be the conversion of records that were originally the product of LC cataloging. It was suggested that all of these records should be flagged and sent to LC by the shared cataloging services as a service to LC. LC representatives agreed to consider the usefulness to LC of this suggestion.

While the Linked Systems Project will result in operating links between the Library of Congress, the Research Libraries Group, and the Washington Library Network, it will be some time before OCLC can become a part of the technical link. Microenhancer or similar techniques using microcomputers should be developed for searching several databases in the RECON process. Since one of the objectives is to reduce duplicative effort, it makes no sense to search only one database when there is some likelihood that similar work may already have been done on one or more others. This

suggestion may require more software work on the part of the target databases than they are willing to do, but there was encouragement to explore this avenue as a short-term solution to the lack of operational links among the utilities.

These recommendations form the essence of a nationally coordinated program for retrospective conversion of print form bibliographic records. It is a program that has the chance of reducing the aggregate costs of the RECON process and securing funding for making a very large dent in the inventory of records that need to be converted to machine-readable form in order to better support the work of the scholarly community. ■■

Editor's note: No copyright is claimed on this article, which the author wrote as part of his official duties as an employee of the U.S. government.

Managing automation for results: Completing tasks while participative planning proceeds

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Planning for automation with the end-user in mind.

For many university and research libraries, the lapsed time between starting library automation planning and securing final top management budget signatures is several months. Perhaps it even takes years. The competition in higher education for scarce resources means that library automation managers and CEO librarians must create a careful case for library automation. One method for creating that case, time-consuming but politically and psychologically helpful, is participative

planning.

As used in this article, participative planning goes beyond the recent library literature concerning participative management[1] because it specifi-
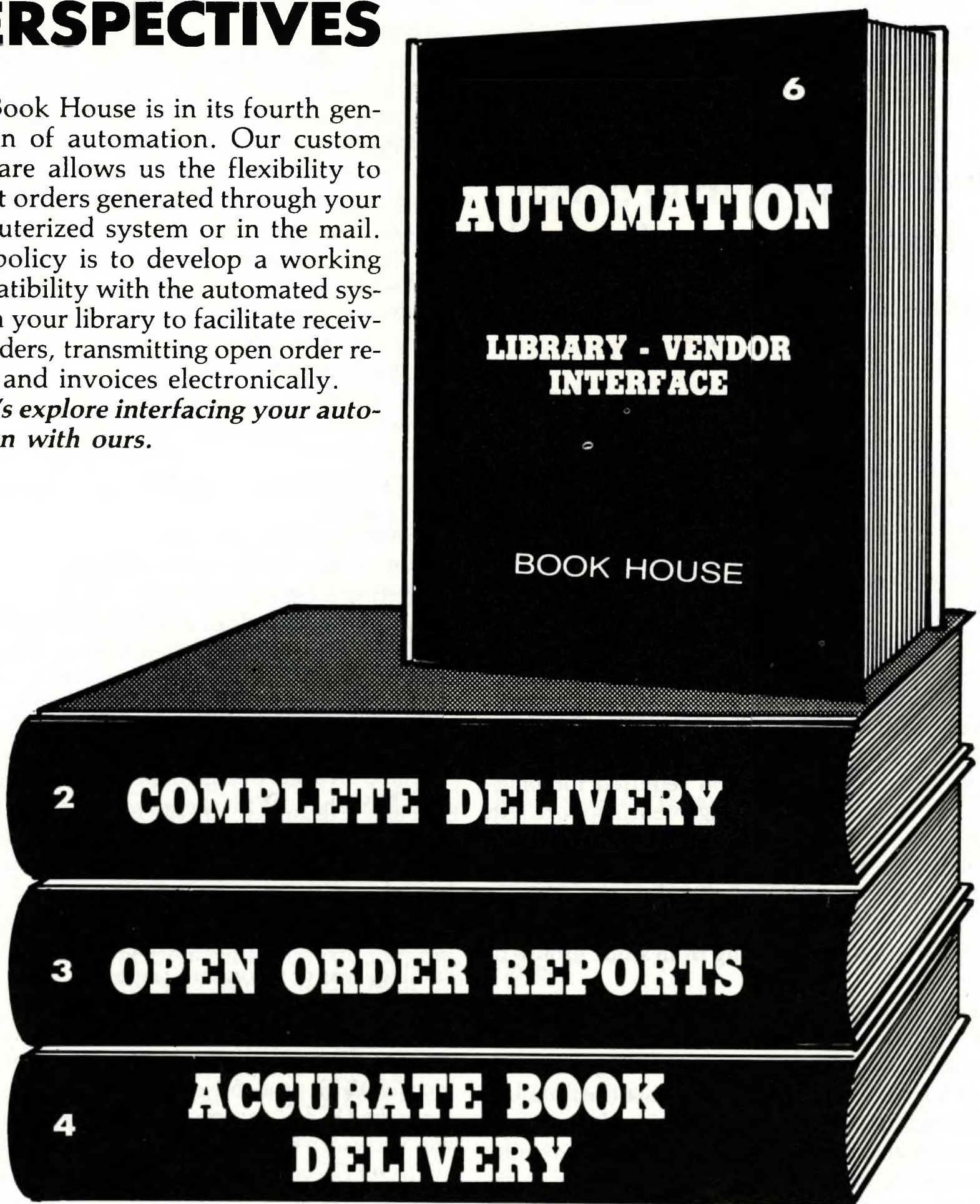
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[1] For a useful summary, see Nicholas C. Burckel, "Participatory Management in Academic Libraries: A Review," *College and Research Libraries* 45(January 1984):25–34.

cally calls for end-users as well as all levels of library staff to be represented in the groups that identify problems and alternative solutions, evaluate those alternatives, make recommendations and point out implications of the recommended solution. Participative planning of automated library systems brings faculty, students, and librarians (both support and professional staff) together in a

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Local programming would be too time-consuming and expensive.

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non-crisis mode to discuss needs and options and to make a system recommendation. Speaking to librarians, one university president noted the need for greater faculty involvement in library decision-making, including decisions about automating both circulation and bibliographic systems.[2] Experiences at the University of Missouri[3] and the University of Cincinnati[4] suggest that participative planning for library automation results in a better match between user needs and system capabilities.

Selecting the management philosophy of participative planning allows for getting other tasks accomplished during the period required for planning and securing top management support. An example is getting tasks out of the way that will help make the system useful sooner than planned. Many libraries use this lead time for retrospective conversion of older bibliographic records; others undertake self-study, ranging from study groups to site visits.

The University of Cincinnati's (UC) management methodology for library automation had four parts. First, we began a participative planning process in early 1981 in order to assure the broadest possible discussion by representatives from all library staff and end-user groups prior to their recommending a permanent system. Second, with the fiscal year funding for continued planning in hand by mid-1982, attention turned to tasks that could be accomplished while awaiting selection and in-

[2]Robert M. O'Neil, "Academic Libraries and the Future: A President's View," *College and Research Libraries* 45(May 1984):187.

[3]James F. Corey, Helen H. Spalding, and Jeanmarie Lang Fraser, "Involving Faculty and Students in the Selection of Catalog Alternatives," *Journal of Academic Librarianship* 8(January 1983):328–33.

[4]Paul M. Anderson and Ellen G. Miller, "Participative Planning for Library Automation: The Role of the User Opinion Survey," *College and Research Libraries* 44(July 1983):245–54.

stallation of the permanent online catalog/circulation-reserve system.

The prime candidate was editing over 600,000 OCLC records collected on archive tapes since 1972. Most libraries choose to review and edit their database after their chosen system's terminals have arrived; that task may take many months. Given the competition at UC for funds of the magnitude required by library systems development, that delay was politically unacceptable. Hence the third decision, to have a standard database ready for end users as soon as possible. Varying local practices made library staff leery of letting patrons use the OCLC database "as is." They wanted to review it and bring it up to standards.

Having decided to edit as much of the database as possible prior to system installation, we reached to our last major decision: use software available in the marketplace rather than do local programming. Local programming was expected to be too time-consuming and too expensive.

In summary, UC's methodology for managing library automation had four parts: use a participative planning process, thus taking at least several months to get top management support; use the intervening time to carry out tasks that would speed up getting the system operational for end users; select as the major task an edit of 600,000 OCLC records; and use software capabilities existing in the market place.

Action plan

The University of Cincinnati Computing Center is an IBM shop. With the help of our management consultant, Ralph Shoffner, we began a cost/benefit study of IBM cataloging systems. Our goal was to find a software package that permitted us to upgrade all OCLC/MARC fields online. A public access module, to allow experimental use of an online catalog, was of secondary importance.

After several weeks of study, we decided on a two-pronged approach. First, we selected Northwestern University's Technical Information System (NOTIS) as a cost-effective method to review and edit OCLC records online. However, it also was necessary to obtain the University of Florida's MVS NOTIS version in order to meet our computer center's requirements. The UC Computing Center (UCCC) took on the significant task of integrating the Florida (MVS) and Northwestern (DOS) versions of NOTIS.

Second, we selected Solinet to 1) do an AACR2 flip on older OCLC archive tapes, 2) perform subfield editing, 3) prepare management reports of records not processed, and 4) reformat individual records so as to better fit our IBM environment. Due to varying local practice, occasionally undocumented, for inputting and updating OCLC records, we decided to "de-dup" records at UC rather than using Solinet's record selection capabilities.

With the software capability selected—NOTIS and Solinet—we turned to equipment. Funding

permitted placing 11 Telex 476L terminals, with associated printers, in 7 UC libraries. Seven of those terminals were dedicated to database editing. All were linked with the campus telecommunications network, permitting access to other software packages like WYLBUR, a text editor.

UC enjoys a high degree of cooperation between its libraries and computing center. For example, UCCC staff hold key positions in library systems development, and the center is the facilities manager of NOTIS and will be for the permanent online catalog/circulation-reserve system. Editing 600,000 OCLC records provided an opportunity for a small-scale preview of the kind of problem-identification, -analysis, and -solving that the permanent system would require. In other words, setting up the Editors' Catalog (the local name for NOTIS) provided a microcosm of the management, policy, and procedural issues that would have to be solved later. The Editors' Catalog would be a living management laboratory.

Implementing the Editors' Catalog (NOTIS)

Three major aspects were tackled simultaneously. One was site preparation. The seven libraries getting the 11 Telex terminals had to make plans for locating equipment that fit into their current workflow. This required coordinating campus offices, such as Physical Plant and the Computing Center, so that electrical, cabling, and other support would arrive in the correct sequence.

The next aspect was staff training. Catalogers were used to OCLC technical screens containing field identifiers, and NOTIS' technical mode used very similar notation. However, most public service staff were not familiar with OCLC/MARC record formats, requiring a double education for them—in OCLC and NOTIS. The representative faculty/staff/student User Education Committee, previously set up to select training methods for the permanent system, designed a brief training package to help public service staff learn OCLC fundamentals as well as NOTIS' public access mode. Cataloging department staff set up NOTIS training for NOTIS' technical mode. Small NOTIS training files were established.

Sequence of the database load was the third aspect of implementation. Prior to this time, UC catalogers had seen only sample printouts from OCLC archive tapes. Presented with the opportunity to load, view, and edit 12 years' worth of cataloging, we decided to break down the 600,000 records into manageable segments. The Florida software allowed us to do that.

It was decided to split the database load into two major segments: OCLC singletons (one occurrence of an OCLC number) first, followed by OCLC duplicate numbers. The singleton load was further split into smaller database slices, such as singletons for the Chemistry-Biology library, in order to process at one time known problems associated with a single slice. See Table 1, UC Editors' Catalog Data

Load Log. Processing the database by slices meant that catalogers controlled sequence and timing. This in turn meant an ability to control the volume of the workload, rather than have to cope with a mountain of 600,000 undifferentiated OCLC records.

Singletons were moved into the test file beginning in November 1983; catalogers looked at a par-

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NOTIS permitted a leisurely time frame for making changes.

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ticular slice and decided if there were any unexpected problems. If so, the data was backed out of the test file, tables were adjusted, and the test file load was repeated. Database slices were moved out of the test file to the production file, where online editing takes place, only on the catalogers' approval. By the end of June 1984, over 420,000 singletons had been moved to the production file. Duplicate processing then began and continues, also by slices. Currently, there are 475,000 OCLC records in NOTIS.

Table 1 shows the complexity of the database load sequence. It required careful tracking in order to know at all times exactly where every record was and its status. UCCC staff prepared the programs and documentation supporting record tracking, which enabled us to load the 600,000 record database into both test and then production files by slices.

Workloads and procedures

Although we knew that NOTIS could help us accomplish a needed OCLC editing task prior to installing the permanent system, we also recognized that there were no additional staff available to edit the records. To find necessary staff time, current workloads and practices needed review.

In the University Libraries' cataloging center (serving Central, college and departmental academic libraries), NOTIS served as a catalyst for 1) reviewing card filing and its quality control, 2) changing procedures for personal name authorities and cross references, 3) revising card production for serials, and 4) reviewing the priorities of peripheral tasks such as added copy and volume processing, filing of on-order slips in the Public Catalog, and withdrawal and transfer projects. Some processing has been dropped and some has been reassigned to staff in other units. NOTIS speeded up our viewing OCLC as a database generator rather than as a card producer. Processes were stream-

TABLE 1

U.C. EDITORS' CATALOG
DATA LOAD LOG
September 8, 1984

Total Records Loaded: 479,102

Collection or C & D Library	OCLC Symbol(s)	Quantity Loaded
Archive & Rare Book	CIN4/5/6#	5545 Singletons
Central 1971–1972	CINN	6882 Singletons
Central 1973	CINN	12399 Singletons
Central 1974	CINN	10632 Singletons
Central 1975	CINN	16919 Singletons
Central 1976	CINN	28743 Singletons
Central 1977–1978	CINN	14195 Singletons
Central 1979–1980	CINN	22821 Singletons
Central 1981–1982	CINN	23627 Singletons
Central 1983–Part A	CINN	24066 Singletons
Central 1983–Part B	CINN	21443 Singletons
Clermont College	CIC2	8076 Singletons
Special Collections	CIN3	1278 Singletons
Serials	CIN7	2787 Singletons
Medical, New	MXC	1944 Singletons
Central, New	CIN	1853 Singletons
Nursing & Health	MXCN	3980 Singletons
Extracted Non-MXCI	MXCI	219 Singletons
Health Sciences Lib.	MXCC	22061 Singletons
Classics	CINT/W/Y	35727 Singletons
Chem./Bio. Library	CINB/C	8993 Singletons
CCM Library, Scores	CINS	10222 Singletons
CCM Library	CINM/V/F(F 1977 & ON)	17227 Singletons
Central, Old Codes	CINL/Q/H	11213 Singletons
All Other Medical	MXCR/A/B/H/L/P	4575 Singletons
Geology Library	CING	4061 Singletons
Physics Library	CINP	3726 Singletons
Curric. Resources	CINU	318 Singletons
Various	CIN9	198 Singletons
Marx Law Library	OML	5434 Singletons
Classics, New	CINT/W/Y	29445 Singletons
Elliston Collection	CINK/8	2977 Singletons
C&D, Small Colleges	CIND/E/X/2/Z/R/@/%	36461 Singletons
Raymond Walters	ORW	17731 Singletons
Juvenile Collection	CINJ	3310 Singletons
Central, New Dups	CIN	302 Duplicates
Medical, New Dups	MXC	13 Duplicates
Central, Reuse Cancl	CIN	297 Duplicates
Central, Replace UPD	CIN	5715 Duplicates
Central, @01 in 910	CIN	3749 Duplicates
Central, 1's in 010	CIN	15113 Duplicates
Serials	CIN7	6305 Duplicates
Special Collections	CIN3	3335 Duplicates
Archive & Rare Book	CIN4	1536 Duplicates
Nursing & Health	MXCN	2133 Duplicates
Central 1971–1972	CIN	3716 Duplicates
Central 1973	CIN	6471 Duplicates
Central 1974	CIN	6280 Duplicates
Central 1975	CIN	7920 Duplicates

TABLE 2

EDITORS' CATALOG CORRECTIONS—MONTHLY SUMMARY 1984

Type of Correction	JAN No. of Corr.: Total	JAN Hours: Total	FEB No. of Corr.: Total	FEB Hours: Total	MAR No. of Corr.: Total	MAR Hours: Total	APR No. of Corr.: Total	APR Hours: Total	MAY No. of Corr.: Total	MAY Hours: Total	JUNE No. of Corr.: Total	JUNE Hours: Total	ALL MONTHS No. of Corr.: Total	ALL MONTHS Hours: Total
Classics Corrections	0	0	0	0	159	19.50	1525	58.25	1077	32.75	641	33.50	3402	144.00
Transfers	0	0	0	0	318	33.75	340	78.90	14	250	95	2.25	767	127.4
Filing Indicators	0	0	0	0	0	0	1070	43.58	1556	64.50	972	43.25	3598	151.33
Wrong Updates	0	0	0	0	16	9.00	35	6.00	120	14.50	0	0	171	29.50
Medical Theses	0	0	0	0	0	0	0	0	45	1.25	0	0	45	1.25
Music Corrections	0	0	0	0	408	15.25	740	14.25	263	4.50	262	6.75	1573	40.75
No Call No.	0	0	0	0	30	4.00	6	1.00	684	62.50	16	.33	736	67.83
Review Only	0	29.66	0	33.06	0	62.57	0	47.83	0	37.65	0	21.82	0	232.59
SOLINET Report	0	0	0	0	0	0	0	0	6	1.33	1005	157.66	1011	158.99
Miscellaneous	0	0	0	0	19	1.50	32	2.25	23	2.25	132	2.83	206	8.83
All Projects	0	29.66	0	33.06	950	145.57	3748	262.06	3788	223.73	3123	268.39	11609	962.47

lined and priorities revised in order to find the staff time to use NOTIS to get the database ready for the permanent system. Changes in authority procedures were also begun in an incremental fashion; those procedures will continue to be changed after the permanent system, with its authority control capability, arrives.

In the cataloging center described above, staff and unit heads liked the opportunity to make workflow and procedural changes incrementally over several months. They also liked being involved in decision-making about changes and being able to try out changes with just a few staff, adjusting to new learning as they went along. NOTIS permitted a leisurely timeframe for making changes that the permanent system would have required in a highly visible mode over a short period of time. An example is Editors' Catalog staffing.

Table 2, Editors' Catalog Corrections, shows the pace of online editing in University Libraries.[5] In January and February 1984 few corrections were made; the 20-odd staff logged in under 40 hours. In April a plateau of about 255 hours/month to make about 3,500 corrections had been reached. One category, "Review only" took time but resulted in no changes. In six months, over 11,500 corrections had been made, requiring 962 man-hours or about 5 minutes per correction. Initially, all staff took part in the editing process in order that they all would become familiar with NOTIS editing procedures. There was one difficulty—NOTIS editing was not being done very efficiently, as Table 2 indicates.

A new technique is now being used. Four-person teams are assigned full-time to the Editors' Catalog for a 2-week period. They have a limited number of other duties to provide respite from the tedium of long hours spent checking the shelflist or at the terminal. This rotational method seems to combine lack of interruptions with a constantly growing learning curve without running the risk of staff burnout.

University Libraries' experience thus far shows that both existing tasks and the additional workload for the Editors' Catalog are being accomplished by the same staff. It remains to be seen whether this production rate can and will continue.

Campus news about NOTIS

Throughout the planning process, UC's library systems development office used a plan that combined one-way (such as articles in the faculty newsletter) and two-way (such as discussions with the University Library Committee at regular meetings) communications methods. The theme "database under construction" epitomized database editing via NOTIS. While the Editors' Catalog was visible in only 7 of 18 library sites, articles and

[5]Linda Newman, "Editing of OCLC Archive Tapes." A presentation to the Northern Ohio Technical Services Librarians, June 8, 1984.

meetings stressed that library staff were working hard to have a standardized, useful database ready when the permanent system came up.

We also pointed out that we were using a participative management process that included faculty, students, and library staff. These groups were represented when specifications were identified, systems reviewed, and the permanent system selected. We believe that their participation, combined with editing the database prior to installing the permanent system, will help result in faster integration of the online catalog/circulation-reserve system by faculty, researchers, and students into their daily lives.

Costs

There were, of course, costs for the Editors' Catalog. The NOTIS software and equipment are obvious examples, totalling about $125,000 in one-time fees. Next comes billing from the computing center, on whose mainframe NOTIS is run, along with equipment maintenance and personnel time. That totals about $180,000 per 12 months. A third direct cost is for Solinet processing, about $15,000 to date. Library staff time is not known but could include at least 2 FTE supervisor level staff in addition to the man-hours shown in Table 2.

Another cost category is time. We underestimated the time required to mesh the Northwestern and Florida versions of NOTIS. In reality it took six months, from July through December, to fully integrate them and to prepare our record tracking system. Staff had expected to begin editing records on the production file in the fall of 1983, rather than January 1984. This delay resulted understandably in nervous staff who fretted about their ability to edit the 600,000 OCLC records before the permanent system would be installed. Nevertheless, as of this writing, we believe that all but about one-sixth of those records, the most difficult duplicates requiring many changes, will be ready when the first eight libraries are brought up prior to the beginning of fall term, 1985. Early in 1984 it

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Input needed on micros

The newly formed ACRL Microcomputers in Academic Libraries Discussion Group is currently compiling policy and procedure statements from libraries that offer any type of microcomputer services to their patrons. A sample collection of these will then be made available to members and others.

If your library has public access microcomputers, circulates software, or offers any other service related to the use of microcomputers by patrons, please send copies of relevant policy and procedure statements to the chair, Linda Piele, Library/Learning Center, University of Wisconsin-Parkside, Box 2000, Kenosha, WI 53141.

was decided to emphasize editing one type of data—bibliographic—on NOTIS. Whereas the accuracy of location information is being reviewed, comprehensive data editing of copy and piece holdings, especially for serials, will await the arrival of the permanent system. Our goal of an entirely edited record will occur later than planned.

Benefits

The benefits of setting up the Editors' Catalog using NOTIS have been many.

•The Editors' Catalog proved a management microcosm for tasks that would also be required by the permanent system. Planning for site preparation; reviewing existing cataloging practices and procedures; experimenting with staff education for an online catalog; training public service staff about OCLC; standardizing divergent cataloging practices; bringing together cataloging staff from all five UC library jurisdictions for the first time—all these things and more were accomplished in a less visible and hence less hectic atmosphere.

•Many staff in both technical and public service areas were trained on the Editors' Catalog. This broadened general knowledge about online bibliographic databases. Others were named to the several systems development committees. One result has been a heightened awareness among catalogers about public service ramifications of database decisions.

•The profiling decisions required to set up NOTIS were a prelude to those now being required by the permanent system. We have learned a lot about the consequences of our NOTIS profiling, such as defining library levels, e.g., system-wide, institution, etc., in descending order of magnitude.

Time to plan your posters

The LOEX Clearinghouse has issued a call for abstracts for Poster Sessions to be held at the Second Biennial LOEX Workshop, May 9–10, 1985. The workshop theme is "Teaching the Online Catalog User."

Poster Session presentations—to include graphics, pictures, diagrams, and narrative text—will allow presenters to expand informally and to answer questions relating to the online catalog instruction programs on their own campuses, to report research findings, and to describe innovative ideas or mistakes encountered. Sessions will last 30 minutes, with question and discussion time built in.

Guidelines for the submission of abstracts and forms can be obtained by contacting Carolyn Kirkendall, Director, LOEX Clearinghouse, Eastern Michigan University Library, Center of Educational Resources, Ypsilanti, MI 48197.

The deadline for submission of abstracts is March 1, 1985.

This also means that we have more and deeper questions to ask our current vendor, Biblio-Techniques, Inc., of Olympia, Washington. We understand better the consequence of initial profiling decisions.

•Public services staff started to learn about the OCLC/MARC world. This knowledge is essential if one is to understand index construction and how OCLC/MARC fields map into Biblio-Techniques Library and Information System (BLIS).

•We learned about subtle MARC/OCLC format implications early, such as the card profile automatically removing unwanted subject headings which, however, occur on the archive tape. An opposite example is automatic stamps, e.g., oversize, that are printed on cards based on the profile but do not occur on the tape.

•We have saved innumerable man-hours due to the Solinet pre-processing for AACR2 flip, subfield checks, and MARC/OCLC subfield 049 (location and holdings information), to name only a few services provided. Personnel in different reporting structures—such as the five independent library jurisdictions, the computing center, campus planning, and physical plant—are learning to work together. This growing communication, done in a relatively low stress environment, will pay large dividends when BLIS is installed and become operational.
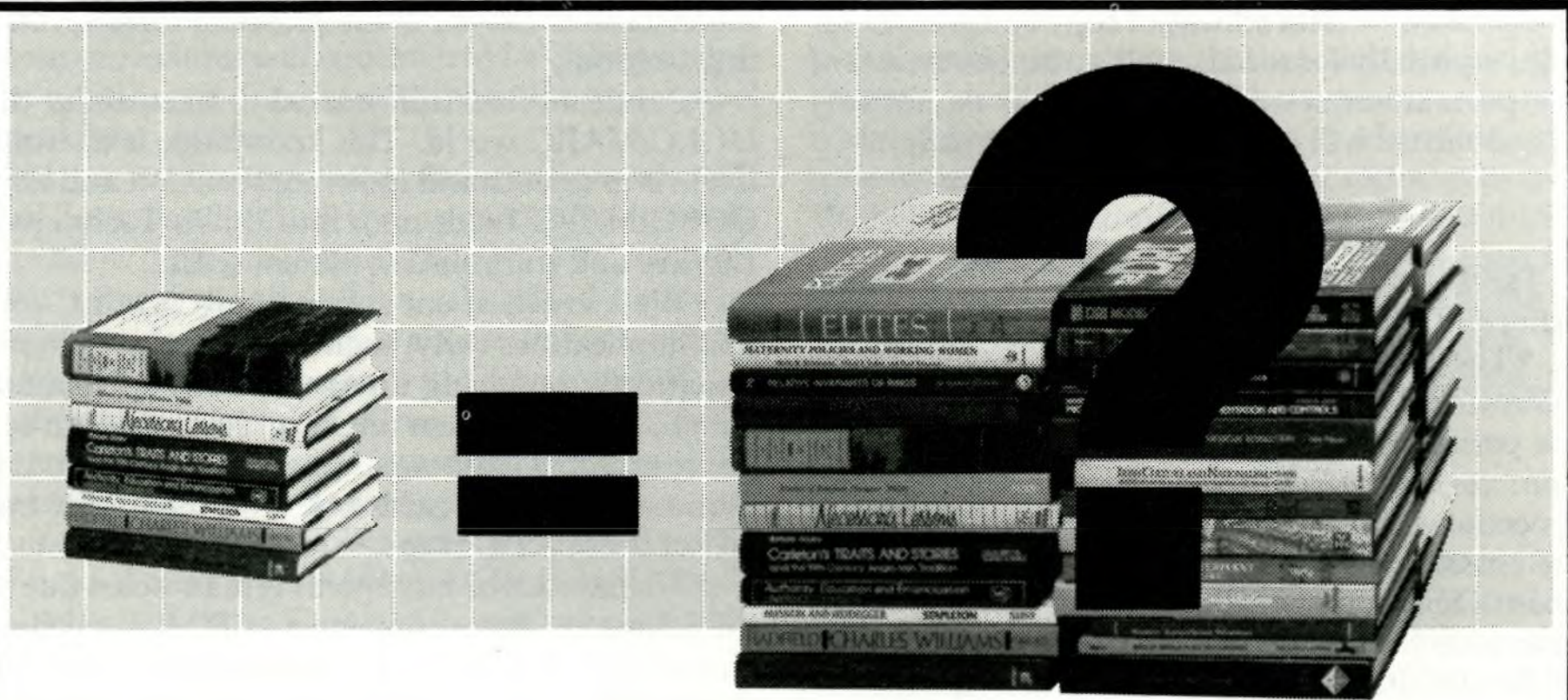
•Many library staff now know the difference between technical displays used by database maintainers and the public catalog used by faculty, students, and researchers. Those differences include level and completeness of information and command language.

•Or, to look at it from a more general perspective, the Editors' Catalog has permitted us to start bringing large groups of staff out of a mostly paper records era with all of that medium's characteristics and limitations, into an electronic era. Electronic records permit and create uses which will disturb and stimulate all our staff.

•Finally, and certainly not least, the Editors' Catalog has laid to rest many doubts about meeting standards. One reason that over 400,000 singletons were loaded into the production file in less than six months was because the records were complete. Library staff confidence in the accuracy of UC's database, after its load into BLIS, is essential if staff are to help faculty, students, and researchers transfer their trust to the online catalog.

The University of Cincinnati selected participative management of library automation because it would bring end-users and library staff together in selecting an online catalog/circulation-reserve system. While that selection process was underway, we began the major task of editing 600,000 OCLC records to meet standards. It appears that the benefits of record editing outweigh its costs because both the database and the library staff will be as ready as possible to support faculty and students in the fall of 1985. ■■