BIBLIOS REVISITED

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In the following, Orange County Public Library's earlier reports on its BIBLIOS system are updated. Book catalog and circulation control modules are detailed, development and operation costs documented, and a cost comparison for acquisitions cited.

"In 1968 ALA began publishing, through its Information Science and Automation Division, a *Journal of Library Automation*. It is perhaps appropriate to note that in the first three quarterly issues only one public library project was described (1), and this was a project under contemplation, not one actually in operation." (2) This statement by Dan Melcher to substantiate his contention that library automation is suspect is, in itself, suspect. The public library project alluded to as being contemplated in 1968 was brought to fruition by Orange County (California) Public Library in 1969, and has functioned with startling success ever since. In addition, the finished system was reported to the library (3) and data processing (4) worlds in 1969 and 1970 respectively.

Orange County Public Library's BIBLIOS (Book Inventory Building Library Information Oriented System) is a system designed to fulfill all functional requirements of a multibranch library which is growing by leaps and bounds (5). Specifically these functional requirements are: acquisitions, book processing, catalog maintenance, circulation control, and book fund accounting, in addition to management reporting on a level not practical in a manual system.

THE FUNCTIONAL SYSTEM

The interrelation of these system elements is shown diagramatically in Figure 1. Briefly and from a user's point of view, the system works like this:

A title is desired by someone, patron or staff member. The person refers to the book catalog, Figure 2, to see if the item is in the collection. If it is and not in circulation, he gets the book directly. If the item is in circulation, he can submit a request for it—to receive the book on its return. To update the catalog, a cumulative supplement is produced, keeping current the listing of the library's holdings. If the title is not found in the catalog or supplement, the monthly cumulative on-order list, Figure 3, is consulted. If the title is listed, a request is submitted and, on receipt and processing, the book is released to the requester. If the title is cancelled, the requester is notified.

When a title wanted for the collection is not listed in either the catalog or the cumulative on-order list, a bibliographic information sheet (BIS), Figure 4, is completed and optically scanned into the system. This information is essentially a pre-cataloging bibliographic description of the desired material. Once entered, these same data serve first to create purchase orders and related reports; then, once edited by the catalogers from the book in hand, to create book card and pocket sets (Figure 5), book catalog entries, shown in Figure 2, holding lists (shelf lists) for each branch, and a broad array of operational reports. It is a feature of BIBLIOS that the descriptive data (from the BIS) are entered in their entirety only once. This means that a bibliographic description need not be initialized by each individual using it; rather, it need only be consulted and, if necessary, corrected or deleted. Thus, an entry once in the system is immediately available for, among other purposes, ordering. This is especially significant since it means that each entry in the book catalog, the catalog supplement, the cumulative on-order list, etc., can be ordered against by simply using the key number for the desired item and the number assigned to the branch wishing to order. This poses the possibility of orders for materials which are OP or otherwise not readily available through the usual vendor channels. BIBLIOS addresses these potential errors by listing (pre-vend list, Figure 6) all order requirements for review before they are used to create orders. By editing this list against *Books in Print* and/or publishers' catalogs and taking corrective action, orders for the unobtainable are short-stopped.

On placing an order, while a unique subpurchase order number is mechanically created, the key number continues to document the title for processing purposes. In this role the key number follows the order until it is filled or cancelled. Thus, the key is used by BIBLIOS to update inventory automatically on receipt of an order and to create the card and pocket sets for those materials received. Finally, the key number is used by the branches to report inventory changes and, as a subset of inventory, for circulation control.

Since it is through the key number (or key, for short) for a bibliographic citation that the citation is used in the various functions performed by BIBLIOS, perhaps a little detail concerning the key is in order.
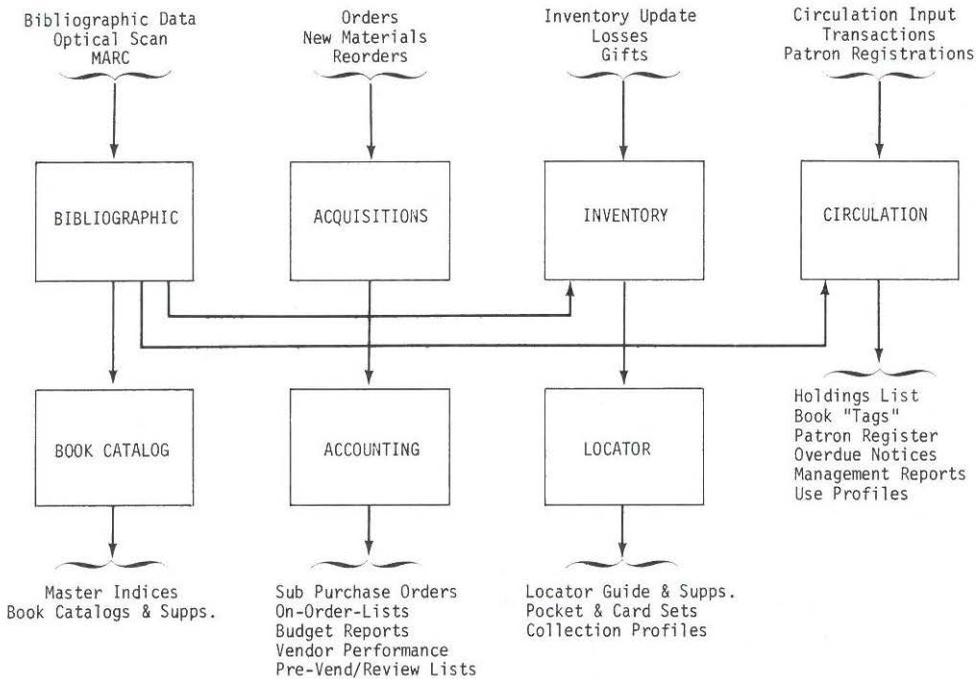
Fig. 1. BIBLIOS—The functional system.

THE KEY NUMBER

In Figure 2, the key for 73084452 has been underlined. The key number resembles the LC card order number. Wherever an LC card order number is available, it is used. When no LC card order number is available, a unique Orange County (OC) number is applied. The OC number consists of two alphabetic characters in the first two positions (at one time the numbers implied year) of the "traditional" number followed by a six-digit sequential number. Since the Library of Congress has certain idiosyncracies about its card order number, the key also specifies the type of material it represents (for example, only book keys are in the *book* catalog), and identifies each volume, or edition, of a title which has a blanket LC card order number.

The selection of the LC card order number for this application was based on a suspicion that the bulk of materials in the collection were already

Wall, Joseph Frazier.
Andrew Carnegie. Oxford University. 1970
1137p Index Bibliog Photos Biography
92-C   AA006725

Wall, Leonard Vernon *Compiler*
The Puppet Book. *Ed. of G. A. White. 2nd &
Extensive Rev. Under Ed. of A. R. Philpott*
Faber & Faber. 1965 300p Index Bibliog
B/W Illus Photos
791.53   68017740

Wall Street and Witchcraft.
See: Gunther, Max
133   1971   AA012873

The Wall Street Jungle.
See: Ney, Richard
332.678   1970   76084477

Wallace, Irving.
The Nympho and Other Maniacs. Simon-
Schuster. 1971 475p Index Bibliog B/W
Illus Biography
301.415   AA011778

Wallace, Marcia.
Barefoot in the Kitchen. *A Cookbook for
Summer Hostesses. Drawings by Reid
Perez Kolman* St. Martin's Pr. 1971 150p
Index B/W Illus
641.5   73145431

Wallace, Robert *Editor*
The World of Bernini, 1598-1680. *By Robert
Wallace and the Editors of Time-Life
Books* Time-Life Books. 1970 192p Index
Bibliog Chronology Col Illus

**Walter Chandoha's Book of Foals
and Horses.**
See: Chandoha, Walter
636.1   1971   AA011379

The Walter Syndrome.
See: Neely, Richard
FICTION M   1970   79122149

Walters, Barbara.
How to Talk with Practically Anybody About
Practically Anything. Doubleday. 1970
195p
808.56   AA007142

Walton, Clarence C.
Ethos and the Executive. *Values in
Managerial Decision Making* Prentice-Hall.
1969 267p Index Bibliog
658.4   ▶ 73084452

Walton, Izaak.
The Lives of John Donne and George Herbert.
*Bound with the Pilgrim's Progress, by
John Bunyan. V. 15 in the Harvard
Classics* Collier. 1909 418p
FICTION   09023026-001-015
The Lives of John Donne and George Herbert.
*Bound with the Pilgrim's Progress, by
John Bunyan. No. 15 in the Harvard
Classics* Collier. 1937 418p
FICTION   37040164-001-015

Wambaugh, Joseph.
The Blue Knight. *An Atlantic Monthly Press
Book* Little, Brown. 1972 338p Lg
FICTION   79175474

Ward, Mary Jane.
The Other Caroline. *A Novel* Crown. 1970
216p
FICTION   70108078

Ward, Ritchie.
The Living Clocks. *Drawings by Hollett Smith*
Alfred A. Knopf. 1971 385p Index B/W
Illus Photos
574.1   77111247

Warde, Frederick B.
Fifty Years of Make Believe. *By Frederick
Warde* International Pr. Syndicate. 1920
310p
FICTION   21008154

Wardropper, Bruce W. *Editor*
Spanish Poetry of the Golden Age. *Edited by
Bruce W. Wardropper* Appleton-Century.
1971 353p For Lang Poetry Collection
Bibliog
SP861.08   78132806

Ware, Clyde.
The Eden Tree. Touchstone Publishing
Company. 1971 357p
FICTION   AA013079

Warmack, Oliver J.
The Mystery of Iniquity, Volume 1. *2 Thess.
2.7* Pub. by the Author. 1969 120p No
Index
200   77013647-001

Warman, Edwin G.

**Washington, George, Pres. U. S.,
1732-1799.**
The Journal of Major George Washington.
*March of America Facsimile Series, No.
42. Original T. P. Reads... Williamsburgh
Printed; London. Reprinted for T. Jefferys.
1754. Covers the Period from Oct. 1753
to Jan. 1754* University Microfilms. 1966
32p No Index Maps
973.26   66026314-001

**Washington International Arts
Letter** *Editor*
Grants and Aid to Individuals in the Arts.
*Containing Listings of Most Professional
Awards, and Information About Colleges.
Universities and Prof. Schools of the
Arts... by the Editors of the Washington
Intl. Arts Letter. Paperback Wash. Intl.
Arts Letter.* 1970 75p No Index
R378.34   70112695

Waskow, Arthur I.
The Freedom Seder. *A New Haggadah for
Passover* Holt, Rinehart, Winsto. 1970
56p B/W Illus
296.437   79103557

Wasley, Ruth.
Bead Design. *A Comprehensive Course for
Beginner and Experienced Craftsman by
Ruth Wasley and Edith Harris* Crown.
1970 216p Index B W Illus Col Illus
Photos
746.5

Fig. 2. A book catalog page featuring four columns.

assigned a number, a suspicion which was confirmed on completion of conversion through simple reporting of the keys on file. In short, after fifty years of operation of Orange County's libraries, 92 percent of all titles in the collection had an "LC number," a factor one might weigh when trying to decide between ISBN and LC card order number; nor has it been indicated that ISBN's will be developed retrospectively.

AN UPDATE TO THE SYSTEM

In the paper presented to the American Society for Information Science in 1969 (6), neither the book catalog nor the circulation control modules had been implemented.

Book Catalog

In May 1971, the first edition of BIBLIOS book catalog was released for public use. Since that date, the cumulative supplement has been run six times. The module of BIBLIOS producing the book catalog and cumulative supplement is diagrammed in Figure 7. Input is the title-master file (the system's bibliographic data base) and a specification of the output required. The output options available to the library include the production of either a full catalog or a cumulative supplement (displaying all entries placed on file since production of the full catalog which have been edited by cataloging). In the case of full catalog production, the title-master file is updated to reflect the use of all qualifying entries for catalog production and the date of their use. This updating facilitates cumulative supplement production by precluding the use of these entries from display until the next full catalog run.

In addition to the type catalog (full or supplement), the library designates the format of the output. Either an off-line print-out or a print file designed to drive a mechanical photocomposition device, or both, can be requested. It is important to note that this print file is designed specifically to be hardware independent, e.g., it will run on RCA, Photon, Alphanumeric, or comparable equipment with equal ease. Hardware independence in its simplest terms means the computer program does not have to be rewritten each time a vendor goes out of business. And, coincidentally, this print file is in the sequence it is to be displayed in. In short, the vendor only performs that processing necessary to make his device set type to the library's specification for layout, font style, and font size—a specification, it might be added, which calls for upper- and lower-case type from a file in upper-case only.

This approach differs from what has become typical of book catalog production in that sorting, file maintenance, and all related processing are sustained by the library through BIBLIOS. The vendor only sets type, prints, and binds. The results spell savings since a potentially error-laden file does not have to be committed to the most expensive of all displays, photocomposition, before corrections can be made.

AUTHOR	TITLE
WIDERBERG, SIV	MY BEST FRIEND
WIDMER, KINGSLEY	WAYS OF NIHILISM
WIER, ESTER	WHITE OAK
WIEST, J. / LEVY, F.	MANAGEM NT GUIDE TO PERT-
WILCOX, LESLIE A.	ANSON'S VOYAGE
WILDER, LAURA (INGALLS)	BY THE SHORES OF SILVER L
WILK, MAX	WIT AND WISDOM OF HOLLYWO
WILKERSON, DAVID	CROSS AND THE SWITCHBLADE
WILKES, BILL ST. JOHN	NAUTICAI ARCHAEOLOGY
WILKINSON, PAUL H.	AIRCRAF ENGINES OF THE W
WILKINSON, RUPERT	PREVENTION OF DRINKING PR
WILLARDS, MILDRED WILDS	LUCK OF HARRY WEAVER
WILLCOX, DONALD	MODERN LEATHER DESIGN
WILLCOX, DONALD	NEW DESIGN IN JEWELRY
WILLCOX, DONALD	WOOD DESIGN
WILLIAMS, BRAD	LOST LEGENDS OF THE WEST
WILLIAMS, COLIN	HOMOSEXUALS AND THE MILIT
WILLIAMS, ETHEL W.	KNOW YOUR ANCESTORS
WILLIAMS, GARTH	BIG GOLDEN ANIMAL A B C
WILLIAMS, JAY	SILVER WHISTLE
WILLIAMS, JOHN G.	FIELD G-IDE TO THE BUTTER
WILLIAMS, JOYCE	ADJUSTABLE JULIE
WILLIAMS, MILLER	ONLY WORLD THERE IS
WILLIAMS, ROBERT M.	U C L A BUSINESS FORECAST
WILLIAMS, TENNESSEE	MILK TRAIN DOESN'T STOP H
WILLIAMS, URSULA MORAY	BOY IN BARN
WILLIAMS, URSULA MORAY	THREE TOYMAKERS
WILLINGHAM, WARREN W.	FREE-ACCESS HIGHER EDUCAT
WILLIS, F. ROY	ITALY CLOOSES EUROPE
WILSON, EDMUND	UPSTATE
WILSON, ELLEN JANET (CAME	AMERICAN PAINTER IN PARIS
WILSON, ERICA	CREWEL EMBROIDERY
WILSON, H. W.; FIRM, PUBL	FICTION CATALOG FOR 1970
WILSON, IRA G.	WHAT COMPUTERS CAN NOT DO
WILSON, JEAN	WEAVING IS FUN
WILSON, JOHN ROWAN	BARRINGTON
WILSON, KENNETH L.	HAVE FAITH WITHOUT FEAR
WINCHELL, CONSTANCE MABEL	GUIDE T REFERENCE BOOKS,
WINDCHY, EUGENE C.	TONKIN GULF
WINN, MARIE	PLAYGROP BOOK
WINTER'S TALES	WINTER'S TALES 16, 1970
WINTERBURN, MOLLIE	TECHNIQUE OF HANDBUILT PO
WINTERS, DONALD L.	HENRY CANTWELL WALLACE AS
WIRTENBERG, PATRICIA Z.	ALL-AROUND-THE-HOUSE ART
WISE, ARTHUR	WHO KILLED ENOCH POWELL
WISE, HERBERT ALVIN	GREAT TALES OF TERROR / T
WISE, SIDNEY T.	INVEST AND RETIRE IN MEXI
WITHERS, CARL	AMERICA. RIDDLE BOOK
WITKIN, B. E.	SUMMARY OF CALIFORNIA LAW

Fig. 3. *All outstanding titles are reported in the monthly cumulative on-order list.*

LC-OC NUMBER	SUB PO NBR LB ORDER NO	VENDOR	QTY	PTL CD	LIST PRICE
72114229.........	7127707747	BT	22		3.86
AA011448.........	7117908249	BRO	4		7.00
73136008.........	7127705427	BRO	5		3.95
AA011253.........	7113002633	BRO	1		4.95
73125589.........	7127700308	BRO	1		8.95
39027949.........	7117918536	PKW	1		2.80
73124983.........	7122105261	BRO	23		7.95
63009442.........	7125600790	BRO	1		4.95
77159558.........	7127703436	BRO	4		7.95
41013397......070	7122108980	CH	2		25.00
78083057.........	7109704020	BRO	8		10.00
72131147.........	7122107263	BT	12		4.50
69017667.........	7125602394	BRO	1		12.50
79126870.........	7122103587	BRO	3		7.50
68012400.........	7127705530	BRO	1		8.95
70080368.........	7127702979	BRO	1		5.95
AA011209.........	7125605046	BT	2		8.95
60015252.........	7127702742	BRO	1		5.00
57004312.........	7122100631	BRO	1		3.30
71136987.........	7122104431	BRO	16		3.47
73146203.........	7125601188	BRO	1		3.95
AA012052.........	7122100095	BRO	1		1.35
76122786.........	7125602623	BRO	1		4.95
AA017727.........	7116109875	CH	2		10.00
63013641.........	7125605433	BT	1		3.75
79102411.........	7127700637	BRO	7		3.80
79152875.........	7127704868	BRO	16		3.80
AA017711.........	7116108965	CH	20		6.50
75083024.........	7127702651	BRO	1		8.50
75143302.........	7125603013	BRO	1		8.95
70149223.........	7125600143	BRO	6		4.95
62009637.........	7127701161	BRO	1		7.50
09035044......070	7125609788	WI	26		25.00
73112925.........	7122112088	PKW	8		6.95
AA013577.........	7127708884	BT	11		8.95
72150926.........	7125607764	DD	9		6.95
77124696.........	7125603013	BT	6		3.95
AA006785......067	7117903415	BRO	2		4.00
AA012355.........	7125608130	DD	4		6.95
67013591.........	7127711323	CMA	1		4.95
55013394......071	7127708931	BT	3		5.95
AA017794.........	7116104869	BRO	4		10.00
76630793.........	7127707032	BT	2		8.95
68028058.........	7122100197	BRO	1		5.00
76148431.........	7125603051	BRO	4		5.95
48005552.........	7127702071	BRO	1		4.95
AA017685.........	7117918194	DRN	27		1.95
53010845.........	7127705905	BT	3		3.50
60004794......169	7122109607	CH	3		25.00

	F			Orange County Public Library ──
	cycle id	document	no.	

A — A [ ] @ B [ ] @ C [ ] @ D [ ] @ E [ ] @ F [ ] @ G [ ] (
LC Year · LC Sequence · LC Prefix · LC Suffix · Serial · Media · On-Hand

B — A [ ] @ B
Sort Author · Sort

C — [ ] [ ] [ ]
Subject Role · Author 1

D — [ ] [ ] [ ]
Subject Role · Author 2

E — [ ] [ ] [ ]
Subject Role · Author 3

F — [ ]
Subject Title

G — Sub-Title

H — Sub-Title

I — Sub-Title

J — A [ ] @ B [ ] @ C [ ] @ D [ ] @ E [ ] @ F [ ]
Publication Year · Copyright Year · Pagination · List Price · Bind · Publisher Ca

K — A [ ] @ B [ ] @ C [ ]
Standard Book Number · Review Source · Core

L — A [ ] @ B [ ] @ C [ ] @ D [ ] @ E [ ] @ F [ ] @ G [ ] @ H
Vendor 1 · Disc Code · Disc.% · Net Price · Proc. · Vendor 2 · Disc. Code

M — Special Order Data 1

N — Special Order Data 2

O — Annotation 1

P — Annotation 2

Q — Annotation 3

R — Annotation 4

S — [ ] Series · Series Title

T — Subject Head 1

U — Subject Head 2

14021-10?

Fig. 4. It all begins with the bibliographic information sheet (BIS).

Bibliographic Information Sheet

@H @I @J @K @L @M @N @O @P
List   Fiction   Level   Sub-Level   Dewey-Pre   Dewey Base   Dewey Interpolation   Cutter

@

@ G
Publisher

@D @E @F @G @H @I @J @K @L @M @
1   2   3   4   1   2   3   4   5   6
Bibliographic Notes   Information Queries

@I @J @
Disc. %   Net Price   Proc.

133.5

PROPERTY OF:
ORANGE CO PUBLIC LIB   25
431 S MANCHESTER
ORANGE 92668

133.5   COPY YW

SCHMIDT, STEVEN

ASTROLOGY 14   1970

$4.95 75123232

CC   25

F6021-132

133.5   COPY YW

SCHMIDT, STEVEN

ASTROLOGY 14   1970

$4.95 75123232

12/27/71

PROPERTY OF:
ORANGE CO PUBLIC LIB   25
431 S MANCHESTER
ORANGE 92668

F6021-132

133.5   COPY YW

SCHMIDT, STEVEN

ASTROLOGY 14   1970

$4.95 75123232

CC   25

F6021-132

01655

Fig. 5. Pocket, circulation cards, spine label, and property stamp are machine-generated for each addition to inventory (reduced by 20 percent).

Holdings data are not included in the Book Catalog. Holdings are displayed separately in the locator guide (Figure 8), where the key for each item in the book catalog which has inventory is listed in concert with the numbers for these branches holding the item and, when more than one copy is held, the number of copies. The locator guide is kept current with a cumulative supplement which lists all changes to inventory. This approach, rather than displaying holdings in the book catalog, was chosen for a variety of reasons. First, it makes little sense to display strictly numeric data which lend themselves to tightly packed typography in a format designed for text and for which a premium page rate is being paid. Second, inventory data are volatile for a multibranch library. The holdings of any given branch vary significantly from month to month due to patron losses, acquisitions, gifts, etc. In addition, holdings (inventory) shifts are fostered by a standing policy that titles not being used extensively at one branch be reassigned to another branch to fill a known requirement.

While the locator guide tracks the holdings for all titles in the collection, BIBLIOS also creates holdings lists (Figure 9) for each branch. These lists display, in shelf-list sequence, the materials in each branch's collection. In use, they replace the traditional shelf list (and related filing) at the individual branch as well as facilitating periodic full branch inventory to maintain the accuracy of the inventory master file. Reporting, for inventory purposes, uses the key number for the affected items.

Circulation Control

Where the book catalog and allied subsystem components have been successfully implemented, circulation control (for lack of a device to economically capture circulation transaction data) has not. An economical data collection unit designed for libraries has not been developed to date by any major manufacturer. In those cases where a machine having the necessary characteristics is offered, it invariably is the product of an undercapitalized firm which promptly goes broke after demonstrating its prototype. The result of this "state of the hardware art" is that the ten fully coded and tested programs in the BIBLIOS circulation control subsystem have been shelved.

Operational, though not operating, this subsystem which is shown diagramatically in Figure 10, draws on the two major data bases maintained by BIBLIOS, the Title-Master and Inventory Master Files. For implementation, the manual registration files now resident in the branches would have to be converted, and book tags or cards would have to be generated and placed with their respective volumes. When these requirements are satisfied, the only remaining input would be circulation transactions created from "marked book" (7), patron card, and the yet-to-be-marketed transactor. These data elements would be patron number, key number, branch number, and Julian date. The method used to capture this transaction input could take any of a broad array of formats (punched

```
L820J702 --      PRE-VEND LIST                              ORANGE COUN

                                                                 MEDIA

LC-OC NBR -SERIAL R AUTHOR                              F   A  ON    LIST
                    CD TITLE                            NF  J  HD    PRICE
AA013106............ 1 RUBNER, ALEX                     N   A        8.50
                       THREE SACRED COWS OF ECON

74160871............ 1 RUDOFSKY, BERNARD                N   A        14.95
                       UNFASHIONABLE HUMAN BODY

73163093............ 1 RUNYON, CHARLES W.               F   A        4.95
                       PIG-WORLD

76160353............ 1 RYCK, FRANCIS                    F   A        4.95
                       LOADED GUN

AA012421............ 1 SACK, JOHN                       N   A        5.95
                       LIEUTENANT CALLEY

77125906............ 1 SANDERS, ED.                     N   A        6.95
                       FAMILY

AA013111............ 1 SANDERSON, IVAN TERENCE          N   A        12.95
                       U. S. A.

61014215............ 1 SANDOZ, MARI                     N   J  R     3.50
                       THESE WERE THE SIOUX

AA010485............ 3 SANTESSON, HANS STEFAN           F   J        5.95
                       DAYS AFTER TOMORROW

AA010476............ 1 SASEK, MIROSLAV                  N   J        2.16
                       ESTO ES SAN FRANCISCO

AA010477............ 1 SASEK, MIROSLAV                  N   J        2.16
                       ESTO ES WASHINGTON, D. C.

65019787............ 1 SASEK, MIROSLAV                  N   J  R     4.95
                       THIS IS HONG KONG

59016286............ 1 SASEK, MIROSLAV                  N   J  R     3.94
                       THIS IS PARIS

74171270............ 1 SAXTON, JOSEPHINE               F   A        4.95
                       GROUP FEAST
```

Fig. 6. Before producing a sub-P.O., the pre-vend list is checked for O.P. materials, among other things.

01 BOOK

TY	PUBLISHER SPECIAL ORDER DATA	DATE	VDR CD	D CD	DISC PCT	NET PRICE	PR CD	AV CD
3	BARNES-NOBLE ...ECONOMICS	1971	*BRO BT	A A				
4	DOUBLEDAY	1971	*DD	A				
5	DOUBLEDAY SF	1971	*DD	A				
9	STEIN-DAY	1971	*BRO BT	A A				
2	VIKING PRESS	1971	*BT BRO	A A				
3	E. P. DUTTON	1971	*BT BRO	A A				
2	RAND MCNALLY	1971	*BRO BT	A A				
1	HASTINGS HOUSE	1961	BT *BRO	A A				
13	LITTLE, BROWN JLG DISTRIBUTED BY DOUBLEDAY	1971	*BT BRO	C C				
9	MOLINO PROYECTO-LEER ORDER DEPT. BRO-DART	1970		A				
10	MOLINO PROYECTO-LEER ORDER DEPT., BRO-DART	1970		C				
1	MACMILLAN-NY	1965	*CH	C				
1	MACMILLAN-NY	1959	*CH	C				
6	DOUBLEDAY	1971	*DD	A				
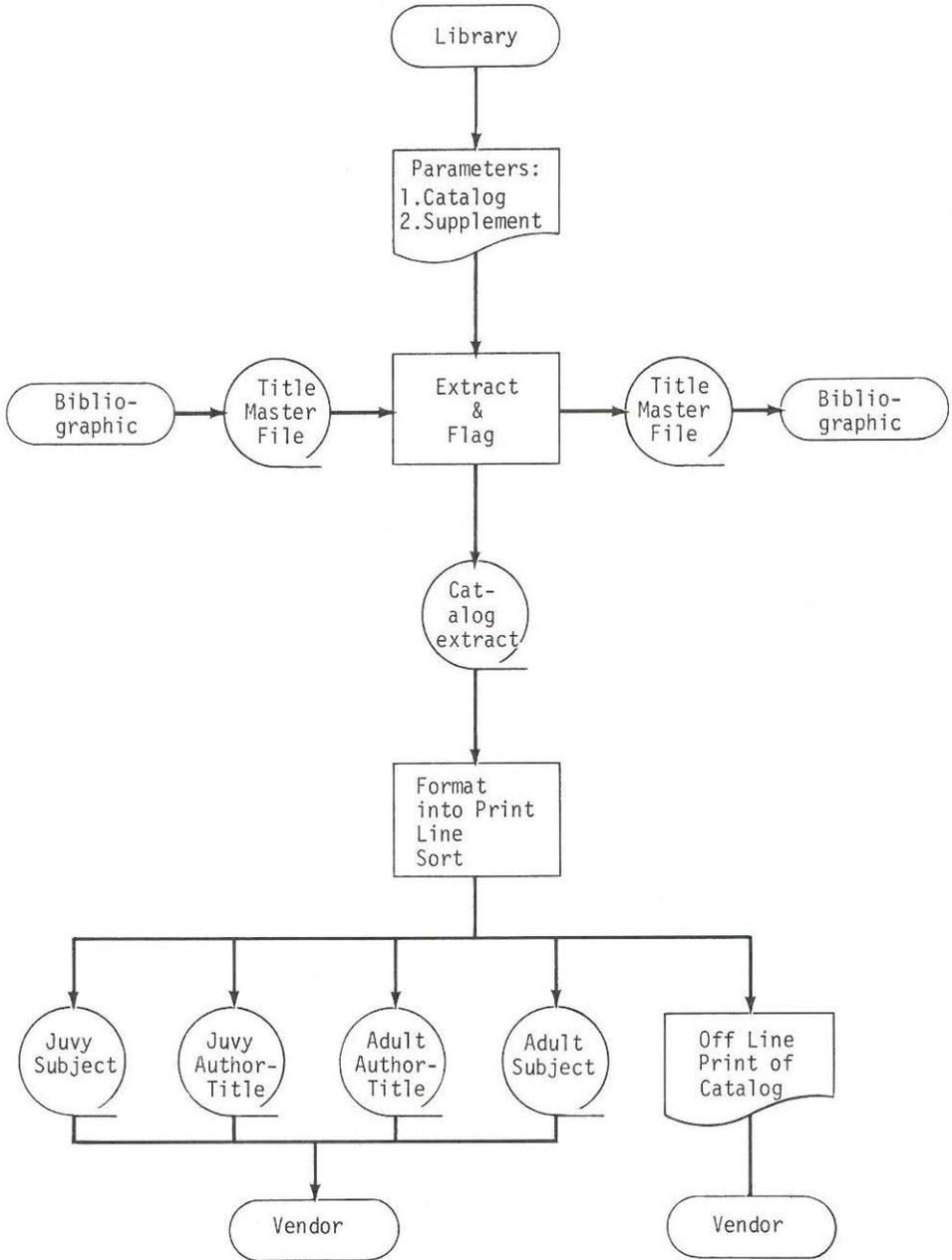
Fig. 7. BIBLIOS book catalog subsystem.

52012816 02 11 14 21 22 23 24 25
26 27 32 35 56-2 61 63
52012846 02-3 11 13 14 15 21 22
23 24-3 25 26-2 27 28
32-2 35 41 42 52 56 61
63
52012848 25 27
52012850 11
52012875 36
52012878 28
52012887 28 61
52012891 23 52
52012892 02 11 21 22-2 24 25 26
28 35 42 52 54 56 61
52012893 21 26 28
52012894 02
52012896 25
52012899 21 54 61
52012902 45
52012904 24 27 28 52 63
52012905 28 35 52
52012906 02-2 11 12 24 25 26 27
28 32 42 52 56-2 61
52012907 21
52012908 21
52012909 21 22 25
52012914 01
52012915 02 24 25
52012917 24
52012922 21
52012924 24 25-2 28 63
52012926 24
52012933 01 14 24 32 35 61 63
52012949 24
52012951 28
52012953

52013140-002 63
52013175 11
52013192 02-2 13 14 21 22 23 24-2
25 26 27-2 28 32 35 42
45 52 56 61 63
52013193 12
52013200 26
52013202 02
52013217 21 27 28 35
52013219 27
52013224 26
52013232 28
52013235 36
52013236 35 63
52013240 21
52013242 32
52013250 61
52013252 02 11 13 14 21 22 23
24-2 25 26 27 28 41 42
56 61
52013253 21 24 25 27 45 61
► 52013255 11 24 32 ◄
52013258 21
52013263 11 23
52013264 02-2 11 14 15 21 22 24
25 26-2 27-2 28 32-2 35
41 42 45 61-2
52013268 42
52013287 63
52013288 22 25 61
52013290 02 11 14 24 25 26-2 35-2
42 45 56 61
52013291 24
52013

52013548 02-2 14 21 25 26 27 45
61
52013550 02 14 21 32 42 63
52013559 02 11 14 22 24 25 27 28
35 56 61
52013565 45
52013566 02 26 27 28 42 45 61-2
52013569 35
52013571 02 22 61
52013574 63
52013587 25 35
52013592 45
52013601 13 21 24
52013609 22 63
52013617 02 25
52013618 02 11 13 21 23 24 27 28
32 35 41 42 61
52013634 14 21 25 28 35-2 61
52013640 21
52013645 11 13 14 21 22 25 26 27
28 32 36 41 42-2 45 56
61 63
52013647 11 28 36
52013648 61
52013649 41
52013657 02
52013659 26
52013663 42
52013669 13 52
52013675 26
52013677 02-2 11 13 14 15 21-2
22-2 23 24 25 26 27 28
32 35 41   52 54 56

52013799 24 42
52013827 21
52013828 12 28 36 42 63
52013829 41
52013836 61
52013845 14
52013850 25
52013852 02 14 42
52013861 28
52013868 02 13 14 25 26 28 35 36
52013872 02 22 24
52013873 14
52013876 22 28
52013879-001 01 11 14 21 22 23
24 27 28 32 42 56 61
52013879-002 01 11 14 21 22 23
24 27 28 32 42 56 61
52013879-003 01 11 14 21 22 23
24 27 28 32 42 56 61
52013880 24 26 42
52013881 26 61
52013904 12
52013912 01 14 21 22 23 24 26 27
28 32 35 45 56 61
52013935 26
52013939 14 21 22 24 26 27 32 35
36
52013940 13
52013941 25
52013968 01
52013969-001 02 61
52013969-002 02 61
52013969-003 02 61
21 26

Fig. 8. If a title listed in the book catalog has inventory, the key, branch number, and copy count are displayed in the locator guide.

CALL NUMBER	AUTHOR * TITLE
795.415	REESE TERENCE * STORY OF AN ACCUSATION
795.415	SHEINWOLD ALFRED * SHORT CUT TO WINNING BRIDGE
795.415	SMITH THOMAS M * LOOK IT UP IN HOYLE
795.415	YOUNG RAY * BRIDGE FOR PEOPLE WHO DON T KNOW ON
795.41503	REESE TERENCE * BRIDGE PLAYER S DICTIONARY
795.42	COLLVER DONALD I * SCIENTIFIC BLACKJACK AND COM
795.42	THORP EDWARD O * BEAT THE DEALER A WINNING STRA
795.438	BLACKSTONE HARRY * BLACKSTONE S MODERN CARD TRI
795.438	STANYON ELLIS * CARD TRICKS FOR EVERYONE
795.540973	RAND MCNALLY * 1970 RAND MCNALLY GUIDEBOOK TO C
796	BISHER FURMAN * WITH A SOUTHERN EXPOSURE
796	KROUT JOHN ALLEN * ANNALS OF AMERICAN SPORT
796	MITTELBUSCHER C F * CALL EM RIGHT
796	MURRAY JIM * SPORTING WORLD OF JIM MURRAY
796	SMITH ROBERT MILLER * GRANTLAND RICE AWARD PRIZ
796	SMITH WALTER WELLESLEY * VIEWS CF SPORT
796	VANNIER MARYHELEN * INDIVIDUAL AND TEAM SPORTS
796	WOOD CLEMENT * COMPLETE BOOK OF GAMES
796.026	SPORTS RULES ENCYCLOPEDIA * SPORTS RULES ENCYCL
796.03	SALAK JOHN S * DICTIONARY OF AMERICAN SPORTS
796.068	AARON DAVID * CHILD S PLAY
796.068	BUTLER GEORGE D * RECREATION AREAS
796.069	ISAACS STAN * CAREERS AND OPPORTUNITIES IN SPOR
796.08	PEPE PHILIP S * WINNERS NEVER QUIT
796.08	WIND HERBERT WARREN * REALM OF SPORT
796.082	ESQUIRE * ESQUIRE S GREAT MEN AND MOMENTS IN SP
796.082	SPORTS ILLUSTRATED * SPORTS THE AMERICAN SCENE
796.09	COHANE TIMOTHY * BYPATHS OF GLORY
796.0973	BEST SPORTS STORIES * BEST SPORTS STORIES FOR I
796.0973	BEST SPORTS STORIES * BEST SPORTS STORIES FOR I
796.0973	BEST SPORTS STORIES * BEST SPORTS STORIES FOR I
796.0973	BEST SPORTS STORIES * BEST SPORTS STORIES FOR I
796.0973	BEST SPORTS STORIES * BEST SPORTS STORIES FOR I
796.1	BROER MARION R * FUNDAMENTALS OF MARCHING
796.13	CHASE RICHARD * HULLABALOO AND OTHER SINGING FO
796.15	WAGENVOORD JAMES * FLYING KITES
796.3	HOLT RICHARD * TEACH YOURSELF BILLIARDS AND SNO
796.31	AMATEUR ATHLETIC UNION * OFFICIAL RULES HANDBAL
796.31	MAXWELL HARVEY C * AMERICAN LAWN BOWLER S GUIDE
796.323	AMATEUR ATHLETIC UNION * OFFICIAL A A U BASKETB
796.323	SPORTS ILLUSTRATED * BOOK OF BASKETBALL
796.32307	VERDERAME SAL RED * ORGANIZATION FOR CHAMPIONSH
796.323092	AUERBACH ARNOLD RED * RED AUERBACH WINNING THE
796.323092	PETTIT BOB * BOB PETTIT THE DRIVE WITHIN ME
796.3236	AXTHELM PETE * CITY GAME
796.33	CONERLY CHARLIE * FORWARD PASS
796.332	SCHENKEL CHRIS * HOW TO WATCH FOOTBALL ON TELEV
796.33203	TREAT ROGER L * ENCYCLOPEDIA OF FOOTBALL
796.332058	RIGER ROBERT * BEST PLAYS OF THE YEAR 1962
796.33206	CURRAN BOB * FOUR HUNDRED THOUSAND DOLLAR QUART
796.332077	DEVINE DAN * MISSOURI POWER FOOTBALL
796.332077	SCHOOR GENE * TREASURY OF NOTRE DAME FOOTBALL
796.332082	NEWCOMBE JACK * FIRESIDE BOOK OF FOOTBALL
796.33209	BELL JOSEPH N * BOWL GAME THRILLS

Fig. 9. *The maintenance of manual shelflists is obviated by a BIBLIOS-produced holdings list for each branch.*

NON-FICTION

TITLE	R S NBR	LC/OC NBR
	*	67C17872.........
	*	61016665.........
	*	78077366.........
E CARD FROM ANOTHER	*	64015641.........
	*	63025374.........
PLETE CASINO GUIDE	*	66023116.........
TEGY FOR THE GAME OF TWENTY ONE	*	66C12019.........
CKS	*	58C05566.........
	*	68022206.........
AMPGROUNDS REV ED	*	60C01380.........
	*	62008215.........
	*	29000805A........
	*	BB091802.........
	*	68C25594.........
E SPORTS STORIES	*	62015934.........
	*	53C06862.........
FOR GIRLS AND WOMEN	*	60007465.........
	*	38003909.........
OPEDIA	*	61019409.........
	*	60013658.........
	*	64012696.........
	*	57011288.........
TS	*	64019529.........
	*	67026079.........
	*	66019433.........
ORTS	*	61010232.........
	*	63021480.........
	*	63016506.........
961	*	45C35124......061
963	*	45035124......063
964	*	45035124......064
966	*	45035124......066
970	*	45035124......070
	*	65021807.........
LK GAMES	*	49008127.........
	*	68031281.........
OKER	*	58003667.........
LL	*	BBC40004.........
E	*	66025876.........
ALL GUIDE 1965 1966	*	BB090177.........
	*	62011346.........
IP HIGH SCHOOL BASKETBALL	*	63014720.........
HARD WAY	*	67011223.........
	*	66C14357.........
	*	AA010179.........
	*	60012110.........
ISION	*	64020856.........
	*	61013913.........
	*	62022305.........
ERBACK	*	65022618.........
	*	62005250.........
	*	62C18326.........
	*	64019933.........
	* 2	63016799.........
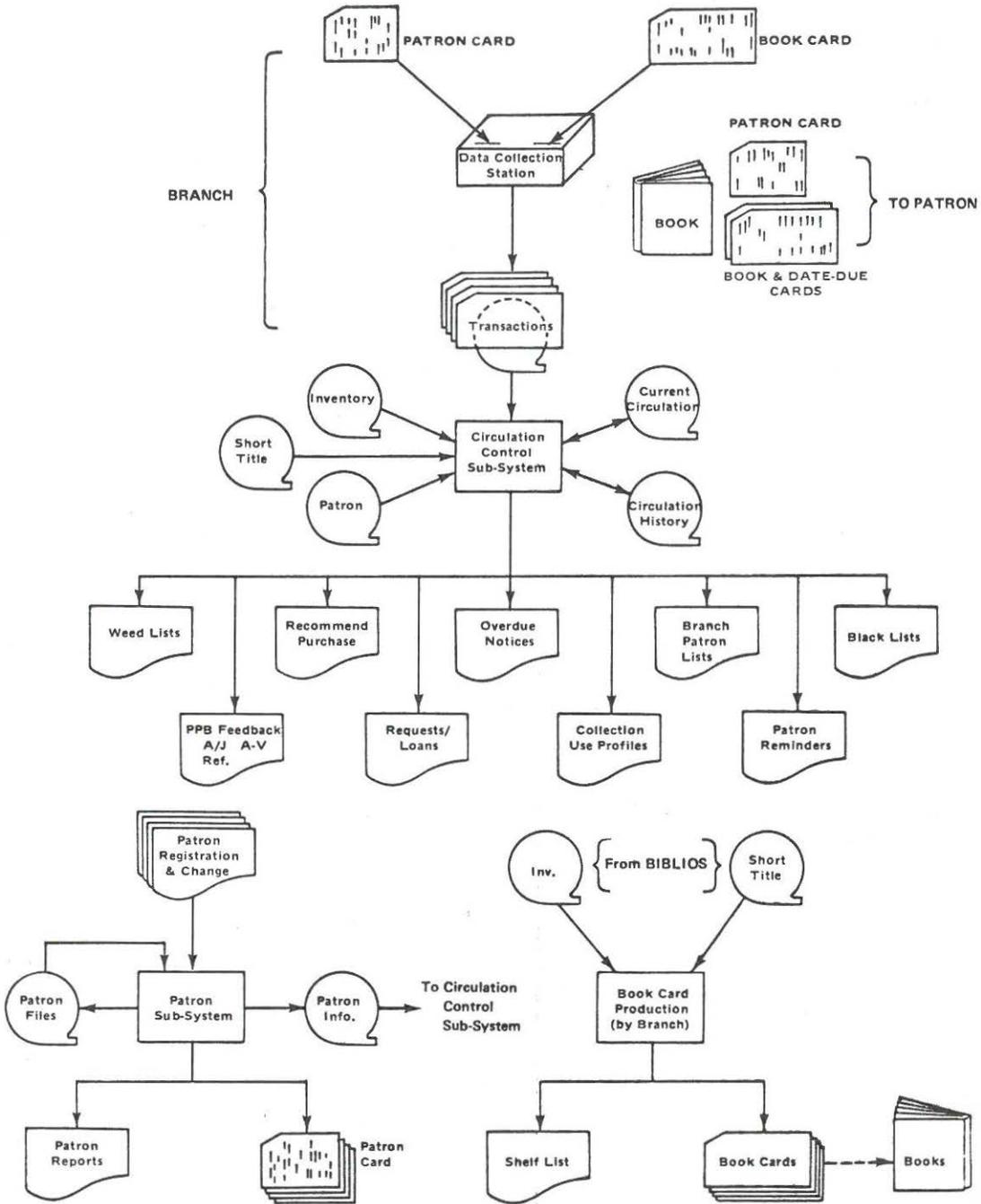
Fig. 10. *BIBLIOS circulation control subsystem.*

cards, cassette, or mini-reels). Ideally, the elusive transactor should be able to "read" a label on the book as well as a patron card.

Kimball labels, "Sunburst" tags, magnetically coded swatches and the like have worked and continue to work in the retail trade; there is no reason why they shouldn't work for libraries. The only deterrent seems to be the reticence of their manufacturers to enter an unknown market where, following the Melcher axiom, they are met with a "stubborn, 'show me' attitude when automation is proposed." (8)

The products designed into the circulation control module include: weed lists, patron "black lists," circulation profiles (graphically displaying patron use of each branch's collection), and automatic duplicate ordering. Reports measure circulation from a manager's viewpoint, but not to the exclusion of such bread-and-butter products as overdue notices, registration lists, and related statistical recapitulations.

A WORD ABOUT DOCUMENTATION

For each program in each subsystem of BIBLIOS, forty unique programs in all, there is a formal package consisting of:
1. A program specification detailing the inputs, processing, outputs, idiosyncracies, and edits of that program;
2. A listing of the COBOL program itself;
3. An operations binder (notebook) section for set-up and run procedures;
4. A user's guide section relating requirements and diagnostics to the librarians using the program including typical problems; and,
5. Assorted total system binders (notebooks).

While some might think "overkill," in automation this is not the case. The BIBLIOS system has yet to fail a scheduled commitment. Further, it is suspected that the mere discipline of documentation caused many serious reconsiderations of program and procedural logic, at the time and on the spot, with the result that BIBLIOS is a reliable system—requiring no major rework and continuing to respond to the library's functional requirements for over two years at this writing.

A WORD ABOUT DEVELOPMENT COSTS

Both developmental and operational costs for BIBLIOS are known and documented. Specifically, the costs to procure such a system are broken out in Table 1, where each subsystem is examined in terms of the dollars it represents and the assorted tasks required to bring it into being. The totals represent all costs over approximately a three-year period beginning with rough specifications and yielding the first book catalog.

It must be noted that final program specifications and coding were performed for Orange County by a contractor. This approach was chosen, since a good job done on time was wanted. That the approach was valid is

Table 1. BIBLIOS development costs (including full conversion and publication of first book catalog).

	MARC	Bibliographic Inventory	Book Catalog Locator Guide	Acquisitions	Circulation	Total
Contractor						
Program Specifications & Coding	$16,686	$ 54,299	$ 25,800	$ 72,305	$ 91,000	$260,090
Orange Co. Public Library						
Analyst	3,360	7,840	2,240	14,560	7,000	35,000
Coordination	1,225	7,679	818	5,310	5,670	20,702
Implementation (K.P., Machine Time, Etc.)	4,772	12,263	4,635	7,879	10,110	39,659
Conversion/Outside Services	800	53,500	41,370			95,670
Subtotal	10,157	81,282	49,063	27,749	22,780	191,031
TOTAL	$26,843	$135,581	$ 74,863	$100,054	$113,780	$451,121

evidenced by the achievement of a successful system on schedule and within budget. This approach reflects a contention that librarians can specify their requirements if they "have a mind to," and that a contracted programming staff can satisfactorily perform to predetermined standards and timeframes if properly directed. In direct contrast to this approach are the incredible schedules developed when requirements are not specified (and frozen), and the suspected monumental costs hidden in lost staff time due to extended parallel operations or simply waiting until "they" get the " . . . thing" to run right.

The remaining cost components, briefly, reflect direct library analyst time, the cost of coordination meetings, direct key punch and machine time for programs, their test, debug, string test, systems test, and for the bibliographic and book catalog, subsystems conversion and catalog print file generation. The conversion/outside services include a MARC subscription, the creation and use of a group of nine typists to optically scan the library's files to convert them to machine readable form (including error correction), and the contracted services of a photoreproduction house to mechanically compose, print, bind, and deliver 500 sets of the book catalog and 100 sets of the locator guide. These are the costs of setting the system up, staff training, and creating a single operational display: the book catalog.

A WORD ABOUT OPERATING COSTS

Early in 1965, as a prelude to implementing a book acquisition program, a time/cost study was performed to determine how much it cost the library to order a book (one title). This study detailed and costed the typing, sorting, assignment of vendors, and the reduction of a diversity of paper requisite to creating a purchase order. Excluding the cost of the purchase order form itself, the direct manual cost for this process was $1.56 per title, using a clerical rate of $2.10 per hour. In the intervening years three things have happened:

First, clerical rates have increased to $2.79 per hour which when applied to the unit cost of the 1965 acquisitions study means a direct outlay of $2.07 per title (as against the previous $1.56).

Second, the number of branches has increased which implies that, if the manual system of 1965 could cope with the increased load, it would have required more people and therefore an increase in indirect costs, not to mention the probability of less efficiency due to increased direct costs.

Third, Orange County has automated this function (as well as others). Since Orange County is wont to track costs, it so happens that the cost for creating a purchase order (subpurchase order under the new system) is available. Specifically, Orange County knows computer and peripheral costs and the exact time for processing from actual billings over the past two years. The reduction of these data to a per-unit-handled equivalent, while detailed, is not difficult. Thus, it is possible to deduce the machine costs

Table 2. *Typical processing costs for one title in Orange County Public Library's BIBLIOS system.*

	MARC (Weekly)	Bibliographic[1]	Inventory	Acquisitions[2] Order	Receive[3]	Book Catalog B.C.	Inventory
Run Cost	$325.16	$300.40	$201.21	$1244.94	$238.55	$238.00	$26.00
Average Items Per Period	115[4]	1,000	8,100	700		4000	
				Order	Receive		
Cost/Entry	2.83	0.30	0.025	$1.78	$0.34	0.059	0.0006
Supplies	0.13		0.028	$.05 (Sub P.O.)			
Services		0.02 (Opscan)	(Convelope)	.06 (Opscan)		0.041 (Comp/Print)	0.0028 (Comp/Print)
TOTAL	$2.96	$0.32	$0.053	$1.89	$0.34	$.10	$0.0034

Example:
  Cost of entry from initial input to display in book catalog (including Convelope; excluding MARC source: $2.77).

[1] 40% Bibliographic.
[2] 60% Bibliographic.
[3] Includes invoice, vendor, and budget displays.
[4] If all new entries to system came from MARC.

equitable to those for the earlier manual effort: creating a purchase order for one title, including the purchase order form, now costs $1.89.

Similar economies can readily be documented as can the increases in service to our patrons at no increase in staff. The operating costs for those BIBLIOS subsystems in regular use are given in Table 2. Only two entries on this table are not self-explanatory.

MARC

MARC, which is indicated as processed weekly, has not been run for over a year. The explanation is simple economics. It costs $0.32 to manually place a bibliographic description on file (excluding the time spent to circle an entry in *Publishers' Weekly (PW)* vs. $2.96 to process the same entry from MARC. This cost for MARC includes the subscription cost prorated to selected entries, the translation and format of all MARC entries, the automatic release of those entries of limited value to a public library, the cumulation of entries which may be of value, the extract and transfer of those entries selected, and the reporting via indices and full listings for the contents of the cumulated file. The unit cost is the actual processing cost for MARC II files for one year divided by the number of titles processed through the rest of BIBLIOS during the same period. This cost does not include corrections to selected MARC entries (invariably in the call number and author fields for consistency with the library's existing files). The costs affiliated with processing corrective input closely resemble those for bibliographic, e.g., $0.32 each.

Prorated Bibliographic Input

BIBLIOS works on pre-cataloged entries. The 60 percent bibliographic input shown under acquisitions relates to the full initial description for a title being entered by a book selector to effect its order and subsequent reporting; the 40 percent shown under bibliographic is for cataloger input to adjust the entry for title-page accuracy, consistency with existing files, and, for nonfiction, the assignment of call numbers and subject headings. It is important to note that for reorders against a title already in the system, no bibliographic input is required. In the case of reorders, the per title cost is $0.88 including subpurchase order forms.

REFERENCES

1. John C. Kountz, "Cost Comparison of Computer versus Manual Catalog Maintenance," *Journal of Library Automation* 1:159-77 (Spring 1968).
2. Daniel Melcher, *Melcher on Acquisition* (Chicago: American Library Association, 1971), p. 135.
3. John C. Kountz and Robert Norton, "BIBLIOS—A Modular Approach to Total Library ADP," *Proceedings of ASIS* 6:39-50 (1969).

4. John C. Kountz and Robert E. Norton, "BIBLIOS—A Modular System for Library Automation," *Datamation* 16-79-83 (Feb. 1970).
5. Orange County Public Library presently has twenty-six branches, three bookmobiles, and plans for at least three more branches and an additional bookmobile in the near future.
6. Kountz and Norton, "BIBLIOS—A Modular Approach."
7. The device affiliated with the book depends on the transactor. The only requirements are that it mechanically represent the key for the book, be practically indestructible, and that it can be prepared mechanically. This last consideration is an absolute when there are 800,000 volumes to convert.
8. Melcher, *Melcher on Acquisition,* p. 135.