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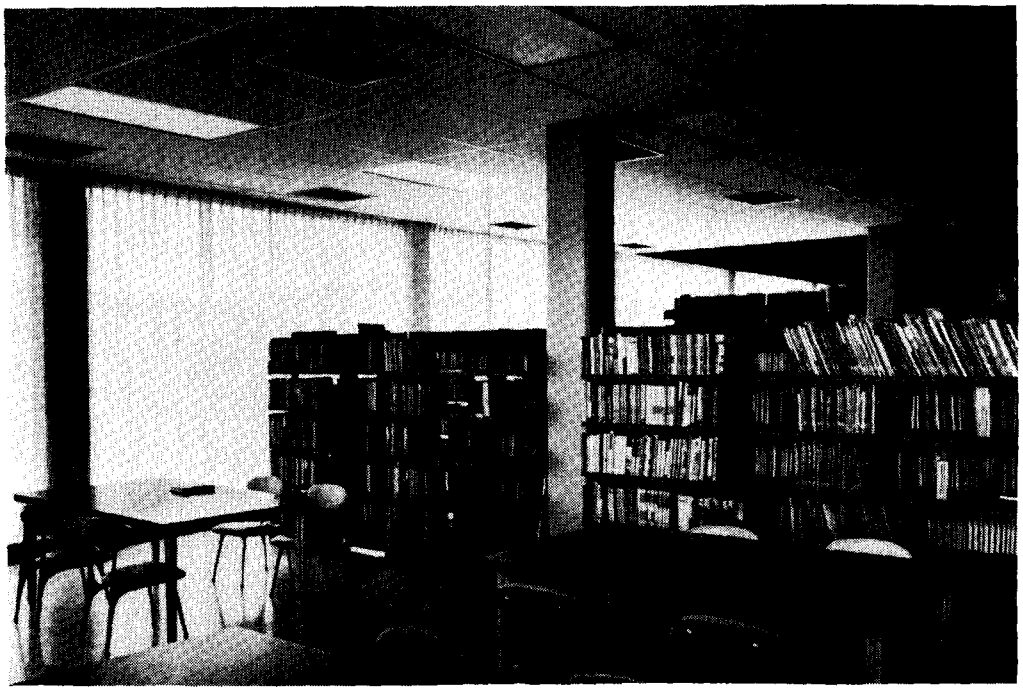

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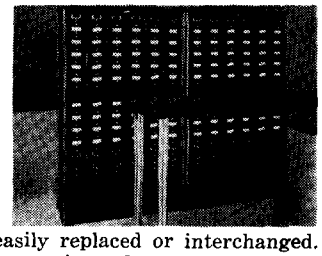

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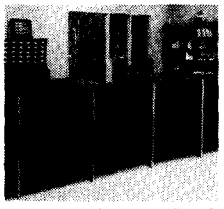

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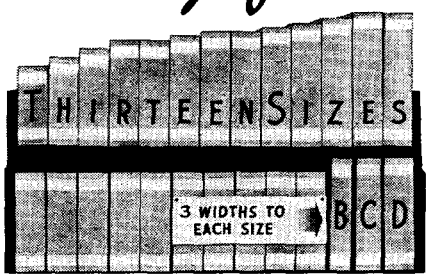

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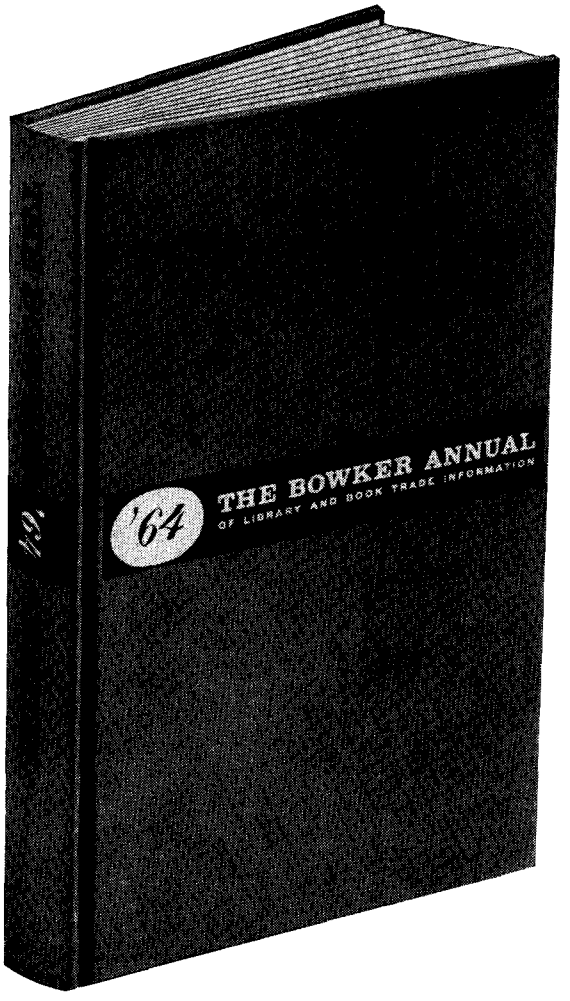

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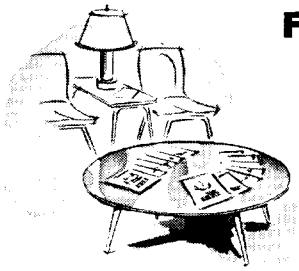

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Automated Circulation at a Government R&D Installation

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PICATINNY ARSENAL'S Technical Information Section shares the big problem of technical libraries everywhere—too much business, too little help. Its collection of 29,000 books, over 900 current periodical titles, and 135,000 technical reports is used by more than 1,500 scientists and engineers. In a typical recent year the staff was called on to handle more than 114,000 separate library transactions. This is due to the requests generated from the library's weekly *Technical Information Bulletin* (see COSTELLO, M. A. and VOOS, H. Preparation of an Information Bulletin. *Special Libraries*, vol. 50, November 1959, p. 454-5).

The circulation problem is further complicated by two special factors: *1)* for security reasons, the movement and location of a large part of the library's holdings must be strictly controlled, and *2)* the people who use the library are widely dispersed throughout a 7,000-acre plant, and therefore the library materials they order must usually be mailed to them. These two factors alone add greatly to the amount of handling and paper work that must be done by the library's limited staff.

Up to 1962 we had tried to keep up with the steadily rising circulation by streamlining what was essentially a traditional system. Under this system records and files were kept, and actual charging was done with a two-card process. Each day cards had to be interfiled or removed manually from the files. The only way to locate overdue material was to thumb through the charge-out cards.

Meanwhile, shortages of both physical space and manpower became more and more acute. Finally, it became clear that a complete break with old methods was necessary if we were to be able to provide the kind of library service so essential to a modern research and development organization. The answer, of course, was automation. Fortunately, a circulation system has two characteristics that encourage the use of business machines—high frequency and repetition of operation.

General Description of System

In April 1962 the Technical Information Section adopted a semi-automated, computer-based circulation system for books and reports. After considerable thought it had been decided that, within reasonable limits, efficiency should take precedence over cost.

The system chosen involves preparation and sorting of cards on low cost IBM equipment—an 026 punch and an 082 sorter—and preparations of master listings by a 1401 computer. Print-out is performed on a 1403 high speed printer, which also prepares overdue notices using a search program and an interpreter.

Punched cards are prepared for all library materials on loan or reserved for loan. These cards are then placed in the computer to record charge-out or reserve data as a master list on magnetic tape. Entries are made in the first 63 columns according to the coding on Figure 1.

Every second day, the cards are fed into the 1401 computer, which uses them to correct the master listing by erasing from the tape entries for materials that have been returned, converting reserves to loans as reserved materials become available, and adding entries for newly loaned materials.

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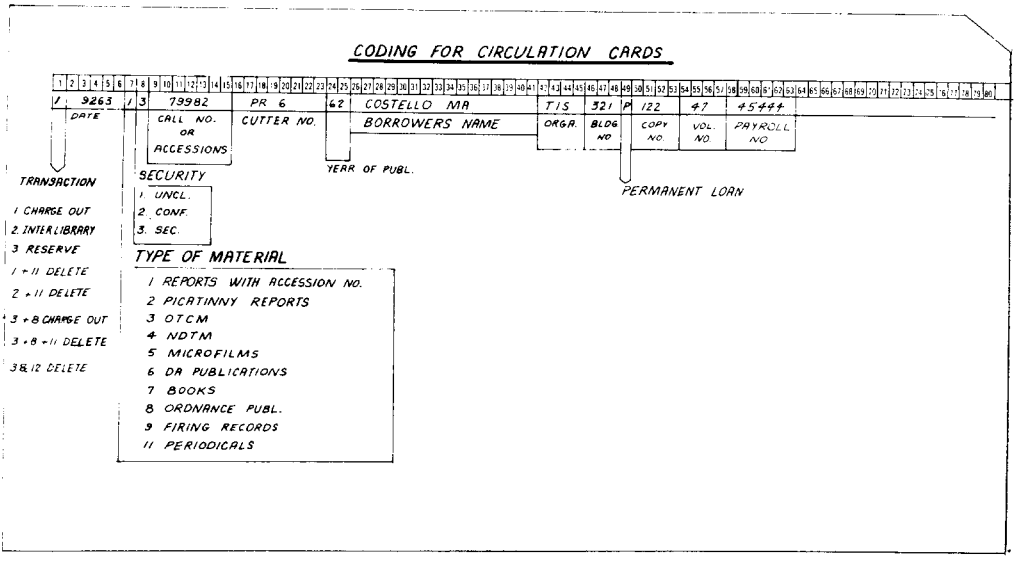

Figure 1: Code used in punching the IBM cards

Borrowing Procedure

Stocks of blank punched cards are maintained in the Technical Information Section at all charge-out desks and also at convenient locations in all of the Arsenal's several research groups. Thus a borrower may either mail his request or come to the library.

The borrower enters his name, organization, and building number on the request card and identifies the library material he wants by either entering the accession (or call) number, if he knows it, or writing on the card the name of the author, the title of the publication, and other identifying data.

Cards received by mail are checked (see step 1 in the flow chart, Figure 2) to determine whether the borrower has identified the requested material by an accession or call number. If he has not, a search is made by library personnel to determine whether the library has the requested material. If the material is found, its call or accession number is entered on the card. If it is not found, the card is sent to the ordering unit of the library, which determines whether or not the material should be purchased. The back of the card can be used by the ordering unit to show library action both in searching and in deciding on number of copies, supplier, and other factors.

Once the library requisition cards have call or accession numbers on them, they are sent to the keypunch operator who punches the following entries: *1)* date of transaction, *2)* type of document, *3)* library number (call or accession), *4)* borrower's name, and *5)* borrower's payroll number.

She then sorts the cards by: *1)* library number, *2)* type of document, and *3)* security classification, which is part of the accession number (for security reasons, materials having different classifications are kept in different parts of the library).

The cards are then given to clerks who determine by shelf search whether the material requested is on hand. If the item is not found, the card is sent to the keypunch operator who punches a reserve transaction code in it and puts it aside for sorting. If the item is on the shelf, the card is slipped into it, and it is placed on a truck for delivery to the keypunch operator, who enters the transaction code and copy number of the material. She also prepares a duplicate card, using a gang punch. The original card is then attached, as a route slip, to the material being loaned, and the second is put aside for sorting.

For over-the-desk requests (which account for only ten per cent of all circulation), the

requester fills in two copies of the card instead of one, so that one may immediately serve as a route slip, while the other is used to process the request.

When an item of library material is returned to the library, the route slip card is removed, gang punched with the delete code, and put aside for sorting. The returned item is then checked against the reserve list print-out to determine whether anyone is waiting for it. If so, the reserve card is pulled from the reserve punched card file and sent with the item to the keypuncher, who punches a transaction code (delete reserve and charge-out) in the card and duplicates it. As with all charge-outs, the original card is attached to the library item as a route slip, and the duplicate card is set aside for sorting.

To facilitate processing on the IBM 1401, the cards are sorted first by payroll number, then by volume number, by library number, and by type of material. They are then sent to the computer for use in updating the master tape.

Updating the Master Tape

The document number on each card is read into the memory and compared with numbers on the magnetic tape until the proper tape record is located for deletion from or addition to the master tape. The transaction code on the card read indicates the action to be taken at this point. Before a given record is deleted from the tape, the document number and security classification, the volume and copy numbers, the requester's payroll number, and the status of the document (outstanding, reserve, and so on) are checked to insure that the proper document record is removed from the tape. Records written on tape are exact duplicates of the card records.

The punched cards that have been used in updating the tape are then returned to the library where the reserve cards are pulled by sorting and all other cards are thrown away (see Figure 2).

The corrected tape record is transcribed, on the IBM 1401 on-line printer, into a printed statement listing all items on loan or on reserve. The printed list has the following column headings: document type, document security classification, library number, transaction code, borrower's name, organization, building and payroll numbers, and date.

The tape is updated daily, and the master list print-out and the reserve list are prepared from it as needed. Each week the master tape is read into the 709 computer (which has a much greater storage capacity than the 1401) for sorting by payroll number order, and a print-out in payroll number order is then prepared. This print-out, which is considered necessary to control our collection, is used in compiling the monthly statements sent out to library users and for clearing individuals leaving Arsenal employment.

The monthly statement for library users informs them of the library items they are charged with. It also informs a user of classified library items in his possession. This information serves to remind him to periodically check on the safety of such documents.

As a by-product of the circulation system, the computer provides a monthly statistical breakdown of circulation transactions listed by type of document, security classification, and user organization.

Once each month overdues are sent by using the computer to search for materials that have been charged out longest and have someone listed in the reserve file as waiting for them. Before the computer punches an overdue card, it counts the number of reserves against the item and the number of copies that are overdue. If there are fewer reserves than overdues, the computer punches as many overdue cards as there are reserves, starting with the copy of the item that has been outstanding the longest. These cards are then passed through an interpreting machine, and, to facilitate mailing, the notices are sorted by payroll number and then by building number. Overdues are sent only if the item has been requested.

Cost and Efficiency

Here are some details on cost and efficiency. The costs of the materials used are:

Blank IBM cards—$1.05 per 1,000

Printed circulation cards—$1.50 per 1,000 (not including setup and plate charges)

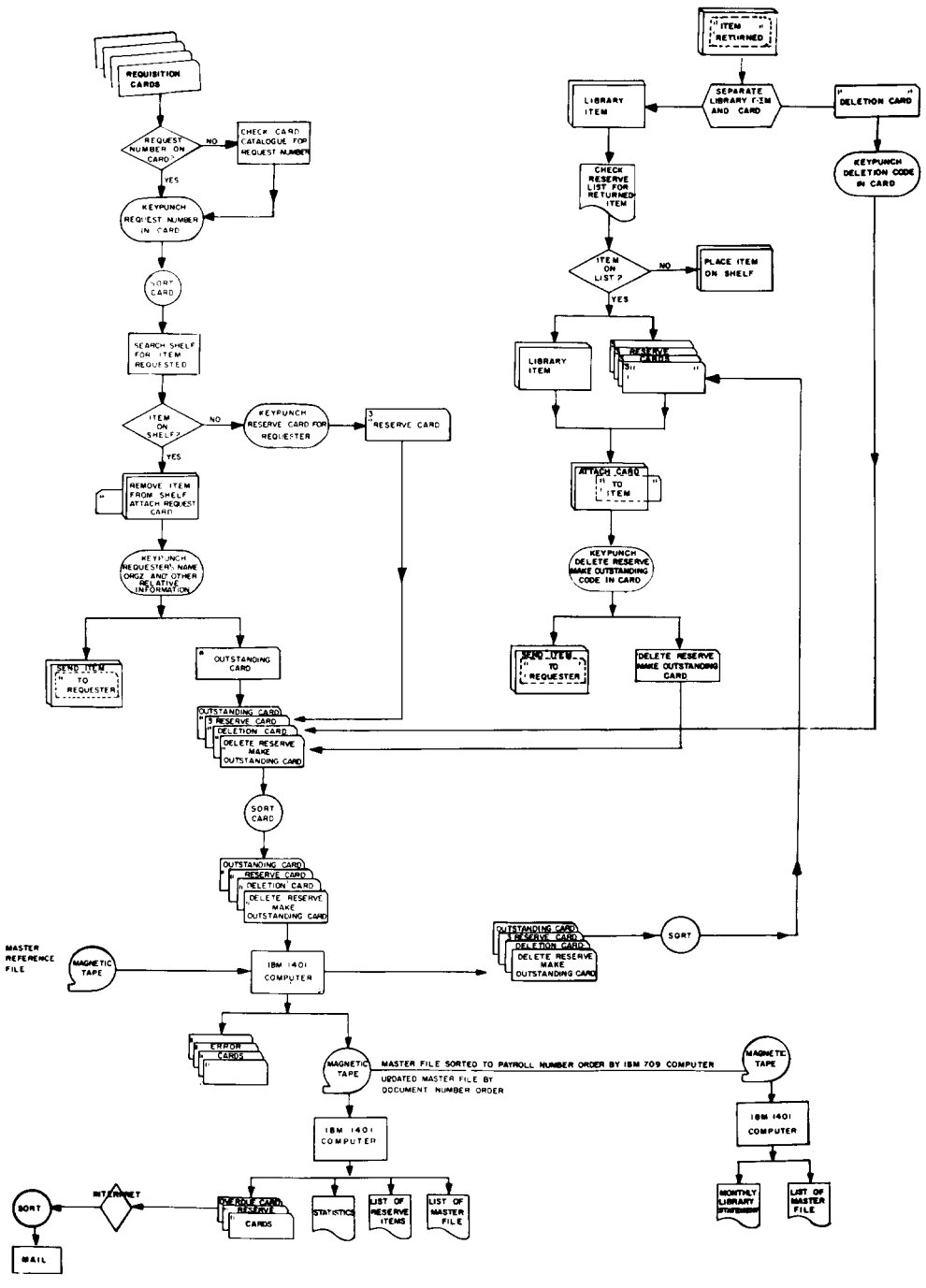

Figure 2: Circulation control flow chart

Since approximately 2,000 blank cards and 2,900 printed cards are used each month, total monthly material costs are $6.45, plus setup and plate charge costs.

About 10 rolls of masking tape are also used each month to attach the IBM cards to loaned-out library material.

Monthly equipment costs are:

026 Keypunch	$ 71.00
082 Sorter	46.00
1401 cost (average)	318.87
709 cost (average)	319.93
Total	$755.80

A study of the efficiency of the system, accomplished by the use of work measurement and standard time data, shows that the new system, including computer time in terms of hours per unit, is more efficient than the old one. In 1962-63, the new system required an average of .15 hour per item (this includes keypunching, sorting, pulling from shelves, preparing for mail, discharging and refiling returns, and processing on computer) as compared to a 1961 average of .18 for the old system. Although this may seem an insignificant gain in time (two minutes per item), it actually represents a substantial saving when the number of annual transactions is considered. Future refinements in the program, such as less frequent computer runs, automatic preparation of reserve cards, and so on may make greater economies of time possible.

With this computer-based system, the circulation function can be accomplished with two less library personnel.

The automated overdue system is five times as efficient as the manual system. Moreover, it provides statistical data, which the manual system did not, on the rate of return of documents and the average number of people waiting for them.

Future Plans

Circulation, of course, is only one part of the entire information handling process. We have plans under way to automate other phases of the library operation. We intend, for example, to place the entire shelflist on tape, thereby providing benefits broader than those of information retrieval alone. The matching of reserves by number of requests against this shelflist tape will supply more meaningful requisition information. The statistical data now available on the use of materials will give us more realistic weeding criteria. A monthly regrading list and an annual inventory list will be prepared. Each week's cataloging input will be used to prepare an accession list in broad subject order.

We are also considering the possibility of issuing a book catalog, which could be kept up-dated by issuing supplements or by using cards that would be generated by a computer in pre-sorted order. The periodical records could also be fed into an automated system. Contractor and user profiles will be used for initial routing of periodicals, books, and reports, as well as for establishing need-to-know and preparing distribution lists for technical reports.

Conclusion

The circulation system described in this paper represents the approach that we at Picatinny have taken to the application of automation. Obviously, it is not the only approach. Varying local situations create differences in circulation policies and procedures. Local security problems, for example, will have a significant influence on the techniques a library must use to control its circulation. It will be up to the librarians at each installation to determine for themselves how best to take advantage of the latest in library procedures and methods.

Management Information Services

George Fry & Associates, Inc., a management consulting firm with offices in New York, Washington, D. C., Chicago, and Los Angeles, has added management information services as a supplement to several of its other services in the areas of organization planning and management controls, marketing planning and research, and industrial engineering and production. W. Robert Hydeman, former Chairman of the College of Management Information of the Institute of Management Sciences and a pioneer in management information systems and electronic data processing applications, will direct operations from the Los Angeles office.

PIL (Processing Information List) or A Computer-Controlled Processing Record

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1963 Consultant to the IBM Research Library

WHILE UNITED STATES libraries usually follow procedures recommended by ALA and the Library of Congress in the bibliographic control of their collections, there is no acceptable standard system for the control of items on order or being processed. Instead, the procedures employed are evolved to meet local requirements and to solve specific problems.

To achieve control over the ordering process, a library must:

1. Verify that an item is neither in the collection nor on order.
2. Inform the vendor of what is desired.
3. Identify the item received in terms of what has been ordered.
4. Authorize the disbursing authority to pay for the item received.

Beyond this minimum, there is incessant pressure on the ordering and receiving activity to expand its record keeping. The library administrator wants statistics. The cataloger needs the information necessary to order LC cards. A requester desires to know when he can expect to receive the item he suggested. Accounting demands to be informed of the financial commitments that have been made. The circulation librarian wants to know whether an item has been ordered or, if it has been received, where it is in the processing system. And, occasionally, management will ask, on seeing a book in the collection, why it was ordered originally.

To meet these demands and thus protect its equanimity, an acquisitions department is inclined to extend its record-keeping activity to the level where it can answer any question, even an absurd one. Although each additional record can be justified on a basis of individual, specific need, the resulting conglomerate often cries for a systems study.

Original Acquisitions Filing System

When the circulation system of the Thomas J. Watson Research Library (described in *Special Libraries,* July-August 1963) had become operational, attention was turned to the ordering and receiving function. The system was working fairly satisfactorily, to be sure. The library staff, the users of the library, and outside departments such as purchasing and accounting usually obtained the information they needed. But the records being maintained were partially duplicatory; information was not accessible without considerable time and footwork; and outstanding orders were not being claimed when overdue. The intuitive judgment of the library administration was that an objective review of the situation would be beneficial. The resident library consultant, new to the job and hence more or less objective, was asked to review the ordering and receiving procedures.

The paper work for each item ordered consisted of *1)* a request card, handwritten, *2)* a purchase document typed in multiple copies, and *3)* a multi-copy book order form (or fanfold), also typed. The purchase document was required by the purchasing department for release to vendors. In addition to the copies retained in the library, some went to purchasing, to the vendor, and to accounting. The fanfold originally had been used for indexing the order files as well as for ordering LC cards and had been continued even when the ordering of LC cards had been discontinued.

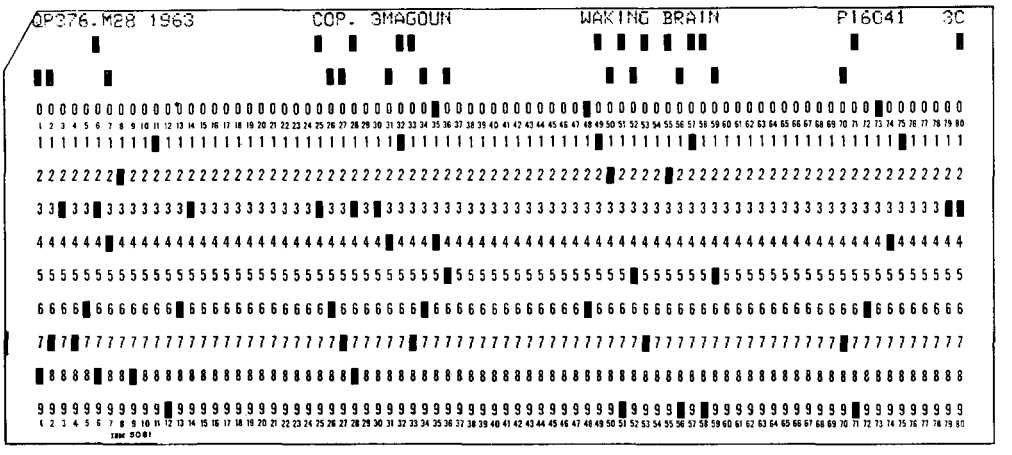


Figure 1: Processing Information List card

As usually happens when people have many documents, they think up many ways to file them. Using one or another of the documents mentioned above, the staff had established: an outstanding order file, a file for orders received, an alphabetical file in the order department by item ordered, an alphabetical file by requester at the circulation desk, and an alphabetical file in cataloging. Each file was felt to be justified when it was started. But changing procedures were not reflected in changed file requirements, nor was the cost of file maintenance really evaluated. Review of the procedures by the consultant made the inefficiencies obvious.

Punched Card Processing Information File

The library was already creating a punched card file which was used to print a shelflist record and an author index to the collection each quarter. It was proposed that these punched cards be made at the time of ordering and that the cards be filed in a processing information file. The file would be subdivided into the following sections, with a header card for each:

Ordered
Ordered but not yet published
Ordered, overdue, and claimed
Received but not yet cataloged
Cataloged but catalog cards not reproduced and filed
Recent additions to the collection

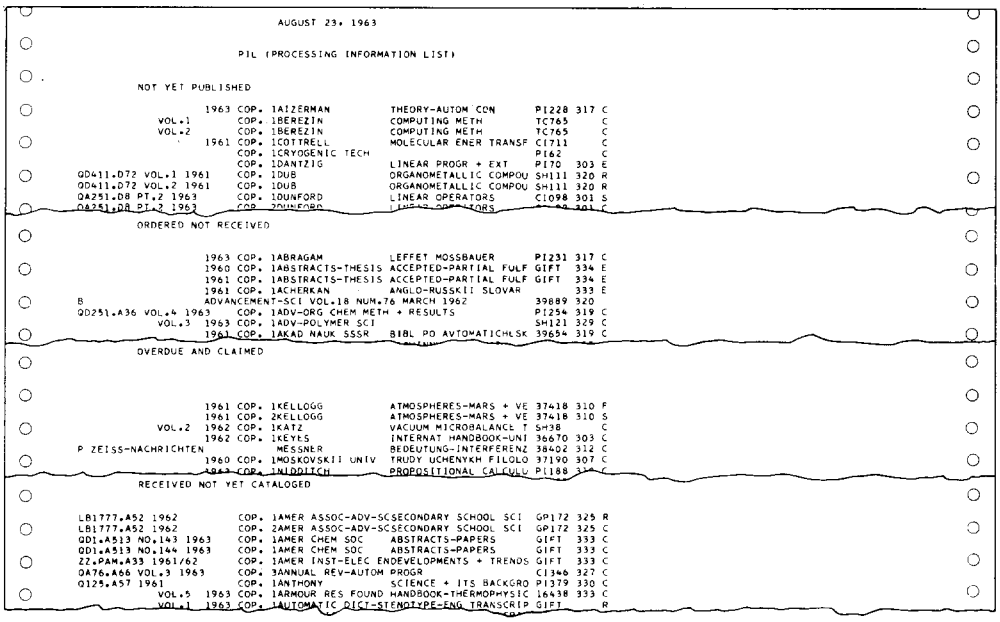
As a book moved from one step to another, the punched card would be manually shifted accordingly.

The proposal raised some questions. What effect would the lack of a call number for some of the books have on the system? How would the file custodian be told when a book moved from one step to the next? How could people outside the order department find out where a book was in the cycle without inspecting the card file? A brief account of the routines adopted will describe how we attempted to answer the questions.

First of all, a punched card was made for each item ordered (see Figure 1). Approximately a third of the additions to the collection were added copies, added volumes, or subsequent editions of sets and books already in the collection, and for these titles all the information could be accurately determined. If the item ordered was brand new, the keypuncher punched the information she had. Whenever the main entry of an item to be ordered was suspect, the request card was given to the cataloger to review before the order was approved.

Next, the punched card file was run three times a week on an IBM 407, and a six-copy print-out made (see Figure 2) and distributed to all groups concerned. Thus, information on the processing status of any item was readily available to everyone who needed it.

As each item moved from one step to the next, its progress was marked on the print-



AUGUST 23, 1963

PIL (PROCESSING INFORMATION LIST)

NOT YET PUBLISHED

	1963	COP. 1AIZERMAN	THEORY-AUTOM CON	PI228	317	C
VOL.1		COP. 1BEREZIN	COMPUTING METH	TC765		C
VOL.2		COP. 1BEREZIN	COMPUTING METH	TC765		C
	1961	COP. 1COTTRELL	MOLECULAR ENER TRANSF	CI711		C
		COP. 1CRYOGENIC TECH		PI62		C
		COP. 1DANTZIG	LINEAR PROGR + EXT	PI70	303	E
QD411.D72 VOL.1 1961		COP. 1DUB	ORGANOMETALLIC COMPOU	SH111	320	R
QD411.D72 VOL.2 1961		COP. 1DUB	ORGANOMETALLIC COMPOU	SH111	320	R
QA251.D8 PT.2 1963		COP. 1DUNFORD	LINEAR OPERATORS	CI098	301	S
QA251.D8 PT.3 1963		COP. 2DUNFORD	LINEAR OPERATORS		301	C

ORDERED NOT RECEIVED

	1963	COP. 1ABRAGAM	LEFFET MOSSBAUER	PI231	317	C
	1960	COP. 1ABSTRACTS-THESIS	ACCEPTED-PARTIAL FULF	GIFT	334	E
	1961	COP. 1ABSTRACTS-THESIS	ACCEPTED-PARTIAL FULF	GIFT	334	E
	1961	COP. 1ACHERKAN	ANGLO-RUSSKII SLOVAR		333	E
B		ADVANCEMENT-SCI VOL.18 NUM.76 MARCH 1962		39889	320	
QD251.A36 VOL.4 1963		COP. 1ADV-ORG CHEM METH + RESULTS		PI254	319	C
VOL.3	1963	COP. 1ADV-POLYMER SCI		SH121	329	C
	1961	COP. 1AKAD NAUK SSSR	BIBL PO AVTOMATICHLSK	39654	319	C

OVERDUE AND CLAIMED

	1961	COP. 1KELLOGG	ATMOSPHERES-MARS + VE	37418	310	F
	1961	COP. 2KELLOGG	ATMOSPHERES-MARS + VE	37418	310	S
VOL.2	1962	COP. 1KATZ	VACUUM MICROBALANCE T	SH38		C
	1962	COP. 1KEYES	INTERNAT HANDBOOK-UNI	36670	303	C
P ZEISS-NACHRICHTEN		MESSNER	BEDEUTUNG-INTERFERENZ	38402	312	C
	1960	COP. 1MOSKOVSKII UNIV	TRUDY UCHENYKH FILOLO	37190	307	C
	1963	COP. 1NIDDITCH	PROPOSITIONAL CALCULU	PI188	324	C

RECEIVED NOT YET CATALOGED

LB1777.A52 1962		COP. 1AMER ASSOC-ADV-SCSECONDARY SCHOOL SCI		GP172	325	R
LB1777.A52 1962		COP. 2AMER ASSOC-ADV-SCSECONDARY SCHOOL SCI		GP172	325	C
QD1.A513 NO.143 1963		COP. 1AMER CHEM SOC	ABSTRACTS-PAPERS	GIFT	333	C
QD1.A513 NO.144 1963		COP. 1AMER CHEM SOC	ABSTRACTS-PAPERS	GIFT	333	C
ZZ.PAM.A33 1961/62		COP. 1AMER INST-ELEC ENDEVELOPMENTS + TRENDS		GIFT	333	C
QA76.A66 VOL.3 1963		COP. 3ANNUAL REV-AUTOM PROGR		CI346	327	C
Q125.A57 1961		COP. 1ANTHONY	SCIENCE + ITS BACKGRO	PI379	330	C
VOL.5	1963	COP. 1ARMOUR RES FOUND	HANDBOOK-THERMOPHYSIC	L6438	333	C
VOL.1	1963	COP. 1AUTOMATIC DICT-STENOTYPE-ENG TRANSCRIP		GIFT		R

Figure 2: Processing Information List produced on an IBM 407

out (the Processing Information List, hence PIL). The print-out was given to the file custodian, and the cards were manually moved to reflect the changes.

When a book was received and cataloged, the PIL entry was checked. If it was found to be incorrect, the correction was noted on the PIL and the incorrect card replaced with a corrected one. Addition of a call number at this point merely required the additional information to be punched in the PIL card. The amount of repunching was regrettable, but on the whole, the new system was more efficient than the old.

Four months of experience with the procedure produced staff approbation. File keeping was simplified. The fanfold files were discontinued. Only two files of purchase documents (outstanding and completed) were maintained. An item in the processing cycle could usually be located in a matter of seconds, and unnecessary and unintentional duplicate orders were caught.

But the system was still susceptible to improvement.

1. Corrections in a PIL entry required that a new punched card be produced. While the keypunch operator could duplicate the correct portions of the card by machine and punch in only the changes, each card had to be completely reprocessed.
2. There were filing errors. Each time a book was transferred from one processing step to the next, the PIL card had to be manually moved, and, occasionally, the wrong card was pulled.
3. Sometimes a card was not pulled when it should have been.
4. The PIL showed in which week an item was ordered but not when it was claimed, received, cataloged, or added to the collection. The 80-column capability of the punched card was completely utilized, and there was no room to add this type of information. This data could be obtained only by examining each PIL in turn and noting the date a status change occurred.
5. Statistics were not generated as a result of the PIL printing. They had to be obtained with considerable trouble if they were obtained at all.

Computer-Produced File

When these defects in the system were recognized, the possibility of producing the PIL by computer rather than from a unit record machine was discussed with the

MAPS (Management Analysis and Planning Systems) programmers. This computer group processes fiscal and personnel records for the Research Center and provides computer service for the library circulation system.

The PIL record was considered appropriate for a computer application. It was large enough (approximately 900 items are in process at any one time), and the daily use was frequent enough to warrant putting the record on the 1401 computer.

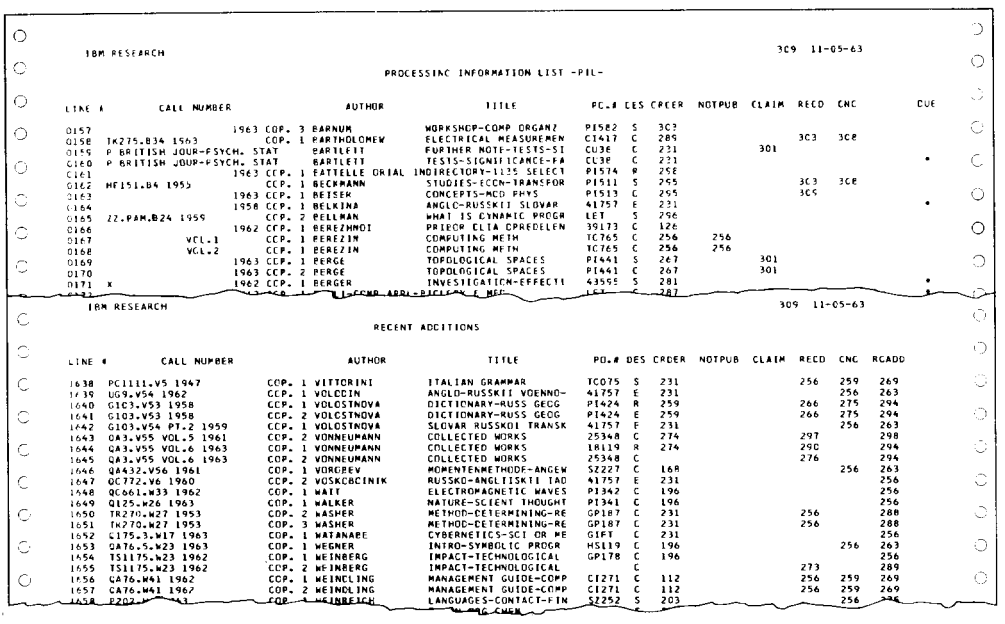
This change in the mechanics of creating the list made a number of improvements in the PIL possible. The library was no longer quite so rigorously bound by the 80-column limitation of the punched card. The printout capability per line was increased from 80 characters to 120.

In the additional space it was decided to put headings for the six sections of the old PIL. The computer could automatically print out the date when each item changed its status, so one could see at a glance the status of each item by observing which column carried the most recent date (see Figure 3).

Recent additions were put into one list, and the other five categories were combined into another. This makes locating a book in the record much easier, since only two lists instead of six have to be checked. Similarly, the sequence of dates shown as an item moves from phase to phase makes it easy for the library administration to evaluate vendors and to determine processing time for the various routines. Furthermore, the recent additions list cumulates daily over a three-month period, eliminating the previous issuance of monthly supplements to the author list of the library's holdings.

The computer is programmed to identify any item that stays overlong in one category. This gives a visual indication of any item that requires claiming (if it is still on order) or expediting (if it has been received but has not completed a processing step at the proper time). Thus, the computer-produced PIL is an excellent monitoring device for management.

During the printing of the PIL, the computer creates, as by-products, the library shelflist card (from which the circulation card is mechanically reproduced) and the label for a printed book pocket. In addition, it provides a daily count of the new items added to any category and of the total items in process.



IBM RESEARCH 3C9 11-05-63

PROCESSING INFORMATION LIST -PIL-

LINE #	CALL NUMBER		AUTHOR	TITLE	PO.#	DES	ORDER	NOTPUB	CLAIM	RECD	CNC	DUE
0157		1963	CCP. 3 BARNUM	WORKSHOP-COMP ORGANZ	PI582	S	3C2					
0158	TK275.B34 1963		CCP. 1 BARTHOLOMEW	ELECTRICAL MEASUREMEN	CI417	C	289			3C3	3C8	
0159	P BRITISH JOUR-PSYCH. STAT		BARTLETT	FURTHER NOTE-TESTS-SI	CU3E	C	231		301			
0160	P BRITISH JOUR-PSYCH. STAT		BARTLETT	TESTS-SIGNIFICANCE-FA	CL3E	C	221					•
0161		1963	CCP. 1 BATTELLE ORIAL	INDIRECTORY-1135 SELECT	PI574	R	258					
0162	HF151.B4 1955		CCP. 1 BECKMANN	STUDIES-ECON-TRANSFOR	PI511	S	255			3C3	3C8	
0163		1963	CCP. 1 BEISER	CONCEPTS-MOD PHYS	PI513	C	255			3C5		
0164		1958	CCP. 1 BELKINA	ANGLO-RUSSKII SLOVAR	41757	E	231					•
0165	ZZ.PAM.B24 1959		CCP. 2 BELLMAN	WHAT IS DYNAMIC PROGR	LET	S	256					
0166		1962	CCP. 1 BEREZHNOI	PRIKOP CLIA CPREDELEN	39173	C	126					
0167	VOL.1		CCP. 1 BEREZIN	COMPUTING METH	TC765	C	256	256				
0168	VOL.2		CCP. 1 BEREZIN	COMPUTING METH	TC765	C	256	256				
0169		1963	CCP. 1 BERGE	TOPOLOGICAL SPACES	PI441	S	267		301			
0170		1963	CCP. 2 BERGE	TOPOLOGICAL SPACES	PI441	C	267		301			
0171	X	1962	CCP. 1 BERGER	INVESTIGATION-EFFECTI	43595	S	281					•
0172				[illegible]	LET	C	287					•

IBM RESEARCH 309 11-05-63

RECENT ADDITIONS

LINE #	CALL NUMBER	AUTHOR	TITLE	PO.#	DES	ORDER	NOTPUB	CLAIM	RECD	CNC	RCADD
1638	PC1111.V5 1947	CCP. 1 VITTORINI	ITALIAN GRAMMAR	TC075	S	231			256	259	269
1639	UG9.V54 1962	CCP. 1 VOLCCIN	ANGLO-RUSSKII VOENNO-	41757	E	231				256	263
1640	G103.V53 1958	CCP. 1 VOLOSTNOVA	DICTIONARY-RUSS GEOG	PI424	R	259			266	275	294
1641	G103.V53 1958	CCP. 2 VOLOSTNOVA	DICTIONARY-RUSS GEOG	PI424	E	259			266	275	294
1642	G103.V54 PT.2 1959	CCP. 1 VOLOSTNOVA	SLOVAR RUSSKOI TRANSK	41757	E	231				256	263
1643	QA3.V55 VOL.5 1961	CCP. 2 VONNEUMANN	COLLECTED WORKS	25348	C	274			297		298
1644	QA3.V55 VOL.6 1963	CCP. 1 VONNEUMANN	COLLECTED WORKS	18119	R	274			290		294
1645	QA3.V55 VOL.6 1963	CCP. 2 VONNEUMANN	COLLECTED WORKS	25348	C				276		294
1646	QA432.V56 1961	CCP. 1 VORGBEV	MOMENTENMETHODE-ANGEW	SZ227	C	168				256	263
1647	QC772.V6 1960	CCP. 2 VOSKOBOINIK	RUSSKO-ANGLIISKII TAO	41757	E	231					256
1648	QC661.W33 1962	CCP. 1 WAIT	ELECTROMAGNETIC WAVES	PI342	C	196					256
1649	QL25.W26 1963	CCP. 1 WALKER	NATURE-SCIENT THOUGHT	PI341	C	196					256
1650	TR270.W27 1953	CCP. 2 WASHER	METHOD-DETERMINING-RE	GP187	C	231			256		288
1651	TK270.W27 1953	CCP. 3 WASHER	METHOD-DETERMINING-RE	GP187	C	231			256		288
1652	G175.3.W17 1963	CCP. 1 WATANABE	CYBERNETICS-SCI OR ME	GIEF	C	231					256
1653	QA76.5.W23 1963	CCP. 1 WEGNER	INTRO-SYMBOLIC PROGR	HSL19	C	196				256	263
1654	TS1175.W23 1962	CCP. 1 WEINBERG	IMPACT-TECHNOLOGICAL	GP178	C	196					256
1655	TS1175.W23 1962	CCP. 2 WEINBERG	IMPACT-TECHNOLOGICAL		C				273		289
1656	QA76.W41 1962	CCP. 1 WEINCLING	MANAGEMENT GUIDE-COMP	CI271	C	112			256	259	269
1657	QA76.W41 1962	CCP. 2 WEINCLING	MANAGEMENT GUIDE-COMP	CI271	C	112			256	259	269
1658	P202.W43	CCP. 1 WEINREICH	LANGUAGES-CONTACT-FIN	SZ252	S	203				256	266

Figure 3: Processing Information List produced on an IBM 1403

Summary

For the Research Library, the computer has brought order out of the chaos that characterized the processing records. We now know what is on order, what has been received, where it is in the processing cycle, and how long it has been there. And this information is being provided without the extensive record keeping previously required. In addition, the system gives us as machine produced by-products, the shelflist card, the circulation card, and the book pocket label. The printed shelflist, the author index to it, and the circulation control system are, in turn, also by-products of the single card record system. And lastly, the Processing Information List is a meaningful monitoring tool for library management.

And what of the future? The single card record system is now exploited to the full. Future mechanization of the Research Library procedures will require that the complete bibliographic information for each item in the collection be recorded on a deck of cards to produce both the purchase order and the catalog record. This will then become the basic record from which the PIL card and its by-products will be produced.

Uncovering Some Facts of Life in Information Retrieval

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ALTHOUGH OBSCURED somewhat in the first great flush of enthusiasm for machines as searching devices, the essential part played by the indexing process in information retrieval is now reasonably well recognized. If we admit that "indexing" means how documents are analyzed and how their subject content is recognized and accurately described in ways that optimize the chances of their subsequent retrieval (not forgetting the corollary of analyzing and programming the searches), no more claims for its importance need be made.

For the past six years, with financial assistance of the National Science Foundation, the indexing process has been subjected, by the Aslib Cranfield Research Project, to the closest and most dispassionate study it has ever received, and on a scale without parallel in its magnitude. In the course of its work the Project has come up with many illuminating and sometimes surprising facts, nearly all of which are of direct significance to cataloguers and indexers and to those who pay for and use their products. For example, what causes relevant documents to be overlooked in IR searches? In particular, to what extent is this due to the nature of the indexing system used? What sort of retrieval figure (the number of relevant documents actually found compared with those that should be found) can be expected in some typical situations? How much noise is there in the system (i.e. what percentage of the documents retrieved turn out to be irrelevant)? How can these things be reliably measured?

Cranfield offers fairly precise answers to all these questions. But perhaps its most important achievement to date has been the uncovering of a harsh fact of indexing life, which may seem obvious to some people but which has received practically no explicit recognition in a century of exposition and argument on the subject of classification and indexing. The fact is that no indexing sleight of hand, no indexing skill, can produce a system in which a figure for recall can be im-

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proved substantially without weakening the over-all relevance, i.e., the number of documents that are really relevant compared with the total number retrieved. Extra (relevant) documents can be retrieved only at the cost of reducing total relevance ratio, and this holds for all systems. Indexes operate in a straightjacket from which there is no escape, although some straightjackets are tighter than others.

Perhaps the most instructive way of presenting a brief account of the Cranfield findings is to describe the development of the different investigations, in which test methods have been progressively refined and the validity of the findings reinforced.

First Investigation: Comparative Efficiency

The first investigation was into the "comparative efficiency of indexing systems." The title itself was partly a reflection of the traditional assumption that systems *per se* determine retrieval efficiency. The scale of the test was impressive—18,000 documents in the field of aeronautics and allied topics were indexed by four different systems: alphabetical subject, UDC, a new faceted classification, and Uniterm. To the four resulting indexes were put 1,200 questions. Each question was based on a document in the collection (called henceforth the "source document" in relation to that question). Each question was checked by experienced workers in the field as a guarantee of its suitability as a typical question. The basic test was simply this: for a given system, in an average search for a hundred questions, how many of the equivalent hundred source documents would be found? This figure was called the *recall* ratio, and the answer, surprisingly or not, was between 75 and 85 per cent for all four systems.

It was hypothesized at the time that the same figure should hold for *all* relevant documents in the collection, if it held for the source documents, but there was no proof of this. In any case, was a figure for recall alone an adequate measure of performance? We must remember that the basic function of classification and indexing in the library is to save the task of searching the whole collection to make sure no relevant information has not been overlooked. This is achieved by assigning documents to particular classes (which may be defined by Uniterms, or by the coordination of these, or by subject headings, or by classes in a regular classification, and so on); we examine only those classes likely to contain relevant documents. That is, improvement of the relevance of what we do in fact look through is the prime object of all classification and indexing. But if we are to measure the degree to which our retrieved document sets are relevant, we need to know, for each question, how many relevant documents there are *in the whole collection* before we can say what proportion of relevant documents we have actually found. This was impossible in a collection of 18,000 documents. But it did point clearly to the sort of further test that was now necessary.

However, the analysis of the great treasury of data accumulated by the first investigation provided a number of findings of the greatest interest. Only the most important of these are given here.

The most significant result of the main test programme was the discovery that all four indexing methods were operating at about the same level of recall performance—approximately 80 per cent of known relevant documents were being retrieved by each system. Moreover, when the failures were analyzed, it was discovered that very few of these could be attributed to actual deficiencies in the indexing system, only six per cent of the total failures. (Since only 20 per cent of the questions resulted in failure, this means that for about one per cent of the questions put to the system, a sought document was missed as a result of a system failure.)

The majority of the failures (60 per cent) were due to inadequacies and inaccuracies (carelessness rather than lack of knowledge) in the indexing process. However, supplementary tests, in which the staff of outside organizations carried out the indexing, revealed that the Cranfield indexers were achieving a standard above average. This seems to indicate a certain inevitability of human weakness and error in the indexing process and lends some support to the many current research projects that are investigating the feasibility of automatic indexing.

Secondary, but still significant, findings of this first investigation relate to indexing times and to the experience of the indexers. A strict stopwatch control was exercised over indexing times, which varied over the range of two, four, eight, 12, and 16 minutes per document. It was noticeable that a relatively high standard of indexing was achieved at four minutes and proportionately very little improvement was effected by increasing the indexing time to 16 minutes. All the indexing was carried out by librarians with varying degrees of experience in indexing but with no technical qualifications in the subject field. Analysis of the indexing failures showed that a negligible number were due to lack of subject knowledge. This would seem to indicate that technical qualifications are less important in indexers than knowledge and experience of indexing methods—a fact not generally appreciated.

In this preliminary investigation, very interesting light was shed on the tactics of using a classified catalogue (the most popular form of subject index in Europe). The performance of the facet scheme was disappointing in view of its precision and consistency in analysis. The use of a single entry in the classified file and the consequent overloading of the A/Z chain index (overloaded with the innumerable aspects of each topic, which a thorough relative index must show) were shown to be the source of the trouble. When further tests were made using multiple (permuted) entries in the classified file (as with UDC), recall performance of the faceted catalogue exceeded that of any other system.

Testing Existing Indexes

The next stage of the Project consisted in applying the testing techniques to two existing installations. Firstly, the facet catalogue of the English Electric Company was tested for recall, and the results confirmed the broad findings of the main investigation.

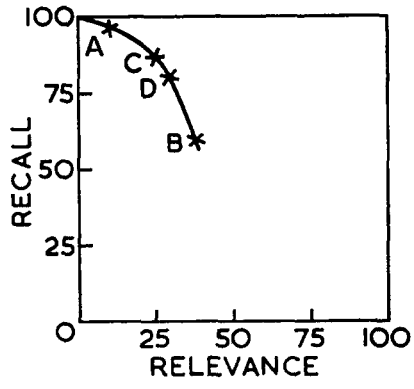
The second major investigation in this stage of the Project was into Western Reserve University's Index to Metallurgical Literature. The operating efficiency of this machine-searchable index was compared with the operating efficiency of a manual faceted catalogue (but this time one using multiple permuted entries, not single entry with chain index).

As mentioned, the tests in the main investigation gave a rather crude measure of operating efficiency, since they took no account of other possibly relevant documents retrieved in the course of locating the source document. It further neglected to consider the question of noise, i.e., the amount of irrelevant material brought out in the process of retrieving a sought item. When the test of the WRU index was carried out, more sophisticated measures were employed. Each question was examined by subject specialists in relation to each and every document in the test collection. As a result, a question document matrix was derived, indicating for each document in relation to each question whether it was *a)* source document, *b)* equal in relevance to source document, *c)* of minor relevance, or *d)* irrelevant. It was thus possible to measure the operating efficiency of the index by the twin parameters of recall and relevance. These are:

$$\text{Recall ratio} = \frac{\text{Relevant documents retrieved}}{\text{Known relevant documents in collection}} \times 100$$

$$\text{Relevance ratio} = \frac{\text{Relevant documents retrieved}}{\text{Total documents retrieved in searching}} \times 100$$

With these figures for both recall and relevance combined, there emerged a clear picture of the *inverse relation between the factors of recall and relevance.* From the tests that have been made on actual working indexes, it appears that document retrieval systems in the fields of science and engineering are generally working in the range of 70-90 per cent recall and 8-20 per cent relevance. Once an optimum level of performance has been reached, any device added to a system to improve recall must inevitably reduce relevance; conversely, any device added to improve relevance must reduce recall. There is



evidence to suggest that roughly, within the normal operating range of a system, a one per cent improvement in relevance will cost a three per cent drop in recall.

For any given set of documents and any given set of questions there would seem to be a maximum performance curve. That is, a particular recall ratio will be accompanied by a particular relevance ratio, and if a higher ratio is desired for either of the parameters, it can be secured only at the cost of accepting the lower ratio for the other parameter. For the groups of documents and questions so far used in the Cranfield Project, which may be regarded as typical of collections in the field of engineering, the curve has always approximated that given in the accompanying graph. Thus it can be seen that a recall figure of 75 per cent is attainable with a relevance figure of something like 25 per cent. In other subject fields this curve may be slightly different.

It should be possible to design a system to operate anywhere on this maximum performance curve. For example, in the average industrial library the majority of requests are for *some* relevant documents on a particular topic, and the librarian is expected to produce a few references almost at once. On the other hand, he is sometimes required to undertake an extensive literature search and to prepare a near-comprehensive bibliography. His requirements, then, are for a system that will normally operate at about 25 per cent relevance but is capable of giving a recall figure of 90 per cent when required to do so.

Factors Governing Performance of IR Systems: Specificity and Exhaustivity

When the inverse relationship between recall and relevance became apparent, attention was given to analysis of factors governing these parameters. From this analysis, it was concluded that the key factors are *specificity* and *exhaustivity* of indexing and searching.

Specificity, at the input stage, is a property of index vocabulary. The more specifically a concept can be described, i.e., the degree to which the exact species rather than a containing genus is recognized, the higher should be the relevance ratio of searches involving this concept. For example, if all documents on "transpiration cooling" are entered under the precise heading TRANSPIRATION COOLING in the index, searches on this topic should produce very little noise. However, if all documents on this subject were entered under the less specific heading COOLING, a search for "transpiration cooling" would involve looking at all the cards in the file under COOLING. This would probably involve a large amount of irrelevant material. On the other hand, there may well be several articles that have been indexed under the generic heading COOLING that are relevant (but to a less concentrated degree) to the more specific topic of TRANSPIRATION COOLING. These would be retrieved in a search in an index in which COOLING was the adopted heading. It may, therefore, be said that specificity of index language makes for higher relevance and lower recall.

Exhaustivity, the second crucial factor, is dependent not on system vocabulary but on a decision by the indexer. Exhaustive indexing implies the recognition and description of every indexable item of information (theme) in a document. Indexing at the utmost level of exhaustivity would imply entering into the index the complete text of a document word by word. At the other end of the scale, indexing of the very lowest exhaustivity would imply recognizing only a single concept (the most important one) in indexing a document. It is obvious that complete textual indexing will produce a great deal of noise, whereas recognition of a single (most important) concept only will tend to

produce high relevance, i.e., a class defined by one term contains only those documents in which the concept described by that term is the crucial factor. But the document will not be retrieved in searches for any other aspect of its content, since these will not have been indexed. Therefore, it may be said that high exhaustivity in indexing produces high recall and low relevance, low exhaustivity produces low recall and high relevance.

Exhaustivity and specificity apply also to searching. A search programme that is highly specific and highly exhaustive would recognise all the concepts demanded by the question at the level of specificity required by the question. For example, if the question is for information on "transpiration cooling of a laminar boundary layer on a sweptback wing," the specific/exhaustive search specification would be TRANSPIRATION COOLING: LAMINAR BOUNDARY LAYER: SWEPTBACK WING. This is a highly precise search prescription that will make for high relevance in document retrieval—if it retrieves any document at all. However, there is a strong probability that this search is too precise and that it will miss relevant material, i.e., the recall would be low. It is possible to broaden the search programme either by reducing specificity (moving up in one or more of the hierarchies, as from TRANSPIRATION COOLING to COOLING, from LAMINAR BOUNDARY LAYER to BOUNDARY LAYER) or by reducing exhaustivity (omitting one or more of the categories, as TRANSPIRATION COOLING: LAMINAR BOUNDARY LAYER *or* SWEPTBACK WING: LAMINAR BOUNDARY LAYER). It can be seen, therefore, that *reduction* of exhaustivity or specificity in search programmes increases recall and reduces relevance.

Exhaustivity of indexing involves an indexing decision divorced from index language considerations, for we assume that the index language must at the very least allow some specification of each category in the subject field concerned, even if only at the most generic level, i.e., even if LAMINAR BOUNDARY LAYER specifically is not included, then at least FLOW will be. It follows, therefore, that so far as the design of the index language goes, the most significant factor governing performance is the hospitality of the language to specific indexing. Referring back to the graph, it may be shown that a retrieval system that employs a specific vocabulary and practises exhaustive indexing is capable of operating anywhere on the maximum performance curve between A and B *by means of variations in search programmes.* But a retrieval system employing a nonspecific vocabulary and nonexhaustive indexing will only be able to operate between the points C and D and will never be able to improve on this performance *however much the search programmes are varied.*

This conclusion highlights another important feature disclosed by Cranfield—the importance of the vocabulary and the fact that different systems can achieve comparable performance if given comparable vocabularies. For many years library literature has been liberally sprinkled with articles presenting the pros and cons of dictionary versus classified catalogues, of Dewey versus Library of Congress, and similar comparisons, largely based on personal opinion and experience. The results of the Cranfield investigations show that these discussions, in assuming that the method of file arrangement is the most significant factor governing index performance, have been very wide of the mark. *Given the same vocabulary,* any two systems should be capable of operating at about the same level of efficiency; any discrepancy in their performance due to actual file arrangement is not likely to make more than a one per cent difference to either recall or relevance figures for the system. It should be remembered, however, that this refers to index *performance,* not over-all economic efficiency. The latter must consider further factors, such as ease and convenience (to librarian and user) of assembling, maintaining, and operating a system. But performance is obviously a very important factor in over-all efficiency.

In the literature of documentation, not enough emphasis has so far been placed on the distinction between *system vocabulary* (used to define the classes in the system) and *lead-in vocabulary.* The system vocabulary of a classified catalogue, for example, is the schedule of terms (represented by class

numbers) under which entries may be made. Similarly, the system vocabulary of Zatocoding comprises a limited number of broad descriptors. However, both systems require a *lead-in vocabulary,* an index of the terminology appearing in the actual documents of the collection. The lead-in vocabulary, then, will be an index referring from terms currently used in the literature of the subject of the collection to the class numbers or generic descriptors that are actually used as file ordering devices. All other things being equal, if any two retrieval systems for the same collection of documents are provided with identical lead-in vocabularies, their operating efficiency should be roughly comparable. The actual arrangement of the file will make very little difference to recall and relevance ratios achieved by the system, although the file order may provide certain fringe benefits. For example, certain groups of users may find an alphabetical arrangement of keywords or descriptors somewhat easier to use than a classified file, or the construction of alphabetical subject catalogues may prove less prone to clerical errors than catalogues employing notational symbols. On the other hand, a classified file showing relationships between terms may provide more positive assistance in programming questions than, say, a thesaurus.

The four indexes used in the first Cranfield investigation were equipped with roughly comparable lead-in vocabularies. This means that, on the whole, the terms used in the Uniterm indexing of a particular document were combined to form alphabetical subject headings and also entries for the alphabetical indexes to the UDC and facet classified orders. It was for this reason that the four systems performed so similarly in recall of documents. For example, a special subject heading list of great specificity was prepared as authority for headings in the alphabetical subject catalogue, since published lists either failed to provide the necessary detail or failed to provide consistent rules for forming new subject headings. Again, the alphabetical index to the UDC file was much richer in vocabulary than a typical UDC index. In practice, library catalogues vary widely in the importance they attach to this; for example, it is not uncommon for dictionary catalogues to neglect the principle (dating back to Cutter) of specific entry. Again, many classified catalogues restrict themselves to the system vocabulary of Dewey and its printed relative index. There is no reason, of course, why ordinary catalogues should not be given lead-in vocabularies like those used at Cranfield, and many do in fact have them. But as it is, a librarian at present employing any of these forms of index should not automatically expect it to achieve the same level of performance as the Cranfield indexes, *unless it is equipped with a vocabulary of comparable richness.*

Present Work of the Project

Any retrieval system is an amalgam of devices some of which improve recall, i.e., enlarge class definition, and some improve relevance, i.e., narrow class definition. For example, the devices of role indicators, coordination of terms, and weighting of terms narrow class definition and so improve relevance and reduce recall. On the other hand, devices such as multiple hierarchical linkage, synonym control, and confounding of word forms enlarge class definition and so improve recall and reduce relevance.

At present the Cranfield Project is conducting research on these *index language devices* to discover their precise impact on recall and relevance. It is anticipated that, with the knowledge gained in this investigation, it will be possible to design a system, employing selected variations of these devices, to operate between any desired points on the maximum performance curve.

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The Special Libraries of South Africa

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THE development of special libraries[1] in South Africa has been remarkable if one considers that the library movement as a whole started in earnest as recently as 1928. In that year, Milton J. Ferguson, then State Librarian of California, and S. A. Pitt, then City Librarian of Glasgow, visited South Africa under the auspices of the Carnegie Corporation of New York. They surveyed the library resources and convened the first National Library Conference ever held in South Africa. This Conference, held in 1928, was unable to devote much attention to special library matters.

There were of course numerous special libraries in existence before 1928, but unlike the public libraries, the impetus for their development cannot be attributed to any single event. A study of these special libraries does not reveal any developmental pattern, and it appears that their origins stemmed from the needs of individual organizations. Their beginnings parallel a situation not unlike that in the United States, where, according to Kruzas,[2] many special libraries were formed in response to individual corporate needs.

To establish a chronological sequence of development among South Africa's special libraries is not easy, for while the date of establishment of the parent institution is often readily available, the date of the library's foundation is more often than not problematical and uncertain. The following evidence may, however, be helpful as a guide to chronological development. Of 120 institutional sources whose foundation dates are known to the author, 15 per cent were established before 1900, 30 per cent between 1900 and 1928, 25 per cent between 1929 and 1945, and 30 per cent after 1945. Special libraries in South Africa are therefore largely a product of the twentieth century.

While the year 1928 marked a definite step forward in South African library development, the rise of South Africa's special libraries in the years following the Second World War have been even more phenomenal. This development can best be explained in terms of the country's accelerated economic and industrial development, especially in mining and agriculture.

The most important single development affecting special librarianship in South Africa since the Second World War was the formation in 1945 of the Council for Scientific and Industrial Research (CSIR), the country's principal scientific organization. The Council's objectives are the employment and proper coordination of research aimed at the utilization of natural resources and the development of industries. In its relatively short existence, the stock of the CSIR's library in Pretoria has grown to 45,000 volumes, 21,000 pamphlets, and over 2,000 current serials. It has a fine international collection, comprised of publications by international scientific societies.[3] This library has assumed the role of serving as South Africa's national library of science and technology.

The range of its activities is impressive. The library has been responsible for notable bibliographical enterprises, including a *Directory of Scientific Resources*,[4] and since 1961 it has been jointly responsible (with the National Council for Social Research) for the publication of *Periodicals in South African Libraries*,[5] a union catalogue of serials, issued in loose-leaf format and subject to continuous revision. The library's resources, which are made available to the nation as a whole, are supplemented by a num-

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ber of branch libraries, such as the National Institutes for Personnel and Telecommunications Research in other centres. The CSIR has played a prominent part in the establishment of a Regional Industrial Information Centre in Natal, and among its many services is one that offers photoreproduction facilities for South African materials to overseas enquirers and a similar service to local enquirers for overseas material unavailable in South Africa.

At present, more than 200 special libraries exist in South Africa. They range from libraries, which exist as independent institutions with their own personnel, to those that are attached to business concerns, research and other institutes, societies, and government departments. On the whole, most of these libraries are devoted to a single subject field or to a group of related subjects. Details about them are available in two recently published directories,[6] which provide information about their special collections, photoreproduction facilities, classification schemes and catalogues, accessibility, and loan conditions.

As might be expected, special libraries of South Africa are to a large extent situated in the densely populated urban areas where industrial and commercial developments have been greatest. In Transvaal Province (population 6,273,477; area 110,450 square miles[7]) most of the special libraries are situated in and around Johannesburg (population 1,110,905), where there are over 70 special subject libraries.[8] The two largest libraries in Johannesburg—the Public Library and the University of the Witwatersrand Library—maintain a number of special libraries, while there are numerous others that lead an independent existence. Mining is one of Johannesburg's principal activities, and it is not surprising that there are a number of libraries specializing in this direction. Special mention should be made of the Johannesburg Public Library's outstanding collection in mining and geology, which has assumed the proportions of a special library. Other libraries in this field are those of the mining houses with highly diversified financial, mining, and industrial interests. These include the libraries of the Anglo-American Corporation of South Africa, the Transvaal and Orange Free State Chamber of Mines and its attendant Research Laboratory, and the Government Mining Engineer.

Thirty-six miles to the north of Johannesburg lies Pretoria (population 422,590), the administrative capital of South Africa. This city, too, has many special libraries, and reference has already been made to the CSIR Library, which is situated there. An interesting feature of Pretoria's special libraries is its network of government libraries, with a total bookstock of approximately 328,000 volumes. These libraries are under the overall control of a coordinating central agency, the Division of State Library Services, which provides staff and maintains a union catalogue of the bookstock in the government libraries.

Among the largest of these government libraries is that of the Department of Agricultural Technical Services, with 43,195 books and 1,225 current serials, which aims to be of assistance to the public, especially to farmers and research workers in agricultural departments. To this end, it maintains four divisions and ten branches throughout the country, fully reflecting the importance of agriculture in the life of the nation.

Another important library in the government group is the Department of Education, Arts and Science Library. The objectives of this Department are to provide higher and special education, to promote educational and social research, and to further the development of science and art in South Africa. It has a well-developed main library of 44,000 books and major branch libraries in the various archives and elsewhere.

The Library Service of the Transvaal Education Department, also situated in Pretoria, is a model of its kind.[9] It offers a two-fold service: an Education Library of 200,000 volumes, 600 periodicals, and 5,000 pictures and posters and a Schools Library Service of an advisory nature offering grants and guidance to school libraries in all aspects of librarianship.

The Transvaal Non-European Library Service in Pretoria is a special library providing study material, chiefly by post, to non-European part-time students at both pre- and

post-matriculation level.[10] It also organizes annual conferences and vacation schools, which have proved invaluable for the training of non-European librarians. It is doing sterling work in this connection.

The Cape Province (population 5,342,720; area 278,465 square miles) has a good many special libraries, diversified in scope. Cape Town (population 807,211), the legislative capital of South Africa, is the home of South Africa's first public library, the South African Public Library, founded in 1818, which serves as the National Reference Library, and the Library of Parliament, founded in 1857, which serves the needs of senators and members of the House of Assembly.

The city's vital interest in the fishing industry has resulted in the development of several special libraries in this field—the Fishing Industries Research Institute, which specializes in oceanography and marine fisheries, and the Department of Commerce and Industries' Division of Fisheries. The South African Museum, founded in 1855, is another library with a long history and special subject interests in marine biology and oceanography.

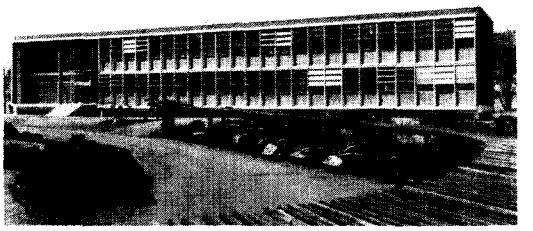
In Cape Town, too, the South African National Gallery, which collects important works of art for the national collection, has a library on fine and applied art. The University of Cape Town has several well-developed special libraries in architecture, law, medicine, and music. In Grahamstown, the Library for the Blind, founded and built up by Miss J. E. Wood, serves the nation with a stock of over 20,000 volumes in Moon and Braille type and 26,865 talking book records.

The Orange Free State Province (population 1,386,547; area 49,866 square miles) affords an example of a special library, founded in 1950, in response to a new industry, the production of oil and by-products from coal. This is the Library of the South African Coal, Oil and Gas Corporation (SASOL). In this Province lies Bloemfontein (population 145,273), the judicial capital of South Africa. The National Drama Library, founded in 1935, is situated here and provides amateur dramatic societies with sets of plays (approximately 15,370 copies) available on a nation-wide postal basis, thus providing an invaluable service in a country where distances are great.

The Province of Natal (population 2,979,920; area 33,578 square miles) has been the centre of an interesting and rewarding co-operative venture in special library service to industry. In 1957, the CSIR established an Industrial Information Centre in Durban (population 659,934) in co-sponsorship with the Natal Chamber of Industries and in collaboration with the Durban Municipal Library. The Centre is based at the University of Natal Library and supplies information to about 90 member firms. An investigation is pending into the provision of further regional information services of this kind in South Africa.

There are various categories of special libraries common to all four provinces: museum libraries, newspaper libraries, education libraries, and law libraries. In view of current American interest in Africana, a few of the more important libraries specializing in this field deserve mention here. In Johannesburg, the Public Library has the Strange Library of Africana (51,000 books), while the University of the Witwatersrand has the Gubbins Library of Africana (30,000 volumes). In Cape Town, the South African Public Library is a veritable treasure house of Africana, chiefly because of its magnificent special collections, and the Library of Parliament houses the famous Mendelssohn Library of Africana (35,000 books). The Killie Campbell Library in Durban, with 33,000 volumes, is among the largest private libraries of Africana in the country. In Grahamstown, the Cory Library for Historical Research (6,000 books), which forms part of Rhodes University Library, specializes in Eastern Cape Africana. There are many other libraries of Africana, details of which may be found in the author's *Guide to Sources of Information in the Humanities.*[11]

Special librarianship has featured prominently in the national library scene in recent years. The National Conference of Library Authorities,[12] held in Pretoria in November 1962, considered the special library situation. It resolved, *inter alia,* that efforts should be



Staff members at work in the periodical area of the modern Council for Scientific and Industrial Research Library in Pretoria. At the right is the exterior of the building. Cars in foreground are shielded from the hot, steady rays of the sun.

made to strengthen the state of special librarianship in South Africa, that the training of special librarians should be investigated,[13] and that standards for special libraries should be formulated.

The chief link between these special libraries is the South African Library Association. The Southern Transvaal Branch of the Association deserves special mention for its sustained and successful efforts in maintaining a Special Libraries Section for many years.

With the industrial and commercial tempo of the country constantly gaining momentum —the largest irrigation and hydroelectric scheme in Africa, the Orange River Project, has recently been announced at an estimated cost of $630 million—the special library scene is full of promise. Much has been achieved so far, and the nation's librarians look forward with enthusiasm to the phase that lies ahead.

CITATIONS

1. The hazards of defining the term special libraries are well known. For purposes of this article, special libraries are interpreted in a wide and heterogeneous sense, embracing all the generally accepted categories.

2. KRUZAS, A. T. *The Development of Special Libraries for American Business and Industry.* Ph.D. thesis, University of Michigan, 1960.

3. A catalogue of this collection has been published in two parts in *CSIR Library Information and Accessions,* vol. 2, no. 17, May 1961 and vol. 2, no. 24, December 1961.

4. *Directory of Scientific Resources in South Africa.* Pretoria: Council for Scientific and Industrial Research, 1961-. Contents: *1)* Scientific Research Organizations in South Africa; *2)* Guide to Sources of Scientific, Technical and Medical Information in South African Libraries; *3)* Scientific and Technical Societies in South Africa; *4)* Scientific and Technical Periodicals Published in South Africa; *5)* Acronyms.

5. *Periodicals in South African Libraries.* Pretoria: South African Council for Scientific and Industrial Research and National Council for Social Research, 1961-. Letters A-F were published by mid-1963.

6. MUSIKER, R. *Guide to Sources of Information in the Humanities.* Potchefstroom University in collaboration with South African Library Association, 1962.

Directory of Scientific Resources in South Africa (*see* #4 above).

7. Population figures given in this article include all races and are based on the 1960 census as given in the Bureau of Statistics' *Monthly Bulletin of Statistics.* The total population of South Africa in this census was estimated at 15,982,664.

8. MUSIKER, R. *Directory of Libraries in the Southern Transvaal.* Potchefstroom: South African Library Association, 1963.

9. For a description of this successful service see TURNER, D. M. School Libraries in South Africa, 1952-1962. *South African Libraries,* vol. 30, no. 4, April 1963, p. 127-9.

10. This unique service and related ones have been well described in a pamphlet entitled *The Chief Library Facilities for the Non-European People of the Republic of South Africa, 1928-1963,* published by the Transvaal Non-European Library Service, P.O. Box 397, Pretoria.

11. MUSIKER, R. *Guide to Sources of Information in the Humanities, op. cit.*

12. The resolutions and recommendations of the Conference were published under the title Programme for Future Library Development in the Republic of South Africa, *South African Libraries,* vol. 30, no. 3, January 1963, p. 77-117. Also available separately as a reprint from the Secretariat, South African Library Association, c/o Ferdinand Postma Library, Potchefstroom University, Potchefstroom, Transvaal.

13. At present only the Diploma Course in Librarianship at the University of the Witwatersrand, Johannesburg, emphasizes special librarianship techniques, although courses offering specialization in science librarianship are soon to be offered by the University of South Africa.

Planning the New Library:
Grumman Aircraft Engineering Library

MICHEL O. FRIEDLANDER, Director
Engineering Library, Grumman Aircraft Engineering Corporation
Bethpage, Long Island

THE ENGINEERING Library of Grumman Aircraft Engineering Corporation was formerly located in the main Administration and Engineering Building, Plant 5, where it occupied the third floor—a net space of approximately 1,200 square feet. These premises had originally been designed for purposes other than library quarters. Since the available space was small and broken up in small units, much of it taken up by landings, stairways, doors, and closets, the demands of a modern industrial research library could only be met inadequately. A separate space of approximately 500 square feet on the second floor (Engineering Floor) was allotted to the NACA (later NASA) collection, attended by a library clerk.

As early as 1957 it became evident that the space and physical arrangement of the library were no longer adequate to handle the ever-increasing workload of a rapidly growing company, which at that time had close to 15,000 employees. Various plans were, therefore, made to move the library to larger quarters, but in the end none materialized because activities of higher priority were assigned to locations earmarked for the library.

When management finally decided, in 1962, to construct an additional Engineering Plant in close proximity to the Administration and Engineering Building, the library's needs were recognized after the librarian had submitted his requirements, and space was allotted on the ground floor.

The planning of the library presented two great problems, among many minor ones. First, the short period of time available for planning since the library floor plan only became available in December 1962; and second, the dimensions of the floor plan, which are 30 x 144 (with the exception of the vault), in other words, nearly one to five instead of proportions of one to two as requested by the librarian. Due to unforeseen changes in the construction of the building, these original proportions had to be set aside, and the unusual ratio of one to five was substituted. The library layout, therefore, had to take into account this factor and the location of the vault.

The new library could come none too soon, for the company's rate of expansion took on explosive proportions after the awards of F-111, formerly TFX (Tactical Fighter Experimental) for the Department of Defense and LEM (Lunar Excursion Module) for the National Aeronautics and Space Administration. Both projects are located in the same new plant and later were joined by the Research Department. In fact, the need for larger library quarters was so desperate that long before the building was completely finished and before any library furniture was available, the Document Section had to move into a makeshift arrangement of the new library, where workmen were still busy putting on finishing touches.

The completing move was finally accomplished on May 31 and June 1, 1963, after the most essential library equipment was installed. Most of the library furniture was actually delivered in the subsequent weeks. The move itself involved 20 truckloads, not including any furniture nor the contents of over 100 filing cabinets containing the document collection, which was moved three months earlier. The move was carried out while library activities were continuing practically uninterruptedly. Only during four hours were library facilities unavailable to patrons.

It was decided to place the general charge-out and reading area near the vault at the west end of the premises since circulation is heaviest in documents, which are taken from and returned to the shelves in the vault by

library personnel only. Thus, the time spent on this activity can be held to a minimum.

The remaining rectangle was sliced so as to place all offices in one long corridor next to the windows, and the stacks for books and periodicals to the south of the offices were separated from them by a long aisle. Adjoining the offices to the east are the study carrels and the library conference room. Next to the latter is the workroom for duplicates and binding assembly. These last three units were placed at the far end from the reading room, since the activities there are not hampered by the long distance from the entrance. Engineers and scientists using study carrels stay at their desks ordinarily for a few hours and take books and study tools along. Conferences are not held frequently enough to make the distance cumbersome. As far as preparation for binding and receipt of material from the bindery goes, this location, close to the periodical shelves, is very suitable.

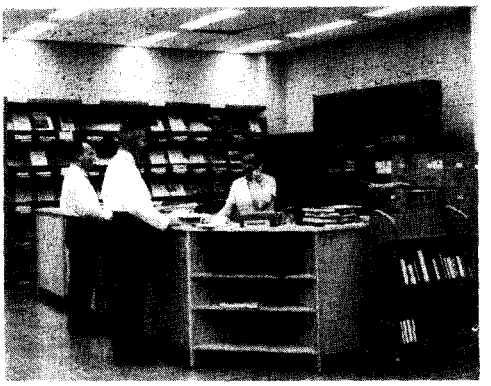
Three areas are located between the reading room and vault: delivery room and mail room, secret room from which access to vault is controlled, and, finally, microfilm reading room where microforms and microfilms are also stored.

The reading area is light and spacious, accommodating 36 persons, and is lined with magazine display shelves on the west and south walls. Placed against the north wall is the battery of card catalog cabinets, wood for book cataloging cards and metal for report cataloging cards. Two long, chest-high tables in front of the catalog cabinets permit the unencumbered search of card drawers. Built-in cubbyholes under the table tops hold book and report order forms.

The reference collection is shelved on ranges forming the east side of the reading area. The Information Librarian's desk faces the reading room from the northeast corner.

The vault has the capacity of approximately 100,000 documents, which, both unclassified and classified, are stored on open divider shelves.

The circulation desk, close to the entrance, is formed by six modules—a corner unit, three tub units, and two desk units. All material is charged out and returned there. All incoming phone calls are received at this

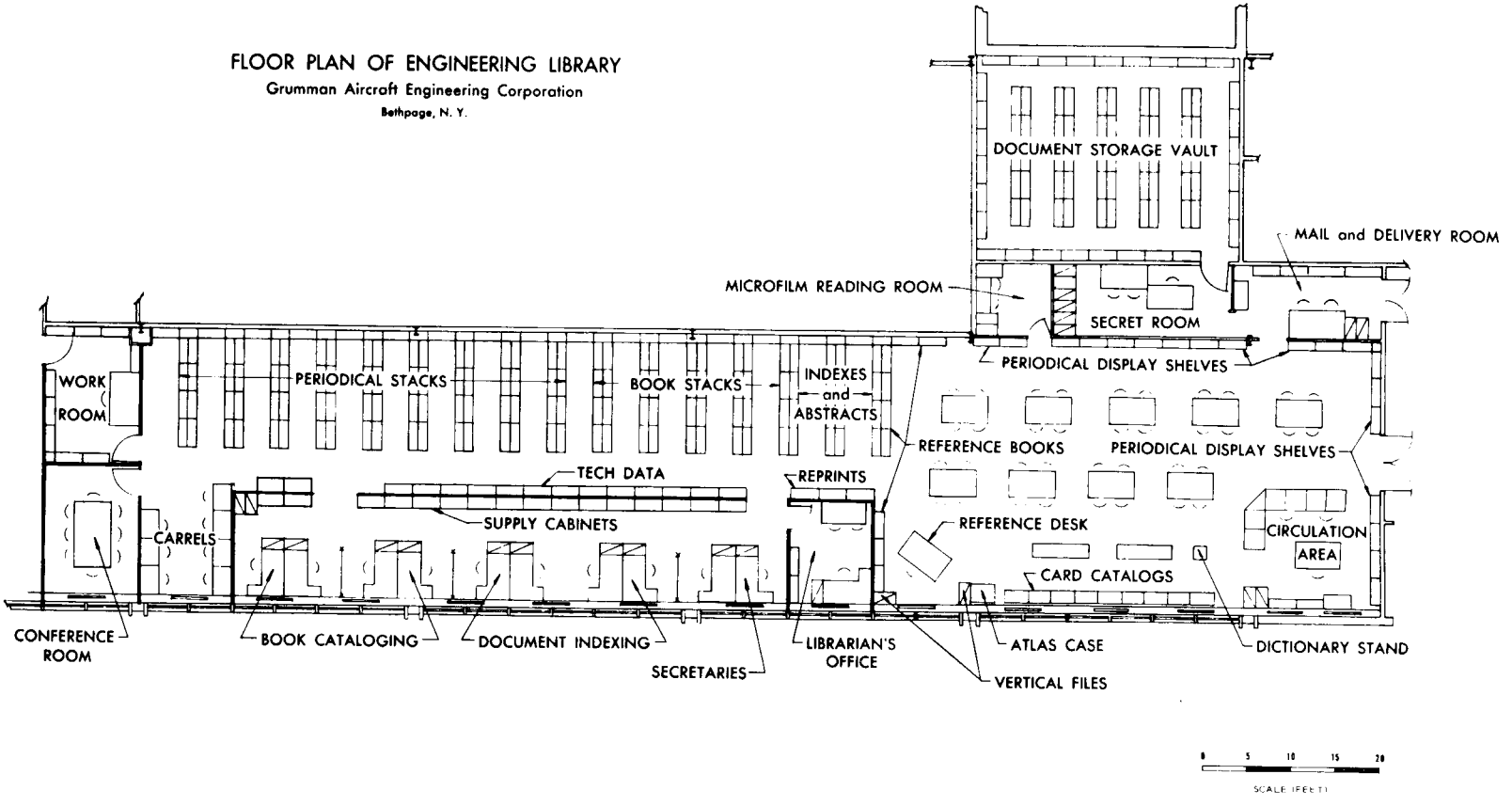


The circulation desk, where books and other material are charged out and returned, is situated at the entrance to the library.

desk and relayed to staff members at any location in the library. An intercom system connects all library desks with each other and also with the main call director at the chargeout desk.

The office area includes the Library Director's room and five pairs of desks separated by short glass top partitions, leaving a narrow aisle for circulation and the moving of book trucks. A wall separating the office space from the stacks is lined on the north side with supply closets and shelves facing the offices, on the south side, facing the stacks, with wall shelf units. The desks are assigned to secretaries, the book ordering-cataloging-and-processing unit, and the report ordering-indexing-and processing sections.

Since the color scheme of the building is tan, the library decor and furniture are kept in blending colors of tan and beige. All wooden furniture, tables, card catalog cabinets, chargeout desks, etc., are done in blond wood with blending formica tops and aluminum legs or posts (Bro-Dart Contemporary Series). The chairs have aluminum frames and wooden arm rests. Their naugahyde upholstery, alternating in aqua and tangerine, lends gaiety and vivid color to the reading area. The magazine display shelves and book stacks, which are in pink-beige metal, are from Remington Rand's Library Bureau. Fluorescent light fixtures built into the white ceiling enhance the ample supply of daylight admitted by the window band running along the north wall.


FLOOR PLAN OF ENGINEERING LIBRARY
Grumman Aircraft Engineering Corporation
Bethpage, N. Y.
DOCUMENT STORAGE VAULT
MAIL and DELIVERY ROOM
MICROFILM READING ROOM
SECRET ROOM
PERIODICAL DISPLAY SHELVES
WORK ROOM
PERIODICAL STACKS
BOOK STACKS
INDEXES and ABSTRACTS
REFERENCE BOOKS
PERIODICAL DISPLAY SHELVES
TECH DATA
REPRINTS
SUPPLY CABINETS
CARRELS
REFERENCE DESK
CIRCULATION AREA
CARD CATALOGS
CONFERENCE ROOM
BOOK CATALOGING
DOCUMENT INDEXING
SECRETARIES
LIBRARIAN'S OFFICE
ATLAS CASE
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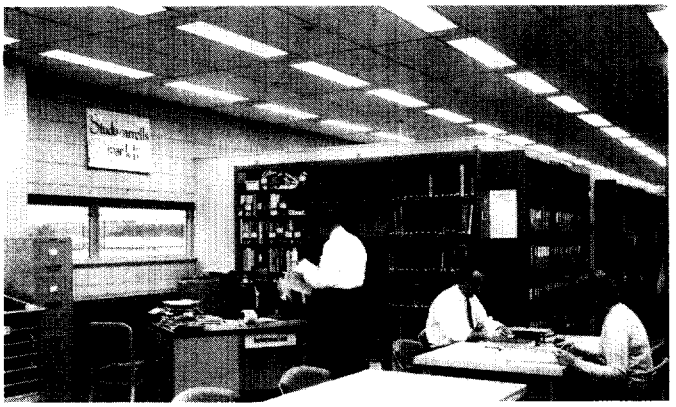


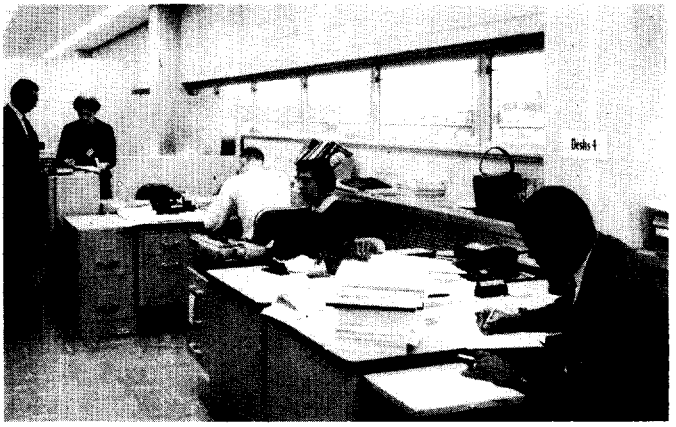
The Information Librarian, with handy reference material close by, answers a phone request while a user waits his turn.

Since the company's activities are primarily concentrated in the aerospace field, it is the foremost task of the library to supply publications and information for the need of defense and NASA proposals and contracts. The collection is accordingly heavily concentrated in all fields of science and technology dealing directly or indirectly with aerospace. However, since the company's interests are not confined to this area but also include such diverse endeavors as shipbuilding, truckbuilding, and container manufacturing, the collection must also cover these fields.

The Engineering Library publishes a variety of media to bring its activities to the knowledge of the administration, engineers, and scientists: *1)* monthly newsletter mainly concerned with library procedures, new services provided by the library and other agencies; *2)* bi-weekly accession list of documents; *3)* quarterly accession list of secret documents; *4)* quarterly accession list of books; *5)* quarterly periodical list; and *6)* irregular memos on library procedure.

Besides customary functions of a special library, the Engineering Library provides:

1. Translation service in French, German, Italian, Spanish, and Russian for commercial and technical purposes.
2. Routing of periodicals by computer-printed stick-on labels to groups (not to individuals) throughout the company. The labels are printed eight weeks in advance and come to the library in eight stacks (one per week), each arranged alphabetically by magazine title. Routing is done on a set day each week. Labels list the groups in sequence of routing and due date for each group, the due date being computed on the basis of two days per reader.
3. Profiles (fields of interest) are kept on edge-notched cards, and reports matching the profile of the registrants are sent to them



Cataloging of classified and unclassified documents is done in the office area of the library.

by the document librarian.

4. Complete collection of microforms of NASA documents, which may be viewed on 3M microform reader-printer.

5. Termatrex equipment to be installed in the near future will provide a first step towards the mechanization of information retrieval.

6. Office automation, EDP of all magazine records, and the mechanization of book ordering and circulation procedure is scheduled for early 1964.

VITAL STATISTICS FOR GRUMMAN AIRCRAFT ENGINEERING LIBRARY

Total square foot area	5,340
Staff	
Professional	7
Nonprofessional	12
Employees served at location	4,000
Services extended to other areas	all company plants
Average number of users per day (including telephone)	250
Volumes (books and bound and unbound periodicals as of December 1963)	25,000
Current periodical subscriptions	650
Technical reports, documents or patents	90,000
Vertical file drawers	8
Date of completion	October 1963
Planned by librarian	

Special facilities or equipment: 3 M Reader-printer (film or microform), film reader, Microcard reader, and Xerox and other reproduction facilities in close vicinity

SLA Board of Directors Acts to Fill Advisory Council Post

With mutual regret President Mildred H. Brode has accepted the resignation of Mrs. Elizabeth M. Hutchins as Director and Chairman-Elect of the Advisory Council of the Association. For personal reasons Mrs. Hutchins has left Young & Rubicam, Inc. in New York City to move to Fremont, Michigan, where she became Librarian of the Public Library on February 1.

The Nominating Committee, under the chairmanship of Mary C. Dunnigan, has submitted to the Board of Directors the names and written acceptances of the following two individuals whose names will appear on the 1964 Association ballot to fill the second year of Mrs. Hutchins' term of office:

LORNA M. DANIELLS, Reference Department, Baker Library, Harvard Business School, Boston, Massachusetts

MARIAN G. LECHNER, Librarian
Connecticut General Life Insurance Co.
Hartford, Connecticut

The person elected will serve as Director and Advisory Council Chairman during 1964-65.

In accordance to Article X: Section 2 of the Association's Bylaws: "Further nominations, accompanied by written acceptance of the nominee, may be entered by petition of 25 voting members and shall be filed with the administrator of Association Headquarters at least three months prior to the annual meeting." The deadline for such a nomination is March 10, 1964.

Meanwhile the Board has proceeded to replace Mrs. Hutchins for the remainder of her first-year term as outlined in Article III: Section 5 of the Bylaws: "A vacancy in the membership of the Board of Directors by reason of resignation, death or otherwise shall be filled by a majority vote of the remaining members of the Board. This appointee shall serve until the vacancy is filled at the earliest annual election permitting orderly nominations." By mail ballot the Board has elected Robert W. Gibson, Jr., Head, Technical Processing, Thomas J. Watson Research Center, Yorktown Heights, New York, to serve as Director of the Association and Secretary of the Advisory Council until the 1964-65 elected officers take office at the close of the Annual Business Meeting, June 10, 1964, in St. Louis.

AAAS Panel on Information Communication and the Role of the Scientist

"COMMUNICATION OF Research and Development Information and the Role of the Working Scientist and Engineer" was the formidable title of the joint program of Section T and the Society of Technical Writers and Publishers that was held December 27, 1963 at the annual meeting of the American Association for the Advancement of Science in Cleveland.

Dr. Alvin Weinberg, Chairman of the President's Science Advisory Committee opened the panel by citing the rumor that a librarian, after reading the so-called Weinberg Report, had ceremoniously burned it and then proceeded to say that he felt the most important theme of the Report is the initial statement that, "Transfer of information is an inseparable part of research and development." He advocated the establishment of information centers or scientific institutes that will resemble the Alexandrian library where librarians were expected to read and digest material. Each center would be small and specialized documentalists and scientists would gather there, the latter to create a raw data and provide guidance. This concept is based on a distinction between documents and information and a return to the "inductive method." Dr. Weinberg then chided scientists for contributing to the problem of transferring information by their proclivity for turgid writing and cited the work of a group of Oak Ridge English teachers who have tried to discover why American scientific writing has deteriorated.

Dr. Milton O. Lee, Executive Secretary of the Federation of American Societies for Experimental Biology, sketched the complex role of scientists in scientific publication and suggested that authors be forced to revise their material for readability, prepare abstracts, experiment with style improvement, provide critical bibliographies, and teach younger men about information services and bibliographic tools.

Turning to government-sponsored scientific and engineering reports, Robert Speers, a patent specialist in the Engineering Department of E. I. du Pont de Nemours and Company, stated that reports are too voluminous and need to be screened, for there is "lots of debris in the information explosion." The patent system of examination offers a good pattern for sifting out the important and eliminating duplication, and he suggested that no report be considered for publication unless it had a concise statement of its contribution and the contents were also concise and completely revealed all pertinent information.

The librarian on the panel, Charles Stevens, Lincoln Laboratory, Massachusetts Institute of Technology, opposed the proposed central depositories and suggested that agency depositories such as DDC would be preferable to subject depositories. He also recalled the several discussions of the Weinberg Report at recent SLA and ADI meetings and pointed out that there are Alexandrian librarians who do read and comment. Dr. Weinberg replied by saying that the Report was written for scientists, not librarians, and that its major point was that information and the way it is handled should be the concern of all scientists, not just documentalists.

Vernon Root, Director of Education at the Johns Hopkins Applied Physics Laboratory, speaking on "How Should the Scientist Change," said the process would be difficult but conceded that a change was necessary to prevent the narrowing of scientific fields. He suggested that individuals and societies could help by becoming aware of the problem, publishing review articles, and developing techniques for change.

Dr. Lee concluded the panel with a summary of the main points he felt had been made: *1)* The Weinberg Report is a scientists' report and expresses many of their deep-seated prejudices, including irreconcilable prejudices; *2)* Dr. Weinberg was extremely successful in toning down many extreme positions when writing the Report, the central depositories, for instance; *3)*

there was no feeling that all scientists would accept the Report since all members of the present panel had not done so, but the Report's purpose was to interest the scientific societies and their members and involve them in the problem; *4)* the panel was sympathetic with librarians and appreciated their real contribution and for this reason tended to be severe with them, especially when librarians have castigated themselves more sternly than the Report did and have been openly critical of their role in solving the information problems.

FREDERICK L. TAFT, Library Director
Case Institute of Technology, Cleveland

San Francisco Bay Region Chapter Hears Dr. Weinberg

WEDNESDAY evening, January 15, 1964, the San Francisco Bay Area Chapter of SLA, brought the Weinberg Report *in person* to the Chapter meeting and to the scientific community of the Bay Area. Over 300 persons attended an open meeting of the Chapter, which was held in an auditorium of Dwinelle Hall on the Berkeley campus of the University of California. The event was co-hosted by the Lawrence Radiation Laboratory. About one-third present were SLA members; another third were invited members of the scientific community of Northern California; and the other third represented campus faculty and students.

Dr. Weinberg read the first paragraph of the report, and then pointed out that the remaining 25,000 words merely reiterate and explicate the theme, which is the same approach he has taken in other public addresses, such as before the American Documentation Institute in Chicago last October. But he brought into more emphasis than before a number of points:

He likened the role of information scientists or documentalists to that of the staff advisors to line officers, pointing out the strategic position in which information handlers are and will be finding themselves—as influencers indirectly of scientific research. This will become clearer as the scientific hierarchy crystallizes further in the near future. Dr. Weinberg was referring to the differentiation of individual scientist's role, e.g., bench scientist, area specialist, and so forth up to the general theorizer who works essentially at synthesizing at the highest level the work of others. This has always existed to some degree, particularly in physics. Weinberg apparently sees this stratification obtaining in other disciplines. If so, then this will in turn define more sharply the role and roles of information scientists and documentalists.

Hardware in automation is not enough. With the development of hardware must go increasingly superior software. For this reason alone, Dr. Weinberg foresees no diminution of the librarian's profession but rather an increase in its scope and importance, and therefore in professional prestige as well.

These few observations are essentially adumbrations to the principal import of his message, which, as he distinctly stated in his opening remarks, consists of adumbrations of the 25,000-word adumbration of the first paragraph of the Weinberg Report. Moral for the evening: *Read Your Weinberg Report!*

Press coverage was obtained for the lecture, and CBS made arrangements to interview Dr. Weinberg the following day over the air. Chapter members worked very hard on this program, which was one of actual general news value and public service.

THEODOR B. YERKE, Librarian
Special Technical Services
Pacific Southwest Forest and Range
Experiment Station
Berkeley, California

Summary of Dean's Colloquy on Recorded Information in Engineering Practice and Teaching

A COLLOQUY FOR the members of the faculty of the College of Engineering at Penn State University was held under the sponsorship of the Dean of the College, December 19, 1963.

The goal of the Colloquy was to find ways in which the criticism from the Weinberg Report could be resolved. Emphasis was placed on Part III, Section G of that Report, in which the engineers were criticized for not knowing how to use the literature of their field. This was also a test program to implement portions of the Engineers Joint Council Report on "The Nation's Engineering Needs, 1965-1985," especially sections H, J, and K.

The program began with a consideration of the definition and meaning of the term "information," with emphasis placed on the differences between knowledge and information. The static properties of information such as storage and identification were stressed rather than the dynamic properties to be found in the Shannon Theory.

The next lecture on creativity emphasized the part information plays in the creative process. An attempt was made to show that background information is an essential part of creativity and that literature is not a detriment to creativity when used properly.

The next session compared the three basic methods of finding information, mainly personal contact, experimentation, and reference to the recorded record of the past. The personal contact included lectures, discussion, text books, and so on. Experimentation included personal experience. Recorded information included any form of permanent record, not merely the library. Attempts were made to show that in the practice of engineering, one should know the strengths and weaknesses of the three forms of finding information and use the proper form or combination of forms to suit the specific situation. In effect, what was said was that recorded information should be raised to the same level as the laboratory and the lecture.

The second day was composed primarily of discussions of various tools used for finding permanent information, methods of finding information, report writing, and so forth. A section on a proposed information center gave a view of things to come in the near future. The participants were quickly brought back to earth by a panel discussion on present library services and tools.

The third day was devoted to a practicum where the participants were asked to consider ways in which specific courses could be altered to include exercises in the use of the literature. The one restriction placed upon the group was that these additions should in no way distract from the present course content or add additional courses to the curriculum. Some specific comments were:

1. The freshman should have a formal introduction to the literature. There are two courses at Penn State that beginning engineering students are required to take that could be altered to fit these needs.
2. Faculty members in attendance agreed to look at their own courses during the winter term, use various techniques of having students use the literature, and submit an evaluation at the end of the term.
3. The group agreed that a program of this type should also be carried through to the curriculum, department, and college level.
4. The present tools and facilities for finding recorded information were agreed to be completely inadequate. Not only must the library find more efficient ways of using its present facilities, but the library profession as a whole must develop new techniques to meet the needs of the engineering colleges and practicing engineer. New data processing techniques hold great promise in this area.
5. A program of this type should be carried on beyond Penn State to their engineering colleges and the engineering profession.

THOMAS L. MINDER, Engineering Librarian
The Pennsylvania State University
University Park, Pennsylvania

Summary Statement of Policy of the Joint Libraries Committee on Fair Use in Photocopying

EDWARD G. FREEHAFER, Committee Chairman and Director, New York Public Library

AN EXTENDED report from the Joint Libraries Committee on Fair Use in Photocopying appeared in several journals in 1961.[1] It is not proposed to retrace here the ground covered by that report. However, it is desirable to bring together the now scattered statements of policy regarding single-copy photocopying in libraries that have resulted from the Committee's work and have been approved by the four major library associations which the Committee represents, and to provide some additional background not contained in the earlier report.

The Joint Libraries Committee (the rather awkward name of which is due to Arthur Fisher, the late Register of Copyrights, who until his untimely death in 1960 took a lively interest in the Committee's work as offering a possibility of reaching agreement on the definition of "fair use" in library photocopying) developed by stages from a committee established in 1956 by the Association of Research Libraries (known as the David Committee from the name of its Chairman, the former Director of Libraries of the University of Pennsylvania) to survey library practice with respect to photocopying. The David Committee joined forces with a similar committee of the Special Libraries Association, headed by Robert S. Bray of the Library of Congress. The two committees made some initial explorations, which demonstrated that the inquiry should be widened, and the Joint Committee was consequently established in 1957 with a representation eventually including the American Association of Law Libraries, American Library Association, Association of Research Libraries, and Special Libraries Association. Its current membership includes Arthur Charpentier, Association of the Bar of the City of New York (AALL), Charles F. Gosnell, New York University (ALA), Chester M. Lewis, New York *Times* (SLA), and the present writer (ARL) as well as consultants B. M. Webster and William Hogeland (Webster Sheffield Fleischmann Hitchcock & Chrystie), and Verner W. Clapp (Council on Library Resources).

The Committee's *raison d'être* was the lack of a clear policy with respect to the photocopying of copyrighted material in libraries. This lack of clarity stems from the Copyright Act itself. The Act states categorically that the copyright proprietor shall have exclusive right to copy his work. But this categorical statement does not square with the fact that copying to some extent by other than the proprietor has from the oldest times been permissible. To reconcile this conflict between statute and actuality the courts have developed the doctrine of "fair use," by which permissible copying is distinguished from copying that infringes the rights of the copyright proprietor. But because this doctrine has no statutory basis or definition, certitude as to whether it applies in any particular case must always await judicial ruling. The result, in the absence of clear court decisions in the area of library photocopying, was to leave such copying in the shadow of uncertainty.

An attempt to clarify the situation was made in the 'thirties in the so-called gentlemen's agreement between the Joint Committee on Materials for Research and the trade association of book publishers.[2] Although the attempt was a noble one, it was unsatisfactory for a number of reasons.[3] The principal of these was that it constituted, on the part of libraries adopting it, an admission of liability for wrong-doing for which they were charitably given exemption by a few out of the total number of publishers. Consequently, although the Agreement was later made the basis of a Materials Reproduction Code prepared by ARL and adopted in 1940 by ALA,[4] it did not clear the air.

It was this situation that the David Committee inherited in 1956 and that was passed

on to the Joint Libraries Committee in 1957 with the assignment of finding a better solution.

The Committee's method of approach, its findings, and its initial recommendation of policy were set out in its 1961 report to which previous reference has been made. This policy was approved by all four constituent associations during the summer of 1961.[5]

Following this approval the Committee held further conferences with representatives of the publishers. As a result, and in view of the fact that a number of publishers have given photocopying rights for their out-of-print books to photocopying companies, the Committee amended its recommendation of policy. This amendment was likewise approved by the constituent associations during 1963.[6]

To summarize, the Committee's findings and recommended policy with respect to single-copy photocopying in libraries, as approved by the constituent associations, are as follows:

FINDINGS:

1. The making of a single copy by a library is a direct and natural extension of traditional library service.

2. Such service, employing modern copying methods, has become essential.

3. The present demand can be satisfied without inflicting measurable damage on publishers and copyright owners.

4. Improved copying processes will not materially affect the demand for single copy library duplication for research purposes.

RECOMMENDATIONS:

The Committee recommends that it be library policy to fill an order for a single photocopy of any published work or any part thereof. Before making a copy of an entire work, a library should make an effort by consulting standard sources to determine whether or not a copy is available through normal trade channels.

A few additional remarks are in order:

A. As stated by the Executive Director of ALA in announcing to the membership the approval of the Committee's 1961 recommendation, the adoption of the policy "does not relieve any librarian of his legal and ethical responsibilities with respect to photocopying," and librarians should "continue to deal with the problem carefully and responsibly as they have in the past."[7]

B. The assignment, report, findings, and recommendations of the Committee deal exclusively with single-copy photocopying. Any situation involving the making of multiple copies for classroom or other mass use obviously involves republication and must be dealt with as such.

C. The Committee considered and rejected as valueless various proposals for requiring purchasers of photocopies to certify as to their need for such copies, the use to be made, or their assumption of liability for the copying. Libraries do not require such certification from users who copy by hand or by typewriter, and in any case a library cannot avoid responsibility for its copying.

D. The Committee similarly rejected proposals for warning purchasers of photocopies regarding possible infringement. Libraries do not do this with respect to other materials furnished to their users, and the burden of acquaintance and compliance with the Copyright Law must always be on the user of library materials.

E. The Committee hopes and expects that the general adoption of its recommendations will, without damage to the rights of authors, contribute to establishing the principle of copying as one of the recognized ways by which libraries "promote the Progress of Science and useful Arts" (to quote Article 1, Section 8 of the Constitution, which authorizes Congress to legislate regarding copyright). The Committee believes that the establishment of this principle and of practice flowing from it as traditional and normal to library work will provide libraries with adequate authority with which to provide photocopying service.

References

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2. *Library Journal,* vol. 60, October 1, 1935, p.

(continued on next page)

763-4; *Journal of Documentary Reproduction,* vol. 2, March 1939, p. 29-36.
3. *Law Library Journal,* vol. 55, February 1962, p. 10-15.
4. *ALA Bulletin,* vol. 35, February 1941, p. 64.
5. ALA: *Conference Proceedings,* 80th Annual Meeting (1961), p. 22; ARL: *Minutes,* 57th Meeting (1961), p. 15; *Law Library Journal,* vol. 54, p. 438; *Special Libraries,* vol. 52, September 1961, p. 411.
6. *ALA Bulletin,* vol. 57, March 1963, p. 233; ARL: *Minutes,* 61st Meeting (1963), p. 4-5, 9-10; *Law Library Journal,* vol. 56, August 1963, p. 328; *Special Libraries,* vol. 54, July-August 1963, S-15; vol. 54, September 1963, p. 452-3.
7. *ALA Bulletin,* vol. 55, September 1961, p. 680-1.

Report on New York Library Resources

Prospects for Library Cooperation in New York City: Planning for More Effective Utilization of Reference and Research Resources, based on a study made by an ad hoc committee comprised of New York City librarians representing public, university, and special libraries, has recently been published. Two $16,000 grants from the Council on Library Resources, Inc. and the Old Dominion Foundation made the investigation possible.

A total of 4,486 questionnaires completed by users of 12 libraries, plus interviews, were used as the sampling. The main object was to identify the kind of use in the library in a particular area. In selecting libraries, those with heavy enough use to obtain the maximum number of questionnaires within the shortest period of time were considered. In each of the main libraries in the New York, Brooklyn, and Queens Public Library systems, plus the two major branches in Brooklyn and Queens, the questionnaire was administered to cover the busiest period of the week plus normal periods.

The questionnaire attempted to discover the purpose for library use, the extent of library use in other libraries, occupations of users, recommendations by users, and if users resided in the area or commuted. It was found that the library of heaviest use was the New York Public Library at 42nd Street, and statistics show that 16.4 per cent were reading for pleasure, 11.2 for academic research, 20.7 for business or professional purposes, 16.2 for personal information, and 27.2 for the preparation of student assignments. About 39.8 per cent have used the library in which they completed the questionnaire for more than five years.

Since the emphasis of the study is on research and reference sources, many of the problems and recommendations included special libraries, which were put into three categories: *1)* open or quasi-public, such as the special departments in a large public library; *2)* those with restrictive use policies; and *3)* private, which are closed to the public and are the most numerous. Many of the public and quasi-public libraries do not grant circulation privileges, and since private libraries of companies are not always adequate, they must depend upon the large public library collections. Another problem is that, although companies may prepare research material for their clients or make information available to their staffs, no machinery exists for gathering together all of this available material in New York City.

Brought to light by the study was the fact that much valuable material is overlooked or searched for in vain by researchers because its existence has not been recorded in the bibliographical tools available. Few workers were enthusiastic about comprehensive union lists; all felt that special subject union lists would be invaluable.

In addition to problems of the collections, there are also those of space, intricate catalog systems, uncoordinated acquisitions, and mutilating of material, which was found not attributable only to students but to faculty members.

Those filling out the questionnaire had a chance to express suggestions for better service, and the most frequently recurring one was for longer hours and Sunday openings. In the New York Public Library, where relatively little material is on open shelves, the biggest request was for faster service in the reference departments. Correlated with this was the need for more accurate shelving, reference material for circulation, and more li-

brary personnel. Under the group of suggestions covering resources, the request for better research and reference collections was the most frequently recurring. Inadequate college libraries put a strain on special collections in the public libraries.

Some libraries have started programs of cooperation to make their resources readily available to the community. For example there is one such program between Queens College and Queens Public Library. The United Nations also has a unique interlibrary setup (see *Special Libraries,* October 1963).

In view of its findings, the committee has set forth several recommendations:

1. The establishment of a New York Library Service Authority, a non-profit organization that would provide or sell any service of use to members or nonmembers and initiate and/or coordinate research into library matters.
2. The construction of an undergraduate college-oriented reference library at 42nd Street.
3. A program for inter-institutional library use for undergraduates and doctoral students and faculties.
4. A program of research into library activities in the area.
5. Improved utilization of paperback publications in connection with reserve collections at college libraries.
6. Identification of special subject advanced research level holdings and their designation as the advanced research centers under the 3R program.
7. A site location study to select the optimum site or sites for the establishment of future college-oriented reference libraries.

The report specifically recommended that Special Libraries Association participate in preparing an inventory of special library and special subject holdings in the area. As part of this project a system should be designed for routine notification of changes in holdings, either by acquisition or by disposal. A pilot scheme might be devised for testing, in one very narrow specialty, how such a research level inventory might be compiled. The means of distributing the information to all scholars and research workers interested should be explored.

One of the objectives of the study was to prepare for applying the provisions of the proposed Reference and Research Library Resources Bill, commonly referred to as the 3R bill, in New York State. The legislation would provide for:

1. A Reference and Research Library Resources Board to advise on the development of statewide plans and policies for the establishment of a cooperative reference and research library program involving college and university, public, industrial research, and other private and public research libraries. The program would include research in research library techniques and their application.
2. Establishment of a regional reference and research library system.
3. Standards for such a system.
4. Apportionment of state aid for the program.

Bill M. Woods, SLA Executive Director, served on the ad hoc committee formed to sponsor the study and obtain the grant and is now serving as Committee Chairman. Other members include Edward G. Freehafer, Director, The New York Public Library; Morris A. Gelfand, Librarian, Queens College; Charles F. Gosnell, Director of Libraries, New York University; Richard Logsdon, Director, Columbia University Libraries; S. Gilbert Prentiss, State Librarian and Assistant Commissioner for Libraries, New York State Library; Harold W. Tucker, Chief Librarian, Queens Borough Public Library; and Committee Chairman Francis R. St. John, Chief Librarian, Brooklyn Public Library. Nelson Associates, Inc., management consultants, conducted the study and prepared the published report.

Needed: "Scientific Meetings"!

Association Headquarters is out of stock on two volumes of "Scientific Meetings":

January 1962, vol. 6, no. 7
Summer 1957, vol. 1, no. 2

If anyone still has these issues and does not need them, please send them to SLA, 31 East 10th Street, New York 10003.

Conference on the Organization and Utilization of Information

ALL OF the problems of special librarians will not be solved by holding conferences. However, the recent Conference on the Organization and Utilization of Information, held January 9-11, 1964, on the campus of Florida State University, Tallahassee, certainly presented some of them in a most interesting fashion.

The stated objectives of the Conference were: *1)* to summarize new developments in information handling techniques and systems studies in libraries and information centers; *2)* to characterize critical problems of special librarians and discuss possible solutions of these problems; *3)* to discuss information needs of researchers; and *4)* to assist library schools in determining the educational needs of special librarians and information scientists.

Papers given by Saul Herner, Edward Heiliger, Herbert S. White, Arthur W. Elias, Jerry Creeden, and Dr. J. F. Sutton were heard by about 75 special librarians.

Mr. Herner discussed and gave a basic formula for performing a system analysis. The main points to be considered in such an analysis were: *a)* why does one need a system?; *b)* list a series of hypothetical needs or services; *c)* set up a study system to test these hypothetical needs; *d)* implement a pilot project; and *e)* define the goals of the system.

Messrs. White, Heiliger, Creeden, and Elias explained, by way of case histories, the operating details and pitfalls of actual systems.

Dr. Sutton tackled some of the problems of special librarians. His paper presented a plan for cooperative action on the part of industry and colleges for the mutual exchange of information.

Panel discussions were the highlight of the Conference. The first centered on the information gathering habits and information needs of researchers. The discussants were a chemist, an economist, and a professor of engineering. The second panel was concerned with problems in the organization and utilization of information in which the results of a survey of southeastern special librarians were presented and discussed. The third and final panel was on education for special librarianship and information science.

Indeed, all of the problems were not solved, but they were certainly brought to light, which was the purpose of the Conference. Over-all results would be hard to state as they will be far-reaching. One would have to say that the Conference clearly showed the need of close cooperation between the special librarian and his users. In addition, the Conference indicated that special librarians should carefully examine all possibilities before selecting machines to automate library functions. Published selections of the proceedings are planned.

TOM FARRELL, Apollo Support Department
Command Systems, General Electric Company
Daytona Beach, Florida

AMA Company Library Seminar

Establishing and Managing the Company Library was the name of a recent American Management Association seminar held February 5-7 at AMA's New York headquarters. Seven topics were discussed during the three-day session: Objectives of a Company Library; Organizing the Company Library; Space and Equipment for a Company Library; Services; Systems and Techniques; Evaluation of Company Library Services; and Other Problems of Company Library Organization and Management. Discussion leaders for the seminar were Mary W. Covington, Ore Division, Union Carbide Corporation, and Chester M. Lewis, Chief Librarian, The New York *Times,* both of New York City. Guest resource leader was Monte J. Gordon, Assistant to Partner, Bache & Company, Branch Sales Division, New York City. The 15 participants added comments and questions to the discussion agenda.

Standardizing Periodical Title Abbreviations

A recent "Letter to the Editor" on the ASTM CODEN concerns a subject that should be of great interest to special librarians, and three individuals who have long been directly involved in the problems of standardizing periodical title abbreviations have been asked to comment. The following exchange is not intended to provoke controversy but rather to present an explanation of current efforts at standardization for information retrieval and other purposes.

For a good many years now, warnings and admonitions regarding mechanized processing have appeared in the literature of librarianship. The burden of all these jeremiads has been the same—librarians had best look ahead to the potentialities of these machines and adopt them where useful; if not, others will do the jobs that need doing, and librarians will be left behind.

The prophecies have begun to come true. Recently a list of 20,000 periodical titles in the fields of science and technology was published. Associated with each title in this list is a four-character code that uniquely identifies it. The entire listing is available in punched-card form from the publisher. The usefulness of such a body of machine-readable information on periodicals in such projects as union lists, duplicate exchange lists, interlibrary loans, and citation indexes is clear. Yet who compiled this index? Not ALA or SLA, nor yet even ADI. It was the ASTM Committee E-13 on Absorption Spectroscopy! Surely this is so far afield as to be absurd.

There will no doubt be a great deal found to be objectionable in ASTM Special Technical Publication No. 329, *CODEN for Periodical Titles* (Philadelphia: ASTM, 1963, $20). The titles are, for one thing, alphabetized and coded as they appear on the title pages. Thus, *Journal of the American Chemical Society* is listed in the "J's" and is coded "JACS." In addition, there are no cross references. Further, the compilation is not without error. Some titles are coded more than once, presumably because variant forms of the same title were not recognized as such. *Nuclear Science Abstracts* is coded "NSAB," but there is also another entry, *United States Atomic Energy Commission, Nuclear Science Abstracts,* coded "XNSA."

Errors or no, these codes are being used. They have appeared in *Chemical Titles* for nearly two years. *Biochemical Title Index* uses them. Other groups are investigating their use as well. ASTM has established a mechanism for supplying codes for new periodicals or previously uncoded titles and plans to publish an annual supplement. The first such supplement will appear early in 1964 and contain 4,000-5,000 new entries. Furthermore, ASTM is considering submitting the codes to ASA for adoption as an American Standard. It appears that the library profession may be presented with a de facto standard in this field, without so much as a "by your leave" from anyone.

What is to be done about this situation? Librarians can, of course, continue to ignore these changes. Assuming that some affirmative move is desirable, there are several things that can be done, though redoing ASTM's job is not one of them. It hardly seems feasible, at this late date, for the library associations to attempt to develop a competitive standard more to librarians' liking. The ASTM codes can be used as assigned; the alphabetization problem can be overcome in various ways.

Instead, SLA should, either independently or in cooperation with other library associations:

1. Adopt the ASTM codes as a standard.
2. Cooperate with ASTM in the maintenance and expansion of the system.
3. Initiate the publication of a permuted title index to the coded titles. This will be a first step in resolving the "form of entry" problem.
4. Develop standard rules for condensed bibliographic citations based on the ASTM codes. Since the codes identify only journals, there is a need for a consistent means of identifying both a particular issue and a particular item within an issue of a given journal.
5. Encourage the use of the ASTM codes in union lists, duplicate exchange lists, and the like.
6. Attempt to persuade publishers to print the codes on each issue of their journals, as proposed by Paul Vesenyi (in *Library Resources and Technical Services,* vol. 7, no. 3, p. 294-6).

Some action on these points would at least give evidence that SLA's statement on the Weinberg report was more than a perfunctory response.

A. D. PRATT, Systems Librarian
Development Laboratory Library
IBM Corporation, San Jose, California

My comments are addressed to Mr. Pratt's statements that imply the library profession is sleeping at the switch while others have been making all the approaches toward solving the new information processing situations brought about by the vast proliferation of scientific and technical literature. True, some of our profession may be drifting along but certainly not all. For example, I'll cite a case.

On November 20, 1963, the Board of Review of the American Standards Association approved

ASA Z39-5, the "American Standard for Periodical Title Abbreviations," proposed by ASA Section Committee Z39 on Library Work and Documentation (see news note in this issue). This new standard is designed to serve the needs of writers, editors, librarians, and documentalists who have the common problem of establishing standard abbreviations for periodical titles and deciphering periodical title citations that appear in an abbreviated form. Thus, Z39, sponsored by the Council of National Library Associations, has not been resting while any other group has been forging along.

The American Standards Association investigated *CODEN* prior to approving the "American Standard for Periodical Title Abbreviations" and found that owing to the limitations of *CODEN*, they could not serve as substitutes for the standard rules for abbreviations for periodical titles and work abbreviations. The new American Standard Z39-5 is the work of ASA Z39-5/SC-3: Subcommittee on Abbreviations for Periodical Titles and was made possible by grants to Z39 by the National Science Foundation and the Council on Library Resources. Many years of study and effort went into Z39-5. Those who were members of SC-3 at the time the proposed standard was developed and submitted were:

James L. Wood, Chairman
Librarian
Chemical Abstracts Service

Mildred P. Clark, Librarian
Winthrop Laboratories

Eloise Givens, Librarian
Sterling Winthrop Research Institute

Williamina Himwich
Galesburg State Research Hospital

Harold Oatfield
Chas. Pfizer & Co., Inc.

Elizabeth Sullivan, Librarian
Pepsi-Cola Company

Margaret S. Bryant, Library
U. S. Department of Agriculture

Ann Farren, Associate Bibliographer
Biological Abstracts

E. J. Hoffman, Cataloging Branch
Technical Information Service Ext.
U. S. Atomic Energy Commission

John Sherrod, Chief
Science and Technology Division
The Library of Congress

Margaret Kinney, Librarian
Kingsbridge V. A. Medical Library

Seymour I. Taine
Chief, Index Division
National Library of Medicine

Of the 40 members of Z39, who represent every major library association, documentation group, and abstracting and indexing service in America, only one member, the representative of the National Association of Home Builders, voted against Z39-5. Those who voted for Z39-5 did so at the request of such organizations as American Library Association, Special Libraries Association, American Documentation Institute, Medical Library Association, National Federation of Science Abstracting and Indexing Services, National Science Foundation, and National Academy of Science-National Research Council to name but a few.

Thus, it seems to me that SLA does have a standard for citing periodical titles in abbreviated form. However, I join with Mr. Pratt in urging the Special Libraries Association or any other group to cooperate with Mr. Kuentzel and the American Society for Testing and Materials, Committee E-13 in developing the *CODEN* along the lines for which they are useful.

JAMES L. WOOD, Chairman
American Standards Association Z39/SC-3
Librarian, Chemical Abstracts Service

I must admit I was surprised at the tone of Mr. Pratt's letter. As one completely ignorant of the way librarians think and act, all I can say is that I don't know whether this is good or bad. He has been submitting quite a list of new periodical titles to be coded, and I have had limited correspondence with him in this connection. He seemed to be quite interested in the operation so I gave him a brief history of the project from Dr. Bishop's initiation, through the extensive cooperative effort with Chemical Abstracts Service to the publication of STP 329.

I would be most happy to cooperate with ANY group interested in making use of the codes we have developed. It took a lot of time and work to get where we are now, and the mechanics of up-dating and maintaining the codes are far more complicated than expected as the number of users increases. Having accepted the task of supplying unique four-letter codes for the titles of periodicals, I don't want to become involved in arguing the relative merits of *CODEN*, "Standard Periodical Title Abbreviations," or any other form of presentation as all are probably advantageous in given areas of application.

There is much in Mr. Pratt's letter that I can't comment on as I do not know enough about it to form an opinion. I can understand his interest in mechanization for that is his job, but whether his approach to librarians and his suggestions are the right ones, I don't know except that criticism rarely elicits cooperation.

I can supply factual information relative to some items in his letter. The actual number of titles published in STP 329 was 18,572. At the time we went to press a count had not been made, so you will find reference to "nearly 20,000 codes and titles" in the book. There are considerably more than 20,000 IBM cards involved, but here

an actual count has not yet been made. We have an actual count on the new titles currently ready for our first supplemental publication early in 1964; it now stands at 5,664, and we expect the supplement to contain about 6,000 new titles and codes as requests for new assignments have been coming to me at better than 100 per week all year.

It is customary for the efforts of ASTM Committees to be adopted as some sort of a standard. Since outside sources have suggested that the *CODEN* be made a standard, ASTM Committee E-13, in action taken during its meeting in New York last month, has recommended to ASTM that some action be taken to standardize the codes. ASA would be a logical choice, although ASTM realizes that this particular project is growing somewhat beyond its scope of activity. For this reason, it was suggested that ASTM seek co-sponsors more closely related to librarians. I do not know what efforts they have made in this direction. I am sure they would not proceed without consideration and cooperation of the library profession.

There is nothing profound in the concept of a unique set of four-letter codes for the titles of periodicals—any kind of periodical—but there is an enormous amount of work involved in bringing it into being and keeping it "clean." It is not very important which four letters are assigned to a given title, except for possible mnemonic value, but it is important that each code be unique for a given title. Alphabetizing of the *CODEN* presents no problem, but alphabetizing the titles is about as bad as trying to alphabetize the names of organic chemical compounds because of the multiplicity of accepted forms. I have had some experience with the names of organic compounds, and I feel extensive cross-indexing will take care of the periodical title problem although here I would be happy to have the experience of librarians. The system used in STP 329 was what seemed to be the simplest, i.e. strict alphabetical arrangement, letter by letter, after ignoring all articles, conjunctions, and prepositions.

Mr. Pratt mentions some titles having more than one code. This, of course, was unintentional, and we are attempting to eliminate it. There is much other "cleaning up" to be done involving spelling, omissions, and errors, which, for the most part, got into the system via the punched IBM cards we received from CAS. This has pretty well been completed now, and it has been suggested that the complete *CODEN* list be republished at the time a second supplement would be ready, i.e., early 1965. Meanwhile, the IBM cards are corrected and available to anyone who wants them.

I realize that this letter is more than my comments on Mr. Pratt's letter, as I have supplied some facts and with some of my thinking on the project. I repeat, I am willing to cooperate to any degree with any group that feels a need for the *CODEN* as we have developed them. I would welcome suggestions and cooperation from librarians, individually or organized, and, if it gets too big for me to handle, I would be the first to suggest that the whole thing should be turned over to an organization that had the desire and capability of maintaining the system. It is, however, essentially a one-man job as far as keeping track of assignments is concerned.

DR. L. E. KUENTZEL, Vice Chairman
ASTM Committee E-13 on Absorption Spectroscopy
Wyandotte Chemicals Corp.,
Wyandotte, Michigan

Librarians have been very active in the formulation of periodical title abbreviations as witnessed by the recently approved and about-to-be published American Standards Association Z39-5 "Standards for Periodical Title Abbreviations," prepared under the chairmanship of James L. Wood, Librarian of the Chemical Abstracts Service.

The ASTM *CODEN for Periodical Titles* can certainly be mentioned in the 1964 revision of *Ulrich's Periodicals Directory,* Part I, Science and Technology, as well as the new ASA standards, if this would be helpful to Mr. Pratt and others. We will explore it at once.

This is as good a time as any to announce that *Ulrich's* will henceforth appear in two parts, published and sold separately, to permit the science coverage to be greatly expanded. Foreign as well as domestic periodicals will continue to be covered.

ANNE J. RICHTER
SLA ASA Z-39 Representative and
Book Editor, R. R. Bowker Company
New York, New York

SLA Representative at UNESCO Meeting

Elizabeth M. Walkey, Chairman of the Association's Translations Activities Committee, was invited by UNESCO to participate in its international Working Party on Scientific Translation and Terminology, which convened in Rome, January 27-31, 1964. One of three international groups surveying ways and means of improving scientific documentation problems, the Working Party was composed of experts from United Nations agencies, information and translation centers, and international documentation and translation organizations. Miss Walkey, Manager, Library Services, Bell & Howell Research Center, Pasadena, California, was one of two participants from the United States. A fuller report will appear in a later issue.

Books and People—the Spirit of NLW

ALTHOUGH the University of New Mexico's Library of the Medical Sciences came into existence January 1, 1963, it was largely a small collection in the librarian's office until March 20, when the University's Board of Regents signed an agreement to take over operation of the Bernalillo County Medical Society Library, housed in the Bernalillo County Indian Hospital. National Library Week, coming just one month later appeared to be a good opportunity to publicize this change and to promote the use of the library by the hospital staff. A secondary objective of the National Library Week activities was to bring to the attention of the hospital's patients and staff the services of other local libraries. Mrs. Lilybell Crawford, Director of Volunteers, offered the services of her group, who did most of the work preparing for NLW.

Mrs. Charlotte Bruce, a prominent Albuquerque artist directed the preparations. She painted two large posters, prepared and painted paper caps, modeled after nurses caps, which all volunteers, food service personnel, and library staff members wore during the Week. Several hundred lapel booklets were distributed to hospital staff and patients. The volunteers also made "library trees" whose fruit were miniature books, and these were placed on the hospital receptionist desk and on each table in the staff cafeteria.

Mrs. Lois E. Godfrey, SLA Rio Grande Chapter Library Week Chairman, provided posters and bookmarks, which were used in the library and the staff cafeteria and distributed by the library staff to library users. The local bookbinder also provided a poster used in the cafeteria.

One of the volunteers was a reporter for the Albuquerque *Tribune,* who wrote an article about the activities, and arranged for a newspaper picture.

The help of the volunteers in preparing the materials made them acutely aware of libraries. They gained a better understanding of the place of the library in the hospital and also became aware of other library services. A healthy increase in staff use of the library was experienced, and the local doctors noted the publicity and took increased interest in the development of the library.

ROBERT T. DIVETT, Librarian
Library of the Medical Sciences
University of New Mexico
Bernalillo County Indian Hospital
Albuquerque, New Mexico

OBSERVANCE of National Library Week at Meldrum and Fewsmith, Inc., an advertising agency in Cleveland, centered around a Seminar on Marketing Materials, an all-day workshop program held on Thursday, April 25, to which Meldrum and Fewsmith clients were invited.

The objectives of the seminar were to bring together client librarians and researchers for an interchange of ideas and to present to them outside sources of marketing information with which they might possibly not be acquainted. To this end the morning session, which started off with coffee and a welcome from Arthur E. Earley, Vice-President, Marketing Services, was devoted to talks by four client librarians. Three of these librarians talked about some phase of their operation, and the fourth speaker reported on her attendance at the American Management Association Seminar for Corporate Librarians held in New York City in March.

A buffet luncheon was served at the agency at noon, and the afternoon session was given over to four presentations of sources of marketing materials. The head of the Business Information Division of the Cleveland Public Library spoke on the "Pubic Library as an Aid to Business." The marketing librarian from Penton Publishing Company and the market research specialist from McGraw-Hill Publishing Company (Cleveland) presented the materials and statistics available from their respective companies. The Cleveland Field Office of the U. S. Department of Commerce was represented by the Chief, Research and Publicity, who explained the function of the Department in relation to marketers. Discussions following each speaker were lively and the audience took an active part in the whole program.

Results of such a program are difficult to measure and can be assessed only in terms of the increased use of the sources presented. Perhaps a few excerpts from letters from the guests are an indication: "I felt the seminar itself very rewarding. It held my interest from beginning to end. . . ." "Your seminar was my pleasure and benefit. . . ."

MARY EVALYN CROOKSTON, Librarian
Meldrum and Fewsmith, Inc.
Cleveland, Ohio

THE MAJOR Appliance Laboratories Library prepared a series of programs to stimulate interest in and promote the use of the technical library by the managers, scientists, engineers, technicians, secretaries, and various department staffs at Appliance Park.

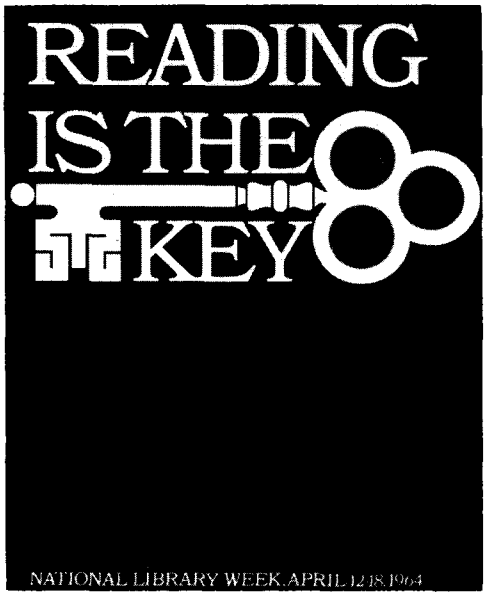
NLW programs were scheduled each day from 12:15-1 p.m.:

Monday—Books—"You and the Authors"
Tuesday—Periodicals—"Too Many?"
Wednesday—Newspapers—"Is It News?"
Thursday—Library, At Your Service—"For Secretaries" (in honor of National Secretary Week)
Friday—Literature Potpourri

To remind the users of these noontime programs, large posters were placed in the three cafeterias and the two snack bars, and lists were posted on office area bulletin boards. There was also an announcement in the *Headliner*, a daily newsletter distributed to the 10,000 employers at Appliance Park.

After the participation of the users in these daily programs, the library followed up the interest shown by sending a bibliography of reference books for secretaries to each secretary who attended. Its availability was announced in the next *Library Bulletin* so other secretaries could benefit from this information. Plans were also made for organizing monthly lunch hour meetings for secretaries that would include discussions of how they can do a better job, new library aids available to them, an exchange of ideas, and an occasional book review or literary theme.

MRS. MARIAN S. VEATH, Technical Librarian
Major Appliance Div., General Electric Co.
Louisville, Kentucky



SLANLW
and What to Do About It

National Library Week, April 12-18, 1964, is a natural one for SLA. READING IS THE KEY to so many things for so many people. Even reading these words may put you in for the prize money (awarded to your Chapter) for the most effective promotion of NLW.

READING IS THE KEY

The slogan is significant but so broad. Use it in a Chapter program for recruitment. Arrange for a few assorted special librarians to visit high schools before or during NLW to talk about the impressive "bunch of keys" they administer. Our profession has many frontiers with limitless horizons. Each can be viewed only through the keyhole until someone unlocks the door. With what? . . . .!

LOYD R. RATHBUN
SLA Special Representative
National Book Committee

Developments in Document Reproduction

LORETTA J. KIERSKY, Librarian
Air Reduction Company, Inc., Murray Hill, New Jersey
SLA Special Representative to National Microfilm Association

A NUMBER OF interesting new developments, some new machines, and some existing machines showing modifications or refinements were displayed at the 5th annual Business Equipment Exposition, held October 28 through November 1 at the New York Coliseum. It provided the showcase for the wares of 105 manufacturers.

One of the new machines demonstrated was the Xerox 813, a desk-top model electrostatic copying machine. This machine was designed for users who make less than 2,000 copies per month, or from 30 to 100 copies per day. It will accept single sheet originals but will not copy pages from bound volumes. The manufacturer is Xerox Corporation, Rochester 3, New York.

Copies are easily obtained from this single-unit machine. When the original is inserted into the document feed slot, it activates the automatic processing and exposure mechanisms. A single copy is then delivered in about 20 seconds. When more copies are needed a selector dial may be set to obtain up to 10 copies. These are automatically produced at the rate of five per minute. All copy is reduced 6 per cent from the original size. This does not present a problem for general copying purposes. However, such copy would not be acceptable in applications that require an accurate 1:1 reproduction.

The desk-top machine is 26 x 18 x 20 inches in size and weighs 190 pounds. There are no special electrical requirements other than that the machine should have the sole use of a 15-amp circuit.

At present the Xerox 813 is available only on a rental basis. Under the metered service plan the rental cost is $10 per month plus a charge of .045 cents per copy with a minimum of 800 copies. Adding in the cost of supplies, a cost per copy can be estimated at $.06 for the 100 copies per day user, or $.08 per copy for the 30 copies per day user. This new machine supplements the Xerox 914 but does not supplant it. If more than 2,000 copies are made per month with a requirement either for copying from bound volumes or for 1:1 reproduction, the Xerox 914 is designed to handle this volume.

In addition to the two Xerox models four other electrostatic copiers of the office type are available. They are the Apeco Electro-Stat (American Photocopy Equipment Co., Evanston, Illinois), Bruning Copytron 2000 (Charles Bruning Inc., Mt. Prospect, Illinois), Savin-Sahara (Savin Business Machines Corporation, New York) and SCM Model 33 Copier (SCM Corporation, New York). This number will soon be increased by three more machines expected to be introduced by Dennison Manufacturing Company, Electrocopy Corporation, and Harris Intertype Corporation.

The Magnaprint reader, Model PE-1A, is a new motorized reader-printer introduced by Recordak Corporation, New York. The machine accepts 16mm and 35mm roll microfilm. Additional accessory kits permit it to accept microfilm magazines (cartridges), aperture cards, microfilm in jackets, and microfiches (sheet film). When the "print" signal is given, a hard copy print is delivered at the lower front within a few seconds.

Lenses are available in magnifications of 11.8, 19, 22.5, 30, and 38. The lamp and condenser system is adjustable for the complete line of lenses. The large viewing screen is 11 x 11 inches in size. Sensitized paper is available in widths of 4 inches, 5½ inches and 8½ inches and in 150-foot lengths. The size of the unit is 27 x 16⅝ x 29¼ inches. It weighs 105 pounds and costs $1065.

Wherever microfilm is discussed, the microformat that stirs the imagination is the microfiche. The microfiche is a transparent

sheet of film containing a number of images, depending upon the size of the sheet, and including a top margin containing identifying printed information in normal size type. Until recently the microfiche was better known abroad than in the United States. Now a number of government agencies and some nongovernment agencies are using it.

A two-day meeting held in Washington last September 4-5 was attended by representatives of the National Aeronautics and Space Administration, The Atomic Energy Commission, the Department of Defense, and manufacturer members of the National Microfilm Assocation. The purpose was to discuss the need for standards for the microfiche and for the related processing and reading equipment. A draft standard specification was prepared by the Subcommittee of the Standards Committee of the National Microfilm Association. This proposed standard, "Microfiche Standard Specification for Documents 8½ x 11 Inches and Smaller," will be presented to the American Standards Association for consideration. The present microfiche sizes, 3 x 5 inches, 4 x 6 inches, 5 x 8 inches, and tabulating card size are to be considered for standardization.

The microfiche offers: a low cost medium for storing information; good readability; hard copy can be obtained from a reader-printer; flexibility for filing; easily mailed to other locations; the master negative can be reproduced on an offset machine. Publications in this microformat may be obtained from many documentation centers abroad. For example the International Documentation Centre AB (Hågelby House, Tumba, Sweden) supplies either microfiches or Microcards of publications in the Swedish libraries or libraries on the continent. The price of either in the 3 x 5 inch size with 50-60 pages of text is 50 cents. Starting with 1963, University Microfilms has announced that periodicals will be available both in roll and microfiche at the same price.

In the realm of things-to-come, and still in the laboratory stage, is an interesting new process called Photo-Plastic-Recording (PPR). It was developed by Dr. J. Gaynor and named by Dr. S. Aftergut, both of Advanced Technology Laboratories, General Electric Company, Schenectady, New York. A plastic film material is the image carrier. The image to be recorded is projected onto an electrostatically charged photoconductive plastic film by means of a light beam. In almost an instant the latent image on the film is developed by a process of heating and cooling. While the film is warm a downward force of electrostatic charges impresses the latent image into the plastic film surface. The image is recorded in the form of minute depressions rather than conventional light and dark areas. (A special illumination technique is required for projecting the image.)

A novel feature of the process is that the images can be erased by heating the film. The film can be erased and reused up to about a dozen times. The resolution is very fine, permitting as many as 144 images to be produced in a square about two inches in size. This microformat offers possibilities for a wide range of future applications.

SLA Sustaining Members

The following organizations are supporting the activities and objectives of the Special Libraries Association by becoming Sustaining Members for 1964. These are additions to the Sustaining Members listed in *News and Notes*, January 1964, and include all applications processed through January 23, 1964.

AEROJET-GENERAL CORPORATION
ATLAS CHEMICAL INDUSTRIES, INC.
BUSINESS AND PROFESSIONAL WOMEN'S FOUNDATION LIBRARY
CHEMCELL LIMITED
CONSOLIDATION COAL COMPANY
CONTINENTAL CARBON COMPANY
CORNELL UNIVERSITY LIBRARY
DOW CHEMICAL LIBRARY
F. W. FAXON COMPANY, INC.
FEDERAL RESERVE BANK OF NEW YORK
GENERAL FOODS CORPORATION
B. F. GOODRICH RESEARCH CENTER
IDAHO STATE UNIVERSITY LIBRARY
INDIANA STATE LIBRARY
NATIONAL LEAD COMPANY
NEW YORK PUBLIC LIBRARY
PUBLIC SERVICE ELECTRIC & GAS COMPANY
REPUBLIC AVIATION CORPORATION
UNITED STATES AIR FORCE ACADEMY
UNIVERSITY OF CONNECTICUT
UNIVERSITY OF MINNESOTA LIBRARY
UNIVERSITY OF WASHINGTON LIBRARY
WYETH LABORATORIES, INC.

Have You Heard . . .

Standard for Periodical Abbreviations

"American Standard for Periodical Title Abbreviations, Z39.5-1963," the product of two years' research by a committee of experts, is a compendium of 2,428 abbreviations for words commonly found in periodical titles. First of its kind, the standard has its origin in the *Index Medicus, Biological Abstracts, Bibliography of Agriculture, Chemical Abstracts,* and other domestic and foreign publications.

Chaired by Robert E. Kingery of The New York Public Library, the Z39 sectional committee indicated that voluntary use of the standard would facilitate library work and cataloging within government and industry. To simplify matters, general rules are provided in the standard for the omission of letters, punctuation, conflicting title words, and multilingual abbreviations. The standard applies only to titles printed in languages using the Roman alphabet or transliterated into Roman characters.

Moving to systematize the abbreviating of foreign titles, the committee also included numerous foreign titles in the *Standard,* among them those from Czechoslovakia, Denmark, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and Soviet Russia.

James L. Wood of Ohio State University directed the efforts of the subcommittee that developed the *Standard,* while committee leadership was provided by the Council of National Library Associations.

Copies of the *Standard* will be available shortly for $1.80 each from ASA, Room 906, 10 East 40th Street, New York 10016.

M.I.T. Library-Computer Symposium

Approximately 150 librarians attended a symposium on "Computers and the Library" on January 15, sponsored by the Industrial Liaison Program of the Massachusetts Institute of Technology. The aim of the symposium was to examine some of the opportunities for automating library operations that have become possible by advances in computer technology. Six members of the MIT faculty including the library staff reported on research projects currently in progress on library utilization of general and special purpose computers. Some of the topics included were: "The Library as an Operational System," the use of mathematical models to interpret library statistics for predicting future needs; "Automated Printing for the Library," a computer controlled and edited photo-composition system; and "Design of the Library Catalog Card Replicator," a simplified data processor using typewriter input and output and paper tape permanent storage. Other speakers discussed the role of man-machine interaction, which was demonstrated by an on-line literature search. A teletype inquiry station in the meeting room was "plugged in" to a computer whose storage unit contained citation entries. The demonstration showed many of the relationships existing in the system. The final speaker considered automation of technical libraries in terms of methods of implementation now within technical feasibility.

SLA Membership Gain

The Special Libraries Association membership total for all classes of membership as of December 31, 1963, was 6,091. This new record high is 358 more than the membership count as of December 31, 1962.

Training Programs in Librarianship

A three-year interdepartmental training program for science information specialists, which is open to college juniors, is being offered by the UNIVERSITY OF ILLINOIS with financial support from the National Science Foundation. Applications for 1964-65 will be accepted until March 15, 1964. The program consists of courses for a science major and librarianship minor leading to a B.S. in two years and a M.S. in three years. A librarianship major and a science minor is also allowed. Each student will receive $680 a year in his junior and senior years and $1,834 in his year of graduate study. For

further information, contact Dr. Frances B. Jenkins, Room 322, Library Building, University of Illinois, Urbana.

Applications for three internships in medical librarianship for 1964-65 are being accepted by the Biomedical Library, UNIVERSITY OF CALIFORNIA CENTER FOR HEALTH SCIENCES, Los Angeles. The deadline is March 30, 1964. The program offers a year of planned work combined with courses in foreign languages, documentation, biological sciences, and history of science and has been approved for Level II certification by the Medical Library Association. Applicants must be United States citizens and hold master's degrees from American Library Association accredited library schools. Applications may be obtained from Louise Darling, Librarian at the Biomedical Library.

Library Courses and Workshops

The third and final seminar in the Rutgers University Graduate School of Library Service series will be held March 12 and 13 on the New Brunswick campus. John Metcalfe of the University of New South Wales, Sydney, Australia, will speak on ALPHABETICAL SUBJECT INDEXING. Cyril W. Cleverdon, Librarian, College of Aeronautics Library, Cranfield, England, and Director of the Aslib Cranfield Research Project, will be a panelist. For further information, contact Dr. Susan Artandi at the Library School.

The University of California Extension, in cooperation with the University of California School of Librarianship, Berkeley, is establishing a program of CONTINUING EDUCATION IN LIBRARIANSHIP. In establishing extension programs in the various fields of library science, Elinor Alexander, who is directing the program, will consult with members of the library school faculty and representatives of library associations in the San Francisco Bay area. Information may be obtained from University Extension, University of California, Berkeley 94720.

A EUROPEAN LIBRARY STUDY TOUR is being conducted this summer from June 20-August 1 by the Graduate School of Library Science of Drexel Institute of Technology, Philadelphia. The tour carries six semester credits and will be conducted by Dr. Harold Lancour, Dean of The Graduate Library School at the University of Pittsburgh, through England, Scotland, Denmark, Sweden, West Germany, Holland, Belgium, and France. The cost is $1,406 including transportation, meals, tips, and theater admissions, plus $247 for tuition and $20 for fees. The size of the tour is limited to 25, and applicants must be either practicing librarians holding a library degree, students currently enrolled in an accredited library school, or graduates of an accredited college who have filed an application at Drexel. Applications, which must be submitted before March 1, 1964, are available from Mrs. Marilyn Filderman.

Seventh CLR Annual Report

The Council on Library Resources, Inc., has recently published its seventh annual report, which describes 38 grants and contracts totaling $985,203. Twenty of the grants were for new projects, and 18 were for extensions or renewals of previously supported work. Also included in the report are projects that have been completed during the past year and a 16-page listing of "Reports and Publications Resulting from or Assisted by Grants and Contracts" since the establishment of CLR.

National Library of Medicine Director

Dr. Martin M. Cummings, newly appointed Director of the National Library of Medicine, supervises the world's largest biomedical library, which serves as the principal resource for published information in the biological and medical sciences in the United States. Dr. Cummings, a former Chairman and Professor of Microbiology at the University of Oklahoma Medical School, had been Associate Director for Research Grants and Chief of the Office of International Research, National Institutes of Health. He succeeds Dr. Frank B. Rogers, who retired September 1.

Correction

The Medical Library Association's scholarship (see *Special Libraries,* p. 654, December 1963) is for students entering library school in 1964 for the 1964-65 terms.

Members in the News

SAMUEL K. CABEEN, former Librarian at the Ford Instrument Company in Long Island City, is now Assistant to the Director, Engineering Societies Library, at the United Engineering Center.

C. DAKE GULL, former Consulting Analyst, Information Processing, General Electric Company, has recently been appointed Professor of Library Science and Information Systems Consultant to the Aerospace Research Applications Center at Indiana University, Bloomington. Besides teaching, Mr. Gull will conduct research and assist in the development of the doctoral program in library science and in information science.

LYNN R. HARD, former Humanities Reference Librarian at Arizona State University, Tempe, is Assistant Technical Librarian at Burroughs Corporation, ElectroData Division, Pasadena, California.

In Memoriam

MARY KATHLEEN CARPENTER, retired Librarian at the Bank of Montreal, Canada, died suddenly January 8. Miss Carpenter had been with the bank since 1932 and retired four years ago. She was one of the organizers of the SLA Montreal Chapter and served as Secretary-Treasurer of the SLA Business Division.

Need for Teaching Tools

Copies of guides to libraries, booklists, and library school syllabi in the field of special librarianship and information are being requested from T. D. Wilson, Lecturer, Department of Librarianship, College of Commerce, Carlton House, Jesmond Road, Newcastle upon Tyne 2, England. Any similar material, which is helpful for teaching special librarianship, will also be appreciated.

Letters to Editor

ARE TECHNICAL LIBRARIES NECESSARY?

The "Elimination of the Technical Library" is to be a topic of discussion at the American Society for Engineering Education Conference in June 1964. The Engineering School Libraries Committee of the ASEE has sent out a call for papers on this topic (see page 655 in the December 1963 *Special Libraries*). To provide a greater variety of opinions on this topic, the deadlines have been extended to: March 15, 1964, for abstracts; April 15, 1964, for papers.

The audience will include leading engineering educators and industrial management interested in the future of the technical library.

The Committee hopes that librarians everywhere will respond to this opportunity to set forth the role, if any, of the technical library. Are special librarians interested in the educational and research responsibilities of the academic or technical library? If so, respond to Karen G. Takle, Assistant Professor, Graduate School of Library Science, Drexel Institute of Technology, Philadelphia, Pennsylvania 19104.

ENGINEERING SCHOOL LIBRARIES COMMITTEE
American Society for Engineering Education

STUDY OF INFORMATION SCIENCE COURSES

At the present time, a number of institutions are developing graduate programs that combine library science with studies in other fields, and offer radically different approaches to the information process. The disciplines now converging into the field of "information sciences" are extremely diverse, and they contribute a wide variety of tools and techniques: logical, mathematical, linguistic, and electronic-mechanical.

To the emerging discipline, each institution will no doubt bring its own particular emphasis, although presumably there is developing some consensus regarding basic subject matter. The emphasis of a given school will be, of course, influenced by the needs of its present and potential students as well as by special areas of intellectual interests among its faculty.

I should like to make an intensive comparison of the developing programs. This, I hope, will serve the following purposes:

1. To identify the subject matter and emphasis common to all. Hopefully, this will contribute to definition of a general theoretical foundation for the discipline as a whole.
2. To offer guidance to the potential graduate student in choosing the program best suited to his own background, interests, and needs.

I would greatly appreciate it if library schools and other institutes planning such courses would provide me with relevant data. In addition to the catalog of the graduate program, it would be useful to have additional statements regarding programs in the planning stage and course syllabuses that could give an indication of the relative importance attached to various aspects of certain subjects. It is often difficult to determine such things from course descriptions in catalogs. If you wish to contribute additional comments to a possible article on the current state of education in information sciences, I should greatly appreciate it. I should also like to receive future course descriptions and news releases.

JOSEPH C. DONOHUE
303 Loma Alta Drive
Santa Barbara, California

Another Look at Printed Card Catalogs

One of the great advantages of working with machine methods in libraries comes about because such methods cause us to examine, in great detail, the work we perform in a step by step, sequential manner. The clarity this gives the picture of library routines is an invaluable aid to the library administrator, but this fact is not new and has been stressed by more than one author in the recent literature on library mechanization. It is especially distressing, therefore, to read an article such as "A Compact Card Catalog . . ." (*Special Libraries,* December 1963, p. 635) with what appear to be half truths, inaccuracies, and fuzzy thinking. Or do I misunderstand the text?

The St. Louis Junior College book catalog is being widely touted as the new and final solution to a major problem of the librarian, the library, and the user. It is not. It is being promoted as an "Instant Library" (Wooten, Richard. *Instant Libraries.* St. Louis, Mo., The Junior College District, St. Louis County. Privately issued, 1963). It is not. It gives the impression that card manipulation is done automatically. It is not. Let me discuss each point separately.

1. *Novelty.* It is claimed that this method is a new one. How so? The Compos-O-List method of producing printing quality photographic masters is not in itself unusual. The National Library of Medicine has been doing the same thing for several years using a Kodak List-O-Matic camera, and the Library of Congress has photographically produced its catalog for many years using the shingling method. What then is the major difference in this system? Merely that it can photograph more lines of type than other machines.

2. *Instant Libraries.* The claim is made for this system that it does away with the card catalog. As in every other photographic reproduction of a card catalog, this one requires a place to store the new cards between the times of production of the book catalog. One therefore has one complete card catalog in the central library. Since the book catalog is out-of-date as soon as it is issued (if not before), how is it kept up-to-date in this system? A card file supplement is maintained at each of the locations of the book catalog, kept in catalog card trays. In the main library a complete catalog on cards is interfiled, to do away with the need to search multiple alphabets. One has, therefore, still to maintain traditional card files. If printed supplements are resorted to, then there is the main list, the printed supplements, and the card file supplement to be checked. But even with printed supplements, there is still the card file, and, of course, the main catalog must be kept up-to-date by continuous manual interfiling.

Dr. Jones mentions that "perhaps each year, the whole card deck can be merged (and deletions pulled)." There is nothing built into this system that would enable this to be done any way but manually, and his mention of the use of pre-punched IBM cards merely obscures the fact. What is to be pre-punched on the cards, and how does it get there? If he goes to punched IBM cards one might reason that there is then no point in producing the catalog in this fashion at all, unless a computer is used to do the interfiling and page arranging (perhaps as in the National Library of Medicine's MEDLARS project).

Ease of use of the catalogs. The main point seems to be that the student can use the book catalog as easily as the phone book. Perhaps that is true of the author section, but, since the subject headings are the traditional LC ones, certainly the same problems will arise in the use of the subject book catalog that arise in a card catalog.

Strong arguments can be made about the superiority of a printed book catalog over a card catalog, such as the ease of producing multiple copies and its use by numerous people simultaneously. The advantages of the book catalog are well described in Kingery and Tauber's recent book *Book Catalogs* (N.Y.: Scarecrow Press, 1963). But it must also be remembered what the disadvantages of a book catalog are, so that those who claim to have wiped out those disadvantages can have their claims checked against reality.

The most serious problem with book catalogs is the impossibility of adding new citations among the old. The "official" book catalogs of the British Museum and the Library of the Surgeon General's Office (now the National Library of Medicine) in the 19th century tried to get around this by writing in, by hand, information about new accessions. Jewett's stereotypic slugs for the Smithsonian collection was another attempt to do the same thing. These systems were so cumbersome that the present card catalog with its contents in movable, not fixed, form was eagerly accepted as the real solution to this problem. Dr. Jones' catalog has not even tackled this problem, if his article is complete.

The basic reason for evolving this system appears to have been the need to provide multiple copies of a catalog to each of several college sites, and a way had to be found to reproduce them. Printing does, indeed, seem to be the way out, and this system is no less effective than others that could have been devised.

Mechanization and computerization of library routines have come to be the hallmark of a progressive library these days, but it is pointless to try to ascribe to a system such as this one advantages it does not have and to invent problems it does solve on a *de facto* basis. In my opinion, such an approach does the profession a disservice and may in the end do more harm than good.

Irwin H. Pizer, Associate Librarian and
Research Associate in Machine Methods
Washington University
School of Medicine Library
St. Louis, Missouri

Off the Press . . .

Book Reviews

DOCUMENTATION AND ITS FACETS: BEING A SYMPOSIUM OF SEVENTY PAPERS BY THIRTY-TWO AUTHORS. *S. R. Ranganathan,* ed. (Ranganathan Series in Library Science, 10) New York: Asia Publishing House, 1963. 639 p. notes. index. $16. (Distr. by Taplinger Publishing Co., New York City)

Dr. Ranganathan, like Dewey or Jewett or Billings, is an elemental force in librarianship, that is, if an elemental force can be distinguished by great sweetness of personal character. Like any elemental force, he can be irritating or annoying (or even just plain wrong), but he remains a towering figure, and his influence is persuasive, pervasive, and powerful.

Americans probably think of Ranganathan primarily as the leading world theoretician in classification. He is the major exponent of depth classification. He is the creator of a classification scheme (the Colon) little used in practice but enormously great in its influence—directly in the case of our English cousins and more indirectly but none the less strongly throughout the world.

His interests, however, are much broader than this would indicate. He has, practically singlehandedly, created a monographic literature of librarianship for India. His concerns include the details of circulation work, the location of rural bookmobile stops, adult education, reference work —indeed, the full range from children's services through the creation of a catalog code and the forging of a general theory of librarianship expressed in five simple laws.

When such a man turns his attention to producing an extensive work on documentation, the result is sure to be interesting. And produce it he has. Of the 70 papers included, 26 are by Ranganathan himself, ten by his long-time friend and disciple, S. Parthasarathy, two by both of them together, and one by Ranganathan in collaboration with another author.

The book is exceptionally broad in scope, ranging from highly theoretical discussion and consideration of international bibliographic problems down to the details of running a clipping file. It has far more resemblance to, say, the Aslib *Handbook of Special Librarianship* in its coverage than to most recent works with documentation in their titles. As the conspectus notes: "This book does not go into the techniques of classification. . . . Equally so it does not go into the techniques of machine-coding and the working of the machinery for search." This emphasis on these elements as techniques is of interest. It also contributes to the value of the book, since other texts go into little else but classification, machinery-coding, and the working of the machinery for search. In fact, there is much in this book to reassure those special librarians who quiver slightly when the word documentation is mentioned. If that were all, it would be it pity. The book is also likely to broaden their outlook (and ours) as well. Ranganathan insists on the oneness of documentation and librarianship.

But what does he consider documentation to be, if classification and what he calls "the machinery" are techniques to be mentioned but neither emphasized nor discussed in detail here? "Documentation," he says, "is library activity intensified by putting emphasis on . . ." *1)* nascent thought (by which he means new thought), *2)* micro document (the article or report as opposed to the book), and *3)* the specialist reader, rather than the generalist reader.

While he says also that his book is "turned on future development rather than on a description of past achievement," this seems to reflect what might be called both the nascent level of documentation service in India (and he is writing in India), and the fact that the book deals with methods, procedures, and theories, which have nowhere been used as fully as they might productively be used.

There is a great deal of material here of varying value. General discussion of the theory and terminology of documentation is followed by general historical background, information about FID, a discussion of post-war (World War II) documentation centers, and a description of the Soviet Institute for Scientific and Technical Information. There is material on documentation in India, including the development of Insdoc and (interestingly enough) an excellent suggested course of training for documentalists.

There is a discussion of library resources for documentation, primarily union catalogs, primarily Indian. There are a number of case studies of particular Indian examples. There is a section on Meta Documentation (not clearly defined), which has in it a very interesting article on data service, perhaps of especial value to those who distinguish "information" from "data."

There are also articles on bibliographical service, procurement service (i.e., acquisitions and interlibrary loan), and physical reproduction (including an article entitled "Prophylactics of Microcopies"). There is a section dealing with translation and one on standards, which includes excellent general observations on abstracting. There is a suggested documentation program for the Third Plan Period in India, which includes much information on the administration of documentation centers.

Two final sections deal with the future of documentation in India and abroad and with problems for research in information production and storage

as well as depth classification (the wheel has swung), tools for retrieval, and organization for research.

If the terminology seems somewhat quaint at times (though this is less apparent here than in other of the master's works), if the examples sound too Indian, if the outline sounds too much like the special librarianship we know all about already, if some of the concern with detail seems odd—never mind. Persevere. There is much indeed to be quarried from this book, and it is well worth purchasing for all special libraries and well worthy of extensive examination by documentalists.

THEODORE C. HINES
Special Assistant to the Dean
School of Library Service
Columbia University, New York

DIRECTORY OF SELECTED SCIENTIFIC INSTITUTIONS IN THE USSR. Prepared by Battelle Memorial Institute for the National Science Foundation. Columbus, Ohio: Charles E. Merrill Books, 1963. $14.75.

As research activity continues to grow, the need rises sharply for many types of reference aids to assist information personnel serving the scientist. It is well that the National Science Foundation has seen fit to make more widely available this information that Battelle had collected. The *Directory* includes information on 1,135 selected Soviet research institutions: the address, administrative affiliation, a brief description of activities and publications, and a list of selected staff members. Unfortunately, titles of the latter are not complete: "Professor," "Dean," or "Head" are commonly noted without an indication of department or faculty.

Institutes in biology and medicine have been excluded. "It is anticipated that another United States organization will survey this area." The compilers also caution that for various reasons "neither the extent of the descriptions, nor the inclusion of or failure to include an institution, is indicative of the relative importance of a given institution." Also, although there is an emphasis on the physical sciences (reflecting Battelle research interests), many institutes in the social sciences and even a few in the humanities are included. An essay on the organization and general administration of Soviet science prefaces the *Directory*.

The size of the book makes it awkward to handle. It has been produced by photo-offset from 8½ x 11 sheets and the over 800 pages make a bulky volume indeed for the type of use to which it will be put. The alphabetical arrangement of the *Directory* by the translated name of the organization should be questioned, but an index of transliterated names has been provided. There are five other indexes: a keyword index to the names of the institutes in English, indexes to abbreviations of the institutes, to subjects of research, and to the names of selected staff members (approximately 8,500), and a geographical list, by city, of the locations of the institutions.

The directory is recommended; the research community can use more such compilations. We need them for other countries, not excluding more comprehensive, up-to-date coverage of our own.

IRMA JOHNSON, Reference Librarian
Massachusetts Institute of Technology
Cambridge, Massachusetts

READINGS IN SPECIAL LIBRARIANSHIP. *Harold S. Sharp,* ed. New York: Scarecrow Press, 1963. 714 p. $15.

This volume is not a collection of essays on the state of the art of special librarianship, and certainly it is not an anthology of what might be called the "classical writings" in that field. In fact, the purpose this compilation was intended to serve is not entirely clear. The 700 pages of the volume contain 47 papers (all of which have previously appeared in print except J. W. Perry's "Document Selection Methods"), grouped under ten major headings.

The volume opens with an introduction by the editor that considers the needs of business and industry for adequate library resources and sets forth some of the considerations that must be taken into account by any organization in which library service of some kind is being contemplated. The editor expresses the hope that this volume will be of assistance to management in achieving and implementing a realistic decision with respect to the kind of library required to meet the particular needs of various organizations. Emphasis seems, however, to be placed on those situations in which a fully equipped and professionally staffed library is either impracticable or impossible.

As one might expect, the first major section of the work considers the reasons for establishing a special library, and the next consists of a selection of papers dealing with "Establishing and Organizing the Special Library," "Using the Special Library," and standards for the evaluation of special library services. At this point attention is turned to the more detailed aspects of special library operation: administration, public relations, and surveys of special libraries (these are not case studies at all, but merely descriptions of particular installations). The work concludes with a section on information retrieval and "A Look into the Future." The treatments under these headings range from those written for the completely uninitiated layman (such as Francis Bello's article on "How to Cope with Information," which appeared in *Fortune*) to Perry's fairly technical treatment mentioned above, which was prepared under a grant from the Air Research and Development Command of the United States Air Force. Some papers have been written by specialists with recognized competence in their fields, such as Paul Wasserman's essay on "Measuring Performance in

a Special Library," while others are the work of those who have few, if any, qualifications for making their pronouncements; i.e., Daniel Melcher on "Machine Information Storage and Retrieval." Some contributions are carefully reasoned and defensibly realistic projections of the future, such as Eugene Jackson's "A Look into the Future of Special Libraries," while others are little more than scare headlines about the menace of the information explosion and the success of the Russians in meeting it (see Allen Kent on "Machine Literature Searching in Science"). This reviewer happens to know, of his own knowledge, that Mr. Kent's views on this matter have been somewhat modified since this particular article was written.

Thus one is again brought back to the reasons for the publication of this volume. Possibly the book may have some value to students in library school, but the instructor would have to exercise considerable care in selecting those contributions that are not ephemeral and will not lead the student into erroneous conceptions, especially in the information retrieval section. If the book really was intended to assist business and industrial management in establishing special libraries, certainly it is far less useful than, for example, Chester Lewis' excellent manual, *Special Libraries—How to Plan and Equip Them,* recently published by the Special Libraries Association. An anthology, which by its very nature is almost certain to be fragmentary and uneven, is not an appropriate vehicle for administrative and managerial guidance in the decision-making process, even when, as is not true of the present volume, a high proportion of the contents are of exceptional merit.

Judged, then, by intellectual standards, this is not a particularly useful book, and it does not fulfill any identifiable *raison d'être.* But if the real excuse for its publication was to make a neat profit for the publisher, we can confidently predict its success—that is, of course, assuming that hordes will buy it at such an exorbitant price.

JESSE H. SHERA, Dean
School of Library Science
Western Reserve University
Cleveland, Ohio

New Serials

AIR AND WATER POLLUTION is a monthly journal devoted to the air and water pollution problems on an international level. Sections deal individually with the two problems and have separate editors. A subscription, based on a calendar year, is $60 and is available from Pergamon Press.

PETROLEUM CHEMISTRY: USSR is the English edition of the Russian Journal, *Neftekhimiya,* which began publication in 1961. The articles of most interest to Western research workers are published in full English translation with abstracts of the remaining articles. Pergamon Press, publishers of the quarterly, has made arrangements with the Institute of Scientific Information of the USSR Academy of Sciences whereby it can rapidly obtain a copy of any article originally published in the open literature of the Soviet Union. Translations of these articles in any other language are also available; both services are available from the Administrative Secretary, The Pergamon Institute, Headington Hill Hall, Oxford, England. A subscription to the journal is based on a calendar year and is $140.

SLA Authors

BAHN, Gilbert S., ed. *Kinetics, Equilibria, and Performance of High Temperature Systems* (Proceedings of the 2nd Conference, April 1962, Western States Section of The Combustion Institute). New York, N. Y.: Gordon and Breach, 1963. 406 p. $19.50 (L. C. 63-2173)

LINDER, L. H. Indexing Costs for 10,000 Documents. American Documentation Institute, 26th Annual Meeting, Chicago, Ill., October 1963, p. 147-8.

LORBER, Gertrude. Sources of Drug Information. *The American Journal of Nursing,* vol. 63, no. 12, December 1963, p. 101-2.

MEDWIED, M., co-author. Gas Chromatographic Information Storage and Retrieval by the Uniterm System. *Journal of Chromatography,* vol. 11, 1963, p. 307-11.

Issue Devoted to Special Libraries

The November 1963 issue of *Illinois Libraries,* published by The Illinois State Library, was devoted to special libraries. The Illinois Chapter of Special Libraries Association cooperated by obtaining from its members articles on the Chapter, recruitment, and various Illinois special libraries.

Free Catalog of Russian Books in English

All About USSR, catalog number 26 of books about the USSR in English, is available free from Cross World Books and Periodicals, Inc., 333 South Wacker Drive, Chicago. The catalog contains titles of books about politics, language, the arts, films, science and technology, travel, the humanities, and other subjects which have been published and translated in English in the Soviet Union. Cross World Books, a "Russian-Books-by-Mail" company, was established four years ago and supplies many government agencies and educational institutions with materials from the USSR.

NBS Radio Science Journal

In January 1964, the National Bureau of Standards changed Section D of its *Journal of Research,* published under the title "Radio Propagation," to *Radio Science,* to become a national journal of radio science. The journal is published monthly by NBS in cooperation with the U.S. National Committee of the International Scientific Radio Union at the yearly subscription rate of $9. The foreign rate is $11.50.

RECENT REFERENCES

Librarianship

INTERNATIONAL RESEARCH ASSOCIATES, INC. *Access to Public Libraries.* Chicago: American Library Association, 1963. xxiv, 160 p. pap. $3.

A study of the extent of limited access to the resources and services of public libraries in the United States, with particular reference to racial restrictions. Based on questionnaires and interviews with personnel in public library systems and a study of branch libraries in ten cities. Restrictions on students, shortage of foreign language materials in areas of foreign population concentration, and regional variations in library resources and standards in relation to ALA standards are also examined. See *Library Journal,* December 15, 1963, p. 4685-4715, and *Wilson Library Bulletin,* December 1963, p. 335-344, for fuller analysis and comment on this important report.

Library Binding Handbook. Boston: Library Binding Institute, 160 State St., 1963. 50 p. pap. illus. $1. (L. C. 63-17991)

Instructions and recommendations for good library binding. Appendix consists of the new LBI Standard, which consolidates the Standards for Rebinding and Prebinding issued in 1958.

NELSON ASSOCIATES, INC. *Strengthening and Coordinating Reference and Research Library Resources in New York State.* Albany: New York State Education Department, 1963. [vi], 98 + 22 p. pap. mimeo. Apply.

A study of the implications of proposed legislation for a state-wide reference and research library resources program in New York. Deals specifically with the activities of the state agency of the program, its relationship with other organizations, suitable areas for establishing regional systems, financial considerations, and application of data processing methods to the program. General and data processing bibliographies. Text of impending legislation.

REES, Alan M. *Review of a Report on the Aslib-Cranfield Test of the Index of Metallurgical Literature of Western Reserve University.* Cleveland, Ohio: Center for Documentation and Communication Research, Western Reserve University, 1963. 32 p. pap. mimeo. Apply.

A lecture presented at Aslib in London on October 16, 1963. Reviews the application of the Aslib-Cranfield testing technique in the light of results obtained at Western Reserve and analyzes the final report issued by Cleverdon and Aitchison with reference to relevance and recall scores, search programs, the semantic code thesaurus, role indicators, and punctuation levels.

UNIVERSITY OF THE STATE OF NEW YORK. *Building on Strength: New York's Plan for a Reference and Research Library Program.* Albany: 1963. 14 p. pap. mimeo. illus. Apply.

Summarizes the recommendations of various authorities and commissions in support of the need for a state-wide reference and research library program.

Bibliographic Tools

ANDREWS, Mary M. *Management* (PACAF Basic Bibliographies for Base Libraries). San Francisco: 1963. iv, 53 p. pap. spiral binding. Apply. (Available from Commander-in-Chief, Pacific Air Forces, ATTN: PFPPS-P, Command Librarian, APO 953, San Francisco, Calif.)

An annotated list of books on management, but excluding the subject of personnel, this is also a guide for those engaged in the management of such Air Force facilities as the base exchange, open mess, commissary, etc. Author-title index. Supersedes the PACAF Bibliography *Management* of August 1, 1962.

Annual Physics Book List—1962. New York: American Institute of Physics, 1963. 26 p. pap. Gratis.

A compilation of "Books Received" listings from *Physics Today,* about 500 titles or the majority of physics books published in 1962. Reviews are cited in six physics journals. Arrangement by subject; author index.

EMBREE, Ruth G., et al. *Pacific Area, Supplement I* (PACAF Basic Bibliographies for Base Libraries). San Francisco: 1963. vi, 47 p. pap. spiral binding. Apply. (Available from Commander-in-Chief, Pacific Air Forces, ATTN: PFPPS-P, Command Librarian, APO 953, San Francisco, Calif.)

A selected list for Air Force libraries annotating books on history, culture, arts, travel, and language, for the countries and islands of the Pacific. Author-title index. Supplements the PACAF Basic Bibliography *Pacific Area* of September 1, 1962.

GIETZ, Ernesto G., ed. *Catálogo Colectivo de Publicaciones Periódicas Existentes en Bibliotecas Científicas y Técnicas Argentinas,* 2nd ed. Buenos Aires: Consejo Nacional de Investigaciones Científicas y Técnicas, 1962. xxx, 1726 p. pap. Apply.

A union list of serials in scientific and technical libraries in Argentina. It is an enlarged version of the first edition published in 1942, and lists over 25,100 titles, with 4,100 Argentine publications included, and 5,915 references. Arrangement is alphabetical by title; index of countries and institutions; the holdings of 142 Argentine libraries are also indicated.

LARSON, Esther Elisabeth. *Swedish Commentators on America, 1638-1865: An Annotated List of Selected Manuscript and Printed Materials.* New York: New York Public Library; Chicago: Swedish Pioneer Historical Society, 1963. 139 p. pap. $5.50. (L. C. 63-14658)

Swedish contact with America dates from the founding of the colony of New Sweden in 1638. Planned as a tool for research scholars, this book lists a large body of letters, journals, official reports, travelogues, and other commentaries, briefly describes the content of each, and indicates its location in Sweden or the United States.

MILLER, Emily M. *Accident Prevention* (PACAF

Basic Bibliographies for Base Libraries). San Francisco: 1963. iv, 28 p. pap. spiral binding. Apply. (Available from Commander-in-Chief, Pacific Air Forces, ATTN: PFPPS-P, Command Librarian, APO 953, San Francisco, Calif.)

An annotated list of books covering the field of accident prevention from atomic defense to safe driving. Includes a list of periodicals and a directory of agencies and research organizations. Author-title index. Supersedes the PACAF Bibliography *Accident Prevention* of March 1, 1961.

NATIONAL AGRICULTURAL LIBRARY. *Serial Publications Indexed in Bibliography of Agriculture* (Library List No. 75). Washington, D. C.: U. S. Dept. of Agriculture, 1963. ii, 163 p. pap. Gratis to institutions and organizations.

A preliminary listing of some 8,000 titles, to be updated and issued regularly in the future.

NATIONAL LIBRARY OF SINGAPORE. *Books About Malaysia*. Singapore: 1963. 22 p. pap. Apply.

Compiled to mark the birth of Malaysia as a nation, this list of books in the National Library of Singapore covers the customs, religion, literature, natural history, economics, history, etc., of Malaya, North Borneo, Sarawak, and Singapore. Includes books for children.

Rarely Held Scientific Serials in the Midwest Inter-Library Center. Chicago: Midwest Inter-Library Center, 5721 Cottage Grove Ave., 1963. vi, 197 p. pap. Gratis.

Contains about 2,500 serial titles abstracted in *Chemical Abstracts* and *Biological Abstracts* and acquired by the Midwest Inter-Library Center in cooperation with the National Science Foundation.

RYAN, Margaret F. *Communications and Electronics* (PACAF Basic Bibliographies for Base Libraries). San Francisco: 1963. vi, 61 p. pap. spiral binding. Apply. (Available from Commander-in-Chief, Pacific Air Forces, ATTN: PFPPS-P, Command Librarian, APO 953, San Francisco, Calif.)

Compiled for Air Force technicians, for military personnel seeking a general knowledge of the subject, and for hobbyists, hi-fi enthusiasts, etc., this annotated list ranges from elementary to highly technical, and from practical to theoretical. Author-title index. Supersedes PACAF Bibliography *Communications and Electronics* of May 1, 1959.

Select Bibliography: Asia, Africa, Eastern Europe, Latin America, Supplement 1963. New York: American Universities Field Staff, Inc., 366 Madison Ave., 1963. 66 p. pap. $1.50.

Adds more than 450 titles, published between June 1961 and June 1963, to the original volume and the 1961 Supplement. Most entries are annotated, and as before given "A" and "B" categories as an aid in selection.

SLEDGE, Jeanette, et al. *Bibliography on the Documentation, Dissemination, and Retrieval of Information*. New York: Special Libraries Association, 1963. [3 p.] mimeo. Gratis.

Prepared for SLA's Management Information Center at the International Management Congress, September 16-20, 1963, this selection of recent articles and papers covers both manual and mechanized systems for the documentation, dissemination, and retrieval of information. Systems in current use are described and companies where they are in operation are identified.

WALKER, Warren S. *Twentieth-Century Short Story Explication: Supplement—Interpretations, Since 1960, of Short Fiction Since 1800*. Hamden, Conn.: Shoe String Press, 1963. 131 p. $3.50. (L. C. 61-17290 rev.)

The first edition was a bibliography of interpretive studies of short fiction from 1900 to 1960; this supplement carries the list forward to April 1, 1963. Entries from the first volume are repeated if subsequently reprinted in anthologies and collections of essays. Author index.

UNION OF INTERNATIONAL ASSOCIATIONS. *Bibliography of Proceedings of International Meetings Held in 1957* (Bibliographie des Comptes Rendus des Reunions Internationales Tenues en 1957) (Pub. no. 183). Brussels: 1963. 388 p. cloth $10; pap. $8.

First of a series of volumes published with the financial support of the National Science Foundation. Covers some 1,350 reports published in connection with international conferences, congresses, conventions, symposia, etc., held in 1957, with information on reports published up to four years later. Text largely in English and French; occasional references in other languages. Systematic and author and subject indices.

U. S. DEPARTMENT OF COMMERCE, OFFICE OF TECHNICAL SERVICES. *Computers* (OTS Selective Bibliography SB-472, Supplement 1). Washington, D. C.: 1963: 37 p. pap. 10¢.

Lists 808 references on computers added to the OTS collection between September 1961 and February 1963. Material includes digital and other computers, high-speed computer research, computer reliability studies, computer programming, word coding techniques, computers in automation and industrial planning, etc.

———. *Computer Related Research* (OTS Selective Bibliography SB-473, Supplement 1). Washington, D. C.: 1963. 25 p. pap. 10¢.

Lists 369 reports and translations added to the OTS collection from September 1961 to February 1963. Covers medical and behavioral research, cybernetics and bionics, artificial intelligence, speech and character recognition, reading and teaching machines, adaptive control systems.

———. *Data Processing and Programming* (OTS Selective Bibliography SB-474, Supplement 1). Washington, D. C.: 1963. 61 p. pap. 10¢.

Reports and translations added to the OTS collection from September 1961 to February 1963.

———. *Information Storage and Retrieval* (OTS Selective Bibliography SB-475, Supplement 1). Washington, D. C.: 1963. 22 p. pap. 10¢.

Lists 302 reports and translations, covering data storage systems, data reduction, mechanized litera-

ture searching, machine association of ideas, machine indexing, data feedback systems, etc., added to the OTS files in the above period.

WALSH, S. Padraig. *General Encyclopedias in Print: A Comparative Analysis, 1963,* 2nd ed., rev. Akron, Ohio: Reference Books Research Service, P. O. Box 602, 1963. [68 p.] pap. $1.50.

Evaluates 37 current encyclopedias under a number of aspects: cost, size, accuracy, indexing, maps, illustrations, age level, etc.

Classification

CHEMICAL ABSTRACTS SERVICE. *The Naming and Indexing of Chemical Compounds from Chemical Abstracts.* Easton, Pa.: American Chemical Society, 1962. 98 p. pap. $5. (Available from Chemical Abstracts Service, Ohio State University, Columbus 10, Ohio.)

A reprint of the introduction to the volume 56 (January-June 1962) Subject Index of *Chemical Abstracts.* Discusses the chemical nomenclature for indexing both organic and inorganic compounds, with a classified bibliography, index, and five appendices listing miscellaneous chemical prefixes, inorganic groups and radicals, anions, organic groups and radicals, and organic suffixes.

PRYTZ, JOHANSEN, J. *De exakte fags encyclopaedi og terminologi.* Copenhagen: Danmarks Biblioteksskole, 1963. 48 p. pap. DKR. 12.50. (Available from Biblioteksentralen, Mosedalvej 11, Copenhagen Valby.)

Published by the Royal Danish School of Librarianship, this book provides an explanation in Danish of scientific terminology to help librarians in the classification and cataloging of books in the exact sciences. Index.

Information Handling

BELFOUR, Albert J. *Development and Implementation of a Materials Information Processing System* (ASD-TDR-62-819). Wright-Patterson Air Force Base, Ohio: Air Force Systems Command, 1963. iv, 24 p. pap. 75¢ (Available from OTS, U. S. Department of Commerce, Washington, D. C.—order AD 401 640.)

Sets forth a data processing program based on the Materials Information System developed by the Belfour Engineering Co. under contract from the U. S. Air Force. Biblography.

Miscellaneous

Free and Inexpensive Learning Materials, 12th ed. Nashville, Tenn.; Division of Surveys and Field Services, George Peabody College for Teachers, 1964. 276 p. pap. $2.

Lists over 4,000 educational aids, such as pamphlets, posters, charts, maps, and pictures, obtainable free or for a small charge from organizations, industries, and government agencies. More than half the entries are new or have been revised since publication of the last edition in 1962.

HAWKEN, William R. *Supplement No. 1 to Photocopying from Bound Volumes.* Chicago: Library Technology Project, American Library Association, 1963. 32 p. pap. illus. $2. (L. C. 61-18876)

This supplement to the author's *Photocopying from Bound Volumes: A Study of Machines, Methods, and Materials* (LTP Publication No. 4) covers the Docustat Book Copier and the 3M "107" Photocopiers, with description, specifications, and analysis of performance for each.

MCALLISTER, Gerald J., ed. *Aerospace Facts and Figures 1963.* Los Angeles: Aero Publishers, Inc., 2162 Sunset Blvd., 1963. 180 p. pap. illus. $3. (L. C. 46-25007)

Covers all aspects of the aircraft, missile, and space industry in the United States, with the latest available statistics. Over 100 charts and tables. Index.

NATIONAL SCIENCE FOUNDATION. *A Case Study of Support of Scientific and Engineering Research Proposals* (NSF 63-22). Washington, D. C.: 1963. vi, 123 p. pap. 65¢. (Available from Government Printing Office.)

A pilot study, prepared by the University of Michigan and New York University, on the acceptance and rejection of scientific research proposals submitted by these two institutions to federal and other outside sponsors over a two-year period. Statistical tables and questionnaire forms.

STEINBERG, S. H., ed. *A New Dictionary of British History.* New York: St. Martin's Press, 1963. viii, 407 p. $10. (L. C. 63-19376)

Brendon's *Dictionary of British History,* published in 1937, is here completely revised so as to become a new work. All biographical entries have been eliminated to enlarge the number and scope of other headings. Subject matter encompasses all countries that are or were once part of England and her overseas possessions; their history is carried on only as long as the British connection lasted.

———. *Statesman's Yearbook, 1963-1964.* New York: St. Martin's Press, 1963. xxxvi, 1728 p. $10. (L. C. 4-3776)

In addition to its annual statistical and historical data for all countries of the world, this centenary edition contains a special preface by the editor giving the history of the publication, a brief account at the head of each country's entry of conditions in 1863, and an atlas supplement with comparative maps and population charts for 1863 and 1963.

Yearbook of International Trade Statistics, 1961. New York: United Nations, 1963. 710 p. pap. $8.

Gives total imports and exports in national currency and U.S. dollars, trade in gold, indices of quantum and unit value, currency conversion factors, trade in principal commodities, trade by principal countries of provenance and destination, and receipts from import and export duties for each of 138 countries, as well as other regional and world statistical trade data.

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ASSOCIATE LIBRARIAN—Librarian to be in charge of Maryland State Department of Health public health library located in State Office Building in Baltimore City. Library of Science degree and several years' experience required. Challenging position involving opportunity to develop and expand services include consultation to local health departments, hospitals, and public and school libraries. Librarian would be able to work closely with other professional librarians in such well-known libraries as Enoch Pratt, Welch, and the Johns Hopkins and University of Maryland Libraries. Salary: $6,280-7,849. Address inquiries to Herbert F. Hare, Director of Training and Personnel, Health Department, 301 West Preston Street, Baltimore, Maryland 21201.

CATALOGER—Research Librarian. Responsible position for individual with college background in biological sciences or related fields and some special library experience. The Agricultural Chemicals Division requires person to do some abstracting and to index technical reports. Position is located 40 minutes from midtown Manhattan. Applicants should send complete resume with salary requirements to Personnel Director, Geigy Chemical Corporation, Box 430, Yonkers, N. Y. An equal opportunity employer.

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HEAD TECHNICAL LIBRARIAN—North Carolina Research Triangle Area. An opportunity to organize a technical library for a newly established Electronics Research Laboratory. Graduate level training and experience in library science and information retrieval techniques desired in the physics/electronics fields. Starting salary range to $10,000. Reply to the Laboratory Director, Corning Glass Works, 3800 Electronics Drive, Raleigh, N. Carolina. An Equal Opportunity Employer.

LIBRARIAN—Opportunity for a woman to be in charge of our established technical library. Applicant should be a graduate in library science. Actual library experience and a knowledge of chemistry preferred. Salary commensurate with qualifications. Excellent group insurance and other fringe benefits. Send resume to Mr. R. K. Estelow, Columbian Carbon Company, Research Center, P. O. Box 975, Princeton, New Jersey.

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R. L. Collison 1955 $1.62

The Foreign Language Barrier
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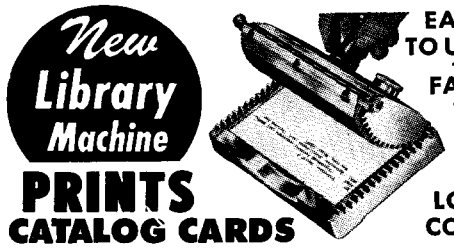

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