and Information Technology Association, a new section of LITA is in process of formation—the Information Science and Automation Section (ISAS). In December 1977, Mitch Freedman, president of the division, appointed Kenneth Bierman, Tucson Public Library, to be acting chairperson of ISAS to get the new section formed and functioning. A Nominating Committee, chaired by Jerry Pennington, Stockton City-County Library, was appointed, and a slate of nominees was presented to the LITA Board at the Chicago ALA Midwinter Meeting and will be voted on by the membership as part of the regular 1978 ALA election. In addition, the proposed bylaws that follow will be voted on as part of the 1978 ALA election. Please read the bylaws and indicate your approval or disapproval of them on the ballot when it arrives.

INFORMATION SCIENCE AND AUTOMATION SECTION BYLAWS

Article I. Name

The name of this body shall be the Information Science and Automation Section of the Library and Information Technology Association of the American Library Association. As used hereafter, the word "Section" shall mean all current members in good standing of the Information Science and Automation Section and the word "Division" shall mean all current members in good standing of the Library and Information Technology Association.

Article II. Object

The object of this Section shall be to provide leadership and educational opportunities for those who are concerned with the development and application of automated library and information systems. Within this field, the Section shall foster research, promote the development of appropriate standards, disseminate information, and provide a forum for the discussion of common problems.

Article III. Relationship to the Library and Information Technology Association

This body is a section of the Library and Information Technology Association. The Bylaws of that Division and the Constitution and Bylaws of the American Library Association, to the extent to which they are applicable, take precedence over these bylaws.

Article IV. Membership

Sec. 1. *Members.* Any member of the Division who shall elect membership in this Section according to the provisions of the Bylaws of the Division thereupon shall become a member of this Section.

Sec. 2. *Classification.* Membership classes of the Section shall consist of the same classes as those of the American Library Association.

Sec. 3. *Dues, rights, and privileges.* Only personal members of the Section shall have the right to vote and hold office. Dues for the

Division paid to the American Library Association shall constitute the dues of members. The date of payment of dues to the American Library Association shall be considered the date of payment of dues to this Section. The designation by a member of the American Library Association, on its membership form, of this Section as a section to which the member wishes to belong shall be considered as election of membership in this Section.

Sec. 4. *Membership, fiscal, and conference years.* The membership, fiscal, and conference years shall be the same as those of the American Library Association.

Article V. Officers, Terms of Office, and Duties

Sec. 1. *Officers.* The officers of this Section shall be a chairperson, a vice-chairperson (who shall also be the chairperson-elect), and a secretary.

Sec. 2. *Terms of office.* All officers shall serve until the adjournment of the general meeting at which their successors are announced. Procedures for filling vacancies in the offices of chairperson and vice-chairperson are specified in Article VI, Sec. 3.

(a) *Chairperson.* The chairperson shall serve for one year and shall not be eligible for the office of chairperson or chairperson-elect for a period of at least one year following service as immediate past chairperson.

(b) *Vice-chairperson.* The chairperson-elect shall serve for the first year after election as vice-chairperson, the second year as chairperson, and the third year as immediate past chairperson.

(c) *Secretary.* The secretary shall serve for two years.

Sec. 3. *Duties.* Except as otherwise provided in the bylaws, the duties of the officers shall be such as are specified in the parliamentary authority adopted by the Section, and such other duties as may be approved by the Executive Committee.

Article VI. Executive Committee

Sec. 1. *Composition.* The Executive Committee shall consist of the officers of the Section, the immediate past chairperson of the Section, and three members at large. *Ex-officio* members of the Executive Committee including the executive secretary of the Division, the representative of the Section on the editorial board of the Division's journal, and other *ex-officio* members as shall be from time to time so designated by action of the Executive Committee shall not have the right to vote.

Sec. 2. *Powers and duties.* The Executive Committee shall have authority over the affairs of the Section during the period between meetings of the Section provided, however, that none of its acts shall conflict with or modify any actions taken by the Section. The annual and any other budget requests shall be subject to the approval of the Board of Directors of the Division. The Executive Committee shall perform such other duties as are specified in these bylaws, and shall report upon its work at the regular meeting of the Section.

Sec. 3. *Vacancies.* Vacancies in the elected membership of the Executive Committee shall be filled as follows:

(a) *Chairperson.* If the office of chairperson becomes vacant, the vice-chairperson shall succeed to the office of chairperson and shall serve in that capacity until the expiration of the year for which the vice-chairperson was elected chairperson, except as provided for in Article VI, Section 3(b).

If the offices of both the chairperson and vice-chairperson became vacant within the same year, the Executive Committee shall appoint one of its members to act as chairperson until a chairperson is duly elected. At the next election two candidates shall be elected, one to take the office of chairperson and to serve for one year, the other to serve as vice-chairperson (chairperson-elect).

(b) *Vice-chairperson.* If the office of vice-chairperson becomes vacant, two candidates shall be elected at the next election, one to take the office of chairperson and to serve for one year, the other to serve as vice-chairperson (chairperson-elect). If the vacancy occurs between the close of nominations and the adjournment of the general meeting in one year, the vacancy shall be considered as having occurred in the office of chairperson in the following year, in which case two candidates shall be elected at the election in the following year, one to take the office of chairperson and to serve for one year, the other to serve as vice-chairperson (chairperson-elect).

(c) *Secretary and members at large of the Executive Committee.* If the office of secretary or a member at large becomes vacant, a secretary or a member at large, as the case may be, shall be appointed by the Executive Committee until a replacement is elected at the next election to complete the unexpired term.

(d) *General provisions.* If the successful candidate for an elective office dies or withdraws between the close of nominations and the adjournment of the general meeting, the resulting situation shall be considered as a vacancy

having occurred during the term for which this candidate was elected.

Sec. 4. *Terms of office.* Members at large shall serve for three years. They shall be elected for terms expiring in different years and shall not be eligible for consecutive terms.

Sec. 5. *Officers.* The officers of the Section shall *ex-officio* be the officers of the Executive Committee.

Sec. 6. *Meetings.* The Executive Committee shall meet in conjunction with each general meeting of the Section. Special meetings may be called by the chairperson, and shall be called upon the written request of a majority of the members of the Executive Committee.

Sec. 7. *Quorum.* A majority of voting members shall constitute a quorum of the Executive Committee.

Sec. 8. *Votes by mail.* Votes may be taken by mail as provided in the Bylaws of the Division.

Sec. 9. *Rules of order.* The Executive Committee may adopt rules for the transaction of its business, provided they shall not conflict with the bylaws of the Section.

Sec. 10. *Duties of members.* Each member of the Executive Committee shall perform the duties attached to membership in the Executive Committee. In the case of continued failure of a member at large to participate in the deliberations of the Executive Committee, the Executive Committee may, by vote of three-fourths of its members, declare the office of such member at large vacant.

Article VII. Meetings

Sec. 1. *General meeting.* The Section shall hold a general meeting of the Section at the time and place of the general meeting of the Division.

Sec. 2. *Special meetings.* Special meetings may be called by the Executive Committee and shall be called by the chairperson upon the written request of twenty-five members of the Section. At least thirty days notice shall be given and only business specified in the call shall be transacted.

Sec. 3. *Quorum.* Twenty-five members shall constitute a quorum.

Sec. 4. *Votes by mail.* Votes by mail may be authorized by the Executive Committee between meetings. Such mail votes shall be conducted under the same requirements as votes at meetings.

Mail ballots shall be conducted by the executive secretary in such manner as the Executive Committee shall determine. A copy of the ballot shall be mailed by the executive secretary to each member simultaneously. The Executive Committee shall have the authority to set the time limit during which votes will be recorded, but if no such time limit is set, no vote shall be counted unless received within thirty days from the day the text of the ballot or question voted upon was mailed properly addressed to those entitled to vote on the matter involved. A proposal is carried if it receives the same proportion of affirmative votes from among all votes cast as would be required to carry the same proposal if voted upon at a meeting. Unless otherwise specified in the proposal, if carried, it becomes effective upon publication of the result of the ballot.

In the case of a vote by mail, the Executive Committee may designate publication of the ballot or questions submitted in the official journal of the Division as the appropriate method of submitting the matter to the members for their determination.

Article VIII. Other Committees

Sec. 1. *Standing and annual committees.*

(a) *Establishment.* The Section may establish standing and annual committees to consider affairs of the Section which require continuous or repeated attention by the members. The Executive Committee shall recommend the name and size of each such committee, and may recommend special regulations for its appointment, composition, and term of office of members.

(b) *Composition.* Unless otherwise provided for by these bylaws or by action of the Section, each standing and annual committee shall be composed of an odd number of not less than three members, each of whom shall be an active member in good standing of the Section.

(c) *Terms of office.* Unless otherwise provided for by these bylaws or by action of the Executive Committee, members of standing and special committees shall be appointed for terms of two years, and may be appointed for a second term but in no case shall a person serve on a committee for more than four consecutive years. The terms of approximately one-half the members shall expire each year. Members of annual committees shall be appointed for terms of one year.

Sec. 2. *Special committees.* Committees not authorized as standing or annual committees are special committees. Special committees may be authorized by the Section or by the Executive Committee. Each special committee shall continue in existence until its purpose is accomplished or it is discharged by the Section or by the Executive Committee.

Sec. 3. *Intersectional committees.* Intersectional committees with sections within the Division

and other intra-Division committees may be established by the Section upon recommendation of the Bylaws and Organization Committee of the Division and the approval of the Executive Committee.

Intersectional committees and other committees formed with units that are outside the Division and that are within the Association may be established only as provided for in the Bylaws of the American Library Association.

Sec. 4. *Joint Committees.* The Section or the Executive Committee may recommend to the Division that joint committees, either standing or special, be established with other organizations when the functions of the proposed committee cannot appropriately be delegated to a single Division or Section committee. Joint committees with organizations outside the American Library Association shall be established only as provided for in the Bylaws of the American Library Association.

Representation of the Section in organizations outside the Association may be authorized by the Division or the Board of Directors of the Division, with the approval of the American Library Association.

Sec. 5. *Notification.* The secretary shall inform the executive secretary of the Division annually of the establishment and functions, or discontinuance of all committees of the Section.

Sec. 6. *Appointments.* Unless otherwise provided for by these bylaws or by action of the Executive Committee, each committee member and representative shall be appointed, with the approval of the Executive Committee, by the vice-chairperson (chairperson-elect) of the Section, or the chairperson of the Section, under whose term of office as chairperson the member shall commence service, and shall serve until the adjournment of the meeting at which a successor is appointed.

Vacancies on committees shall be filled by the chairperson of the Section with the approval of the Executive Committee.

Sec. 7. *Votes by mail.* Committee votes may be taken by mail, provided all members are canvassed simultaneously. In case of dissent among members, a second vote shall be taken after each member has been acquainted with the views of every other. Each committee shall have the authority to set a time limit within which the votes of its members shall be recorded, but if no such time limit is set, no vote shall be counted unless received within thirty days from the day the text of the matter to be voted upon was mailed properly addressed to those entitled to vote.

Sec. 8. *Reports.* Unless otherwise specified in these bylaws, or in the act authorizing a committee, each committee shall report on its work at the general meeting of the Section in the following manner:

Committees shall transmit their reports to the chairperson of the Section not later than thirty days before the general meeting of the Section.

Reports containing recommendations for action by the Section shall be presented at the general meeting. If a copy of a report was distributed to the membership either before or at the beginning of the meeting, and unless a majority of the members present and voting demand a reading of the report, its presentation may be limited to a summary of the findings and a reading of the recommendations.

Other reports shall be published in full or in summary or be transmitted otherwise to the membership not later than four months after the general meeting. Such reports shall be cited, and their disposition announced, at the general meeting.

Article IX. Discussion Groups

Sec. 1. *Establishment.* Any group of ten or more members of the Section interested in discussing common problems which fall within the object of the Section may form a discussion group upon written petition from the group and upon approval of the Executive Committee. The petition shall include the purpose of the group and the requirements for membership, if any.

Sec. 2. *Membership.* Membership is open to members of the Section who are interested in the purpose of the group and who fulfill the requirements for membership in the group.

Sec. 3. *Officers.* Each group shall elect a chairperson annually. In addition to regular duties, the chairperson shall see that the group's activities are limited to discussion of common problems within the purpose of the group, that the group engages in no activity in conflict with the program of the Section, and that the Section bylaws are observed by the group.

Sec. 4. *Discontinuance.* Each group shall continue in existence until its usefulness has ceased when it shall be dissolved by action of the Executive Committee.

Article X. Nominations and Elections

Sec. 1. *Nominations.* The Nominating Committee shall present candidates for the positions of vice-chairperson (chairperson-elect), secretary, and members at large of the Executive

Committee when required. Other nominations for these offices may be submitted in writing by any ten members and shall be filed with the chairperson of the section and with the executive secretary of the Division. Any such nominations shall be included on the official ballot.

No candidate shall be presented whose written consent has not been filed with the executive secretary of the Division. No candidate shall be presented who is not a personal member in good standing of the Section at the time of nomination.

Sec. 2. *Nominating Committee.*

(a) *Composition.* The Nominating Committee consists of three to five members of the Section. No member of the Executive Committee shall be appointed to the Nominating Committee.

(b) *Terms of office.* The Nominating Committee shall be appointed for a one-year term, ending with its final report to the membership, by the vice-chairperson (chairperson-elect) under whose term of office as chairperson its final report will be made, and with the approval of the Executive Committee. Members of the Nominating Committee, upon expiration of their terms, shall not be eligible for immediate reappointment.

(c) *Duties.* The duties of the Nominating Committee are those specified in the Bylaws of the Division. In addition, the Nominating Committee shall report to the executive secretary of the Division and the executive secretary shall notify each member by mail of the nominations for elective offices in the Section at such time as is prescribed by the Bylaws of the American Library Association.

Sec. 3. *Elections.* Elections shall be conducted in accordance with the Bylaws of the Division and Bylaws of the American Library Association.

Sec. 4. *Extraordinary circumstances.* If, for reasons beyond the control of the Section, no general meeting is held in any one year, terms based on the date of the general meetings shall be determined by the anniversary of the last general meeting at which an election was reported, unless a different date is authorized by the American Library Association. The election results shall be mailed to each member.

Article XI. Amendment of Bylaws

Sec. 1. *Proposals.* Amendments to the bylaws may be proposed by the Executive Committee or, in writing to the Executive Committee, by any Section committee, or by petition signed by ten members of the Section. Proposed amendments shall be presented in writing to the chairperson of the Section and the executive secretary of the Division at least ninety days prior to the date at which they are to be acted upon; they shall then be referred by the executive secretary to the Bylaws and Organization Committee of the Division, which shall report upon them to the Section membership.

Sec. 2. *Notice.* The text of any proposed amendment shall be mailed to each member of the Section at least thirty days prior to the meeting at which it is to be acted upon.

Sec. 3. *Voting.* The bylaws may be amended by a two-thirds majority vote of those members participating in the vote to amend. The vote shall be taken either at the general meeting of the Section, or by mail, and, if by mail, preferably as a part of the mail vote for election of officers.

Sec. 4. *Adoption.* A proposed amendment or new bylaw becomes effective when it has been approved.

Article XII. Notice by Mail

Publication of notices in the journal of the Division or the Association shall be considered sufficient to fulfill the requirement of notice by mail.

Article XIII. Parliamentary Authority

The rules in the latest edition of *Robert's Rules of Order (Newly Revised)* shall govern the Section in all cases to which they are applicable provided they are not inconsistent with the bylaws of the Section, the Bylaws of the Division, or with the Constitution and Bylaws of the American Library Association.

Technical Communications

Elimination of Redundancy In Keyboarding Bibliographic Data for Computer-Based Information Systems

At the University of North Carolina at Greensboro, the Library Science/Educational Technology Division of the School of Education has been studying the application of library automation and information science techniques to school media center materials.

In a number of instances and for a number of different media, we have been forced to do our own input keyboarding. Input keyboarding is one of the most expensive aspects of any computer-based information system. This paper reports on one aspect of the input design concepts which we have developed, that of lowering input costs by reducing redundancy in the keyboarding of bibliographic data.

In order to provide a basis for comparison, this paper compares our input design with the keying requirements for the same basic information as keyed in conventional library unit card format for a card catalog. We have followed the more usual forms used before ISBD. We recognize that, in many instances, it would be desirable to be able to derive a MARC format from input and to include ISBD data elements, punctuation, and spacing. Often, however, this is not economical, useful, or practicable. In these cases our principles of input design may be of value to others.

Our basic input configuration is intended primarily for format recognition: all fields are variable, and there is minimal explicit tagging. Data elements are recognized and identified mainly by their spacing, position, and significant internal characteristics.

Some minor editing is done by the keyboard operator to permit computer filing by use of a very simple sortkey generator—omission of initial articles from titles, for example—to conform to a filing code developed earlier.

Basically, the input format is the same as that used for catalog entries for many years: author, title, imprint, and collation, in that order. Annotations, notes, contents notes, and tracings follow. The differences arise in the way in which some data elements are recorded, permitting others to be omitted. Space does not permit the discussion of all of these and of the many possible variations, but we can indicate some of the most important ones.

Author field. In cases of multiple authorship in conventional cataloging, the primary author is given as main entry, and added entries are usually made for the others. All of the names are repeated in the title field. In our format, all authors are entered in the author field, with the names in inverted form and separated by semicolons. Both added entries and an author statement for the title field are generated by program. Example: ALDRIDGE, JOSEPHINE HASKELL; ALDRIDGE, RICHARD.

Title field. The title is so punctuated as to permit format recognition of the title proper, sub- or alternate title, and the remainder of the title statement. If there is an illustrator or editorial attribution, it forms a separate data element, with name or names inverted. The format recognition program puts the names in normal order for the output title statement, and creates added entries for the names.

Collation. The collation statement is relatively conventional, although we may add here such additional information as reading level and price. Series (if any) appears as the last data element of the collation, permitting series added entries to be made by the program.

Contents notes. Contents notes are tagged "CN:" or "CON:" on input. "CON:" distinguishes those notes that give title or author and title for composite works. This permits the recognition program to form analytic author/title and title/author tracings. Names are keyed in inverted form

and can be regularized by program for the output contents note. Both tags may be expanded to "CONTENTS.—" on output, just as our abbreviation "AN:" can be expanded to "ANNOTATION.—" by program.

Tracings. Tracings that will not be program generated are keyed. Since the vast majority of these will be subject added entries, the usual number tags need not be keyed before topical subjects but only before such few other added entries as may be keyed. Actually, our recognition program does not number any added entries but rather tags each with a letter designation to indicate type: added author, other association, series, analytic. Topical subject headings are not tagged by program. No added entry is made for title, since the program has tagged the title proper separately from the rest of the title statement.

The following is an example of input:

ALDRIDGE, JOSEPHINE HASKELL; ALDRIDGE, RICHARD
REASONS AND RAISINS. IL BY LARRECQ, JOHN PARNASSUS PRESS; 1972. N. P. COL IL LC: 72-156875 PH-3 N-P-4 $3.87
AN: LITTLE FOX STEALS HIS MOTHER'S RAISINS AND GOES OFF FOR ADVENTURE WITH A CROW, A CIRCUS FAT LADY, A MAGICIAN AND A MASKED WEASEL. ALONG THE WAY HE LEARNS A LESSON ABOUT THE DIFFERENCE BETWEEN THE WAY THINGS ARE AND THE WAY THEY SEEM TO BE.
OBEDIENCE — FICTION
FOXES — STORIES
IMAGINATION — FICTION

The following example shows tagging by program:

AUTHOR: ALDRIDGE, JOSEPHINE HASKELL
AUTHOR STAEMENT: BY JOSEPHINE HASKELL ALDRIDGE AND RICHARD ALDRIDGE.
TITLE: REASONS AND RAISINS
TITLE STATEMENT: IL BY LARRECQ, JOHN
IMPRINT: PARNASSUS PRESS; 1972.
COLLATION: N. P. COL IL LC: 72-156875 PH-3 N-P-4 $3.87
LC NUMBER: 72-156875
ANNOTATION: LITTLE FOX STEALS HIS MOTHER'S RAISINS AND GOES OFF FOR ADVENTURE WITH A CROW, A CIRCUS FAT LADY, A MAGICIAN AND A MASKED WEASEL. ALONG THE WAY HE LEARNS A LESSON ABOUT THE DIFFERENCE BETWEEN THE WAY THINGS ARE AND THE WAY THEY SEEM TO BE
A: LARRECQ, JOHN
A: ALDRIDGE, RICHARD
OBEDIENCE — FICTION
FOXES — STORIES
IMAGINATION — FICTION

In working out these techniques, we have been astonished by the amount of redundancy in the usual catalog card unit card format that can be eliminated in a computer-based system without information loss. Even if we drop from consideration the author/title and title/author analytics as not usually made (though they are an important information gain), these include elimination of:

1. Repetition of author names, often given in three places on the card: author statement, title statement, and tracings.
2. Repetition of other name added entries in the title statement and tracings.
3. Title tracing for the vast majority of titles. (Parenthetically, it might be wondered why conventional cataloging did not use the tracing "No title" for titles *not* to be traced as being far more economical than the reverse procedure.)
4. Series tracing for a significant proportion of series.
5. Numbering of tracings. This numbering is not a redundancy *per se*. However, the computer-based system permits elimination of numbers in keyboarding, though type tagging may be necessary for occasional added entries.

Obviously, series entries for publishers' series are often not desired. This may be dealt with either by not giving them in the collation, tagging them in the collation to

indicate that they should be suppressed, or listing series entries not to be computer-generated on a stoplist.

Similar procedures can be applied to nonsignificant title roots such as "Textbook of," "History of," and so on. Actually, titles become really "nondistinctive" in increasing numbers as the size of the data base increases, so that the flexibility of listing roots for suppression is an information advantage.

We have been pleasantly surprised to find that no pre-editing of normal catalog copy is required for our input keyboarding: the editing can be done quite successfully as the keying is done.

The example of input shows an entry keyed in the input format printed out line-for-line. As it stands, it is not very different in general appearance from a more conventional typed bibliographic citation and would not be too difficult to proofread in this form. The major noticeable differences are the inclusion of multiple names in the author statement, the inversion of names in the title statement, and the omission of numbers on tracings. An occasional odd spacing at the beginning of a line is not a necessary consequence of the format but reflects some extra convenience in line layout for the keyboarder.

Actually, proofreading is done from an output format like that shown in the second example, which also illustrates the program's capability for tagging types of data. This capability provides for great flexibility in possible forms of output, ranging from simple main entry lists to lists with indexes or to dictionary catalogs. Class numbers do not appear in the examples only because the data set from which they are drawn is composed entirely of picture books and easy material in all media for young children. The input format itself has provisions for a much broader range of data elements than appears in the example, including place of publication, subject analytics, abstracts, index entries, journal citations, and the like.

We also keyed a small sample of entries in regular unit card format in order to compare the number of keystrokes required using conventional methods with the number of keystrokes required using our input format.

The figures are only indicative, not statistically reliable, since the sample consisted of only ten entries that were chosen to illustrate diversity of content rather than to be a representative sample. Nonetheless, the figures are interesting. Including annotations, the unit card format required 5,569 keystrokes as compared to 4,395 keystrokes for format recognition input, a difference of 1,174 keystrokes, or a reduction of about 20 percent. This difference is even more striking, amounting to 30 percent, if we consider only citations proper and eliminate the keystrokes required for the annotations in both examples. The respective totals in this case are 3,631 and 2,457.

These examples of format recognition input do not, of course, represent any ultimate in efficiency. They do show, however, that good input design can be made easy to key and proofread while at the same time reducing the keying of redundant information without any information loss in output. The concepts and techniques outlined are applicable very broadly to computer-based systems.—*Theodore C. Hines, Jane Martin, Jerry Warren, University of North Carolina at Greensboro.*

News and Announcements

NBS Study Recommends Copyright Changes to Protect Computer-Readable Works

Clarification of the copyright law to assure protection for computer-readable works is recommended in a special publication of the Commerce Department's National Bureau of Standards (NBS). Based on research initiated in October 1974 under sponsorship of the National Science Foundation's Division of Science Information, the NBS publication closely examines policy questions now before the National Commission on New Technological Uses of Copyrighted Works (CONTU).

"Without copyright for computer-readable works, increased secrecy, cutthroat competition, and lowered opportunity for recognition of creative talents will result," says Roy Saltman, manager of the NBS copyright study project. "We are recommending changes to help resolve current uncertainties about ownership rights in computer-readable works." The NBS findings and recommendations have been presented to CONTU, established to advise Congress on the use of copyrighted materials in conjunction with computers.

Programs written in a source language and computer-readable data bases deserve copyright protection, according to the study. Another conclusion is that programs written in machine code should not be copyrighted as original works but should be protected under the copyright for the source language program. As Saltman states the principle: "The transformation of a copyrighted computer program into object code from source language should be considered to be the making of a copy."

Other recommendations include:

- Disclosure of computer programs upon copyright registration should be accompanied by documentation for the computer language.
- Copyright protection for computer-readable data bases should require complete disclosure of the contents of the data base when the data base is registered. This disclosure should include provisions for updating the data base.
- Transaction costs associated with copyright protection can be reduced by means of outright sale of computer-readable works, that is, through the transfer of ownership of copies as distinguished from lease or rental with permission.

Recognizing that extending copyright to new technological works often raises unanticipated problems, NBS recommends further study in several areas. These include potential for monopoly in the delivery of computer-readable data base access services and pitfalls in discovering infringements in the copying and unauthorized sale and use of computer-readable works.

The NBS findings, recommendations, and conclusions on copyright have been published as NBS Special Publication 500–17, *Copyright in Computer-Readable Works: Policy Impacts of Technological Change* by Roy G. Saltman. The book is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, at $4 a copy. Order by stock number 003-003-01843-1.

BALLOTS Center Produces Second in Videotape Series

"A Librarian's View of BALLOTS," a twenty-eight–minute color videotape, introduces the BALLOTS system by examining the BALLOTS Center services in three libraries: the University of California at Berkeley, San Francisco Public Library, and the Stanford University Green Library. A general introduction to the BALLOTS system, together with a brief history of the BALLOTS Center, is presented on this tape. This videotape presentation will prove of value to all segments of the library and information community.

"Searching the BALLOTS Files," the

first of the BALLOTS videotape series, introduces the indexing to each of the four BALLOTS on-line files, the manner of formulating search requests, the types of display formats that can be used to present records found in the files, and the way to specify the order in which files are searched.

BALLOTS videotapes can be purchased or rented from the BALLOTS Center. They are available in ¾-inch video cassette or ½-inch reel-to-reel format; the format desired should be specified in ordering. Purchase price is $120 (with tax, $127.80 to California residents). Rental cost is $25 per month minimum charge ($26.63 to California residents). The video presentations are copyrighted by the Board of Trustees, Leland Stanford Junior University, and may not be copied without express written permission of the BALLOTS Center.

For ordering information contact: Jaclyn Caselli, Library Services, BALLOTS Center, Encina Commons, Stanford University, Stanford, CA 94305.

LC-GPO Project Now Operational

The Library of Congress and the Government Printing Office Library have progressed from the planning to the operating phase of their project to work cooperatively in the development of name authorities. On October 3, a unit, which is located at the Library of Congress and attached to the English Language Section 2 of the Descriptive Cataloging Division, began to receive from GPO data for new name authorities being generated for use in the *Monthly Catalog of U.S. Government Publications*.

Catalogers at the GPO Library complete a worksheet for each heading submitted under the project. Information provided for each heading includes the *AACR* form of the name, citation of the way in which the name appeared in the publication, cross-references if necessary, coding for each name to facilitate its conversion to machine-readable form, and a record of any additional research which was done in the formulation of the heading. The worksheets which GPO submits are compared with Library of Congress authority information, verified as to form of heading and cross-references, and then entered into the Library's automated name authority file. The headings which are created by this process will serve as the beginning of a joint LC-GPO data base and are expected to be available to the library community as part of the Library's Name Authority Distribution Service when it becomes operational. Initially, the scope of the project has been limited to corporate body names.

Those currently working on the project are Suzanne Liggett and Frederick McDermott, Descriptive Cataloging Division. Kathy Rolke of GPO assisted them on detail during October 3–14, and Marion Miao is acting as liaison at the GPO Library.

Earlier accounts of this project appeared in the LC *Information Bulletin* for February 18 (p.118–19) and June 10 (p.377–78). —*LC Information Bulletin* 12/2/77.

CLR to Prepare Technical Plan for National Periodicals Center

At the request of the Library of Congress, the Council on Library Resources, Inc. (CLR) has undertaken the preparation of a detailed implementation plan for a national periodicals center. The plan will contain the technical requirements necessary to operate such a center, including location and design of a facility, equipment, personnel, services, collection, management, data processing support systems, schedules, prices, and costs. The study will require approximately eight months to complete.

Creation of a national periodicals center was the central recommendation of a report commissioned and last year endorsed by the National Commission on Libraries and Information Science. The report proposes that the Library of Congress be the responsible agent in the implementation of the center, which would contain a comprehensive collection of periodicals to supplement local resources.

LC will form an advisory group to consider the implications of the technical plan and other matters related to a national periodicals center. If LC and the committee confirm the recommendation that an LC-

administered center is the most appropriate route to effective sharing of periodicals, and if the necessary funds are available, LC will undertake to establish and operate the proposed lending facility. It is anticipated that the technical plan resulting from the study will be usable by another agency should LC find it infeasible to assume management responsibility.

C. Lee Jones, director of the Health Sciences Library at Columbia University, will be the project director for the study, which will be carried out by CLR staff members and consultants. Jones brings to this endeavor a variety of experiences in industrial engineering, library building construction, and serials systems design. Warren J. Haas, CLR vice-president, will oversee the planning group's activities. In addition to CLR, several other foundations are supporting the financial cost of preparing the plan.

LC to Freeze Card Catalog

The Library of Congress has decided to stop filing new entries in its massive card catalogs on January 1, 1980, and to rely primarily on automated data to provide access to the collections. From that date forward the Library will possess two catalogs—the "frozen" manual one and a new multipart one that will include all records in the MARC data base and all records cataloged after January 1, 1980, whether available on-line or temporarily in card format.

At that time LC will abandon its policy of superimposition, will adopt the second edition of the *Anglo-American Cataloging Rules (AACR 2)* and the 19th edition of Dewey, and may make changes in the subject heading system.

Beginning in 1980, it is expected that LC will rely primarily on the automated system for its current cataloging with two possible exceptions:

Nonroman alphabet materials. Since it is unlikely that the automated system will be able to handle nonroman entries by 1980, separate card catalogs for this material will be maintained. When this data is eventually made part of the automated system, these card catalogs will be discarded.

Roman alphabet materials. If the total automated system should not be fully operational in terms of reliability, response time, number of terminals, etc., by January 1980, a parallel card catalog will be maintained until the automated system progresses to the point that a manual catalog is no longer needed and can be discarded.

The Library's freezing of its catalog was the topic of a session at ALA Midwinter 1978 sponsored by the Reference and Adult Services Division's Catalog Use Committee.

Open meetings will also be held at the Library of Congress during the course of the year and staff members will be invited to attend and submit their comments either orally or in writing.

With any new direction there are a certain number of problem areas which must be addressed before implementation. What follows are those points which the Library of Congress has identified as needing consideration.

I. Automated System Capabilities

For the automated system to be considered complete for purposes of relying on it completely rather than on a manual catalog, five criteria must be met:

A. *Reliability.* The system must be available close to 100 percent of the time to ensure that the Library can carry out its mission with a minimum of interruption. A decision as to the amount of system down time which can be tolerated has yet to be made.

B. *Response Time.* A decision as to the maximum response time which can be tolerated has yet to be made.

C. *Indexes.* The system should enable the user to browse through records in ways similar to browsing in a card catalog, in addition to providing other types of search capabilities.

D. *Bibliographic and Authority Records Linkage.* The user must, at a minimum, have access to cross-reference data to search effectively. In addition, the system must eventually have the capacity to make multiple updates with a single transaction, and the capabilities for producing the Library's various bibliographic and technical publications.

E. *Terminals.* Sufficient terminals must be available for the needs of users, whether readers or staff members.

II. Automated System for Nonroman Scripts

Problems of both hardware (terminals, printers, etc.) and software (program modifications to allow storage and manipulation of multiple scripts) are involved. The Library will give priority to developing the five criteria for the general system noted above while analyzing the features of the various nonroman scripts and the complications of linguistic interaction. This will require research and development to provide support for the keying, retrieval, and terminal and hardcopy display of these scripts.

Before a system for handling multiple scripts is available, there are several options which can be followed.

A. Handle all roman alphabet material through the automated system but continue to handle all nonroman scripts through the manual system. This option could be accomplished with present staff, but there would be no access through the automated system.

B. Input an abbreviated romanized record to the automated system so that at least an index to the records would be available; full records in the vernacular would continue to be produced for a manual catalog. This option would require additional staff for the input of the abbreviated record and the expansion of this record when the multiple script system is developed.

C. Input nonroman script material in full in romanized form and continue to produce records in the vernacular through the manual system. This option would require additional staff to romanize the records in full and to input them and later update them when the multiple script system is developed.

D. Input all nonroman script in full in romanized form and discontinue the production of vernacular cards. This option would require additional staff to romanize and input full records. In addition, a close investigation of the effect upon the user would need to be undertaken.

Each of these options has its advantages and disadvantages; the Library has yet to come to any conclusions.

III. Cataloging Rules

With the introduction of *AACR 2*, all new records, whether candidates for the automated system or the manual system, will be cataloged in accordance with the revised rules. The Library's MARC data bases will contain around one million bibliographic records in 1980. Unless all authority records for headings represented in those bibliographic files are also in machine-readable form, superimposition cannot be abandoned by program. Instead, each heading would have to be revised as it is needed for a new record. Even if the authority data are in machine-readable form and programs can convert many headings, a number of them would have to be converted manually because of changes in the cataloging rules from *AACR 1* to *AACR 2* (e.g., fullness of name).

IV. Subject Heading System

LC will review its current system, primarily on the basis of terminology. It will also investigate PRECIS to determine its potential for national use.

V. Shelflist System

The impact on the shelflist of freezing the card catalogs will be studied. Various methods of computer-assisted shelflisting will also be studied. Any proposals will be published when they are fully articulated.

VI. Serials

The problems of serials and the freezing of the catalogs have yet to be fully addressed at the Library.

VII. Other Problems

There are many other problems, major and minor, which the Library continues to identify but which have not yet been fully discussed. Some are primarily internal (e.g., handling records in process as of January 1, 1980, and disposition of the frozen catalogs), while others have an effect on the library community (e.g., records in the *National Union Catalog*).

The Library of Congress is well aware

that many of its decisions with respect to the catalog will have a vast impact on other libraries. For this reason, it is extremely interested in receiving comments and suggestions from as wide a spectrum as possible. Reactions may be expressed in writing to Joseph H. Howard, director, Processing Department, Library of Congress, Washington, DC 20540.—*LC Information Bulletin* 11/4/77.

New Amdahl Computer Increases ORBIT Service Power

SDC announces the acquisition of an Amdahl 370/V5 computer. This powerful new computer will handle a steadily increasing ORBIT traffic and maintain timely data base updating, without degrading user response time.

The new Amdahl 370/V5 operates several times faster than the fastest model of the IBM 370/158. The October 17 issue of *Computerworld* reported the machine cycle time of the Amdahl as 32.5 nanoseconds, as compared with 115 nanoseconds for the 370/158. Overall, the Amdahl 370/V5 is rated as more than twice the power of the 370/158–3.

The Amdahl computer has many new features designed to provide very high service reliability. This was a major consideration in the selection of this computer to support SDC's international on-line retrieval services. The transition to the Amdahl computer was completed in one weekend, without any break in ORBIT service to users. The system is still being "tuned," to provide the best possible balance of computer support to SDC's on-line and batch-type processing (such as updates and data base loading).

SDC Increases Its Data Base Coverage

Close to 30,000 records pertaining to library and information science have been loaded on the SDC Search Service LISA data base that covers the literature from 1969 to the present. Indexed and abstracted by The Library Association (London), LISA is an authoritative source to the library and information science literature, including international and comparative librarianship, bibliographical control, buildings and equipment, library automation, and more. The rates for LISA are $50/computer-connect hour and $0.10/citation for off-line printing.

PESTDOC and RINDOC, two of the Derwent Publications, Ltd., data bases available on the ORBIT system, are now loaded and fully operational. PESTDOC covers the literature related to pesticides, and RINDOC covers the pharmaceutical literature. Access is available to authorized Derwent subscribers. More detailed information is available directly from Derwent in London, England.

Canadian Newspaper Index (CNI), an index to the people and events making the news in Canada, is now available through SDC Search Service. Citations are drawn from five major dailies: *Toronto Globe, Toronto Star, Vancouver Sun, Montreal Star,* and *Winnipeg Free Press.* All facets of the papers' coverage are included, such as national news, provincial affairs, local news, world news, labor news, reviews, etc. The file coverage begins with January 1977 and is to be updated monthly. The rates for the CNI data base are $75/computer-connect hour and $0.10/citation for off-line printing.

PAIS On-Line

The data bases of Public Affairs Information Service (PAIS) are available for on-line searching through the Lockheed DIALOG system. The data bases are the *PAIS Bulletin* and the *PAIS Foreign Language Index,* derived from the corresponding printed publications.

The subject coverage of PAIS is interdisciplinary, covering the broadest spectrum of social science information, from economics, business, finance, banking, government, public administration, and political science to international relations, legislation, court decisions, sociology, demography, and statistics. PAIS lists anything that will assist in making or evaluating public policy. The best and most useful material from periodical articles, monographs, pamphlets, federal, state, and local government publications, publications of public and private agencies, yearbooks, directories, and festschriften is carefully selected.

PAIS indexes more than 1,200 journals and more than 8,000 monographs a year and lists more than 24,000 entries a year. The *PAIS Bulletin* lists English-language materials published anywhere in the world. The *PAIS Foreign Language Index* lists materials written in French, German, Italian, Portuguese, and Spanish. The editors provide additional information to expand and clarify titles that are not specific. PAIS uses a controlled vocabulary, and all subject headings are validated through an automated authority control system. PAIS has always been a very up-to-date publication. The *Bulletin* data base will be updated on a monthly basis, the *Foreign Language Index* on a quarterly basis.

For close to sixty years, PAIS has been located in the Research Libraries of the New York Public Library and has access to all the library's acquisitions. The materials listed in the PAIS data bases are generally retained by the New York Public Library, so that photocopies can be obtained from NYPL's Photographic Service, if no longer available from the original sources.

For further information, contact Wilhelm Bartenbach, executive director, Public Affairs Information Service, 11 W. 40th St., New York, NY 10018; (212) PE6–6629.

New Electronic Information System in First Large-Scale Use in London

Guests at the Inter-Continental Portman Hotel in London are among the best informed people in the world thanks to the installation of Teletext TV receivers in the hotel.

Teletext is a system that allows one to see on a TV screen, in color, any one of 500 "information pages" including stock market quotations, foreign exchange rates, corporate, domestic, or foreign news items, weather forecasts, road travel conditions, theater listings, or horse racing results. The viewer selects the desired page with a walkie-talkie-size push button selector after seeing an index.

The Portman is the first hotel to offer this new communications system in its rooms, and the installation is the first large-scale application of Teletext. The Portman put the Teletext sets in as a special feature for business travelers who want instant information on a broad range of subjects, says the general manager Michel Favre.

Not only does Teletext allow choice of information pages, but the information can be superimposed over a regular TV picture. Pages can be locked in for closer study or repeated if necessary. For the news headlines and for several other pages, information updates come on to the screen automatically.

The information displayed on the screens of the Teletext sets in the Portman is compiled, edited, and prepared for broadcast by special editors at the two BBC networks and the independent network ITV. It is fed into regular TV broadcast signals as code carried in the "vertical interval," the space between the bottom of one picture and the top of the next. A computer in the Teletext set translates the code into displays of letters, numbers, and symbols filling the entire screen.

Teletext was developed by BBC and the Independent Broadcasting Authority with encouragement from the British Home Office. The two networks both use Teletext transmission between their regional offices for what amounts to interoffice memos. BBC calls its system CEEFAX. ITV calls it ORACLE, an acronym for Optimal Reception of Announcements by Coded Line Electronics.

Teletext differs markedly from the closed circuit TV news and information programs available in the U.S., because the viewer can select exactly what information he or she wants to see and can see it at the same time as a regular program.

In the U.S. at present, the vertical interval is used only for the transmission of coded information for automatic TV set tuning. The Public Broadcasting System is studying the possibility of using the vertical interval as a carrier of code that, when decoded, would produce captions superimposed on programming material to assist the deaf.

Computer Catalog Center Greeted With Enthusiasm

Patrons in the Library of Congress have

witnessed a strange new sight for the past three months. At the rear of the card catalogs, off the Main Reading Room, readers gaze into a glowing screen as they hunch over a typewriter keyboard. They type a few letters, wait a moment, and then take notes from the screen. Above, on the wall, are written the words "Computer Catalog Center."

Over the last two years, the Library has experimented in making computer terminals available to the public in the Science and Technology Reading Room, the Thomas Jefferson Reading Room, and the Main Reading Room. The decision to establish a separate Computer Catalog Center was a direct outgrowth of these earlier experiments. Although no formal evaluation of the new center has taken place, discussion with users and staff at the Library of Congress indicates overwhelming satisfaction with the installation.

The center consists of six cathode ray tube terminals and two printers that reproduce material from the screen on paper at high speed. The terminals access six computer files using the SCORPIO (for Subject-Content Oriented Retriever for Processing Information On-line) system; a Bibliographic Information File (bibl) containing references to periodicals, pamphlets, government publications, and a wide range of other sources compiled by the Congressional Research Service's Library Services Division; the National Referral Center Resources File (ncrm), containing data on organizations qualified and willing to provide information on a large number of topics; the Library of Congress Computer Catalog (lccc), which, in general, contains over 700,000 references extracted from the MARC data base for books in English and a few other languages cataloged since 1968; and three Legislative Information Files for the 93d, 94th, and 95th Congresses (cg93, cg94, cg95).

With access to such a broad range of information at their fingertips, researchers have been elated when they realize the speed and ease with which they can search files on-line, saving hours of tedious work. The fact that some 300,000 transactions (defined as one command and response) have taken place in the center since it opened in May testifies to the enthusiasm with which it has been accepted. Part of the reason for such heavy use must be attributed, however, to the fact that Library of Congress staff have been detailed specifically to aid readers in the center.

One such staff member is Mary Ellen Ward. "The printers are being used practically nonstop," she said. "People come in to look up something like 'Fly-Fishing,' become intrigued with the system, and end up looking through additional topics as well."

Since the center opened, about 75 percent of the searches used the lccc file. Ten percent used the bibl file, 9 percent the cg95 file, and 5 percent the nrcm file. One percent of the searches used the cg94 and cg93 file.

Additional figures compiled by the Information Systems Office indicate that the average search time has been ten minutes, with thirteen to fifteen commands used per search. Each terminal has been used about twenty-two times during the day.

The experience gained in opening the center is expected to give insights into some of the problems the Library and readers will face when the card catalog is closed in 1980. After this date, cataloging data for new titles will be placed only in the computerized catalog, not in the card catalog at all. For a thorough indication of what is in the Library of Congress, it will be necessary to consult both files.

The Computer Catalog Center, like the Main Reading Room, is open to all readers over high school age. Reference staff will help readers use the terminals during regular Library hours, and special staff members are available during peak periods, although they recommend early morning and late afternoon as the best times to receive instruction.—*LC Information Bulletin* 9/23/77.

A Report on Activities of the Network Technical Architecture Group July 28–29, 1977, Meeting Minutes

The Network Technical Architecture Group (NTAG), set up by the Network Advisory Group (see the LC *Information Bulletin* of April 29, p.289) held its fifth

meeting in Washington, D.C., on July 28–29.

The first item on the agenda was a presention on the message text study funded by the Committee for the Coordination of National Bibliographic Control (CCNBC) and monitored by NTAG. Paul Lagueux, representing CCNBC, introduced Philip Long, who has been selected to carry out the study. Philip Long discussed with the group his understanding of the purpose, extent, and expected outcome of the study, which will consist of a survey of the existing message formats for query, reply, error, and control message texts used in the major library processing centers. Based on his investigation, Mr. Long is to recommend normalized message formats. These standardized formats are necessary for efficient network communications.

Three members from the NCLIS/NBS Task Force on Computer Network Protocols attended the meeting to discuss with NTAG the concern of the task force that the protocol that they have designed be implemented as soon as possible. The task force, sponsored by NCLIS, has been working since December 1976 on a standard communications protocol at the applications level for the use of library networks, i.e., a protocol that describes types of transactions, message sources, message destinations, etc. They suggested that NTAG proceed directly to its earlier defined project 1.2: the implementation of links to LC using standard protocols. Because the protocol is not yet at the implementation level, but requires a lengthy testing period, a majority of NTAG members voted to retain project 1.1, implementation of links to the Library of Congress using current protocols, as an initial project. Several members felt that their utilities have a great deal to investigate about the use of the linkages and want to begin to gather information as soon as possible.

NTAG, however, agreed with the task force representatives that it was important to begin testing the protocol as soon as possible after the protocol document is finished in October, and that such testing should include consultation with the members of the original NCLIS/NBS task force, so that their knowledge and background on the protocol could assist in its refinement. NTAG decided to look into the possibility of obtaining funds for a protocol test bed.

On Thursday afternoon David Hartmann and Bill Mathews, who are also members of the NCLIS/NBS task force, gave a detailed description of and answered questions about the protocol.

The group reviewed a draft of their joint funding proposal on Friday. The proposal asks for funds for the linking of four utilities to the Library of Congress using current protocols and for funds for the continuation of NTAG meetings, to enable the group to plan the next steps toward the goal of bidirectional linking of all utilities. A motion was passed asking the Library to be the agent responsible for grant funds, subcontracting with the other institutions as required.

The meeting was attended by James Aagaard, Northwestern University; Henriette Avram, chairman, Library of Congress; Pamela Bacher, Library of Congress; A. H. Epstein, BALLOTS Center; Howard Harris, University of Chicago; David Hartmann, Library of Congress; Howard Kierzewski, Library of Congress; John Knapp, Research Libraries Group; Bill Mathews, New England Library Information Network; Sally McCallum, Library of Congress; Tom Murphy, University of Chicago; Gordon Rawlins, Pennsylvania State University; Mary Jane Reed, Washington Library Network; Martin Sellers, Ohio College Library Center; Ruth Tighe, National Commission on Libraries and Information Science; and Andrew Uszak, Information Industries Association.

NTAG adjourned until the next meeting on August 25–26 in Washington, D.C.—*LC Information Bulletin* 10/7/1977.

New Administration for BALLOTS Center

Stanford University announces the appointment of Associate Provost Edward E. Shaw as interim director of the BALLOTS Center. Shaw replaces Hank Epstein, who is forming Information Transform Industries, a consulting company in the area of library automation and computer systems.

The appointment of Shaw, a senior university officer, to the interim directorship reflects Stanford's basic commitment for the development of BALLOTS. Hereafter, BALLOTS will report directly to the provost's office rather than the Stanford Center for Information Processing (SCIP). This transfer reflects the importance BALLOTS has to the university and the university's commitment to guide the BALLOTS Center to independent, nonprofit status.

The university's goals are two-fold. First, the university desires that BALLOTS evolve into a national library automation network focusing upon the unique needs of academic and research libraries and their universities more generally. Second, because Stanford has close ties with libraries in the western United States, BALLOTS should be made available to all types of libraries in California and adjacent states.

Additionally, Stanford announces the appointment of John Schroeder as associate director for technical services for BALLOTS. Schroeder has been manager of interactive and data base systems of SCIP and brings a strong technical and managerial complement to BALLOTS.

BRS Announces Purchase of New Computer and Move to New Headquarters

Bibliographic Retrieval Services, Inc. (BRS), the New York-based on-line information retrieval firm that began operation in January 1977, announces the recent purchase of a new computer to handle all system operations.

The new configuration—an IBM 370/155 computer with two million bytes of AMS high-speed memory—has the processing power equivalent to the larger IBM 370/158 and will provide BRS and its users with all the capacity that is necessary to assure continuing improvements and refinements in the search system without additional cost.

In conjunction with the purchase of the new computer, all BRS operations and personnel moved to new headquarters in Scotia, New York (just outside the Albany-Schenectady area). The consolidation of the technical facility and staff at a single location will result in improved service for BRS users in all areas. Installation of the new machine was completed during the week of November 1–6, and the search system was transferred over the weekend of November 10–12. Full operation began under the new computer on November 14.

The address and telephone number of the new BRS corporate headquarters are: Bibliographic Retrieval Services, Inc., Corporation Park, Building 702, Scotia, NY 12302; (518) 374–5011.

Automated Circulation Systems LITA Institute to be Repeated

"Automated Circulation Systems or Can Your Library Find Happiness Without a Lightpen?" is the title of a repeat institute to be held on May 3–4, 1978, at the Philadelphia Sheraton Hotel. The institute will be cosponsored by the Library and Information Technology Association (formerly the Information Science and Automation Division) and the Library Administration Division Circulation Services Section of ALA.

This second presentation is an answer to the many requests for a repeat institute and will present the same program as the December 1977 one in Dallas except for the addition of one speaker and a second reactor. The exhibits and demonstrations by all the vendors of operational commercial automated circulation systems will also be included. The institute will provide an excellent opportunity for "comparison shopping" among all the commercial systems.

For registration details and other information, contact the Library and Information Technology Association, American Library Association, 50 E. Huron St., Chicago, IL 60611. Telephone: (312) 944–6780.

Book Reviews

SIBIL: Système Intégré pour les Bibliothèques Universitaires de Lausanne: 5 Années D'Automatisation à la Bibliothèque Cantonale et Universitaire de Lausanne. Lausanne: Le Bibliothèque, 1976. 197p. ISBN: 2-88888-000-8. Free from the publisher, Place de la Riponne 6, CH-1005 Lausanne, Switzerland.

SIBIL describes an integrated system that has been under development for Lausanne University Libraries. The situation faced by Lausanne was challenging, and their response to it is bold and mildly startling.

The joint Canton and University Libraries decided to remove the university library physically to Dorigny, to merge several separate departmental libraries into it, and at the same time to increase its small open access collection of 10,000 volumes to 250,000. The situation was complicated by Lausanne's character as a scholarly library strong in the humanities, with a definite policy of conservative and detailed cataloging. The new system had to allow for growth in the collection, for decentralized access to the catalog, and for a centralized circulation system that would coordinate the many centers handling the greatly increased movement of books caused by the adoption of open access.

The proposed answer was an integrated system that would regularly interrogate a simple working file for acqusition purposes and would control all steps from request to cataloging; that would develop a richly detailed and stable catalog file; and that would include an on-line circulation file to offer instant control of all movement of material. The system would also be compatible with INTERMARC and ultimately with other data bases for direct access.

The ambitious project used INTERMARC files for bibliographical information in the MONOCLE format (developed at Grenoble from the MARC format) and supplemented it with a battery of administrative files for the SIBIL system itself: suppliers, accessible by name or code number; readers, in order to inform them of the arrival of requested material; and publishers (a file still to be developed at the time of the publication of the report). The use of these files introduces considerable flexibility and economy into the acquisition process. Catalog entries are taken directly from INTERMARC whenever possible; the system produces cards, lists, and catalogs by author, title, and subject heading for both closed and open access collections and, in the latter case, UDC class number as well. Plans are in hand for an interim microfiche catalog and later for an on-line catalog.

The circulation system offers instant on-line control. The assistant at the circulation desk performs real time inquiries and updating of the reader and transaction files by reading bar codes on both the reader's card and the book and by special interrogation of the files for reader, transaction, or book call numbers. The system is sophisticated enough to accept several returns and issues and reserves simultaneously on behalf of a single borrower, and the computer will automatically perform a series of checks on the logical coherence and legitimacy of the operators.

That a single library of moderate size should undertake to develop such a comprehensive system by itself, instead of cooperating with others, shows at least courage and imagination; that they have been successful may be inferred by the apparent smooth working of the system and by the immediate and positive interest of other libraries in Switzerland.

David Batty
University of Maryland

Essays of an Information Scientist, by Eugene Garfield. Foreword by Joshua Lederberg. V.I: 1962–1973; V.II: 1974–1976. Philadelphia: Institute for Scientific Information, 1977. 544, 710p. $25 (the set) LC 77-602. ISBN 0-89495-000-2 (the set).

In the June 19, 1962, issue of *Current Contents*, Eugene Garfield wrote, "I can no longer resist the opportunity to preach the gospel of scientific information." Since that time Garfield has been stating his views on a wide range of issues related to information science through the medium of editorials appearing as "Current Comments" in the weekly issues of *Current Contents*. And indeed, the gospel according to Garfield has been delivered since that first editorial!

Yet if anyone has a right to preach such a gospel, it is Garfield. As one of the investigators of the Welch Project, 1952, which studied indexes to medical literature, Garfield had firsthand experience analyzing the problems of traditional indexes. With some support from the National Health Institute, Garfield prepared a citation index for the field of genetics in 1961. Out of this project grew *Science Citation Index*, which was first published in 1963. By 1977 Garfield's Institute for Scientific Information employed 350 people, who produce a wide range of products and services that increase our access to scientific information.

The essays varied between 500 and 3,000 words and tended to become better organized and more lengthy as time progressed. The majority of the writings relate to two basic themes: (1) the growth and development of the Institute for Scientific Information and (2) the importance and techniques of citation indexing. However, it should be stressed that a myriad of other topics has been scratched by Garfield's pen. Despite forays into such topics as jazz music and the unhealthy nature of air-conditioners, the majority of the essays contains Garfield's insights and analysis of important topics related to bibliometrics, citation indexing, bibliographic control of scientific information, citation networks, and the structure of knowledge. These pragmatic and often speculative essays are frequently based on excellent ISI-generated data that are included in the volumes. In fact, these tables and charts of citation patterns (most-cited authors, periodicals, and articles) and various other data are one of the most valuable parts of the volumes.

In addition to the editorials appearing in *Current Contents*, reprints of Garfield's—as well as other ISI staff members'—articles are dispersed throughout the volumes. The 350 essays and 40 reprints are arranged together in chronological order. The reprints are especially useful, as they include seminal articles related to citation indexing, such as Garfield's "Citation Indexing for Studying Science" (*Nature*, 227:669) and "Citation Analysis as a Tool in Journal Evaluation" (Science, 178:471). Other reprints, such as Melvin Weinstock's (an ISI staff member) "Citation Indexes," which appeared in *Encyclopedia of Library and Information Science*, also are included.

A review of these volumes can be used as a vehicle by the reviewer to expound upon the deficiencies of Garfield's views and opinions. Instead of inflicting the reader with such endless debate, this reviewer will point out that the major defects of the volumes are technical rather than textual. Although there is a "cited author index," the subject index is inadequate to the task of indexing the myriad topics addressed by Garfield during this fifteen-year period. An essay entitled "Jabberwocky, the Humpty-Dumpty Syndrome and the Making of Scientific Dictionaries" is indexed under "jabberwocky" and "dictionaries." The thrust of the essay deals with the problem of jargon and vocabulary control—for which there are no entries. Similar examples for other essays abound. Because there is no list of figures, the many excellent tables and charts cannot be located easily, if at all. Nor is there a separate listing of the reprinted articles in the volume. The typesetting is inconsistent and of generally poor quality. As Garfield admits in the preface, "I have decided to live with the fact that the book will win no prize for design." True. Regardless of the design, it does seem paradoxical that one of the leading proponents for bibliographic control

for scientific information fails to provide adequate finding aids in his own book!

Although there are a number of views and comments with which many readers may take exception, Garfield states his opinion straightforwardly. Whatever one's philosophy regarding the issues Garfield addresses, there is much to be learned from reading the thoughts of a man who almost single-handedly created some of the most important indexes and current awareness services to scientific information. Perhaps his preaching of "the gospel of scientific information" will reach a greater audience in the years ahead thanks to this compact compendium of fifteen years of essays.

Charles R. McClure
University of Oklahoma
School of Library Science

Lawrence G. Livingston—An Appreciation

The world of librarianship has lost, quietly and all too swiftly, with the death of Larry Livingston, a brilliant mind, a dedicated proponent, and a precious friend. Those of us who watched him entering our lives, growing in his grasp of the complex balance of traditional and new methods in our work until he became a pivotal nurturing force, have suffered a loss far beyond common understanding. Those who had the good fortune to work closely with this man know well his quality and share the sorrow of his family and friends; he will long be remembered.

Larry came from a large family of modest means in the historic Acadian community of St. Martinsville, Louisiana. The village could not contain his vaulting intelligence, and, fortuitously, the advent of World War II offered him both escape and career. He entered the army in 1944 and moved up steadily in its ranks to the level of lieutenant colonel when he retired in 1967. His capability was fully recognized in his assignment to key responsibilities in the design and development of worldwide military mechanized intelligence systems. It was this assignment that prompted his selection for work with the Council on Library Resources when he left the army.

He joined the staff of the Council in 1968, with particular responsibility for the burgeoning library automation program activities then being proposed to the Council. Having initially a naturally limited awareness of professional librarianship, his acceptance as a full-fledged participant in the highly competitive early world of library automation was in an atmosphere of guarded suspicion, if not open antagonism by some. They and others with whom he quietly continued to work soon came to recognize the natural intelligence, the acquisitive mind, and the essential good will of this man. He learned swiftly, analyzed meticulously, and never let emotion or bias cloud his judgment. He understood what was needed, presented logical solutions, and urged action without unseemly pressure. Larry had an altogether rare quality beyond all this, the breadth of vision that enabled him to fit together the multitude of efforts, often partial, disparate, and duplicative, always with the ultimate complete goal in mind. He exercised his judgment with patience, kindness, and benevolence. Generous to all, concerned for our rapidly changing field of work, he imposed upon himself a consuming work schedule. In his last few years, this regimen took its toll, and the frailities of even such a powerful man began to show. Those of us who worked closely with him saw this and treasured the time we had. He is all too soon gone; he will be sorely missed.

Jerrold Orne

Converting your cataloging data base to full LC MARC II Machine Readable Form has taken many staff hours, created confusion and in most cases been cost prohibitive . . .

NOT ANYMORE!

Library Interface Systems method of converting a catalog data base has greatly reduced staff time, eliminated the confusion and is economical in cost. These library systems can all attest to that fact: State of Kansas, Arrowhead Library Systems, Flint Public, the University of Wisconsin/Stout and others.

No matter what state of the art your card catalog data base is in, including OCLC, Library Interface Systems is the solution. To find out why we can say NOT ANYMORE write or call:

LIBRARY INTERFACE SYSTEMS, INC. 1421 Wayzata Blvd. • Suite 51 • Wayzata, MN 55391 • Phone (612) 473-5183

INFORMATION ACCESS CORPORATION

announces its corporate organization
and headquarters location

885 No. San Antonio Rd.
Los Altos, California 94022
415-941-1100

Brett Butler
James L. Dolby
Dick Kollin
Lyle Priest
Bill Scholz
Buster Spiwak
Martha West

Why Choose Faxon?

1. A choice of three renewal services to suit your requirements.
2. A choice of six (one-, two-, and three-year) ordering plans.
3. A common expiration date achieved on subscriptions.
4. A yearly invoice with full periodical information.
5. Annual receipt of the Faxon *Librarians' Guide.*
6. FACS — Faxons's Automated Claim System with a quarterly follow-up report on all claims activity.
7. *Serials Updating Service* — a monthly newsletter with the latest information on serials changes and irregularities.
8. Punch cards or tapes containing all the data shown on the annual invoice.
9. Toll-free WATS lines.
10. An agency that combines small personal handling with large automated know-how.

But these are only 10 of the many reasons for choosing the F.W. Faxon Company. For a full description of our "Total Service Package" — our various services and how they can be useful to you — write for a copy of our *Service Brochure* and our annual *Librarians' Guide.* Or call today toll-free.

Library business is our only business—since 1881.

F.W. FAXON COMPANY, INC.

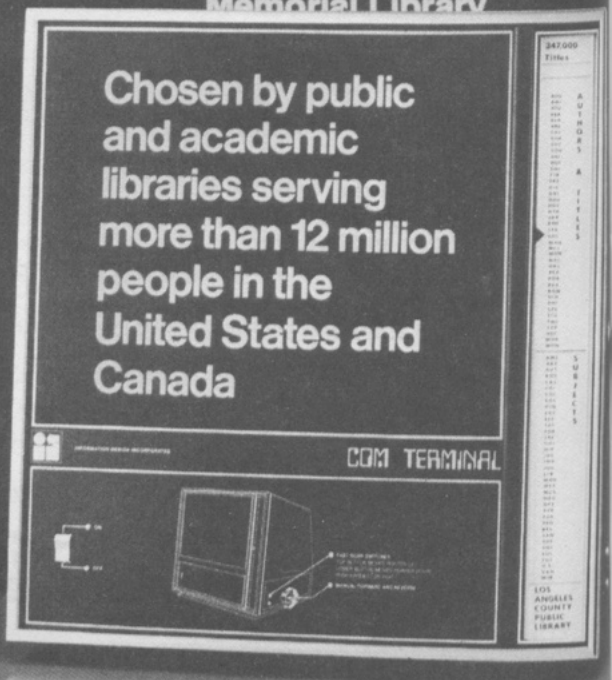
Library Magazine Subscription Agency

15 Southwest Park, Westwood, MA 02090
Tel: 800-225-7894 (toll-free)
617-329-3350 (collect in Mass. and Canada only)

The Standard of Excellence in COM Catalog Readers

Richmond Public Library
Cook County Sheriff's Department
Wichita Public Library
Raisin Valley Library System
Willard Library System
Bethel College
University of Toronto
Huntington Beach Public Library
Black Gold Cooperative Library System
San Luis Obispo City-County Library
Santa Barbara Public Library
Los Angeles County Public Library System
University of Southern California
Denver Public Library
Smithsonian Institution
Palm Beach County Public Library
Savannah Public Library
South Central Kansas Library System
Kansas State Library
Macomb Community College
Oakland Community College
Monroe County Public Library
J.J. Hill Reference Library
North Dakota State University
Duluth Public Library

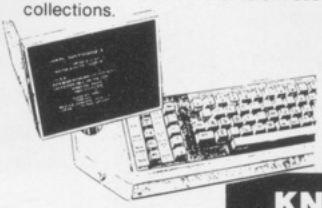
St. Johns University
St. Paul Seminary
St. Louis Community College District
Cumberland County Public Library
Forsyth County Public Library System
North Dakota State University Library
Austin Public Library
Hidalgo County Library S
Houston Public Library
Arrowhead Library Syste
Mid-Continent Public Libr
St. Louis County Library
Fairfax County Public Lib
Prince William County Public Library
Marquette University Memorial Library



INFORMATION DESIGN
3247 Middlefield Road
Menlo Park Ca 94025
(415) 369-2962

University of Texas
North East Texas Library System
Clark County Library District

Instantaneous data
on the current location of any book and the current status of any borrower, automatic entry of reservations and production of overdue notices, complete and continuous utilization data for management purposes for planning additions to collections and more efficient use of present collections.



Instantaneous Charge-out
that in one swift pass of the book over a flush-mounted book reader, inserts inventory information concerning the book, the borrower and the date into a computerized memory and *simultaneously* desensitizes the book detection strip. A similar unit does the same and resensitizes the book detection strip on charge-in.

KNOGO'S AUTOMATED LIBRARY SYSTEM

The first fully automated and fully integrated Circulation Control and Book Detection System

KNOGO, long the leader in the design, innovation and production of Book Detection Systems now offers you the KNOGO Automated Library System, the newest, most efficient and most technologically advanced library system... an integrated Circulation Control and Book Detection System.

For a better, more efficient library asset control system that gives your patrons superior service at reduced cost... that's right, reduced cost... look into the KNOGO Automated Library System. Available as a turn-key system or tailored to your specific needs.

Let us show you how this system can more than pay for itself by eliminating distasteful and monotonous clerical drudgery and expensive and disruptive book theft, leaving library personnel free for library tasks and your collection safe from theft.

Call or write:

knogo corporation

100 Tec Street, Hicksville, New York 11801
Phone: (516) 822-4200/Telex: 125 527 (KNOGO HIC)

Europe KNOGO Europe Ltd.
Rue Neuve 136, 1640 Rhode Saint Genese
Belgium/Tel. 02.358.52.02/Telex: 61371 (KNOBEL B)

Controlled access
to special or restricted areas with automatic logging of names of patrons and times of entry to determine utilization for planning purposes.

Mobile modules
for temporary libraries or Bookmobiles to give total circulation control and theft protection to your entire system.

In-library production
of book and patron identification avoiding the need to purchase outside labor to initiate or maintain the system as the collection changes. No computer knowledge needed. Library personnel can do it all.

Complete security...
the *only* system that protects not only books, but periodicals, tape cassettes, records, art objects or any other material desired, in an integrated compatible system that can be changed as your needs change.

BLACKWEL

A NAME THAT SPEAKS WITH AUTHO

EXP 12-78 K MC03385001
NANCY B OLSON
BOX 863
LAKE CRYSTAL MN 5605

Right now!

To be more specific—fully automated Subject Authority Control according to LCSH/8.

By the time you read this advertisement, every COM and book catalogue produced for B/NA-customer-libraries will have been fully recatalogued from LCSH/7 to LCSH/8. And all the required cross-references will have been interfiled and verified.

All this will have been done at B/NA with B/NA software, the LCSH/8 database, and B/NA's experienced staff of librarians and editors.

The Subject Authority Control System will process computer cataloguing from such sources as: LC-MARC records, OCLC user records, CAN-MARC records, B/NA-MARC records, and other commercial vendor MARC-like records (which we first convert to MARC).

B/NA is the only vendor which can deliver this service to your library now.

Right now! Just as we de
to LCSH/8) with LCS
proven software. The sa
staff. The most up-to-dat

B/NA technical servi
include college, research,
and special libraries around the w

To sum up, then, we would like to speak with you about some, or all of the following:

- shelflist conversion to MARC;
- database management of OCLC (or other network) records;
- book, (COM) fiche, or film catalogues;

and, of course,

- Subject Authority Control by LCSH/8.

Please call (503) 643-8423. Or write to Blackwell North America, 10300 S.W. Allen Blvd., Beaverton, Oregon 97005. Ask for Michael Moen, one of the twelve librarians on our technical services staff, all of whom are knowledgeable about MARC structure, COM fiche and film catalogues and, of course, fully automated Subject Authority Control by LCSH/8.